FY 2022 PCAARRD LIST OF GRANTS-IN-AID PROGRAMS/PROJECTS

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Good Agri-Aqua Livelihood Initiatives towards National Goals (GALING) - PCAARRD Kontra CoViD-19 Program	ENHANCING FOOD PRODUCTION AND LIVELIHOOD THROUGH COMMUNITY-BASED URBAN GARDENING PROJECT AMIDST COVID-19 PANDEMIC IN SELECTED AREAS IN ALBAY PROVINCE	Rapid, Inclusive and Sustained Economic Growth	This project is in response to the pandemic problem and aimed to address the goals of the PCAARRD GALING Program Kontra Covid 19. This is intended to help the communities in Albay province through the science-based urban gardening technologies.	Publication: At least one (1) popular article/ paper on Community-based Urban Gardening will be submitted for publication. Patent: Patent organic fertilizer which will be formulated by the group from local materials. Patent a social technology which will be developed by the group in the implementation of the community-based Urban Gardening Project Product: Production of vegetables (Quantity canÃ¢,¬„¢t be determined yet) Produce vermi-compost as organic fertilizer (Quantity canÃ¢,¬„¢t be determined yet) People: 90 households trained on Urban Gardening Provide technical services to at least 90 householdsPlace: Prepare at least one (1) tripartite MOA with the LGU partners and farmers association Policy: At least one (1) local ordinance will be proposed for LGU partner.	Bicol University - College of Agriculture and Forestry	The target participants of the project are those households in the areas mentioned above. At least a total of 90 (30 pax per barangay) residence/households will be targeted as participants of the project.	16-Feb-22	15-Aug-23	ONGOING	2,500,000	1,800,546.40
Good Agri-Aqua Livelihood Initiatives towards National Goals (GALING) - PCAARRD Kontra CoViD-19 Program	Urban spaces as workplace for augmenting income through gulayan sa pamayanan Iloilo Kontra COVID19 project (USWAG IKCP)	Rapid, Inclusive and Sustained Economic Growth	The project shall provide an alternative source of income and livelihood to the most vulnerable sectors of society brought about by the COVID-19 pandemic €" unemployed women, retrenched workers, out-of-school youth, and persons with disabilities.The initial 100 households as identified and coordinated with the City Agriculturist Office of Iloilo and a cooperative from Miagao shall be given 100 pots of planting materials of vegetables including okra, ampalaya, pechay, pole sitaw, tomatoes, chili pepper, squash, eggplant, turmeric, ginger, and spring onion along with basic garden tools ready for growing until harvest. Prior to the distribution/awarding of the potted vegetables the participating households shall undergo training covering preparation, care and maintenance, harvesting post-harvest handling, extraction and storage of planting materials for the next cycle in order to ensure sustainability of the project beyond the first cycle. Succeeding modules will be conducted to provide additional information.The project aims to achieve the following for each household:€¢Provision of technological knowledge, vegetable seedlings, trainings, materials, and income source;€¢Promotion of sustainable production and consumption; and€¢Reduction of the cases of food and nutrition insecurity, unemployment, and hunger.This project shall run for 18 months upon approval and implemented by UP Visayas in partnership with the Iloilo City Agriculturist Office and under supervision by the WESVARRDEC.The source of funding shall come from DOST-PCAARRD in the amount of PhP 2,520,367.20.A counterpart from UP Visayas shall come in the form of part-time detailed personnel, office space, and other logistical support in the amount of PhP678,000.00.	Publication: A publication and video documentary in the form of reflections, stories, and insights of the participating households shall be produced capturing the actual experience of the participants, challenges and constraints encountered, and innovations introduced to address the constraints. The theme of the publication is Filipino resilience amidst the pandemic. IEC materials on care and maintenance of crops Publishable research output Patent: The actual documentation on the Project both in terms of the process as well as the tangible outputs which are unique and directly attributable to the Project may be patented.Product: There are two types of product that could be expected from the proposed project: the actual products harvested, sold, consumed the technology generated out of the project experience in the form of innovative processes or approaches especially highlighting peopleÃ¢,¬„¢s resilience amidst the COVID-19 pandemic. Products: 100 urban gardens per site; 10 communities; 12 varieties vegetables per urban garden People Services: Trainings on Urban GardeningPlace: The project shall take place in the 100 households from selected barangays of Iloilo City and in the Municipality of Miagao, a highly urbanized municipality outside Iloilo City. A partnership shall be forged between UP Visayas being the implementing agency and the local government of Iloilo City through its City Agriculturist Office and the Municipality of Miagao through its Office of the Municipal Agriculturist. PCAARD and WESVARDEC shall be monitoring the project implementation. Places and Partnerships: Partnerships/collaboration with LGU beneficiaries Policy: Policy on utilizing open underutilized urban spaces for productive purposes	University of the Philippines Visayas	The initial target beneficiaries of 100 households shall come from the various barangays representing the vulnerable sectors especially during the pandemic with the assistance of the Iloilo City Agriculturist Office. An additional project site shall be in Miagao, Iloilo coming from the members of the Navallasca Farmers Rise Against Hunger and Malnutrition Inc., a farmersÃ¢,¬„¢ association. This AssociationÃ¢,¬„¢s mission statement says, Ã¢,¬Å"To provide livelihood opportunities, better income to our farmer agripreneurs as a steadfast commitment and advocacy to improve the health and general welfare.Ã¢,¬• The criteria used are: Highly vulnerable sector - household urban women, unemployed or underemployed preferably belonging to an association (e.g. 4-H Club, Rural Improvement Club, Urban Poor), out-of-school youth, persons with disability (PWD) Preferably a family-based enterprise in a communal setting and belonging to a local organization or association Those prospective project beneficiaries who prequalified shall be further subjected to: Interested and willing to join and sustain the Project Have expressed and felt need for augmenting income Has the basic resources for the care and maintenance of the plants and to sustain the initiative for one year after covering several cycles depending on the crop	16-Feb-22	15-Aug-23	ONGOING	2,520,367	2,039,704.80
Phase 2 Cacao Pest Management Program: Biologically-based Approaches	Project 3. Validation and Pilot Testing of the Portable Nanobiosensor for the Detection of Fungal Diseases of Cacao	Rapid, Inclusive and Sustained Economic Growth	validate and pilot test the developed portable nanobiosensor for the detection of fungal diseases of cacao	Product: A validated nanobiosensor for the detection of fungal diseases in cacao. Patent: A patent applied for the method of detection of fungal diseases in cacao. Publication: At least two (2) papers submitted for publication. People Services: At least five (5) students (Undergrad and graduate) Places and Partnerships: Michigan State University, De La Salle University, Bureau of Plant Industry	UPLB	Cacao and Coconut-Farmers (cacao isusuallyintercroppedwithcoconut) ï¿· AgriculturalTechnicians ï¿· Pest Control Companies ï¿· Cacao Traders ï¿· Cacao Processors/Grinders ï¿· Cacao Food and Wellness Markets	01-Mar-20	31-Dec-22	COMPLETED	5,153,328	925,899.99
Rebuilding the Agriculture, Aquatic and Natural Resources in Response to COVID-19 (ReAARRC)	Development and Use of a GIS-based System for Giant Swamp Taro Production, Processing and Utilization in Agusan del Sur (Old Title: A GIS Approach for an Evaluative Delineation of Giant Swamp Taro in Agusan del Sur: Production, Processing and Utilization)	Rapid, Inclusive and Sustained Economic Growth	The result of this project will expose the magnitude of GST communities in terms of vegetation volume in comparison to its corresponding utilization. The output will also aid in strategizing the GST production within the province. The location of GST communities, existing processing plants, and the produced GST end-products will be highlighted and be known to investors, and researchers in this domain.	ProductsÂ€¢GST Information Maps relating to climatological and growth characteristics of GST as well as the production, processing and utilization; People and ServicesÂ€¢Minimum of three (3) geographical maps, which will the characterization, location, and interpreted data, for disseminatio n to LGUs and Provincial office partners Â€¢Conduct literacy training/seminars to the fourteen (14) municipal planning offices and one (1) provincial government planning office on the use of the mapped system Â€¢Information dissemination of the project recommendations to stakeholders through the 250 barangay offices in the province Places and Partnerships: One (1) MOA/MOU among Implementing Agency, LGUs and Provincial Office partners signed PublicationsÂ€¢2 research papers submitted for journal publication Â€¢One (1) Industry primer/situationer Â€¢1 Training module for GIS information map PolicyÐraft policy recommendation/s for the GST production and processing in the local and provincial level Potential Social ImpactThis project is expected to contribute in the growth of the GST processors and distributors. Along with the growth comes the need for additional manpower, which leads to requiring more personnel. Small and medium scale GST growers, which belong to household and medium-to-large sized respectively, will have more confidence in cultivating GST corms as this project will give them the necessary information about GST processors. Potential Economic ImpactSince GST details in Agusan del Sur is not yet publicly known, the viable information presented in this project will contribute in the growth of GST processing establishments and distributors. The interpreted data and recommendations will encourage residents to become producers and processors. As some unknown crop	ASSCAT	The output of the project will benefit the farmers or GST growers, small-scale (household use) and large-scale (minimum of medium-sized processors) GST entrepreneurs in terms of additional information that will lead to business-related GST production forecasts.	01-Apr-21	31-Dec-22	COMPLETED	1,996,827	442,134.77

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	Design and Development of Low-Cost Temporary Immersion Bioreactor System for Coffee Micropropagation	Rapid, Inclusive and Sustained Economic Growth	The project will locally develop bioreactor system to speed up the production of quality coffee planting materials and increase its efficiency as well as its mortality rate.	Year 1: Optimization data (final specifications and design of the temporary immersion bioreactor) Year 2: Low-cost temporary immersion plant tissue culture bioreactor Publications €" at least 1 article published in ISI/Scopus-indexed journal; Manual of Operations of the equipment; Coffee Somatic Embryogenesis protocol Patents/Intellectual Property €"patent and/ or IPR of the equipment filed Products €" 1 unit of temporary immersion bioreactor system; 3,000 plantlets People services €" engaged at least 2 undergraduate/MS students Places and Partnerships €" partnership with chosen fabricator established	CvSU	Tissue culturists, researchers, laboratory technicians, coffee farmers, coffee nursery owners, students, Department of Agriculture	01-Aug-21	31-Jul-23	ONGOING	5,000,000	943,040.00
	Appropriate Instrumentation and Data Acquisition System for Performance Testing of Agricultural Machinery	Rapid, Inclusive and Sustained Economic Growth	The project will focus on the design and development of appropriate instrumentation and DAQ systems for agricultural and fisheries machinery testing in the Philippines. Development of a low-cost, reliable, compliant with standards instrumentation and data acquisition system will greatly improve testing of agricultural machinery by providing an efficient way of handling data and producing reports with the data gathered.	Products: instrumentation and DAQ system; fuel consumption meter Publications: 2 conference papers, 2 journal articles Patents/copyrights: none People Services: 1 graduate and 3 undergraduate students that would take up Instrumentation courses: ABE 147, AENG 270	UPLB	Though AMTEC will be the main beneficiary of the improved instrumentation and DAQ system, the system could also be used for research and instructions (faculty, researchers and students of UPLB). Moreover, the system could be used by farmers, farmer-groups or cooperatives in the operation of postharvest equipment like dryers, silos and rice mills	01-Jun-20	31-Aug-22	COMPLETED	4,994,150	764,928.48
	Development and Installation of an Autonomous Navigation System Platform in a Hand Tractor for Agricultural Applications	Rapid, Inclusive and Sustained Economic Growth	A lab-scale working prototype of the hardware system of the Autonomous Navigation System Platform was initially developed as a proof of concept and to simulate the interface of the actuators and other mobile components. The Autonomous Navigation System Platform can be installed in different agricultural mobile machines. The proponent selected the hand tractor as the test machine because of its versatility and it is widely used by our local farmers. The prototype robot can navigate through predefined waypoints and straightforward mathematical models were used to test the navigation and steering performance of the robot. Based from the initial tests conducted, a 2- meter error was evident as the robot navigates through the waypoints due to the inaccuracy of the GPS module. The accuracy of navigation is currently acceptable for delivering and carrying loads around the field (point to point navigation) but the tracking errors demonstrate it is not accurate enough for reliable in-line as in case of seed planting and harvesting. Hence, this proposal intends to further improve the autonomous navigation system platform installed in a hand tractor and fine tune test the robot in actual rice field with an aim to come up with a reliable and modular navigation platform for use in a hand tractor setup	The expected output of this project is an autonomous hand tractor navigation platform that can be installed in a hand tractor unit. The platform will allow a commercially available hand tractor to perform tillage operation autonomously or without the manual involvement of the farmer. In the course of the project, operation manual and safety guidelines for the operation of autonomous agricultural robots shall be accomplished	UST	The primary beneficiaries of this project are progressive rice farmers and farm cooperatives. Engineering students and robotics researchers from different universities can be inspired to design similar machines in different areas of agriculture. This includes young farmers that might be interested to go back to farming once they see the exciting use of technology in action. Hopefully, more young generations will be interested to study agricultural robotics for the food security and sustainability of our country	01-Sep-19	31-Aug-22	COMPLETED	4,727,728	1,124,348.31
	Development and Pilot Testing of Hand Tractor Driven Onion Harvester	Rapid, Inclusive and Sustained Economic Growth	The study aims to develop a hand tractor driven onion harvester which will be pilot-tested in actual field conditions of Ilocos Region to come up with a technically and economically feasible final prototype that could be commercialized in the local market. It would utilize existing hand tractors to power the onion harvester thus increasing its utilization as it was mainly used in land preparation and transport operations. With the harvester, onion farmers would be more productive reducing manual labor problems in the harvesting operations which could also be operated timely reducing crop losses thus increases income. The hand tractor driven-onion harvester may also be used to harvest other similar root crops like potato and peanuts given some modifications. Aside from its benefits to farmers, it could also provide opportunities for the local manufacturing industry for further business endeavors. Hence with the attachment, increased income for both the onion farmers and would-be fabricators could be expected.	2 onion harvester implement 1 Technology Patent Applied/utility model 1 Indexed Journal Publication/ 1 Operators Manual/1 technical poster 1 BSABE student assisted/ 45 farmers (15 farmers/municipality) and 6 cooperatives (cooperatives/municipality) trained on the operation of onion harvester 1 accredited fabricator and 3 Municipalities (Bantay and Sinait, Ilocos Sur and Badoc, Ilocos Norte Recommendation for the creation of PAES for onion harvester implement	DMMMSU	The target beneficiaries of the proposed project are; (a) the individual onion farmers, (b) group of farmers or cooperatives, (c) Don Mariano Marcos Memorial State University and other interested institutions, agencies, and individuals for purposes of education in instruction, research, and study tours, and (d) other stakeholders who are engaged in manufacturing and or fabrication.	01-Jul-20	30-Jun-22	COMPLETED	4,684,358	683,716.80
	Development of a Detection Tool for Fungicide Resistant Isolates of Fungal Pathogens Affecting Selected Vegetables and Strawberry in the Northern Philippines	Rapid, Inclusive and Sustained Economic Growth	The project will determine the emergence and widescale prevalence of fungicide (antifungal) resistance of fungal plant pathogens affecting vegetable and fruit crops in the Northern regions of the Philippines. These include emphasizing on the emerging problems and the risks of fungicide resistance in vegetable production and how the project will help alleviate the global concern on the general antimicrobial resistance due to heavy reliance to synthetic/chemicals used in agricultural management practices.	Product- Multiplex PCR-based markers; People & Services- Train at least 3 groups of beneficiaries (university-based service labs, RCPC, NCPC) Conduct at least 3 training/seminars and technical advisory on molecular diagnostic tools in plant pathology and mycology, Involve undergraduate 1 graduate student, 3 staff, >10 farmers through farmer field day activities e.g., advisory on use of fungicides; Places & Partnerships- One (1) MOA/MOU among 2 partner agencies (Benguet State University, Regional Crop Protection Centers) signed Publications: two (2) manuscripts submitted to scientific journal; Training modules for the capacity building activities, extension bulletins/infographics for the advisory systems, protocols for the technology developed, proceedings and presentations from scientific conference attended Policy: Drafted policy recommendation on the regulation of fungicide use	UPD	Vegetables and strawberry farmers, chemical industry, LGUs, Fungicide resistance action committee, NGAs: FPA, NCPC, RCPC,	01-Oct-21	30-Sep-23	ONGOING	5,000,000	849,482.00
	Development of an Unmanned Ground Vehicle Drone-Aided System with vis-NIR Sensors for Soil Nutrient Mapping of Coffee Farms	Rapid, Inclusive and Sustained Economic Growth	The agricultural sector in the country contributes 8.5% to the national economy. Crops like coffee, mango, abaca, and tobacco production deteriorated in comparison to the production in the same period of the previous year (Philippine Statistic Authority, 2017). One of the reasons for decreasing growth is the low production of crop plantations as a result of poor farm practices, lack of equipment, and inadequate post-harvest equipment and facilities. Likewise, there is a limited access to materials and information on farm nursery establishment and proper seedling handling. There is also limited access to the proper water and soil nutrient management. All these factors contribute to the low production of the sector which also limits its potential for product importations. With the support of the government to strengthen the sector, national programs are developed to improve its current production. The project will design, fabricate and test an unmanned ground vehicle with vis-NIR sensors to operate soil nutrient measurement and mapping services in the Philippines. It will be implemented following the input-process-output-outcome approach and will go through series of processes from idea validation, fabrication, evaluation up to deployment. The data collected through the equipment will help the coffee farmers for efficient soil, nutrient and water of their farms which will lead to improved farm productivity. The UGV UAV-aided system with vis-NIR sensors for realtime and quick analysis of soil nutrients of coffee farms in the Philippines.	Year 1: Assessment of the perception and acceptance of target clientele about unmanned ground vehicle (UGV) Soil Nutrient Analyzer; Fabricated spectroscopy Instrument (SI) and UGV platform fabrication; Integrated SI & UGV platform Year 2: Prototype of unmanned ground vehicle equipped with vis-NIR sensor; Reliable prediction models of soil properties; Integrated software of the UGV vis-NIR unit for soil property measurements and soil nutrient mapping; 1 patent/utility model application; 1 copyright; at least 2 paper publicationsPublications €" publish at least 2 articles in ISI/Scopus-indexed journal; 1 operations manual journal Patents/Intellectual Property €" apply for patent/ utility model of the equipment Products €" 1 prototype of Unmanned Ground Vehicle System with vis-NIR Sensors coupled with unmanned aerial vehicle	Cavite State University	Farmers, researchers and soil scientists, local government units	01-Jun-22	31-May-24	ONGOING	11,229,714	7,248,482.00

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	Development of Microbial and Plant-Microbial Combinations for Bioremediation of Pesticide Contaminated Vegetables Areas in Selected Provinces	Rapid, Inclusive and Sustained Economic Growth	Benguet farming areas and vegetables have been reported to be contaminated with varied pesticide residues, with chlorpyrifos being one of the highest and commonly detected in vegetables and soil (Reyes & Laurean, 2007; Lu, 2010; Ngidlo, 2013). Preliminary studies done to isolate microbes, particularly endophytic bacteria from persistently contaminated farms in La Trinidad, Benguet had yielded a number of species with extremely high tolerance to chlorpyrifos and some with moderate capacity for degradation in vitro. These were identified by 16s rDNA sequencing as Acinetobacter junii, Kosakonia sacchari, K. oryzendophytica, Pseudomonas monteilii, Raoultella ornithinolytica, Pseudomonas stutzeri, Enterobacter kobei, E. asburiae, E. cloacae, Klebsiella pneumoniae, and Pantoea agglomerans (Guyo and Tipayno, 2021). This research intends to use indigenous populations of pesticide degrading microorganisms and associated plants in developing formulations for the purpose of reducing pesticide residues in selected contaminated vegetables areas in Benguet, creating a safer environment at the same time improving soil health and productivity. The first phase consists of isolating fungal, soil and endophytic bacterial populations with high tolerance and degradation capacity for organophosphate pesticides commonly detected in Benguet vegetables areas and evaluate their plant growth promoting characteristics. The second phase is intended for the optimization of growth conditions in a bioreactor and development of microbial culture formulations for effective delivery and sustained growth of isolates in the soil. The third phase of the project will assess pesticide residue reduction and soil quality change in pesticide contaminated soils under controlled environment after inoculation with new isolates as well as microbes isolated from previous studies and their combinations and in consortia with host and non-host plants. The final phase will evaluate promising microbe formulations and plant-microbe combinations in their capacity to degrade pesticides in and their economic benefits under actual farm conditions in selected areas in Benguet.	Publications Research article/s, IEC on research outputs Patents/IP Pesticide degrading microbe/s and plant-microbial consortia: formulation, application Products Microbial formulation of pesticide degrading bacteria People Services Seminar-workshop on soil ecological methods for researchers/ research data dissemination Participants/ trainees (stakeholders e.g. researchers, farmers and LGU officials) Undergraduate/ graduate students research assistance Places and Partnerships MOA with institutions (RSU, farmers/ farmer associations) Partnership on possible bioremediation of farms Cebu Technological University Policy Proposal draft/ policy brief for responsible use of pesticide and soil management to be incorporated in local legislation	BSU	Farmers, whose farm soils can be restored to health; Ordinary consumers of farm produce, which is basically everyone; The health of the general populace consuming farm products and the health of the environment.	01-Nov-22	31-Oct-25	ONGOING	21,451,592	5,219,584.00
	Development of sustainable rice straw management using Trichoderma technologies	Rapid, Inclusive and Sustained Economic Growth	EXECUTIVE SUMMARY In the Philippines, the national rice production average is around 4 tons ha-1 (PSA 2019). With two cropping seasons per year, a hectare of rice land can produce 5.6â€“11.2 tons ha-1 of rice straw based on a straw-to-grain ratio of 0.7-1.4 (IRRI Rice straw management, 2015). One ton of rice straw removes as much as 8 kg of N, 2.7 kg of P2O5, and 20 kg of K2O in a one-hectare field (Dobbermann and Fairhurst, 2002) hence successful incorporation of rice straw could mean significant improvement in soil fertility and reduction of fertilizer inputs. It was also found to increase the subsequent rice yield by 17-27% (Watanabe et al., 2017; Witt et al., 2000). Because of the large amount that is produced, rice straw management becomes an important component of sustainable rice production systems. However, rice straw burning has become a common practice since its decomposition rate is slow. The introduction of microbial inoculants, specifically Trichoderma species, were found to greatly contribute to the goal of sustainably improving soil fertility through crop residue incorporation. Recently, an in-situ composting technique of rice straw with Trichoderma activator and seed coating with Trichoderma Microbial Inoculant (TMI) showed promise in increasing rice yield even in Cu-contaminated and drought-affected areas in Mogpog, Marinduque (Cuevas and Banaay, pers comm.).	Publication: One published research article in refereed journalsPatent: NoneProduct: NonePeople: Capacity building of farmer cooperators, and researchers and students from partner SUCPlace: Collaborations with agencies/farmer cooperatives in the study area, SUCs, and DA-RFOsPolicy: None	UPLB	Farmers, researchers, extension workers, students, policy makers	01-Apr-23	31-Mar-25	ONGOING	4,998,968	2,572,040.00
	Enhancing Biopesticide Efficacy of Entomopathogenic Fungi (EPF) against Citrus Rind Borer (CRB) in Calamansi and Pummelo by Myco-synthesis of Bio-Nanoparticles (Old Title:Enhancing Biopesticide Efficacy by Myco-synthesis of Bio-nanoparticles Mediated by Entomopathogenic Fungi (EPF) against Citrus Rind Borer (CRB) in Calamansi (Citrus x microcarpa) and Pomelo (Citrus maxima))	Rapid, Inclusive and Sustained Economic Growth	A two-year project entitled €œEfficacy Evaluation of Biopesticides Derived from Entomopathogenic Fungi Against Rind Borer and Twig Blight Disease of Citrus€ developed biopesticides derived from EPF against CRB and found effective both in laboratory and in field condition. In order to enhance more of its efficiency and efficacy of formulated fungal derived from EPF, other techniques will be harnessed that will improve stability and biological activity of the products. The project aims to develop nano-biopesticides (utilizing nanoparticles mediated by fungi- the fourth generation pesticide) which have higher bio-efficacy/efficiency and highly specific to a target pest. Application of nanotechnology in developing biopesticides now days is one of the most potential techniques with better efficacy. In fact, it gives 20% higher efficiency compared to other forms of biopesticides. In recent years, the use of nanomaterials has been considered as an alternative solution to control plant pests including insects, fungi and weeds. Several nanomaterials are used as antimicrobial agents in which several nanoparticles such as silver nanomaterials are in great interest. Many nanoparticles (Ag, Fe, Cu, Si, Al, Zn, ZnO, TiO2, CeO2, Al2O3 and carbon nanotubes) have been reported to have some adverse effects on plant growth apart from the antimicrobial properties. This technology uses nano-sacale carriers will react to fungal biomolecules. Fungal biomolecules could either be in the form of protein, toxin, enzymes (cell wall degrading enzymes), secondary metabolites and other forms of amino acids. When these molecules react with metal ions forms thin film of bio-nanoparticles. Hence, this project was conceptualized. The project aims to enhance biopesticide efficacy by harnessing myco-synthesis of bio-nanoparticle mediated by EPF against CRB in Calamansi and Pomelo. Studies on compatibility of the two Philippine isolates of EPF on the biosynthesis of AgNO3 and compare the two methods of biosynthesis of EPF-AgNPs using intracellular and extracellular routes; to optimize myco-synthesis of EPF-AgNPs production and formulation; to document structural pathogenesis of EPF-AgNPs; and to test bio-efficacy of myco-synthesized EPF-AgNPs against CRB under in-vitro and in-vivo/field trial condition.	Publication 2 scientific papers to be published in ISI journal Patents 2 utility model for mass production of EPF-AgNPs, drafting of Patent application harnessing myco-synthesized EPF against CRB Products 1 Bottled product of organic-based bio-nanoparticle in the form of EPF-AgNPs People Services 2 undergraduate students and 5 trained personnel (NVSU), 1 lab assistant from NVES of DA-Region 2, 30 trained farmers on field application of EPF-AgNPs Places and Partnership Municipal Agriculture Office, Aurora, Isabela, Calamansi Growers Association, Aurora, Isabela Policy Promotion on the use of EPF-AgNPs	NVSU	€¢RFOs most especially the Regional Crop Pest management Centers (RCPMC€™s) €¢Researchers and agricultural scientists €¢Professor and students €¢Citrus growers and consumers	01-Aug-21	31-Jul-24	ONGOING	10,348,034	1,357,768.00

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	Extraction of Phytohormones from Waste Coconut Water using Biochar Derived from Agricultural Residues	Rapid, Inclusive and Sustained Economic Growth	Coconut (Cocos nucifera linn.) is a key agricultural crop of the Philippines besides rice, corn and sugarcane. In 2013, coconut production in the Philippines yielded 15.3 billion coconuts (Bureau of Agricultural Statistics, 2014), making the country the second top producer of coconut and the top exporter of coconut products worldwide. Coconut has been the major trade item of the Philippines, with 902,009 metric tons of coconut oil exported during the first three quarters of 2013 that resulted in $538.31 M income for the first half of the year (Coconut Industry Profile, Valencia, 2013). Unfortunately, the extraction process to produce coconut oil from dried coconut meat (copra) generates a huge volume of wastes that includes coconut husks, shells and coconut water (Philippine Coconut Authority [PCA], 2005). In particular, waste coconut water poses deleterious effects in the environment due to its high biological oxygen demand (BOD), and low pH value, resulting to fish kills, bad odors, and spoiled natural resources. However, no documented environmental problems due to untreated water discharge are available. The treatment necessary to reduce BOD of waste coconut water to acceptable levels before they can be discharged into the environment is much too costly (Asian Productivity Organization, 2006). The highly acidic pH of coconut water prevents it from being used as an irrigation water to rice paddies. Therefore, many coconut oil industries release their waste untreated, polluting the environment with unpleasant odor, kills aquatic life, and spoils soil and plants. This was a major concern of Peter Paul Philippines Corporation (PPPC) in Candelaria, Quezon, one of the largest desiccated coconut firms in the Philippines generating 80,000 liters a day of coconut water. In 1993, PPPC channeled its waste coconut water to Chia Meei plant in Taiwan for concentrating, freezing and final processing of coconut water as a commercial drink. Alternatively, a small number of industries have used waste coconut water to yield value-added products such as vinegar, nata de coco and wine (lambanog). However, many of these products are already available at an excess market supply, and therefore, are gaining smaller revenues. In this regard, other resource-recovery approaches to reduce pollution loads from coconut oil industry, and at the same time boost the economic returns of waste coconut water, are needed. Some excellent value-added products that can be recovered from coconut processing wastewater, but have not been fully realized, are plant hormones or €œphytohormones€• Phytohormones are	Publication 1-submitted publication on optimized biochar production and phytohormone extraction from waste coconut water 1- submitted publication on pre-scale up studies for phytohormone extraction from waste coconut water Products 1-Activated biochar for phytohormone extraction from waste coconut water 1-Phytohormone product extracted from waste coconut water People 1 PCAARRD GREAT Scholar- MS Chemical Engineering 3 Undergraduate BS Chemical Engineering 1 Undergraduate BS Chemistry Patent 1-Utility Model filed for extraction of phytohormone extraction 1-patent filed for Activated biochar for phytohormone extraction from waste coconut water 1-patent filed for Phytohormone product extracted from waste coconut water Upgraded laboratory that will be the front-runner in bioenergy, waste utilization and materials innovation research.	UPLB	Coconut farmers Coconut processors Cut flower industry	01-Jan-20	31-Dec-22	COMPLETED	22,970,636	4,047,416.81
	Far-UVC Pulse Treatment: A Multi-Layer Approach to Suppress Three Major Cassava Diseases	Rapid, Inclusive and Sustained Economic Growth	€œCassava is planted yearly in about 120,000 hectares of agricultural land in the Philippines, producing about 1.8 million tons of cassava roots. The demand for cassava is increasing and will continue to increase with continued increase in the number of consumers and improvements in processing cassava roots into value-adding products.€€(DA-AMAS, 2019)Farmers in the Isabela region of the Philippines grow cassava for livestock feed and industrial use. The San Miguel Foods Inc., one of their buyers, projected a demand for cassava tuber at 6 million metric tons, however, the 2019 actual cassava volume of production amounted to only 2.6 million metric tons. (PSA, 2020)Pest and disease problem is one of the pressing challenges of the cassava industry in the region. Limited access to technology and knowledge on management factors that inï¬‚uence PD presence and incidence is minimal. Cassava phytoplasma disease, for instance, can reduce yield toabout 50-70% when symptoms appear 4 to 6 months after planting. A 100% loss in yield may even occur when infection ensues during the first three months from planting. (PCAARRD, 2016). The occurrence and spread of the diseases will continue to affect yield and income of farmers specially the smallholders who are constrained with access to technology and disease management strategies. Continually relying on chemicals that are harmful to the environment could lead to a bigger problem. Therefore, it is necessary to re-examine alternative or complementary solutions from a diï¬€erent perspective.	Year 1 Far-UVC pulse Treatment Technology with no harmful effects Cloud-based information system Standard procedures/protocols for the treatment monitoring developed Year 2 Men and women Cassava farmers & stakeholders capacitated Publications submitted and presented and IEC materials producedUtility model iï¬‚ed; and System Copyright registered	ISU	€¢ More than 800 cassava farmers in the province of Isabela. €¢ At least three technicians from the DA-RFOs and DA Regional Crop Protection Centers (RCPCs).€¢ Two Local Government Units farmer technicians. €¢ One private company (San Miguel Corporation), which greatly relies on Cassava for starch. The beneficiaries mentioned above will have the opportunity to rent and explore the Far-UVC Pulse Treatment Technology's innovative design, affordability, effectiveness, and environment-friendly treatment or control of CPD, bacterial blight, and leaf spot diseases. Additionally, this technology could be a supplementary income generation endeavor for LGUs and private industry partners if they opt to invest in purchasing or developing their own Far-UVC pulse treatment equipment.	01-Aug-22	31-Jul-24	ONGOING	6,801,006	4,515,740.18
	Formulation of a Biopesticide and its Efficacy in Controlling Armyworm (Spodoptera exigua)	Rapid, Inclusive and Sustained Economic Growth	This project aims to formulate a biopesticide that can be used as an alternative to synthetic pesticides in the control of armyworm (Spodoptera exigua). This alternative pesticide will be called nanoparticle-enhanced biopesticides (NPEB) from plant extracts and metallic oxide nanoparticles. Botanical plants, extraction methods, and solvents will be assessed. Evaluation of the different plant extracts with bioactivity against armyworm will be the initial step in the formulation process. The mechanism of action of these plant extracts to armyworm will be determined through the expression of the phenoloxidase (PO) gene. The plant extract with the highest activity against armyworm will be utilized in the synthesis of metal (Cu, Ag, Zn) oxide nanoparticles. This process of producing nanoparticles is called the bioreduction of the metal ions into metal/metal oxide nanoparticles. The parameters such as volume ratio of extract and metal salt solution, pH, and temperature will be optimized using Response Surface Methodology. The optimization process will be monitored via UV-Vis spectrophotometry by measuring the Surface Plasmon Resonance (SPR) of the nanoparticles. Efficacy tests of the different formulations (single or combinations of plant extracts) in comparison with a commercial insecticide will be conducted. The mechanism of action of the different formulations will be determined through the phenoloxidase gene of the armyworm. The measured indicator of immune responses can be analyzed in the activity of the PO hemocyte. Therefore, one of the aims of this research is to analyze the effect of the formulated biopesticide on the PO expression before and after the treatment in different periods. Plant growth and yield and the economic benefit of using the NPEB against armyworm will be determined.	Publication 1. Screening of plants for insecticidal activities against armyworms Spodoptera exigua Hubner for pest management of red creole onion 2. Assessment of Green Solvents and Extraction Methods for Biopesticide Preparation from the management of Onion armyworms Spodoptera exigua.Hubner Product development of nanoparticle-enhanced biopesticide People Services 1 MS student trained/graduated Patent patenting of the process and products Places and Partnership Collaboration with the LGU's in identified field testing sites (Bongabon and San Jose, Nueva Ecija) Social Impact Biopesticide that is safer to consumer's health and environment friendly Policy Policy on the use of nanoparticle-enhanced biopesticide Economic Impact More competitive onion industry Patent: Patent application for the process and productProduct: Nanoparticle-enhanced biopesticidePeople: 2 MS students trained/graduated 1 PhD student trained/graduatedPlace: Collaboration with the LGU's in identified field testing sites (Bongabon and San Jose, Nueva Ecija)Policy: Policy on the use of nanoparticle-enhanced biopesticide	CLSU	The specific beneficiaries of the project are the more than 4,000 onion farmers in 15 towns of Nueva Ecija who were affected during the outbreak of onion armyworms. Onion farmers in the Ilocos Region and Cagayan Valley, If this nanoparticle-enhanced biopesticide can control onion armyworms, then the onion industry, in general, will benefit from the results of the project. It is expected that the results of the project may be applied in the production of other crops identified to be host plants of armyworms.	01-Dec-21	30-Nov-23	ONGOING	5,000,000	1,566,436.06

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	MANGGA - Mango Automated Neuralnet Generic Grade Assignor	Rapid, Inclusive and Sustained Economic Growth	MANGGA is a project aimed to improve the quality inspection and sorting of export grade mango fruits through the development of an automated fruit grading and sorting system. Sorting and grading of mangoes is usually done manually making it prone to error when voluminous fruits are being graded. The development of an equipment for efficient and accurate sorting and grading is necessary to reduce postharvest losses and have uniformity of graded fruits for export and local markets.	PublicationsOne (1) scientific manuscript submitted for publication on refereed journalTraining manual/IEC material on operation and maintenance of MANGGAProductsOne (1) minimum viable product of MANGGA systemOne (1) miCNN mobile app for mango grade assignmentPlaces/ PartnershipsOne (1) partnership with a mango grower/s association/cooperative/DAOne (1) partnership with fresh mango exporting industry/companyPatentOne (1) patent/utility model of the automated A.I. €" operated mango quality-sorting handlerOne (1) copyright of the MANGGA training moduleOne (1) copyright of image and chemical dataset of mango fruit quality/classificationPeopleTraining of at least three (3) students on AITraining of at least two (2) industry staff of the module on operation and maintenance of MANGGATraining of at least one (1) mango association/cooperative on MANGGAPolicy	UP Cebu	1. Mango growers and cooperatives2. Mango fruit exporters and processors3. Department of Agriculture4. Researchers	01-Oct-22	30-Sep-24	ONGOING	7,290,906	4,304,178.00
	Near-Real Time Tracking Using GIS and Thermal Sensing Technology Foc TR4 Detection and Prediction Dispersal in Banana	Rapid, Inclusive and Sustained Economic Growth	Fusarium wilt had continued to devastate the banana industry, resulting in huge losses and bankruptcy (small growers and cooperatives) to those who cannot cope with the disease and eventually led to people being unemployed. In view of these, some industry players suggested to initiate preventive measures to control the spread of the disease. The use for example of foot bath mixed with chemicals, limited the movement of farm workers to infected areas and cordoning of suspected infected sites. However, such measure is not 100% effective because they do not really know where the pathogen is and when it will infect plants. Additionally, introduction of tolerant variety had mostly been rejected by banana growers due to its market acceptability (specifically China) and the high cost of input associated to its production.This proposal is forwarded to examine in detail how Fusarium moves from one place to another by determining the latency of its infection though determining microbial load and presence of the pathogen in relation to topography, presence of other microbes and other parameters associated to its growth using thermal sensing technologies.	Publication: One (1) publication of Methods on Detecting FoTR4 using the thermal imaging system in bananas.Published/posted at least one (1) article and social media content related to the project in any social media platform.Patent: One (1) Patent on Expert Information System.One (1) Patent Mobile ApplicationProduct: One (1) Expert Information SystemPeople: Two (2) industry players leverage in FoTR4 prevention.Place: Two (2) MOAs with banana player partnerPolicy: Two (2) organization policy recommendations on the protocols of FoTR4 early detection.	USeP	The target beneficiaries of this project are small banana growers in Region XI and at least two major players in the industry (these are 24 Philippine Banana Growers and Exporters Association (PBGEA) members)	01-Aug-22	31-Jul-24	ONGOING	4,999,968	3,377,984.00
	Pilot testing of Hybrid Solar Powered Dehydrator Machine for Processing of Agri-Products	Rapid, Inclusive and Sustained Economic Growth	Pilot Testing of Multi-powered Dehydrator Machine for Processing of Ginger, Turmeric and Cocoa-based Health Food Products (old title) ISATU has developed a dehydrator machine for drying leaves for herbal tea materials under the project, €œDesign and Development of a Programmable Dehydrator Machine for Herbal Tea Materials. The ISATU developed dehydrator has been field tested at the Ephrathah Farms in Badiangan, Iloilo which reduces the farm€™s electric consumption and established a science-based drying protocols for the different tea products. The success of the previous research grants on the dehydrator machine and the demand of the said machine by Small and Medium Enterprises (SMEs) on food processing in Panay Island inspires the researchers to continue the research endeavor through pilot-testing study. Moreover, this pilot testing study would address the production problem of SMEs and infuse technological innovations in the food production process in order to meet the market demands and to produce agricultural products that customers needed and good quality products, boost competitiveness of the food products in the market and create more jobs for the realization of inclusive growth in the countryside and in the country as a whole.	The expected output of this project: ī¸· A technically efficient, economically viable, and socially acceptable dehydrator machine that caters to different agricultural products. ī¸· locally developed machine would significantly reduce the acquisition cost of dehydrators as compared to imported units.	ISAT-U	ī¸· Local machinery fabricators i.e.AMF Metal Industry ī¸· Local food business/SMEs involved in food processing/agri-products manufacturing (Al Di Foods Iloilo, Ephrathah Farms, Connie€™s Dabong Banana Crackers) ī¸· Fisherfolks, local vendors and LGU of San Dionisio, Iloilo	01-Aug-21	31-Jul-23	ONGOING	4,999,474	1,198,307.20
	Project 1. Postharvest Systems Improvement of Selected Horticultural Value Chains	Rapid, Inclusive and Sustained Economic Growth	Huge volumes of crops are lost after harvest along the supply chain and eventually go to waste due to improper handling, poor packaging, lack of storage facilities and technologies and lack of awareness among supply chain actors that losses occur. These result in income foregone for farmers and traders alike, as well as less available marketable supply for the consuming public.Since postharvest handling is an integral component of and a critical link between production and consumption, a systems approach is needed to address specific postharvest problems. A value chain approach, in particular, that considers determining the status, needs and possible solutions to specific challenges faced by a given industry through collaborative efforts and partnerships of various actors and relevant support agencies in the chain will increase the likelihood of technical interventions being applied and taken up by the stakeholders in the long run.The recent changes in the global agri-food chains create both opportunities and challenges to horticulture industry stakeholders particularly of developing economies like the Philippines. These are compounded by a new set of challenges associated with more demanding quality standards and compliance with new food safety and other legislations related to environmental protection enforced by supply chain management companies and government agencies. Hence, supply or value chains in economically developing countries needs to be strengthened and improved to enable food production in an economically, environmentally and socially sustainable way so that food losses will be decreased to a minimum.	Publications—2 articles in refereed scientific journals—1 Patent/Intellectual Property- no patent only document on loss assessment protocol—4Oral (2) and poster papers (2) for presentation in scientific conferencesProducts—4 Training modules (1 each for partner SUC (for farmer-cooperators, fortrader- cooperators, and for SUC partner experts and URAs)—7 IEC materials on proper postharvest handling of selected commodities—1Commercialization protocol for industry uptake—7 Value Chain maps for selected horticultural cropsPeople and services—4trained co-operators and personnel—4ddition to scientific workforce by graduating postharvest science majorsthrough the project (BS/MS/PhD)—4 Provision of services such as trainings or seminars conducted or organizedPlaces and partnerships :—4orged 5 MOAs or MOUs between UPLB and SUC partners and at least 7 supplemental MOA with industry partners—€stablished collaboration between and among UPLB multidisciplinary team (postharvest technologists, physiologists, biosystem engineers, socio-economists)—€stablished collaborations with key agricultural research universities (BSU, CLSU, NVSU, VSU and CNAC), Department of Agriculture Regional Offices, and industry partners: private companies, Farmers€™ associations, etc. and LGU€™sPolicies—4olicy briefs on postharvest loss reduction—4nputs to proposed policiesSocial impact -The project will advance knowledge and evidence-based improvement ofhorticultural value chains as prioritized in DOST€™s HRDA 2017-2022 for AANR and mainstreammulti-location trials and innovative technology transfer for various technologies throughestablished collaborations and partnerships between and among the academe (research andextension) and the industry.Economic Impact - With the increase of marketable, competitive and safe commoditiesusing postharvest technologies that could also provide increased income/profit to industrystakeholders in a more sustained manner.	BSU/NVSU/CLSU/CNSC/VSU	€c Food industry stakeholders such as farmers, traders and processors who will be knowledgeable about the natural preservation systems for fresh horticultural produce.€¢ Researchers, academic staff, and public sector representatives for technology verification and promotion	01-Oct-22	30-Sep-25	ONGOING	35,069,242	11,813,433.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Project 2. Development of Low-Cost Cooling and Storage Systems for Horticultural Produce	Rapid, Inclusive and Sustained Economic Growth	Horticultural produce have short shelf life, hence cooling is essential. Optimum cooling can be achieved by mechanical refrigeration but its high investment and operational costs deter adoption. The project will develop low-cost cooling and storage systems for priority fresh produce, determining first the storage practices and requirements of potential users to substantiate the three studies (1-Development of coolbot cold storage; 2- Development of commercial-scale evaporative cooler; and 3- Development of integrated storage management systems). Coolbot cold storage has been reported to save 70% of upfront cost, 100% installation cost, 40% grid energy cost and 67% servicing cost relative to the conventional cold storage. Evaporative cooler (EC) is also a low-cost storage technology but previous designs are suited only for small volumes of produce. For larger volumes of one ton or more, the EC system needs water and air circulating and ventilation system. Grid energy-powered components of the coolbot cold storage and EC can be powered through photovoltaic solar panels, thereby enhancing renewable energy use and enabling storage application in offgrid areas and in areas where grid energy is costly and unreliable. Moreover, integrating postharvest treatments during storage of fresh produce has been shown to increase storage efficiency which is a more sustainable solution to reduce postharvest losses.	Products1 prototype of grid and solar powered coolbot cold storage with oneton capacity;1 prototype of grid and solar powered storage evaporative cooler with one-ton capacity;1 interactive spreadsheet-based mathematical model of evaporative cooler;10 commodity-specific integrated storage management systems (mango, banana, pineapple, citrus, tomato, eggplant, bitter gourd, okra, mums, roses)People and Servicesat least 3 students taking part in research activities for their thesis;informed and/or educated food industry stakeholders such as producers, food handlers, marketers, processors, policy makers and other development partners through information dissemination (e.g.attendance in conferences, symposia, IEC, etc.)Places and Partnershipscollaboration and partnerships within and outside UPLB;consulting services within and outside UPLB; team teaching of short courses on postharvest handling, storage and systems improvement;inclusion as subject matter of relevant horticulture and postharvest subjects in undergraduate and graduate programsPublicationsat least 3 papers in refereed scientific journals; at least 3 conference papers; at least 10 IEC materialsPolicyat least 2 policy briefs on postharvest loss reduction strategy, postharvest research and development strategy, and storage systems for horticulture industry developmentPatent2 utility models, 1 each for Coolbot storage, and evaporative cooler prototypes.Potential Social ImpactThe development and subsequent industry mainstreaming of low-cost storage technologies willcontribute to:€¢ more effective control of postharvest quality and shelf life of fresh produce€¢ reduction of postharvest losses and increase in supply of and profits from fresh produce€¢ promotion of renewable energy use as grid power substitute€¢ increase in market engagement and competitiveness of horticulture smallholders€¢ enhanced environmental sustainability through reduce carbon footprint of postharvest losses and energy consumptionPotential Economic ImpactThe project€™s outcomes will ultimately lead and contribute to poverty	UPLB	—Producers€™ groups/cooperatives, food handlers, marketers, and other stakeholders in the horticulture industry.— Researchers/scientists, educators, policy makers and other development actors to adapt low-cost storage systems in research, education, training and policy making for horticulture industry development.	01-Sep-22	31-Aug-25	ONGOING	12,885,000	4,429,000.00
	Project 3. Development of Natural Preservation Systems for Fresh Horticultural Produce	Rapid, Inclusive and Sustained Economic Growth	Fresh commodities, like fruits and vegetables, are highly perishable. In the Philippines, postharvest losses are high even before the commodities reach consumers. With the increasing demand for safe, healthy, and nutritious food among consumers, there is a need to develop natural preservation systems that are locally available and as alternatives to chemical methods. These simple, sustainable, and eco-friendly preservation techniques include the use of plant-derived extracts, oils as coatings, probiotics as antimicrobials, and seafood-waste by-products. The efficiency and effectiveness of these natural preservation systems can also be potentially realized through nanotechnology. Through innovative, safe, and natural preservation systems, postharvest losses in major fruits and vegetables can also be reduced, hence, contributing to the attainment of food and nutrition security.	Products— knowledge products: information on safe, natural, eco-friendly, and sustainable preservation techniques— actual products: natural antimicrobial, postharvest dip and non-chlorine sanitizer, nano-based postharvest preservativesPatent— One patent application of nano-encapsulated seafoodderived waste products, oils or plant-based compound for quality enhancement and shelf-life extensionPeople and Services— nformed and/or educated food industry stakeholders such as farmers, traders or processors through information dissemination (e.g. attendance to conference, symposia, IEC, etc.- at least 50)— ncreased number in scientific workforce by graduating science majors through the project (at least 3 BS and MSc degree holders)Places and Partnerships— • Enhanced research collaborations and established network coordination among PHTRC multidisciplinary team; ICropS, CAFS, UPLB; BIOTECH, UPLB; IPB, UPLBPublications— ublish at least one article in refereed journal (Scopus or ISI-indexed journal publication)— resent at least 4 technical paper and poster abstracts in scientific conferences— • Prepare/publish at least 2 IEC materials (brochures, posters/infographics or flyers)— short instructional video on how to perform the postharvest treatmentsPolicy— rafted policy recommendation on natural preservation system for fresh produce in the horticultural industry which will provide baseline information for the generation of a policy brief for food loss and waste reduction which will be done in cooperation with the funding agency and research collaboratorsPotential Social ImpactThe project will advance postharvest knowledge by providing science-based and ecofriendly technologies on preservation systems using plant derived extracts and oils, and seafood waste-based products.Potential Economic ImpactWith the increase of marketable, competitive and safe commodities for a longer period of time through the use of the developed green postharvest preservation systems, stakeholders in the supply chain handling these selected commodities will have greater profit as well as	UPLB	— ood industry stakeholders such as farmers, traders, and processors will be knowledgeable about the natural preservation systems for fresh horticultural produce.— • Researchers, academic staff, and public sector representatives for technology verification and promotion	01-Sep-22	31-Aug-25	ONGOING	14,525,654	3,586,453.00
	Rehabilitation of heavy metals contaminated agricultural areas along the Taft River Basin	Rapid, Inclusive and Sustained Economic Growth	This project is part of the phase 2 of the recently concluded project of Northwest Samar State University (NwSSU) with DOST-PCAARRD titled Suitability Assessment for Agriculture and Aquaculture Food Production of the Floodplains of the Taft River Basin Impacted by Post Operations of Bagacay MinesÂ¢. The project reported, very high levels and alarming rates of heavy metal contamination above permissible limits in the soil, agricultural crops, aqua-fauna commodities, as well as water quality in the area.A total of 26 rice farmers currently cultivating in highly contaminated agricultural soils in Barangays Malinao, San Pablo, Mabuhay, and Burak / Lumatod with a total of 60 hectares rice field production areas within the river basin are directly impacted. A total population of 1,380 people are also residing within these identified barangays with very high contamination, that makes these people vulnerable and with high exposure to heavy metal contamination.Thus, the research project team from NwSSU, with the guidance and technical assistance of the institution's Balik Scientist Fellow, Dr. Venecio U. Ultra Jr., this project to address and be the intervention in mitigating the impacts of heavy metal contamination within these highly contaminated agricultural soils through bioremediation approaches and technologies. Established protocols and key findings of the project will not just be applicable for Taft, Eastern Samar, but also in heavy metal contaminated environments in the Philippines.The project, looks into the 1. Utilization of indigenous plant species and non-food crops suitable for revegetation and ecological restoration of highly contaminated soils with heavy metal; 2. Application of beneficial microorganisms for enhanced phytoremediation of HM contaminated environments; 3. Application of soil amendments to enhance the ecological rehabilitation of HM contaminated environments; and 4. Efficient and economical utilization of biomass produced from the rehabilitation process.	Publication: At least four (4) research article submitted for publication / published in high impact journal (ISI, Scopus, etc.) to have a wide range of information dissemination to researchers and experts.Patent: At least two (2) utility model on the process optimization of bioenergy production, essential oil, and building material submitted for publication at IPOPHIL.Product: At least one (1) building material (bio-crete) produced from plant biomass of phytoremediation plant species.People: A total of twenty-six (26) rice farmers with a total farm area of 60 hectares currently cultivating in highly contaminated agricultural soils within Brgys. Malinao, San Pablo, Mabuhay, and Lumatod/Burak, Taft, Eastern Samar will be the target direct recipient of the project's outputs. Unproductive agricultural areas within their farms will be site for field trials on phytoremediation and rehabilitation. At least 5 BS students involved in the project, as part of their undergraduate thesis. At least 10 LGU officials of Taft participated in stakeholders forum.Place: One (1) MOA established between the LGU of Taft, Eastern Samar and Northwest Samar State University (NwSSU) for the joint effort in the rehabilitation of heavy metal contaminated agricultural areas along the Taft river.Policy: One (1) policy brief prepared on rehabilitation and ecological restoration of heavy metal contaminated agricultural soils along the Taft river. This document seeks to provide a legal bearing in the rehabilitation process for the Taft LGU, as well as the directly affected communities on site.	Northwest Samar State University	Clienteles Expected Outcome / Effects Of The Project Output Twenty-six (26) rice farmers with a total farm area of 60 hectares currently cultivating in highly contaminated agricultural soils within Brgys. Malinao, San Pablo, Mabuhay, and Lumatod/Burak, Taft, Eastern Samar Improved productivity status of unproductive, heavy metal contamintated agricultural soils within the site. At least one (1) farm area will be identified as site for field trials on phytoremediation and rehabilitation. LGU of Taft, Eastern Samar One (1) MOA established between the LGU of Taft, Eastern	01-Jan-23	31-Dec-24	ONGOING	4,996,522	3,159,468.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Solar Powered Irrigation System: A Clean Energy Management Solution to Dairy Production in Marginalized Communities in Cagayan Valley (Solar-powered Pump Irrigation System: A Clean Energy Water Management Solution to Dairy Cattle Production in Marginalized Communities in Cagayan Valley)	Rapid, Inclusive and Sustained Economic Growth	The project intends to develop and evaluate a solar-powered pump irrigation system for dairy cattle production in marginalized communities of Cagayan Valley.	Products: 1.At least 50 tons (1,250 bags) green corn-based silage produced in an irrigated one-hectare green corn forage area in dairy producing marginalized communities of Region 02. 2.Green corn produced four times a year for silage production. 3.Corn silage available year-round; 4.Environment pollution free model farm equipped with solar powered source of irrigation.; 5.Availability of year-round clean water/source of irrigation for green corn production. People and services; 1.Capacitated at least two marginalized dairy communities and graduating agriculture students on greening the dairy environment using solar powered source of irrigation in Cagayan Valley. 2.Provided additional employment opportunities and added source of income to marginalized dairy farmers.; 3.Increased awareness on renewable energy, climate change effects, mitigation and adaptation by green corn farmers.; 4.Women empowerment on alternative energy applications in dairy production in marginalized communities of Cagayan Valley. Publications: 1.Studies on the efficient use of the two types of solar powered pump irrigation system (fixed type and solar tracker €“ equipped) on green corn-based silage production for the dairy industry.; 2.Drip irrigated and flooded irrigated green corn production.; 3.Role of women in the use and enhancement of renewable energy in marginalized dairy communities.; Patents: 1.Designed and processes in the use of fixed type and solar tracker equipped solar powered pump irrigation systems for green corn production. Place and partnerships: 1.At least two marginalized communities in partnership with the Isabela State University benefited from DOSTs program on renewable energy as climate change mitigation strategy. 2.Establishment of LGUs and NGOs partnership with ISU towards awareness in green technology. Policies: 1.Policy on use of renewable energy particularly on solar energy will be adapted by the LGUs, NGOs and other dairy stakeholders.	ISU	All Dairy Stakeholders	01-Jun-20	31-May-22	COMPLETED	4,999,904	616,914.26
	Sustainable Indoor Farm for Growing Leafy Vegetables using Artificial Lighting (SIGLA): Performance Testing and Evaluation of Solar-powered Modular Indoor Vertical Farm	Rapid, Inclusive and Sustained Economic Growth	Interest in indoor vertical farming, also known as plant factory with artificial lighting (PFAL), is rapidly growing because of the production constraints associated with traditional open-field farming. The potential of growing high-value leafy greens all year round without the influence of the outside environment, high planting density, and low space requirements make indoor vertical farming highly suitable for industrialized and urban areas. In this project, a benchmarking survey of selected commercial indoor vertical farms and greenhouses will be conducted to determine their best practices and resource use efficiency. The information obtained from the benchmarking and literature data will be applied to optimize the production and operation management of SIGLA, a solar-powered modular indoor vertical farm that will be established through the KOR-PH Joint Science and Technology Research Program. The performance of SIGLA in growing high-value leafy greens will be evaluated based on its sustainability and resource use efficiency. Carbon footprint and cost-benefit analysis will be conducted to assess its environmental impact and the marketability of the system for deployment and adoption, respectively It is envisioned that SIGLA will serve as a demonstration unit for urban farming that can be adopted by local government units (LGUs), private companies, and individuals who are looking into venturing into urban agriculture.	Publications €¢At least one (1) scientific paper for presentation/publication€¢At least one IEC/ICT materials€¢One training manual for establishing and operating SIGLAPatents€¢One (1) IPR of SIGLA-related output€¢One (1) copyright of training manual for establishing and operating SIGLAProducts€¢One (1) multi-layer Nutrient Film Technique (NFT) growing system with artificial lighting€¢One (1) prototype of SIGLA€¢One (1) protocol/training manual for establishing and operating SIGLAPeople Services€¢At least one (1) MS student collaborator for research €¢At least one (1) BS student collaborator for research€¢At least one (1) faculty collaboration€¢Knowledge sharing and training activities on indoor vertical farming to various stakeholdersAt least 80-100 students;3-4 groups of SUC representatives;50-100 audience from seminars, conventions, etc.Places and Partnership€¢Collaboration with Seoul National University (SNU), South KoreaPotential Impacts:Social Impact€¢Promotes urban farming€¢Encourages local communities and the youth to venture in modern agriculture€¢Will help address the limitations of open-field farming€¢Produces high-quality, clean, and pesticide-free leafy vegetables€¢Addresses issues on ageing and dwindling workforce in the agricultural crop sector€¢Better work environment.Economic Impact€¢Higher income from increased production volume and good marketable quality produced€¢Off-season production of crops can increase market price€¢Lower farm-to-market expenditures resulting to stable market prices€¢Widespread adoption of the technology can result to a more competitive market for vegetables and other high-value crops	UPLB	Agri-entrepreneurs and agri-enthusiasts (urban growers) Food service industry (restaurants, cafÃƒÂ©s, hotels) Private companies/individuals (e.g. high-end supermarkets, agri-suppliers, and manufacturers) Local Government Units (agro-tourism projects) Research institutions (R&D projects)	01-Jan-23	31-Dec-24	ONGOING	3,741,000	2,339,516.00
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 1. Distribution, Diversity and Host Range of Banana bract mosaic potyvirus in the Philippines	Poverty Reduction and Empowerment of the Poor and Vulnerable	This project will characterize the disease symptoms and pathogenicity and virulence properties of the BBrMV isolates from select region in the Philippines to better understand epidemiology of BBrMD and plant-BBrMV interaction. The knowledge of the pathogenic and virulence properties of BBrMV isolates from the different regions improves our understanding of the BBrMV strains present in the country, which also tells of possible region-specific strains.	1. Incidence and distribution maps of BBrMD 2. Optimized detection protocol for BBrMV 3. Genetic diversity of BBrMV from the Philippines 4. List of alternative hosts of BBrMV and symptom description 5. At least one journal article published	UPLB	€c Plant pathologists, plant breeders, provincial and municipal agriculturists, extension workers, regulators (e.g. Burearu of Plant Industry €" National Plant Quarantine Services Division) and banana growers.	01-Sep-20	31-Aug-23	ONGOING	8,850,000	2,141,783.37
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 2. Evaluating the Impact of BBrMV on the Yield of Selected Banana Cultivars in the Philippines	Poverty Reduction and Empowerment of the Poor and Vulnerable	Yield loss assessment caused by Banana bract mosaic virus and mitigate Banana Bract Mosaic Disease in the field through different nutrient management regimes. This project is initiated to expand the narrow information available on the extent of yield loss caused by BBrMV. Common banana cultivars consumed in the country along with two promising saba strains selected from a previous DOST-PCAARRD funded project will be used as test plants to generate a coherent data on their response to the viral disease.	1. Knowledge on yield loss in common banana cultivars due to BBrMD 2. Yield loss response of Lakatan, Latundan, Cardaba, and some other promising strains. 3. Nutrient management regime for BBrMD mitigation. 4. Published at least one article	UPLB	€c Banana growers €c Agricultural officers/technicians €c Non-government organizations €c Researchers €c Students	01-Sep-20	31-Aug-23	ONGOING	8,075,000	2,637,454.82
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 3. Virus Elimination and Production of Virus-Free Planting Materials of 'Saba' Varieties	Poverty Reduction and Empowerment of the Poor and Vulnerable	The limitations in the production and supply of disease-free quality planting materials of high yielding and promising €¨Saba€™ varieties will be addressed in this project. Continuous supply of quality disease-free planting materials will boost the existing production and will accelerate further expansion programs of the country in order to meet the growing demand of the €¨Saba€™ industry.	1. Optimized sampling technique for BBrMV indexing 2. Micropropagated virus-free indexed plants of Saba varieties 3. At least two protocols optimized for BBrMV elimination 4. Technology dissemination through trainings and seminars 5. In vitro bank of disease-free bananas 6. At least 1 publication	UPLB	€c Farmers €c Banana growers €c Researchers €c Tissue culture laboratories engaged in banana production €c Agricultural workers	01-Sep-20	31-Aug-23	ONGOING	7,250,000	1,628,103.04
Banana Bract Mosaic Disease (BBrMD) in the Philippines: Geographic Distribution, Yield Loss Assessment, Virus Elimination, and Evaluation of Germplasm Collection	Project 4. Evaluation of Selected Irradiated Cardaba Mutants with Short Stature and Other Musa Accessions for Banana bract mosaic virus (BBrMV) Resistance	Poverty Reduction and Empowerment of the Poor and Vulnerable	Promising Saba strains had been identified in previous DOST-PCAARRD funded project but the reaction of these promising materials to BBrMV must be assessed and confirmed before mass propagation. All in vitro and in situ collections will be mass propagated and evaluated for reaction to BBrMV under greenhouse conditions. The reactions of promising materials will be confirmed under field condition where there is high disease pressure. The mechanism of resistance will be analyzed.	1. Confirmed reactions of Cardaba and Saba to BBrMD. 2. Confirmed reactions of in vitro and in situ germplasm collections to BBrMD. 3. Data on field performance of promising lines. 4. Information on the mechanism of resistance to virus and vector 5. Published at least 1 article in ISI-indexed journal	UPLB	€c Banana growers €c Agricultural officers/technicians €c Non-government organizations €c Researchers €c Students	01-Sep-20	31-Aug-23	ONGOING	8,825,000	3,589,204.81
Boosting the Taro Industry and Indigenous Crops of the Bicol Region	Project 1. Survey, Collection, and Characterization of the Indigenous Crops in Region 5	Poverty Reduction and Empowerment of the Poor and Vulnerable	As a component project of the program on Boosting the Indigenous Crops Industry of Bicol Region, that will focus on survey, collection, characterization of indigenous plants from the different provinces in the region. Collected indigenous plants will be conserved in the germplasm facility of CBSUA. These plants will be used as parentals of future initiatives that will involve varietal development.	Publications- Publication of 10 popularized pamphlets, 2 articles , 1 paper presentation Products- At least 5 indigenous crops for Project 3 People Services- 1 training Places and Partnership- IPs, taro producers, OA practitioners Patents- pamphlets copyrighted/ISSNSocial Impact: Increased utilization of indigenous crops; Provide additional healthy food for consumption by local communities Economic Impact: increase production and yield of taro and indigenous crops; Increase income of farmers; More products for commercialization	Central Bicol State University of Agriculture	Taro farmers and processors , Indigenous crops growers	01-Nov-22	31-Oct-24	ONGOING	3,313,395	1,656,697.60

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Boosting the Taro Industry and Indigenous Crops of the Bicol Region	Project 2. Sustainable Production Technology for Taro (Colocasia esculenta) Leaves and Corms	Poverty Reduction and Empowerment of the Poor and Vulnerable	This project will focus on the evaluations of taro local selections in the Bicol region for both leaf and corm production following the NSIC protocols. All accessions that will be collected from various parts of the region will be deposited to Plant Genetic National Plant Genetic Resources laboratory for germplasm repository. Improvement of the fertilization and pest control of taro. Promotion of the technology through audio-visual development, participation in trade fairs and conduct farmers will ensure additional income among the taro growers. This taro project will be a component of the Taro Center for CBSUA in order to continue the research, extension and development activities on this specific root crop.	Publication: Developed a sustainable production schemes for taro leaves and corms. conducted chemical and physical properties of taro corm starch grown in different cropping method Patent: Conducted multilocation trials of potential cultivars for NSIC registrationProduct: IEC materials on the products developed for disseminationPeople: Stakeholders - rural and urban dwellerPlace: Established germplasm collection, demo farms and morphologically characterize of local/endemic cultivars; Other SUCS, International Organizations, NCIPPolicy: Conservation of germplasm	Central Bicol State University of Agriculture	Taro leaves / laing processors, Taro farmers, students, New entrepreneurs, Science community and food industry.	01-Nov-22	31-Oct-24	ONGOING	4,780,944	2,390,472.00
Boosting the Taro Industry and Indigenous Crops of the Bicol Region	Project. 3 Utilization, and Product Development of Selected Indigenous Crops in Region 5	Poverty Reduction and Empowerment of the Poor and Vulnerable	This study will focus mainly on the documentation. development and utilization into food products using taro and selected indigenous crops found in the Bicol Region.	Publication: Publications- Results of this project will be transformed into publishable materials for publication still, subject to IP registration for proper protection and handling of intellectual outputs. Patent: Patents- Any process or outputs from this research will be subjected to IP registration as patent, utility model or copyright as how the gathered information will be documented . Product: Products- For Taro leaves, the thermally processed product will be produced identifying suitable taro leaves variety and the drying characteristics of the taro variety while for taro corms, extraction method, formulation and processing of taro milk will be explored. This plant based product will be appreciated by the health conscious consumers. Indigeneous crops will be subjected to determination of its drying parameters and suitability to food application as flour, powders or additives. These outputs will be used in the production of bakery goods, snacks, flavoring and ready-to-eat items. People: People Services- The intended beneficiaries of this project will be benefited through increase of their knowledge on the consumption of these crops to food, create livelihood, increase the utilization of these commodities, and establish protocols for food processing. Place: Places and Partnership- The study as to the collection and production will be conducted mainly in Camarines Sur. Sourcing of these raw materials will be done in nearby municipalities of Camarines Sur and Bicol region depending on availability of these commodities. Policy: The project will propose possible and applicable protocol for handling these indigenous crops on the processing into food products.	Central Bicol State University of Agriculture	rural farmers and settlers community researchers business enthusiasts	01-Nov-22	31-Oct-24	ONGOING	3,076,298	1,538,148.80
	Biological Control of Fall armyworm, Spodoptera frugiperda (J.E. Smith) (Lepidoptera: Noctuidae) Using Entomopathogens (i.e., bacteria, fungi, NPV)	Poverty Reduction and Empowerment of the Poor and Vulnerable	Biological control studies of S. frugiperda in this project proposal will include Mass rearing studies using natural hosts and meridic diets in the laboratory (Study 1), Laboratory and field evaluation of nucleopolyhedrovirus against FAW (Study 2). Laboratory and field evaluation of entomopathogenic fungi (Study 3) and 4) Laboratory and field evaluation of entomopathogenic bacteria and nematodes (Study 4). The objectives will be geared towards generation of local data about S. on entomopathoges of S. frugiperda on corn and other commonly infested host plants in corn-growing areas in Luzon as bases for the development of IPM strategies that are climate change resilient, ecologically friendly and sustainable.	€¢ Data on mass rearing technique for FAW €¢ Preliminary evaluation of OAW and Cutworm entomopathogens against FAW under laboratory conditions €¢ Preliminary efficacy testing of entomopathogens continued €¢ Field tested effective entomopathogen/s €¢ Shelf life, delivery system of entomopathogens €¢ Mass produced effective entomopathogens	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	01-Feb-20	31-Jan-23	ONGOING	4,672,076	302,741.50
	Development and Evaluation of Soil Fertility and Nutrient Management Strategies for Hybrid Coconut Farming in Eastern Visayas	Poverty Reduction and Empowerment of the Poor and Vulnerable	Soil fertility greatly determines agricultural production especially in upland environments where subsistence farmers like coconut growers do not have the means to buy expensive fertilizers. It is among the important factors in attaining optimum crop yield. Nutrient management is site specific, although in some cases, general fertilizer recommendations may work specially in marginal areas. Soil test-based fertilizer recommendations possess several advantages such that soil analysis provides information regarding the nutrient status of the area. Considering the high potential yield of hybrid coconuts, they have specialized crop nutrition management. High yielding coconut palms absorb large quantities of nutrients from the soil. Thus, in coconut production it is imperative to monitor the essential nutrients present in the soil. This project involves three components: (1)evaluation of the soil properties and fertility status grown with coconut in Region VIII; (2) determination of Critical Nutrient Levels of hybrid coconuts and (3) evaluation and efficacy testing of different fertilizer combinations (INM approach) based on soil-test results for hybrid coconut production. This project will provide available soil fertility data, coconut suitability maps, identify the critical nutrient levels of N, P and K which are essential considerations in fertilizer recommendations, and recommend fertilizer combination for improved hybrid coconut.	Publications At least three (3) publications submitted in refereed journals; Six (6) Soil Fertility Maps of the 6 coconut growing provinces in Region VIII; One (1) training guide on soil fertility management for coconut growers; Three hundred (300) pamphlets about soil fertility management for coconut; Products Database on soil physical, chemical and biological properties, nutrient status and soil taxonomic classification of selected coconut areas of Region VIII; Database on critical nutrient levels of selected hybrid coconut; Data on cost and return analysis of fertilizer treatments; Soil-test based fertilizer recommendations and fertilizer combination(s) technology for effective coconut production in Region VIII; People Services €¢ Coconut farmers demonstrated/trained the proper soil fertility management; a. 300 farmers in Eastern Visayas; b. At least one representative from the PCA (CDO) in the province€¢ Each province given IEC materials (target at least 5 copies for each municipality); Places and Partnership Established partnerships with PCA centers in the region; Target partnership with PCA and other agencies such as LGUs of selected study sites in Region VIII, BSWM for soil maps and future collaboration with DA Region for the soil analysis. Target collaborations are focused on but not limited to the conduct of trainings and seminarsPolicyDraft of Policy recommendation on the use and promotion of effective soil fertility management to rehabilitate and increase coconut production in Region VIII	VSU	Coconut farmers specially in typhoon affected areas in Samar and Leyte Researchers/students from other SUCs for research collaborations on coconut soil fertility management trainings PCA offices which can use the survey data and maps for better monitoring of soil fertility	16-Feb-23	15-Feb-26	ONGOING	5,000,000	2,068,905.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Development of a Detection System for Pest and Disease Resistance in Philippine Coffee Varieties	Poverty Reduction and Empowerment of the Poor and Vulnerable	Two coffee species, Coffea canephora (2n=22) and Coffea arabica (2n=44), contribute to the worldwide coffee bean production (International Coffee Organization, 2018). These yield the commonly known Robusta and Arabica varieties, respectively. In the Philippines, an additional species Coffee liberica (2n=22) with its two distinct varieties, Coffea liberica var. liberica and Coffea liberica var. dewevrei, are also cultivated which yields the Liberica (€œBarako€) and Excelsa varieties, respectively (Bureau of Plant Industry, 2015; Philippines Statistics Authority, 2018). The Philippines however is not a major exporter of coffee. In 2017, coffee production (Arabica and Robusta only) in the Philippines yielded only 200,000 60kg bags of the 159,663,000 60kg bags produced globally (International Coffee Organization, 2018). Recently however, the government has initiated a comprehensive program in propping up the local coffee industry, hoping to turn the Philippines from a coffee importing to a coffee exporting country (Cahiles-Magkilat, 2018). Unfortunately, the local coffee industry is still faced with one of the most common problems, which is pest and disease infestation. Coffee production in the Philippines for the 1st quarter of 2018 has been hampered by berry borers (Philippines Statistics Authority, 2018). There are also a variety of fungal diseases that plagued the coffee plant (Hindorf & Omondi, 2011). With climate change also contributing to the development of susceptible varieties, a repeat of the coffee industry collapse in the 19th century (Baconguis, 2007) is not far from happening. Hence, it is important that local authorities and stakeholders work together to safeguard our local coffee varieties from these modern day challenges. A detection system that can determine resistant varieties and consequently susceptible ones will aid coffee growers/farmers and researchers in planting those that can withstand infections.	Year 1: Designed and synthesized primers for pest and disease resistance in coffee. Year 2: Validated markers that can be utilized in designing a detection kit for resistance in Philippine coffee varieties.	UPD	Coffee growers/farmers, breeders, researchers and scientists from academe and industry	01-Aug-21	31-Jul-23	ONGOING	5,000,000	1,086,718.00
	Development of an Early Warning System against Fall Armyworm, Spodoptera frugiperda through Population and Distribution Modelling	Poverty Reduction and Empowerment of the Poor and Vulnerable	In the Philippines, there are four species of noctuid pests under the genus Spodoptera , namely: S. exigua, S. exempta, S. litura, and S. mauritia. These species are considered highly invasive, polyphagous and economically important pests to approximately 36 crop species (e.g. maize, rice, sorghum, sugarcane and wheat, and other vegetable crops- cabbage and onion and cotton). Middle of this year, presence of another species of Spodoptera, Spodoptera frugiperda popularly known as fall armyworm (FAW) was detected in Cagayan and Ilocos Norte set an alarm to government agencies, academe and private industries due to its fast spread attributed to its strong migratory behavior. Fall armyworm, considered native to America got introduced and first reported in Africa in 2016. After 2 years it had crossed to the Asian continent. Presence of FAW was confirmed based from two (2) larval samples collected in Piat, Cagayan (Navasero and Magsino, 2019). Based from the confirmation for the presence of FAW in the Philippines, one of the grave concerns is to provide an Integrated Pest Management Program (IPM), specific for FAW. The first course of action for introduced and invasive species is to use chemical control. However, insecticides to be recommended for use should be properly selected taking into consideration the efficacy, residue profile and relative safety to non-target organisms. In addition, plants with insecticidal or repellent properties must be explored to increase available options among farmers since pesticide resistance occur at faster rate. This information is important in crafting Insecticide Resistance Management (IRM) program for FAW. Similar approach was done for onion armyworm, Spodoptera exigua, a major problem in onion production.	€¢ Model/s that can simulate population and number of FAW generations through time. €¢ Maps of potential spread and distribution of FAW in PH. €¢ Fall armyworm monitoring and early warning system. €¢ IEC materials containing potential population and distribution delivered to farmers and partners in government and private industry.	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	01-Feb-20	31-Jan-23	ONGOING	4,709,463	541,936.80
	Development of Improved Eggplant Varieties with New Plant Defense Genes for Multiple Insect Resistance using Innovative Technologies	Poverty Reduction and Empowerment of the Poor and Vulnerable	Eggplant, Solanum melongena L., is one of the most important and popular vegetable crops grown and consumed in the Philippines. For the past 10 years, it has remained as the leading vegetable crop grown in the country with an average total production area estimated at 21,481 hectares valued at Php 2.599B at constant prices (PSA, 2017). Eggplant production is severely constrained by two major insect pests, the eggplant fruit and shoot borer or EFSB (Leucinodes orbonalis Guenee; Lepidoptera: Crambidae) and leafhopper or LH (Amrasca biguttula (Ishida); Hemiptera: Cicadellidae). Yield losses from EFSB and LH infestations have been estimated at up to 90% and 50%, respectively, at severe pest pressure. Farmers use excessive amount of chemical sprays to control EFSB and LH because conventional breeding for resistance has failed to produce commercial varieties with acceptable levels of resistance to these pests. Other control practices are more expensive, impractical and/or ineffective. The preferred control method of heavy insecticide application significantly increases input cost by 25-30% and more importantly, poses immediate and long-term hazards on human health and the environment. It is expected that EFSB and LH infestations will be get more severe because of climate change and intensified production system for food security. Therefore, it is imperative to develop effective and environmentally sustainable solutions to control EFSB and LH. Consequently, this will improve farmers€™ productivity and consumer access to this important food crop. The release of insect resistant varieties remains the best option which researchers can provide to farmers. Through the years, Institute of Plant Breeding (IPB) of UPLB has maintained an active eggplant breeding program using both conventional and non-conventional breeding techniques. IPB has released NSIC-approved OP eggplant varieties (Guevara and Maghirang, 2013) and the first eggplant hybrids from a public research institution (Hautea et al. 2014). IPB has also used	1) A well characterized Philippine eggplant germplasm collection and database for local and global eggplant community 2) Eggplant insect resistance breeding pipeline consisting of parent lines, specialized populations, elite inbred lines, advanced breeding lines, and improved varieties with various combinations of defense gene/alleles for resistance to EFSB and LH for plant breeders, other researchers, students, farmers and/or consumers, seed companies; 3) Eggplant R&D resources and tools for scientists and academics: molecular maps and markers, genome/genes sequences of eggplant and target pests associated with plant defense mechanisms; NBT-related eggplant protocols 4) IT-based validated phenotyping apps and HTP screening technique for components of EFSB and LH resistance for entomologist, breeders, genebank researchers, students, extension workers; other relevant govt agencies; 5) at least five (5) publications in ISI journals and at least three (3) paper presentations per year in scientific meetings for other researchers, graduate students and the wider academic community; 6) at least three (3) MS graduates (Genetics, MBB, Plant Breeding, Entomology or Computer Science) and five (5) IPB researchers and (5) support staff with enhanced knowledge and training in marker technology, genomics, NBT and regulation and/or IT-based screening techniques 7) IEC materials and training activities specifically on NBT for other stakeholders and the general public.	UPLB, UPD	The target beneficiaries of the project research results are: ï¿· Public and private sector institutions €“ academic and research institutes, SMEs involved in eggplant industry ï¿· Eggplant researchers €“ plant breeders, gene bank managers, entomologists, geneticists, molecular biologist, ï¿· Students interested in plant breeding, entomology and agricultural sciences ï¿· Policy makers, regulators, agricultural extension workers - ï¿· Farmers/consumers €“ long-term beneficiaries of profitable, less costly and safe varieties	01-Jul-18	30-Jun-23	ONGOING	36,668,412	3,721,052.72

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Development of Low Glycemic Index Rice Through Induced-Mutation and Marker-Assisted Selection (Old Title: Development of Low Glycemic Index Rice through Induced-mutation and Marker-assisted Backcrossing)	Poverty Reduction and Empowerment of the Poor and Vulnerable	Glycemic index (GI) is a measurement carried out on carbohydrate-containing foods based on their tendency to increase blood glucose. It gives relative value on how fast carbohydrates in food is converted into glucose. On a nutritional point of view, a low glycemic index value is considered beneficial, especially to individuals suffering from diabetes. Rice, being one of the primary dietary sources of carbohydrates worldwide, especially in Asia, is of particular interest when it comes to assessing its glycemic index. The glycemic index (GI) of rice is known to be relatively high compared to other starchy foods. A GI of 96 for brown rice and a range of 58€"104 for white rice was reported in the study of Jenkins et al. (1984). Miller et al. (1992) also reported GI value ranging from 64 to 93 for freshly cooked rice. Pure glucose has a GI of 100, which represents the standard value for index measurements. Another way of controlling type II diabetes is the consumption of foods rich in resistant starch (RS). Resistant starch are slowly digested and absorbed by the small intestines, hence, it decreases postprandial glucose or the glucose level in the blood after a meal (Raigond, Ezekiel, and Raigond, 2015). Aside from its positive effect on blood glucose level, RS also potentially protect against pathogen infection, diarrhea, inflammatory bowel disease, colon cancer, and chronic renal and hepatic diseases. These benefits are linked to the ability of RS to escape digestion and reaches the large intestines, where it is fermented by colonic bacteria producing short chain fatty acids (Carciofi, et al., 2012). Reports also show that RS consumption can increase satiety which may lead to reduction of calorie intake and helps in weight management. Rice is a staple food among Filipinos, and lowering the glycemic index in rice is a great measure to decrease the incidence of diabetes in the country.	Expected Outputs: 1.Publication €"1 publishable scientific article 2.Patents/IP €" 1 copyrighted knowledge product leaflet on low glycemic index rice 3.Products €" 1 low glycemic index rice line and 1 knowledge product leaflet 4.People Services €" 1 BS and 1 MS students, farmers and other stakeholders who will be the recipient of the knowledge product leaflets 5.Places and Partnerships €" Memorandum of Agreement formed between DOST-PCAARRD, DOST-FNRI, Mariano Marcos State University and Philippine Rice Research Institute 6.Policy - Promotion of low glycemic index rice for possible adoption through partnership with FNRI	PhilRice-Batac	Filipino consumers, farmers, students, other stakeholders	01-Jan-23	30-Jun-23	ONGOING	6,948,772	1,679,196.77
	Development of New Hibiscus rosa-sinensis Varieties through Conventional Hybridization and Embryo Rescue (Varietal Improvement and Development of Climate-resilient Flowering Bedding/Pot Ornamental Plants)	Poverty Reduction and Empowerment of the Poor and Vulnerable	The study aims to develop new varieties of hibiscus, using both the conventional and the wide hybridization to produce novel, climate resilient, and plants with good morphological characters and aesthetic appearance.	1)To publish 2 ISI publications, 1 poster and 2 IEC materials 2)Minimum of 6 new Hibiscus rosa- sinensis varieties and 2 interspecific hybrids 3)To conduct 1 training in the production and multiplication of gumamela during entire project duration 4)To partner with the Institution that will partner in the launching and naming of the new varieties that will be derived from the project. 5.) GTRRO registration and approval	UPLB	The target beneficiaries of the project research results are: €¢Plant nursery owners €¢Landscapers and landscape engineers €¢Ornamental growers €¢Ornamental plantenthusiast/hobbyist €¢Ornamental plant exporters/importers	01-Mar-21	29-Feb-24	ONGOING	4,996,480	1,527,296.60
	Development, Genotyping and Preliminary Evaluation of Genetically Stable Planting Materials of Selected Medicinal Plants	Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will focus on some of the DOH-recommended medicinal plants, and those plants prioritized by DOST-PCHRD and the herbal industry. As mentioned earlier, this will also serve as a re-entry project of the DOST GREAT program.	€¢ At least one (1) ISI-indexed journal article €¢ At least one (1) poster/paper presented in scientific conferences €¢ At least 9 genetically stable, characterized and evaluated accessions/lines/genotype as reference and standard €¢ At least 3,000 seeds of the four (4) sexually propagated and genetically stable medicinal plant ready for distribution and safety duplication €¢ At least 50 propagules/seedlings of the five (5) asexually propagated medicinal plant ready for distribution €¢ 4 project personnel trained on breeding, genetic resource conservation and management of medicinal plants €¢ One (1) Bachelor€™s, and one (1) Master€™s student trained on genotyping, and evaluation of medicinal plants	UPLB	The target beneficiaries of the project research results are: Research organizations, men and women researchers, scientists, students, medicinal plant growers, and the general public will benefit from a promising and genetically stable source of planting materials of medicinal crop species.	01-Jul-21	30-Jun-23	ONGOING	4,999,216	1,118,800.00
	Effect of temperature and host plants on the life history traits of Spodoptera frugiperda (J.E. Smith) (Noctuidae: Lepidoptera)	Poverty Reduction and Empowerment of the Poor and Vulnerable	In the Philippines, the emergence and invasive pests has been reported but there are limited publications, or some cannot be accessed easily. There are several factors to consider in the rapid spread of invasive pests. Climate is one of these factors and it plays a major role in determining the distribution and abundance of insects (Walter and Hengeveld 2000). More specifically, climate plays two principal roles: as a limiting factor that determines the relative importance of various biotic factors of population dynamics, and as a source of environmental variation that affects physiological rate processes and mediates interspecific interactions. The first role is considered secondary in comparison to the latter, which regards the physiological requirements and tolerances of individuals within the population as the key determinants of survival and reproduction, and thus abundance (Walter and Zalucki 1999). There are studies that emphasized the role of biotic and abiotic (environmental) factors in structuring trophic interactions. Abiotic factors, such as inorganic resources and the ambient environment such as light, temperature can have significant consequences for natural populations, either directly or indirectly, by altering biotic quality and quantity manifested for instance in host-plant quality and number or insect abundance and distribution (Hunter and Price 1992). Studying the effect of these factors (biotic and abiotic) on the development of insect pest will be beneficial to understand better the population dynamics of an insect. This gives us a clue on the extent of infestation on different plant families and explain the mechanism or nature of polyphagy in this kind of insect pest.	Publications:Generate at least two peer-reviewed publications in a recognized scientific journal Web of Science or Scopus-indexed journal Patents/IP:Damage rating scale for field assessment Products:Alternate host plants Biology information of FAW to crops Management protocol for FAW People Services:At least three (3) undergraduate Two (2) graduate students Places and Partnerships:Partnership with NCPC and BPI Policy:Policy on management of FAW	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	01-Feb-20	30-Jun-22	COMPLETED	4,986,964	646,694.63
	Enhancing the Ornamental Crops Industry in Bulacan Through S&T Based Propagation Techniques, Varietal Improvement and Capability Building	Poverty Reduction and Empowerment of the Poor and Vulnerable	For sustainable propagation of various ornamental plants, and to support the LGU Guiguinto to its goal to be the Garden Capital of the Philippines, the Bulacan State University developed the project entitled €œEnhancing the Ornamental Crops Industry in Bulacan through S&T-based Plant Propagation Techniques, Varietal Improvement and Capability Building.	PRODUCTS·At least ten (10) species surveyed and collected, ten (10) mother plants per species·Two (2) tissue cultured products (2 varieties of orchids, and 2 varieties of anthurium)·One (1) ornamental plant, ie. orchid, indexed for ORSV and CymMV viral disease·Three (3) orchid mother plant virus indexed·One (1) putative mutant of orchid ·Three (3) plant varieties mass-produced (Mussaenda, Hoya, Hibiscus)PUBLICATION·One (1) optimized ornamental plant tissue protocols for orchids (jointly developed by iLAB Guiguinto, DOST PSTO and BulSU) ·One (1) optimized ornamental plant tissue protocols for anthurium (jointly developed by iLAB Guiguinto, DOST PSTO and BulSU) ·One (1) primer or manual on conventional propagation of Hibiscus, Hoya, and Mussaenda.PLACES AND PARTNERSHIP·One (1) multi-lateral partnership	Bulacan State University	Nursery growers, plant enthusiasts, iLAB personnel, researchers, plant breeders, academe, students	01-Apr-22	31-Mar-23	ONGOING	5,000,000	5,000,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Fruit Quality Improvement in Carabao Mango through Quantitative Trait Loci (QTL) Identification for Scab and Stem-end Rot Resistance by Genotyping-By-Sequencing (GBS) and Genome Wide Association Studies (GWAS)	Poverty Reduction and Empowerment of the Poor and Vulnerable	Mango is one of the important plantation fruit crops in the Philippines for local consumption and export. The Philippines is one of the major mango producers in the world with a total export of fresh mango of about 800,551 tons (FAOSTAT- 2014). €˜Carabao€™ mango is the most popular and prime export variety, which is acknowledged as one of the best mangoes in the world. On the other hand, mango production and quality in the country is constrained by several factors which include pests and diseases. Anthracnose, stem-end rot and scab are the most serious and destructive diseases of mango in the Philippines affecting fruit quality and yield. Stemend rot, caused by fungi Cytosphaera mangiferae, Dothiorella dominicana, Botryodiplodia theobromae and Lasiodiplodia theobromae, is considered a major problem limiting the storage and shelf life of mango fruits. The lesions develop slowly, and in advanced cases, fruiting bodies may appear at the stem end. Mango scab is caused by the fungal pathogen, ElsinoÃ« mangiferae, which is also known as Denticularia mangiferae or Sphaceloma mangiferae. Losses due to scab disease was estimated to be 20% of the production (Nishijima, 1993). The disease is initially present as small dark brown or gray spots on the underside of leaves or fruit. These spots enlarge and darken over time and develops in young and mature fruits, twigs, leaves, and blossom spikes. Thus, there is a need to identify sources of resistance in mango germplasm that can be used in €˜Carabao€™ mango improvement. Conventional plant breeding in perennial crops such as mango requires a significant amount of time for the selection and evaluation of desirable traits over many generations. Marker-assisted selection (MAS) (Tester and Langridge, 2010) provides a more accurate and faster approach to select the desired phenotypes in a breeding population. The use of genetic approaches to detect and analyze the genetic variations associated with phenotypic differences has greatly facilitated the improvement of agronomic traits, which are mostly quantitative. The emergence of	Products (10)€¢One (1) GBS database for stem-end rot resistance in mango €¢One (1) GBS database for scab resistance in mango €¢At least eight (8) molecular markers for scab and stem-end rot resistance in mango People Services (12)€¢Ten (10) trained personnel €¢Two (2) MS Plant Breeding/Biology/Plant Pathology Students Places and Partnerships (2) €¢Partnership with University of the Philippines Los BaÃ±os (UPLB) €¢Partnership with Bureau of Plant Industry-Guimaras National Crop Research, Development and Production Support Center (BPI-GNCRDPSC) Publications (4)€¢Two (2) papers for publication €¢Two (2) scientific paper presentations Patents (2)€¢One (1) molecular marker kit for scab resistance €¢One (1) molecular marker kit for stem-end rot resistance	USM	1.Mango growers and producers 2.Nursery owners 3.Researchers and plant breeders 4.Undergraduate and graduate students 5.Universities and research institutes	01-Jul-20	30-Jun-23	ONGOING	11,875,045	3,537,865.23
	Full Genome Sequencing of Selected Philippine Mango Species (Old Title: Full Genome Sequencing of Selected Philippine Mango Cultivars)	Poverty Reduction and Empowerment of the Poor and Vulnerable	The sequencing of mango genome will serve as cornerstone in providing information for breeding and research tools for mango farmers.	Products (5):€¢3 Magnifera genomes (M. indica L. cv. €˜Carabao€™, M. altissima and M. odorata) €¢1 online database with annotated SNPs for marker design €¢1 bioinformatics pipeline suitable for mango genome complexity People Services (3):€¢At least 1 MS student and 1 BS student €¢1 Project Staff trained on data management Publications (1): €¢At least 1 article in refereed and ISI journal Patents:€¢1-2 SNP markers	UPLB	1. Researchers 2. Breeders 3. Students	01-Jun-20	31-May-23	ONGOING	7,799,208	1,660,833.55
	Genetic Structure and Morphological Variation Analyses of the Fall Armyworm, Spodoptera frugiperda (J.E. Smith) (Lepidoptera: Noctuidae) in the Philippines	Poverty Reduction and Empowerment of the Poor and Vulnerable	Recently, genetic comparison studies revealed a novel interstrain hybrid population of uncertain behavioral characteristics of the African FAW population (Nagoshi et al., 2019), indicating that host plant and plant utility is not a determinant for the identity of the colonizing strain. Thus, genetic analyses using molecular markers are necessary to design an efficient pest management strategy for S. frugiperda to prevent the occurrence of outbreaks in the Philippines. Molecular data are also necessary for the genetic characterization to identify strains and haplotypes, estimate the genetic structure and study the population structure of the Philippine populations of this invasive insect pest. These basic information are valuable in the establishment of monitoring (Cock et al., 2017) and forecasting systems (Salinas-Hernandez and Saldamando-Benjumea, 2011), determination of source of invasion (Lui et al., 2019), Nagoshi et al., 2019), migration behavior (Nagoshi et al., 2008; Nagoshi et al,, 2015; Nagoshi et al., 2018), distribution (Kuate et al., 2019), infestation levels (Nagoshi et al., 2012), susceptibility to insecticides (Storer et al., 2010), avoidance of the development of resistance to insecticides (Zhu et al., 2015), Bt crystal proteins (Cano-Calle et al., 2015), and Bt corn events (Niu et al., 2016). Furthermore, as the three final instars of FAW exhibit varying color patterns depending on the diet other factors (Hardke et al., 2015), a morphological-based identification key, in agreement with the molecular data that will be obtained in this study that correspond to the two strains, will also be developed in this study to facilitate the rapid FAW identification in the field.	€¢Specimen for morphological and molecular analyses €¢Morphological description of the identified strains/haplotypes €¢Identified FAW strains and haplotypes in the 5 major-corn producing areas €¢Amplicons of genetic markers for nucleotide sequencing €¢Nucleotide and amino acid sequences deposited in the GenBank €¢Global FAW phylogenetic tree €¢Nucleotide and haplotype diversity or polymoprhisms, sequence variations data Geographical map	UPLB	1. Corn & rice farmers & other agricultural sectors 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	01-Feb-20	31-Jan-23	ONGOING	4,999,999	138,931.20
	Identification and Preliminary Evaluation of Natural Enemies Against the Fall Armyworm, Spodoptera frugiperda (J. E. Smith) (Lepidoptera: Noctuidae), in the Philippines	Poverty Reduction and Empowerment of the Poor and Vulnerable	Natural enemies associated with fall armyworm have recorded including parasitoids such as Trichogramma pretiosum in Brazil (Figueiredo et al 2015), Chelonus insularis in Mexico (Rios-Velasco 2011), Aleiodes laphygmae and Campoletis sonorensis in Honduras (Wyckhuys and O€™Neil 2006), Telenomus remus in Africa (Kenis et al 2019), Apanteles sp in Costa Rica (Schmidt-Duran et al 2014), Cotesia icipe in Ethiopia and Palexorista zonata in Kenya (Sisay et al 2018). Predators like earwigs and ground beetles are reported to be associated with lower fall armyworm population throughout the corn season in Honduras (Wyckhuys and O€™Neil 2006). In the Philippines, initial field surveys indicated the presence of local natural enemies associated with fall armyworm - two species of hymenopterous parasitoids and one species of parasitic nematode (MVNavasero, personal communication, 2019). Based on the reported damage caused by the pest, the country has to be ready on the occurrence of any devastation caused by FAW. Measures for long term control should be prepared such as the use of existing biological control agents that poses less hazard in the environment. Augmentation of these biocon agents in the field could help reduce FAW population. This proposal aims to collect, identify and evaluate the effectiveness of biocon agents against fall armyworm in selected corn growing regions.	€¢Percent (%) field parasitism and predation by natural enemies on fall armyworm €¢Identified 1 or 2 potential predatory pentatomoids and ladybeetles against FAW based on effectiveness parameters. €¢Identified 1 or 2 potential Trichogramma, earwigs and green lacewings based on effectiveness parameters	UPLB	1. Corn Growers 2. Researchers/ Breeders 3. Agricultural Technicians 4. R&D planners, researchers, policy makers	01-Feb-20	31-Jul-22	COMPLETED	5,000,000	101,534.76
	Integrated Crop Management (ICM) for the Rehabilitation of Banana in a Coconut Intercropping Production System [Old Title: Deployment of Coconut-Banana Intercropping Technology(DECOBAIT)]	Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will validate an on-farm integrated crop management (ICM) package to rehabilitate banana under coconut intercropping production system. Additionally, the project will use mobile applications generated from the SARAI Project (SpidTech) for pest identification, monitoring and advisory and Banatech (harvest date estimator) as part of the ICM for Banana. The use of unmanned aerial vehicle (UAV) for crop growth and health monitoring will also be explored in the project.	Publication: Publication : At least one publication on a peer-reviewed, internationally- abstracted journal (Y2)Patent: N/AProduct: An image database of Lakatan and saba/cardaba banana growth stages (Y2)People: 1 MS GREAT SCHOLAR Capacity building in Farmer Cooperatives and LGUÃc,¬„¢s (Y1)Place: LGUÃc,¬„¢s and Farmer CooperativesPolicy: A policy brief of the application of BanaTech for crop insurance (Y2)	UPLB	Banana/Coconut Farmers; Banana Traders and LGUs Quezon and Laguna	01-Jul-22	30-Jun-24	ONGOING	4,784,836	2,544,013.28
	Integrated Management of Sineguelas Leaf Beetle (Podontia quatuodecimpunctata (L.)) (Chrysomelida: Alticinae) an Introduced and Emerging Pest of Sineguelas (Spondias purpurea Blanco) in Batangas	Poverty Reduction and Empowerment of the Poor and Vulnerable	To develop a package of Integrated Management Technology for Sineguelas Leaf Beetle (Podontia quatuordecimpunctata (L.)) (Chrysomelidae: Alticinae)	Three (3) papers on biology, ecology, population dynamics IPM package for SLB IPM package disseminated to 20 extension workers at least 50 sineguelas growers Partnerships with: BPI-LBNCRDPSC LGU of Batangas LGU of Occidental Mindoro LGU of Cavite Policy recommendation on IPM package for SLB to LGUs	DA-IVA, BPI-LBNCRDPSC	€¢Sineguelas growers €¢Local Government Units €¢Researchers €¢Students	01-May-21	30-Apr-23	ONGOING	5,000,000	1,366,995.50

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Molecular Marker Assisted Breeding of Sweetpotato Varieties for High Beta-carotene, Anthocyanin and Resistance to Sweetpotato Feathery Mottle Virus (SPFMV) (Old Title: Molecular Marker Assisted Search for High Betacarotene, Anthocyanin and Resistance to Sweetpotato Feathery Mottle Virus (SPFMV) in Sweetpotato Germplasm and their Introgression to Sweetpotato Breeding Program)	Poverty Reduction and Empowerment of the Poor and Vulnerable	The role of sweetpotato as a major food and feed source for developing countries is unquestioned. In 2017, the country€™s total planted area is 84,974 ha producing around 537,303 metric tons (MT) with a value of 8.5 billion pesos. In addition, sweetpotato is cultivated throughout the country wherein commercial farms are located in Central and Western Luzon where it is grown after rice. When contrasted with other major staple food crops, sweetpotato has a diverse range of positive attributes: such as high yield (kg/ha/day), nutritional value, production geography, short production cycle and resistance to production stresses (e.g. high temperature, water deficit, insect and disease pressure, low fertility), making it not only an excellent source of food but a food that is nutritionally superior to most staples. Sweetpotato is now grown in more than 100 developing countries than any other root or tuber crop. Furthermore, it is becoming more and more apparent that sweetpotato is also a healthy choice for rural populations in developing countries. Not only does it produce more edible energy (carbohydrates) per hectare per day than wheat, rice or cassava, but the right varieties can also provide carotene to adults and children, that can be converted to Vitamin A in the body. Some varieties have enough carotene to ward off the severe effects of Vitamin A deficiency, especially in children and lactating mothers. The purple-fleshed varieties, on the other, are rich in anthocyanins that have antioxidant abilities and are being studied for their anticancer property, as well as, antidiabetic potential. Sweetpotato can be prepared in many different and interesting ways, including cooking the fresh roots and leaves, or processing into animal feed, starch, flour, candy, and alcohol. It can be used as a substitute for wheat in breads and cereals, and can be made into as many tasty and nutritious items as one can imagine. For a successful sweetpotato production program a tested technology package, which includes genetically superior varieties with wide genetic background and high quality planting materials, has to reach commercial growers. The Institute of Plant Breeding as a national center for crop improvement research and development, alongside with PhilRootCrops as the center for Root Crops research and development, seek to address this concern. At present, the Institute of Plant Breeding-National Plant Genetic Laboratory (NPGRL), UPLB and	Products ï¿§150 accessions of sweetpotato collected and characterized (morphological and molecular) ï¿§Database of characterized Philippine sweetpotato germplasm ï¿§150 Molecular fingerprints of different accessions of sweetpotato ï¿§10 promising hybrids with improved beta-carotene and anthocyanin, and resistance to SPFMV ï¿§Planting materials of 10 superior promising lines for distribution to growers, researchers, and other interested end-users Publication ï¿§An IEC material for management and disease screening of SPFMV disease. ï¿§Publications (atleast 2) People Services ï¿§1 BS, 1 MSc, and 1 PhD students; atleast 20 trainees Places and Partnership ï¿§PhilRootCrops and CIP	UPLB	Sweetpotato farmers/growers, bio-fuel manufacturers/processors, stakeholder, researchers	01-Apr-20	31-Mar-23	ONGOING	10,292,352	2,923,529.67
	Molecular Mechanisms of Root System Formation for Genetic Improvement of Rice Adapted to Water Stress Conditions	Poverty Reduction and Empowerment of the Poor and Vulnerable	This project will employ characterization of varieties/lines with promoted lateral root (LR) development, gene expression and epigenetic regulation (histone modifications) of LRs under soil moisture fluctuation (i.e. during and after drought) that has not yet been studied thus far. Additionally, the QTL/s conferring LR plasticity under re-watering (i.e. after drought), which is equally important for water-stressed environments but has not yet been reported elsewhere, will be identified. This will be crucial for breeders and biotechnologists in designing genetically improved drought avoidance with higher root plasticity and minimally-compromised productivity of rice plants under stressful environments.	Publication: 4 manuscripts (2 submitted to scientific journals, 2 grad and undergrad theses)3 proceedings & presentations from scientific conferences1 training module/ protocolPatent: Potential patent of drought related putative QTL/geneProduct: 3 drought tolerant lines4 molecular markers on target root traits1 optimized root histone modification protocol People: 10 researchers trained on root gene expression/ epigenetics assays and other molecular tools/ assays in plant genetics1 graduate student (Crop Biotechnology)Place: One (1) MTA/ MOU with Nagoya University signedPartnership with Central Luzon State University (CLSU) Economic ImpactEfficiency of breeding programs on improved root system by 80%Yield improvement (projected at 20-30%)*Increase in farmers€™ income (projected at 20-30%)Social ImpactAdaptation to climate change through the availability of drought tolerant rice varietiesImproved livelihood of rice farmers	PhilRice	Our target beneficiaries are the crop biotechnologists, geneticist, breeders and university thesis students. They may utilize the results of the project particularly in the conduct of R&D initiatives (ex. designing or developing improved rice varieties with enhanced drought avoidance). Ultimately, the outputs of this project benefits the most vulnerable rice farmers in the face of climate change. The information can improve production management strategies of resource-poor farmers in rainfed systems.	01-Apr-22	30-Mar-24	ONGOING	13,581,433	9,135,647.89
	Performance Evaluation of the 2-PRONGED Coconut Hybridization Scheme in CALABARZON	Poverty Reduction and Empowerment of the Poor and Vulnerable	The project will be guided by known breeders from PCA-ZRC who has developed the coconut hybrids with identified uses (for VCO and for cocosugar production). Training on pollination shall be done at PCA-ZRC to capacitate the technicians at PCA-Region IVA. This will actually be the first activity for the On-Farm Hybridization Modality which can be emulated by other coconut growing region nationwide for PCA€™s Accelerated Planting and Replanting Program	1. Identified 2 project sites in Quezon for the conduct of AHS and established 3 farms in Quezon, Laguna, and Batangas for DNHS; 2. Established 3 hybrid nurseries for AHS and distributed hybrid seedlings for ACPRP in CALABARZON; 3. Established field-planted DNHS parental trees and adopt Good Agricultural Practices for management of DNHS farms; 4. Evaluated field performance of the parent materials for DNHS and conducted hybridity testing for selected mother trees; and, 5. Produced hybrid seednuts in AHS project sites, - 76,800 hybrid nuts/year to be planted in 500 ha in Quezon; - 384,000 hybrid nuts within 5 years to be planted in CALABARZON.	PCA-IVA	The project will benefit coconut farmers, as well as stakeholders and processors.	01-May-18	30-Apr-22	COMPLETED	4,981,298	219,528.00
	Pest Management Strategies for Coconut Rhinoceros Beetle in Typhoon Odette Affected Regions	Poverty Reduction and Empowerment of the Poor and Vulnerable	The project proposal was conceptualized to support the goal of the Philippine Coconut Authority (PCA) to mitigate the expected rhinoceros beetle (Oryctes rhinoceros L.) population surge in the aftermath of Typhoon Odette. In December 2021, Typhoon Odette barrelled through Regions XIII (CARAGA), VIII (Eastern Visayas), VII (Central Visayas), VI (Western Visayas), and IV-B (MIMAROPA). About 25% of damaged agricultural crops was coconut. The typhoon produced a huge biomass of felled palms and debris that can serve as breeding sites for the beetle. Around 12,981,195 bearing palms were completely damaged, majority in Region VIII (3,919,615) and Region XIII (6,639,542), providing numerous breeding sites for the coconut rhinoceros beetle (CRB).An adult CRB tunnels into the central crown of coconut, feed on the sap of the pith, may hit the growing point and kill the palm. Tunneling destroys unopened spathe, breaks fronds, expose the palm to entry of pathogens and other pests. Attacks on seedlings almost always result to death because the pith is easily overwhelmed.The green muscardine fungus (GMF), Metarhizium anisopliae, is naturally occurring in the Philippines and was already proven to be a most effective biological control agent (BCA) against CRB based on numerous studies conducted. The GMF isolated from CRB was found highly virulent under laboratory and field conditions, provided there is enough moisture and no direct exposure to sunlight. The use of the GMF is recommended for its efficacy, ease of application, mass production and transport. The GMF was routinely produced by PCA intended for its experiments and field demonstrations in farmers€™ fields, but	Publication: At least one (1) publication on the field assessment of timely GMF log trapping on rhinoceros beetle incidence in Typhoon-devastated areas Products: Approximately 6,270 kg of granular GMF produced for 7,837.6 ha People Services: Trained 10 agriculturists and 120 farmers Places and Partnership: Network with 2 PCA Regional Office (VIII and XIII) and 12 municipalities in Region VIII (Maasin, Malitbog, Sogod, Bontoc, St. Bernard) and Region XIII (Surigao City, Del Carmen, Gen. Luna, Dapa, Pilar, Libjo, Loreto)	PCA	Coconut farming communities in Region VIII €" Southern Leyte (Maasin, Malitbog, Sogod, Bontoc, St. Bernard) and Region XIII €" Surigao del Norte (Surigao City, Del Carmen, Gen. Luna, Dapa, Pilar, Libjo, Loreto).	01-May-22	30-Apr-23	ONGOING	5,000,000	5,000,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Propagation of Quality Planting Materials of Baybay Tall (BAYT) and Selected Dwarf and Hybrid Coconut Varieties through Coconut Somatic Embryogenesis Technology (CSet)	Poverty Reduction and Empowerment of the Poor and Vulnerable	In 2015, a coconut research program titled, €œReinvigorating the Philippine Coconut Industry through the Coconut Somatic Embryogenesis Technology (CSet)€•was implemented through the research funding of DOST-PCAARRD. This was a collaborative undertaking of several tissue culture laboratories situated in various regions of the country, namely VSU, BUCAF, PCA-ARC, PCA-ZRC, UPLB, and UPMin. The program was aimed to mass propagate plumule-derived coconut planting materials primarily to establish new planting in coastal zones and replant the typhoon-damaged, and coconut scale insect- infested palms. It also aimed to advance the agricultural biotechnology capability in the Philippines on the rapid mass propagation of coconut planting materials. The enhanced protocol for the coconut somatic embryogenesis technology (CSet) of the Philippine Coconut Authority €" Albay Research Center (PCA-ARC) was adopted by all seven (7) participating CSet laboratories with the goal of enhancing the mass production of high yielding coconut varieties and hybrids. The adoption of the protocol was supervised and coordinated by expert from PCA-ARC. Likewise, during the first phase of the project implementation, the program enhanced the capability of laboratory personnel, specifically at the VSU Coconut Tissue Culture Laboratory (CTCL), on rapid production of quality planting materials of selected tall, dwarf and hybrid coconut varieties through CSet for the benefit of coconut farmers in selected coastal areas of Regions VI, VII, and VIII. It is very remarkable to note that the enhanced PCA-ARC CSet protocol was successfully adopted among partner laboratories and significant outputs were obtained despite unforeseen problems along the way, especially on the final step of the protocol on plantlet production. Solutions to address this major concern were explored so that optimization and enhancement of the protocol will be achieved. The VSU CTCL has endeavored to produce its first sets of plantlets. Currently, there are a number of existing advanced cultures that are maintained that would produce more	€¢Produced approximately 23,000 somatic embryo cultures, 8,000 regenerants (shootlets and plantlets) in vitro and at least 1,000 plumule-derived ex vitro established plantlets in the screenhouse of Baybay Tall (BAYT), Laguna Tall (LAGT), San Isidro Dwarf (SNID), Tacunan Dwarf (TACD), and Malayan Red Dwarf x Tagnanan Tall (MRDxTAGT) coconut varieties. €¢Developed enhanced nursery management protocols for somatic plantlets €¢Consolidated growth performance data and identified characteristics of CSet-derived plantlets in nursery condition, and made recommendations for field planting based on observed data. €¢Prepared and submitted quarterly, midyear and annual project reports.	VSU	The major beneficiaries are the coconut growers in selected areas in Leyte, Eastern Samar, Bohol, Cebu, Siquijor, Iloilo and Negros Oriental who are dependent on coconut farming as their livelihood.	01-Jun-20	31-May-22	COMPLETED	3,745,400	948,559.00
	Propagation of Quality Planting Materials of Baybay Tall (BAYT), Laguna Tall (LAGT) and Tacunan Dwarf (TACD) Coconut Varieties through Somatic Embryogenesis Technology (CSet)	Poverty Reduction and Empowerment of the Poor and Vulnerable	The Philippine Coconut Authority-Zamboanga Research Center (PCA-ZRC) along with other participating laboratories (UPLB, UPMin, VSU, BUCAF and PCA-ARC) has been doing coconut tissue culture research under the CSet Program funded by DOST-PCAARRD, which generally aimed to mass propagate plumule-derived coconut planting materials of PCA recommended varieties using somatic embryogenesis adapting the protocol developed by PCA-Albay Research Center. The project ran its course for a period of five (5) years. As of February 29, 2020, PCA-ZRC is maintaining a total of 80,092 calloids, 7,840 somatic embryos and 156 regenerants (shootlets and plantlets) from 6 coconut varieties through primary somatic embryogenesis. Moreover, the project was able to identify Batch 16 Baybay Tall (BAYT) as the most responsive of all varieties propagated with 18,545 (cd), 2,702 (SE) and 35 regenerants. This will be maintained at PCA-ZRC together with the estimated 3,000 somatic cultures from UPLB ICropS. Continuity of the propagation of these cultures is beneficial to produce more regenerants that can eventually be established ex vitro and later on be field planted in identified sites throughout the country.	€¢Upgraded the PCA-ZRC CSet laboratory to accommodate 3,000 somatic cultures from UPLB ICropS; €¢Produced 8,000 (30%) regenerants from cultures of Baybay Tall (BAYT), Laguna Tall (LAGT) and Tacunan Dwarf (TACD) €¢Developed a protocol on the movement/distribution of plumule derived plantlets from one laboratory to the nursery/screenhouse; and, €¢Ex vitro established approximately 1,000 regenerants in the screenhouse.	PCA-ZRC	The major beneficiaries are the coconut growers in selected areas in Zamboanga del Norte, BARMM and Region XII who are dependent on coconut farming as their livelihood.	01-Jan-21	31-Dec-22	COMPLETED	5,000,000	1,779,974.43
	Propagation of Quality Planting Materials of Selected Tall, Dwarf and Hybrid Coconut Varieties through Coconut Somatic Embryogenesis Technology (CSet)	Poverty Reduction and Empowerment of the Poor and Vulnerable	Coconut is considered as the Philippines€™ top agricultural export, wherein 3.5% of the Gross National Income and Gross Domestic Product of the agricultural sector is contributed by the coconut industry. The import commodity value of traditional and non-traditional coconut export products is $260M (PCA, 2017). However, the industry faces problems among which are low productivity due to old and senile palms, natural calamities like typhoon and coconut scale insect (CSI) infestation. To address the issue, mass propagation of coconut planting materials is being done. The Traditional method of coconut mass production is through seednut raised in nursery and seedbeds, or through embryo culture. Mass propagation of high-yielding coconut variety/hybrids using somatic embryogenesis can contribute to substantial improvement (Chan et. al., 1998) in the productivity of plantations. Coconut tissue culture has been on-going at Philippine Coconut Authority-Albay Research Center (PCA-ARC) for the past three (3) decades. Different coconut explants are being used like immature flowers, embryos and leaf, anther, ovary and plumule. Plumule was found to be the most responsive. Plumule-derived coconut palms at PCA-ARC are now at vegetative and bearing stages. As of January 31, 2020, Project 4 (PCA-ARC) of the completed CSet Program is maintaining a total of 108,316 calloids (CD), 8,281 somatic embryos (SE), 1,046 shootlets, 202 plantlets and 42 ex vitro established plantlets from 10 coconut varieties via primary somatic embryogenesis. With the aim to increase the regeneration efficiency of the CSet protocol, secondary somatic embryogenesis pathway has been considered. The group of Centre de Investigacion Cientifica de Yucatan (CICY) Mexico has been successful in micropropagation of coconut via secondary somatic embryogenesis enabling them to regenerate 13,000 embryogenic calloids and 98,000 somatic embryos per single plumule. About 35,000 and 50,000-fold increase in calloid and somatic embryo formation, respectively, was noted compared to the yield obtained from primary somatic embryogenesis (Perez-NuÃ±ez et al., 2006). The secondary somatic embryos (SSE) was noted to mature fast and germinate easily, thereby ensuring the increased number of plantlets obtained. Using both primary and secondary somatic embryogenesis with primary somatic embryos, these two (2) practices will produce an enormous	With the projected 40% regeneration efficiency of the PCA-ARC CSet Protocol using the secondary somatic embryogenesis, the project is expected to produce approximately 50,000 somatic embryo cultures in vitro, at least 5,000 regenerants (shootlets and plantlets) in vitro and approximately 2,500 ex vitro established plantlets in the screenhouse of selected four (4) Tall, three (3) Dwarf and three (3) Hybrid coconut varieties.	PCA-ARC	The major beneficiaries are the coconut growers in selected areas in Albay, Camarines Sur and Masbate who are dependent on coconut farming as their livelihood.	16-Dec-20	15-Dec-22	COMPLETED	5,000,000	643,448.06
	Varietal Development in Philippine Native Hoyas	Poverty Reduction and Empowerment of the Poor and Vulnerable	Hoya is a genus of tropical climbing or training plants in the Apocynaceae (Dogbane) plant family, a native to southern Asia, Australia, and Polynesia with an estimated of 200-300 species.	1. 2 poster presentations, 1 oral presentation, 1 refereed journal 2. at least 5 potential varieties 3. at least 5 propagated materials per potential variety	UPLB	Scientists, researchers, students, hobbyists, plant enthusiasts	01-Mar-21	29-Feb-24	ONGOING	4,999,703	1,495,329.70
ACIAR	Enhancing Livelihoods through Forest and Landscape Restoration (ASEM/2016/103)	Rapid, Inclusive and Sustained Economic Growth	This project will provide livelihood options to smallholders involved in forest restoration.	Livelihood options to smallholders through forest restoration	VSU	Tree farmers, LGUs, academe, researchers	01-Apr-19	31-Mar-23	ONGOING	3,996,800	411,232.88

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Mt. Banahaw Biodiversity Assessment, Valuation and Conservation	Proj. 2 Reproductive Phenology, Propagation, and Habitat Characterization of Threatened and Economically Valuable Flora in Mt. Banahaw de Lucban	Rapid, Inclusive and Sustained Economic Growth	This is a solicited from SLSU to support the on-going PCAARRD-funded project tiled €œInventory and Assessment of Flora and Fauna, and Macrofungi in Mt. Banahaw de Lucban€• under the program "Mt. Banahaw Biodiversity Assessment, Valuation and Conservation". It specifically addresses the conservation of threatened and economically valuable flora in Mt. Banahaw de Lucban (MBdL).	6PsPublicationAt least one (1) Journal Article/Book/instructional materialsPatentsApplication for patent on the distribution and habitat suitability maps of the threatened and economically valuable plants in MBdLProductsGIS generated maps of the threatened and economically valuable plants in MBdL;Developed protocol on species propagation (sexual and asexual) of the threatened and economically valuable plants in MBdL;Developed calendar of Phenology and pollination of species of the threatened and economically valuable plants in MBdL;People ServicesAt least one (1) graduate student and one (1) undergraduate student involved/trained in the observation of phenology, propagation, and GIS mapping of the threatened and economically valuable plants in MbDL;Places and PartnershipAt least one (1) partnerships forged through MOA/MOU with LGU, POs and/or DENRPoliciesDraft policy recommendations on: (1) improvement of the management strategies for MBdL towards the conservation of its biodiversity; and (2) conservation and propagation of the threatened and economically valuable plants in MBdL;2IsEconomic ImpactThe improved propagation protocol can benefit nursery operators. Propagation techniques can be adopted to improved production of high quality planting materialsSocial ImpactResults of the project can contribute in improving policies for appropriate management of Mt. Banahaw including the rehabilitation of degraded areas in the locality	SLSU	The immediate beneficiaries of the project are students, faculty researchers; nursery personnel; tree farmers, community residents, decision-makers; Government Institutions engaged in Environmental conservation (DENR, PAMB, LGU€™s); Non- Government Institutions (NGO, PO€™s); SLSU; other academic institutions (SUCs); Researchers; reforestation programs or tree plantations, stakeholders of MBSCPL and vicinities. It could also be beneficial as a livelihood option for the community.	01-Jan-23	31-Dec-24	ONGOING	4,999,650	2,640,325.20
	3D Printing Using ITPS-Derived Lignocellulosic Biomaterials (ITPS3D)	Rapid, Inclusive and Sustained Economic Growth	The planting of industrial tree plantation species (ITPS) is desirable from both an environmental and economic standpoint. ITPS provide cover to degraded uplands and enable farmers to earn income from their planting and harvesting upon maturity. However, timber grown in plantations are less favored by local wood processors because of their preference for wood from natural stands, both as a matter of familiarity with their properties and because customers still continue to demand products from natural timber. Thus, ITPS timber do not command a high price as naturally-grown timber when sold in traditional markets. Also, owing to the poorer form and smaller size of ITPS timber, their processing generates more wastes than large-diameter, naturally-grown timber. There is, therefore, a need to harness these wastes in order to realize more value per cubic meter of the material. The project will explore the utilization of nanocellulose and lignin from ITPS as ITPS3D filaments for 3D printing. With inherent biocompatibility and tunable properties, lignocellulosic materials are being considered as promising materials for use in the rapidly emerging field of 3D-printed biomaterials (Liu et al. 2019a; Zarna et al. 2021). Biocomposite preparation by 3D printing is expected to see tremendous commercial growth. The global 3D printing market size is expected to grow USD 12.6 billion in 2021 to USD 34.8 billion by 2026, at a CAGR of 22.5% (Report Linker 2021). Indeed, 3D printing offers new and exciting opportunities in utilizing the waste from ITPS processing, considering the possibilities of deriving new wood-based products and obtaining products modified with wood-derived materials capable of enhancing product quality and	Publication: One (1) IEC material, i.e., information bulletin/brochure about the extraction of cellulose and lignin using a new method and its potential for the production filaments for 3D printing; Drafts of two (2) scientific articles submitted for publication in peer-reviewed journalPatent: Trademark for ITPS3D; One (1) invention disclosure application for the developed protocol for the production of and the ITPS3D filaments; One patent/utility model for the developed protocol for the production of and the ITPS3D filaments Product: Protocols for the extraction of lignocellulosic material from ITPS and production of ITPS3D filaments; ITPS3D filaments with optimized properties; 3D-printed products People: One (1) graduate/undergraduate student with thesis on 3D printing using ITPS3D filaments; One (1) technical personnel trainedPlace: One (1) partnership with ITPS plantation owners/farmers or ITPS processing plant or the Additive Manufacturing Center (AMCen) in the form of MOU or MOA; Improvement of the FPPS Forest bio-Materials Research LaboratoryPolicy: NA	UPLB-CFNR	The target beneficiaries of this project are forest-based industries using ITPS, tree plantation farmers, 3D printing industry, other related downstream industries and consumers who are willing to use sustainable and environmental-friendly products.	01-Apr-22	31-Mar-24	ONGOING	4,999,999	3,551,072.92
	Application of eDNA Metabarcoding in Faunal Biodiversity Assessment of Indo-Pacific Mangroves Vulnerable to Climate Change: Philippine Node	Rapid, Inclusive and Sustained Economic Growth	This research proposal is part of a regional collaborative research submitted to East Asia Science and Innovation Area Joint Research Program, or e-ASIA JRP, a multilateral international joint initiative between a number of public funding organizations of the East Asia Summit (EAS) member countries, including Japan, Indonesia, Philippines, entitled €œApplication of eDNA metabarcoding in faunal biodiversity assessment of Indo-Pacific mangroves vulnerable to climate change€• and to other funding agencies for non e-ASIA member countries (Thailand, South Africa, Malaysia). This collaborative research project for Philippines aims to determine the change in biodiversity of fish and benthic macroinvertebrates in select mangrove areas of the country following a standardized biomonitoring tool, that is the aquatic environmental DNA and application of species distribution modelling (SDM). The data and information that will be gathered in the Philippines will be incorporated for analysis on Indo-Pacific mangrove ecosystems through the collaboration. The eDNA approach will serve as a new indicator for evaluating species biodiversity in mangrove ecosystems. Incorporating with Species Distribution Model analyses, the study will provide prediction of species distribution under different climate change scenarios and/or environmental conditions. Given the multitude of ecosystem services provided by mangrove ecosystems, it is important to understand their potential responses to global climate change of which faunal biodiversity assessment can provide baseline contribution. Climate change is likely to have a substantial impact on faunal diversity of mangrove ecosystems in the Indo-Pacific, through various impacts resulting from sea level rise (SLR), changing ocean currents, increased storminess, increased temperature, changes in precipitation and increased CO2. These factors are inter-related and spatially variable on inter-regional scales. Challenges in doing biodiversity monitoring can be addressed by application of innovative tool, such as the eDNA. This approach is easy to be standardized across countries, under a system of collaborative work and capacity-building. Raw sequence	6Ps MetricsPublications Ã¯ 1 project brochure Ã¯ 5 publications to national/international indexed journals Ã¯ 6 posters of species and/or SDM maps Patent Ã¯ 1 copyrighted scientific poster People Services Ã¯ 12 project members trained on eDNA protocols Ã¯ 4 young or early career researchers€™ capacity building on eDNA	Mindanao State University - Naawan	The target beneficiaries of the project are the following:- Mangrove conservation managers from DENR, BFAR, and LGU (Municipal Agriculture Office, Municipal Environment and Natural Resources Office)- Fisherfolks and local coastal communities- Pool of mangrove and marine biodiversity researchers or networks- SUCs- Early career ocean professionals and technical staff - Academic graduate and undergraduate students	01-May-22	30-Apr-25	ONGOING	14,937,641	6,286,175.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Artificial Intelligence-Based Diagnostic Clinic for Detection and Monitoring System for the Management of Rubber Diseases and Insect Pests	Rapid, Inclusive and Sustained Economic Growth	This project deals with providing intervention in increasing rubber quality and production, addressing the issue of lack of efficient and effective surveillance, detection, clinic for rubber experts, and monitoring system of rubber diseases and insect pests through the development of artificial intelligence-based databases and online platform for information dissemination, diagnostic clinic, and monitoring system for the management for rubber diseases and insect pests. The development of an online database and platform for diagnostic clinics and monitoring systems is based on R&D needs, problems, and gaps identified by DOST, DA-PRRI, PCAF and TWG for the rubber diseases as an output of consultations and discussions in collaboration with SUCs, government, and private agencies. Thus, this proposal is timely and relevant. This technology could have particular benefits to rubber farmers, associations, LGUs, SUCs, researchers, and other rubber stakeholders and could have a great impact from small to large-scale rubber stakeholders in the country. This project will be implemented in major rubber producing provinces in the country. After the project's completion, an artificial intelligence-based centralized database system and online platform for detection clinics, monitoring, surveillance and reporting system of rubber diseases and insects will be developed for the productivity of the rubber industry in the country.	Publication: At least 1 paper presentation in a conference At least 2 scientific papers At least 1 paper presentation in a conference 1 IEC materials; 1 promotional video for the promotion of the technology Patent: Copyright for the database and online platform for rubber diseases and insect pests Product: Profile of rubber diseases and insect pests in the Philippines Database for diagnosis of rubber diseases and insect pests Pool of plant doctors for an online rubber clinic Artificial intelligence-based powered diagnostic clinic and monitoring system Online database platform for information dissemination of rubber diseases and insect pests People: 1 undergraduate 1 PhD/MS graduate student 1 capacity building training to promote the technology for at least 50 rubber farmers Place: Partnership with small scale rubber growers and rubber farmerÃc‚¬„cs associations, DOST, LGU and SUC Partnership with small scale rubber growers and rubber farmerÃc‚¬„cs associations, DOST, LGU and SUC Policy: Certification of online platform for diagnostic and rubber clinic Protocol for reporting and disseminating information of the observed incidence of rubber diseases and insect pests	PCAARRD	The beneficiaries of this project are the Rubber Farmers, Rubber Cooperatives, LGUÃc‚¬„cs, and SUCÃc‚¬„cs in SOCCSKARGEN, Zamboanga Sibugay, Davao de Oro, Basilan, Palawan and Negros Oriental and Agusan del Sur.	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,888,649.04
	Assessment of various rubber-based cropping systems for enhanced production of smallholder rubber farmers in different climatic types of the Philippines (Old Title:Assessment of Various Rubber-Based Agroforestry Models/Systems For Enhanced Production of Smallholder Rubber Farmers in Different Climatic Types of the Philippines)	Rapid, Inclusive and Sustained Economic Growth	The study on rubber-based cropping system is in order to address the identified research gap for ISP on rubber and to aligned on the development strategies of Philippine rubber industry which is to expand production and improve plantation/farm productivity by adopting new technologies and good agricultural practices as well as the intensification of R&D on rubber to improve technology on production (PhilRubber Roadmap 2020-2040).The study aims to increase the income of rubber farmers and address the issue on the decreasing and inconsistent price of rubber in the market which affects the income of rubber farmers through the rubber-based cropping system (RAS). The study will include documentation and analysis of the current RAS and provide policy recommendations in rubber traditional areas.At the end of the study, book on compendium on rubber-based agroforestry system in different agroclimatic condition will be published and disseminated, and forum will be conducted in order to enhance knowledge of smallhold farmers on this system	Publication: Project press releases, brochures and leaflets about the project One (1) Information Bulletin for Policy recommendation on rubber-based farming system One (1) technical journal One (1) Compendium of rubber-based agroforestry systems published Draft information bulletin on rubber-based agroforestry systems for PCAARRD Publication Patent: Not ApplicableProduct: Book on Compendium of rubber-based agroforestry systemsPeople: Graduated 2 MSc scholars in agriculture specialized in rubber-based agroforestry and/or agricultural economics 50 participants on the forum of Rubber-Based Agroforestry System Place: At least eleven (11) PLGU coordinated for gathering of secondary data At least eleven (7) PLGU coordinated for gathering of secondary dataPolicy: One (1) Policy advocacy prepared for LGUs PAO and MAO in improving smallhold rubber farmers productivity by adopting appropriate rubber-based agroforestry for their situation	Philippine Rubber Research Institute	Different rubber stakeholders (rubber farmers, LGUs, NGOs, Research institutions, SUCs, other government agencies etc.)	01-Jun-22	31-May-24	ONGOING	4,998,099	2,634,049.30
	Assessment, Nutrient Profiling, and Propagation of Economically Important Terrestrial Snail Species in Selected Key Biodiversity Areas (KBAs) of Cebu Island, Philippines(An Alternative Food Source to Strengthen Food Security amidst Pandemic: Land Snail Farming and Nutrient Profiling of Economically Important Land Snail Species in Cebu Island, Philippines)	Rapid, Inclusive and Sustained Economic Growth	This study is in support of the NICER project of CTU-Argao Campus on biodiversity assessment of flora and fauna in Cebu Island KBAs. The NICER project on biodiversity assessment of flora and fauna in Cebu island has led to the inventory of land snails diversity in the area. Land snails are essential both as bio indicator for rainforest biodiversity and health status of forest habitat. Its ecosystem services include breaking down and recycling of organic matter, transfer of calcium nutrient to higher trophic levels and as food source for other animals.	Year 1 People and services - at least 10 student mentored Places and Partnership - MOA with DA, DENR, Philippine Science High School Region 7 and LGUs, Local Community Year 2 Publication- Two (2) articles drafted for publication in ISI-Scopus indexed journal Product - One (1) food formulation with nutrient profile; One (1) unit of micro-museums using €œAugmented Reality€•echnology; One (1) manual (Technoguide) for terrestrial snail farming Patent - Copyright application for the developed manual (Technoguide) for terrestrial snail farming People and services - Seminar/Workshop on food development using landsnails; at least 10 students trained/mentored Places and Partnership - MOA with DA, DENR, Philippine Science High School Region 7, LGUs, local community Policies - One (1) policy recommendation related to the conservation of ecologically and economically important terrestrial snails	CTU	1.FARMERS - utilize land snail as another farm products to increase yield and income. 2.STUDENTS - increase knowledge and awareness of the ecological and economic importance of land snail. 3.LOCAL COMMUNITIES - embark on a communal land snail farming and protection of habitat. 4.LGUs - formulate policies for a comprehensive conservation plan for malacofauna.	01-Aug-21	31-Jul-23	ONGOING	4,998,858	1,129,098.76
	Bamboo: the green and Sustainable Construction Materials	Rapid, Inclusive and Sustained Economic Growth	Bamboo is a wood like material that is naturally available in hollow cylindrical forms. Generally speaking, bamboo has higher compressive strength, tensile strength and flexural strength than any wood. As such it is popular for products produced with strips of bamboo fiber and glue to form boards. Engineered bamboo products result from processing the raw bamboo culm into a laminated composite, similar to glue-laminated timber products. These products allow the material to be used in standardized sections and have less inherent variability than the natural material. Bio-based material technology companies are developing a range of new products that improve both building sustainability and performance. In some cases, these architectural materials and systems also increase efficiencies in design and construction. Technology advancement and initiatives taken up by the government has helped in the development of bamboo in construction and structural applications. A new technology on protection and preservation of bamboo needs to be further developed and the effect on its durability and quality should be determined to open new areas for bamboo as wood substitute. Bamboo products such as bamboo fiber boards and other bamboo composite materials can be made due to their physical and mechanical performance in terms of hardness, stability and strength. Advances in structural engineering and the development of bamboo composites have opened new vistas for lightweight, durable and aesthetic construction for a variety of applications with proper treatment. Furthermore, with its lightness and flexibility the bamboo plant makes a material for the construction of wall panel and bamboo column. These are but a few examples of how bamboo's versatility is meeting the demands of consumers that are becoming increasingly aware of the impact that their choices have on the environment. This represents a very promising shift on both the supply and demand ends of the marketplace and offers hope for other environmentally responsible innovations. Despite its use for millennia in all sorts of applications, bamboo is just beginning to emerge worldwide as a viable alternative to all sorts of non-renewable materials.	€¢ An eco-friendly preservative for bamboo poles €¢ Physical and mechanical properties of giant bamboo, black bamboo and kayali €¢ Bio-composite as construction materials €¢ Optimize design of engineered bamboo products €¢ Laminated bamboo column €¢ Bamboo wall panel	PSAU	Bamboo growers, construction industry	01-Mar-21	28-Feb-23	ONGOING	4,878,500	1,871,382.28

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Conservation and Management of Mt. Arayat Protected Landscape (MAPL) through Enhanced Community Participation	Rapid, Inclusive and Sustained Economic Growth	This project is a solicited proposal from PSAU under PCAARRD's Biodiversity S&T program. It will specifically address the conservation and management of biodiversity resources in MAPL through ecotourism.	Publication: 2 Publications Patent: Copyrighted IEC Materials and Training GuideProduct: Developed ecotourims for Mt. Arayat Protected LandscapePeople: 4 Trainings on Wildlife Literacy and Tour GuidingPlace: Eight barangays and two municipalities partnership developedPolicy: 1 Policy Recommendation in Ecoutourism	PSAU	Locals of the communities surrounding Mt. Arayat.	01-Nov-22	31-Oct-24	ONGOING	4996.231.60	2,931,397.40
	Conservation and Mass Production of High-yielding Falcata Seed Sources in Mindanao (Old Title Conservation and Mass Production of High-yielding Falcata Families in Mindanao (: An Offshoot of Phase 1 Falcata Project "Advancement of Science for the Sustainable Conservation and Utilization of Forest Genetic Resources of Falcata and Yemane")	Rapid, Inclusive and Sustained Economic Growth	The current project (which will be referred to as Phase 2) seeks to conduct progeny selection from the Phase 1 field trials by identifying seed sources that are performing well across a wide range of sites. These €œgeneralistâ€•seed sources will be tested in different locations with the superior seed sources and more resistant to the attack of gall rust and stem borer from each site are to be conserved and mass produced. Thus, Phase 2 is based around a series of field trials via clonal seed orchard establishment, clonal seedling propagation, and seed tree stand establishment with the participation of local farmers. Phase 2 could accelerate or increase the production rate of falcata wood in the region while ensuring the sustainability of falcata tree improvement program in the country. The output of Phase 2 project will be important in the long-term eradication of underperforming or low-quality falcata populations in the country especially those being used or sold widely by tree farmers and wood industries in Mindanao. These efforts are expected to improve the wood supply in the country and hence the income of farmers engaged tree farming. This project is therefore an offshoot of Phase 1 falcata project and seeks to exploit the gains from Phase 1 through the following component activities, namely: selection of superior seed sources from Phase 1 project, F2 progeny trials via clonal seed orchard establishment, development of clonal propagation protocols for superior seed sources, seed tree stands establishment, and engaging local small-scale farmers in the region on implementation of these activities.	The proposed project is expected to accomplish the following: Year 1: €¢ Publication €¢ Patent/Intellectual Property €¢ Product ï¯ 105 plus trees selected from 5 seed sources ï¯ 4,000 cloned seedlings produced ï¯ One (1) on-site learning nursery established ï¯ One (1) experimental clonal seed orchard established €¢ People Services ï¯ 15 forestry students availed services of the rooting experiment and clonal seed orchard areas for their laboratory classes, special problems/thesis €¢ Places and Partnership ï¯ Two (2) barangay LGU resolutions supporting the project in their barangay ï¯ Two (2) Memorandum of Understanding (MOU) forged between the project leader and the land-owner of the two areas for clonal seed orchard/demosites €¢ Policy Year 2: €¢ Publication ï¯ One (1) brochure on plus trees selection protocol produced ï¯ One (1) training module on rooting protocol €¢ Patent/Intellectual Property €¢ Product ï¯ 8,000 cloned seedlings produced ï¯ One (1) on-site learning nursery established ï¯ Two (2) experimental clonal seed orchards established	CMU	Two (2) people€™s organizations of tree farmers consisting of 60 participants, particularly, from Talisayan (Misamis Oriental) and Baliangao (Misamis Occidental) Field Trial sites; and 45 forestry students and faculty.	01-Jul-20	30-Jun-23	ONGOING	4,999,992	1,411,164.00
	Design and Development of Multi-functional School Furniture	Rapid, Inclusive and Sustained Economic Growth	The Philippines is one of the most natural hazard-prone countries in the world because of its geographical location. On the average, there are twenty (20) typhoons each year and twenty (20) earthquakes on each day are recorded in the Philippines. These calamities usually affect the livelihood and safety of the locals on the affected area, most of them are displaced temporarily into an evacuation center to shelter them. This evacuation centers are mostly classrooms from the local schools. Most of the school furniture are transferred on the side or outside of the classroom to give way to the makeshift beds and tents for the evacuees. This school furniture is mostly made from plastic, metals, and wood. According to the executive order (EO) No. 879, s 010, which says that at least twenty five percent (25%) of the desk and other furniture requirements should be made from bamboo. Production of bamboo school furniture could be attained by processing bamboo poles into engineered bamboo. However, the production of engineered bamboo has been a major challenge to our local industry because of the limited or unavailable bamboo processing equipment, high-labor cost, and expensive adhesives that result to the increased cost of production of bamboo school desks and chairs compared to school furniture made of wood and plastics, and the use of pre-fabricated engineered bamboo. The design and development of multi-functional mixed media school furniture shall utilize the use of engineered bamboo along with other raw materials to reduce production cost of school desks and chairs within the price range set by DEPED. Moreover, the project shall transform the functionality of an ordinary school furniture into a useful furniture in the event of calamities and disaster. This additional feature will provide novel and added value to the existing design of school furniture ofDepEd. The multi-functional mixed media school furniture shall be tested at DOSTFPRDI Furniture Testing Center to evaluate its strength and durability. In this project, local elementary school or high school shall be selected to test the acceptability and functionality of the prototype to the users (student). A cost analysis shall also be performed to determine the economic viability of the prototype.	PublicationsOne (1) paper on the Multi-functional School FurnitureOne (1) user manual or work instruction on how to use the Multifunctional School FurniturePatentOne (1) utility model patent application shall be drafted and filedProducts Ten (10) prototype samples of each school chairs and school desk shall be developed based on the outcome of the field testingPeople ServicesTrained two (2) school staff and (2) representative of a local community on the operation of the develop prototypeTrained two (2) FPRDI personnel on the production and testing of the prototype.Places and PartnershipOne (1) Memorandum of Agreement between DOST-FPRDI and local school shall be forged for partnership for the project.PolicyPolicy recommendation for the Department of Education to refer to in re-designing their school furniture	DOST-FPRDI	Public and Private Schools in the Philippines	01-Sep-22	31-Aug-23	ONGOING	4,763,368	4,763,368.00
	Development and optimization of micropropagation protocol for selected bamboo species (Old Title: Optimization of micropropagation protocol of genetically-verified superior bamboo species)	Rapid, Inclusive and Sustained Economic Growth	Bamboos are essential non-timber forest species in the world because of their adaptability, quick physical growth and development that result to renewable materials for construction and furniture products. Growing bamboo has high economic potential. Processing bamboos into a variety of items from simple toothpicks, chopsticks, barbecue sticks, to basketware and furniture provides benefit from the bamboo culms, making business available and profitable for communities and village-level entrepreneurs. The government aims to develop bamboo plantations nationwide through the leadership of the Philippine Bamboo Industry Council (PBIC), in order to create sustainable sources of livelihood for Filipinos especially in the provinces (DTI, 2020). Government organizations such as the Ecosystem Research and Development Bureau (ERDB) in partnership with the Philippine Army, launched the Bamboo Plantation Development Project that aims to rehabilitate denuded areas in the military reservation and combat the effects of climate change (Gillado and Jimenez, 2020). Bamboos are among the fastest biomass producers that are used as alternative to wood. Thus, an increase in their consumption subsequently exerts pressure on the genetic resource. The number of species, geographic range of distribution, species and ecosystem diversity are important to determine in situ conservation programme and selection of appropriate species from good populations for ex situ conservation. 2 International funding has been focused on a relatively small set of commercially important and widely distributed priority bamboo species (Williams and Rao, 1994; Rao et al., 1998 reviewed in Thakur 2016), paving the way for genetic improvement to increase productivity. This can be achieved by comprehensive intra-specific studies on bamboos such as flowering and breeding behavior, hybridization, cytogenetics, selection of desirable population and individuals, and many more, and their application to increase productivity (Williams, 1998). Recently, trait-specific molecular and genetic information are also being used for genetic improvement. The main aim of tissue culture is to obtain true-to-type plants to maintain the germplasm, but during tissue culture, there is a chance of genetic aberration, which is	Publications Manuscripts on bamboo peer-reviewed journal; 1. Protocol development for tissue culture for mass production ; 2. Genetic profiles of selected bamboo species ; 3. Microbial endophytes elimination for tissue culture of bamboo; Patent One intellectual property rights (IPR) application for technologies/products developed from tissue culture Products Minimum of 100 Plantlets from tissue culture of each bamboo species; Protocols for tissue culture of 3 bamboo species; People & Services Three (3) staff trained on tissue culture Places and Partnership Partnership between the College of Forestry and Natural Resources and College of Agriculture and Food Science €" UPLB in the implementation of the project established Policy Draft policy recommendation on bamboo species for selection, utilization for mass propagation by tissue culture, and commercialization of tissue cultured plantlets, highlighting the appropriate evaluation of materials prior to production and commercialization of tissue cultured bamboo plantlets	UPLB-College of Forestry and Natural Resources	The results of the study will benefit various stakeholders including the forestry sector, and the DENR, in designing and implementing conservation and sustainable management of bamboos in the country. The government€™s National Greening Program (NGP) and other forest rehabilitation program will also benefit through the availability of increased number of bamboo planting materials through tissue culture.	01-Apr-22	31-Mar-24	ONGOING	3,497,070	2,132,094.80

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Development and Standardization of Four-Sided Bamboo Slat Planing Machine for Small-Scale Enterprise Production of Engineered Bamboo	Rapid, Inclusive and Sustained Economic Growth	One of the Philippine bamboo industry development roadmap goals is self-sufficiency of raw materials and cost-effective technologies and production processes. As the economic viability of bamboo continues to rise, it is expected that the engineering products of bamboo will achieve high market demand catalyzing the growth of more processing industries. Efficient and effective machineries for the processing of the material appropriate to industry levels is therefore necessary in order to achieve the long-term goal. Virtucio (2009) classified bamboo industries according to assets and includes; backyard, small-scale, medium scale and large scale. Backyard and small-scale enterprise that dominates among the categories have annual revenues not exceeding Php 500,000 and 1,000,000 respectively. Amidst the governments€™ significant investments on the research of bamboo, still maximum efficiency in processing bamboo products was not attained because backyard and small-scale enterprise are attributably low-capital and are incapable of affording and operating advanced technologies (Ramirez, 1999). The gap on research endeavors of improving the production and processing of engineered bamboo should be addressed by assessing and evaluating the performance of existing machineries and develop locally manufacturable and scale-appropriate machineries with competitive capability and output through value engineering.Essentially, value engineering is carried out in one of two ways: (1) improve the functionality or increase the value of a product at similar cost of production; or (2) explore alternative ways to accomplish the same function at lower product cost (Mahajan et al., 2019). This research, therefore, aims to identify alternative materials and/or fabrication technologies that may result to the same design and accomplish the same functionality but at a lower production cost for the development of a more industry-appropriate and economically adoptable machineries.	Publication: Results of the research will be submitted for publication in peer-reviewed or indexed journals.Patent: The developed machine will be applied for a patent or as utility model. Product: The developed machine will serve as a tangible product or prototype that can be replicated or mass produced for use by small-scale enterprises for their bamboo processing.People: The development of the proposed machine can help improve the lives of small scale bamboo enterprisers. Opportunities for training in the operation and maintenance of the machine can also be provided to operators.Place: The development of the planing machine will establish the beginning of partnership between Central Mindanao University and small-scale bamboo enterprisers in the region in terms of appropriately mechanizing the e-bamboo processing.Policy: This endeavor can result to possible policy and/or program by the government to address the specific needs of small-scale bamboo enterprisers.	CMU	1. Small and Medium Scale Bamboo Enterprise2. Local fabricators and machine operators3. Craftmen and women in the bamboo processing industry	01-Dec-22	30-Nov-24	ONGOING	4,999,880	3,912,280.00
	Development of Nursery Management and Outplanting Technique(s) for Selected Tissue Cultured Bamboo Species (Old Title: Development of Outplanting and Nursery Management Techniques of Selected Tissue Cultured Bamboo Species)	Rapid, Inclusive and Sustained Economic Growth	Bamboos are proven to be of valuable economic, sociological and commercial importance. However, with these known benefits from bamboos, constraints lie heavily on the limited availability of quality planting materials of the appropriate bamboos species. The traditional propagation using suckers, culms, and branches is quite slow. In order to address these concerns, there is a need to produce quality planting materials in mass to cope with the demand to operate the marketing of bamboo and bamboo products in a sustainable manner. Mass propagation through tissue culture of bamboo species will help address this problem. Micropropagation by tissue culture offers to be a powerful technique to rapidly mass-produce quality planting materials of bamboos. Moreover, the use of quality planting materials from tissue culture may improve the production and sustainable productivity of bamboos with better yield performance. However, survival and growth after outplanting are crucial to the success of any micropropagation protocols. An effective outplanting and nursery management may help stakeholders in extensive and cost-effective cultivation of bamboos.In addition to the use of tissue culture techniques for mass propagation, propagation using vegetative/clonal means to the established tissue cultured-bamboos in the nursery will be explored. Bakshi (undated) stated that research into innovative and rapid methods of propagation are urgently required to meet the infinite requirements for industrial plantations of bamboos. The method may contribute to further increase the propagation rate of tissue cultured plants and reduces the cost of micropropagation.The project is expected to help address the problem of lack of planting materials and support bamboo industry development. Increasing bamboo production is a strategic S&T priority (PCAARRD, 2012). Furthermore, the project will generate new knowledge in ex vitro plant propagation systems, nursery management and outplanting.	Publication: At least 2 papers presented in scientific conferences and/or published in refereed journals.Patent: 1-Outplanting and nursery management procedure for tissue cultured bamboosProduct: Tissue cultured bamboos of at least four species Hardened tissue cultured bamboo in the nursery of at least four species Field-demo farm of tissue cultured bambooPeople: Recommendation for filed planting of tissue culture-derived bamboos Trainings Student assistantshipPlace: LGUS, Private StakeholdersPolicy: Not applicable	VSU	The major beneficiaries are the: Bamboo growers for more livelihood opportunities. Bamboo industry Ã€,¬Å“ supply of quality planting materials while maintaining the environment and forest conservation Students and researchers as the facility will become a learning ground	01-Dec-21	30-Nov-23	ONGOING	3,990,296	939,324.00
	Development of technology and innovation model farm of indigenous and economically valuable species to support traditional industries for forest restoration and biodiversity conservation in Benguet"	Rapid, Inclusive and Sustained Economic Growth	The goal of the project is to develop a technology innovation farm and pilot test economically viable production technologies of raw materials for desired products (Kayabang and local beverages), and scale up these technologies as avenues for innovative forest restoration strategies consistent with the biodiversity objectives of the forest landscape in Benguet. For the Phase 1 of the project, it will Develop the technical and socio-cultural protocols that cover the establishment and management of model farm to provide a stable supply of raw materials for the production of desired products, while the Phase 2 is envisioned to pursue innovative forest restoration strategies that achieve ecological, economic, and biodiversity objectives of the project.	Publication 2 Publishable articles submitted 1 Manual on GIS mapping 1 Techno-guide for growing species of interest in local dialectProducts 2 Suitability maps 1 AVP on harvesting & manufacturing of Kayabang/local beverage People /Services2 Trainings for 2 LGU, NGA and others, for 30 professionals (2 GIS mapping events)1 Training on clonal & nursery management practice, for 20 participants1 Training on field crop management for local partners for 20 participants.Places and Partnership1 Partnership MOU with at least LGU and/or SUC 1 Partnership agreement w/ local cooperator for the model farm Policy1 Policy brief on conservation of native plants raw materials for Kayabang/local beverages	BSU	Local government units of Atok and La Trinidad BenguetFarmers and local communities of Atok, and La Trinidad, BenguetLocal industry workers/cooperatives for bamboo crafts and local beveragesPENRO-DENR, MENRO, La Trinidad and Atok; and PENRO (PLGU)	01-Dec-22	30-Nov-25	ONGOING	4,999,898	1,991,580.00
	Diversity of Bat Ectoparasites from the Caves of Selected Key Biodiversity Areas (KBAs) in Central Visayas (Old Title: Taxonomy, Prevalence, and Diversity of Cave-bat Ectoparasites in Selected Key Biodiversity Areas (KBAs) of Central Visayas, Philippines)	Rapid, Inclusive and Sustained Economic Growth	This study will be conducted in Selected Key Biodiversity Areas (KBAS) of Central Visayas. Ectoparasites associated in bats will be identified and classified. Mist netting approach is to be used adopting the protocol of SEABCRU. The modified method in collecting ectoparasites of birds (Bear 1995) will be adopted in collecting ectoparasites from captured bats. The body of each captured bat will be placed in a plastic bag with cotton soaked with ethyl acetate for 3-5 minutes to let those parasites detach from the host body. Afterwards, each bat will be examined for possible stacked ectoparasites on the body, wings and ears. Collected ectoparasites will be preserved in a specimen bottle with 70 percent alcohol. Data will be presented in terms of ectoparasite prevalence and intensity. To describe the diversity of ectoparasites in each location, indices such as the Shannon-Weiner Diversity Index and Simpsons€™ Dominance Index will be computed. To determine if there is a trend in ectoparasite abundance and diversity in relation to biological (species, age group, sex) and environmental variables (location, temperature, humidity, etc), multivariate statistical analyses such as Canonical Correspondence Analysis (CCA) using the vegan package in R software (R Core Team, 2017) and non-Metric Multidimensional Scaling (nMDS) using PRIMER v. 6 (Clarke & Gorley 2006). In nMDS, distinction of clusters will be determined using One Way-Analysis of Similarity (ANOSIM). To differentiate between the clusters, pairwise comparisons will be made. To determine which of the species contributed to any observed differences between clusters, the Similarity of Percentage (SIMPER) test will be used.	The output of this study will be aligned and patterned under 6Ps; namely: A.PUBLICATION: 1 peer reviewed journal articles (SCOPUS, Thomson Reuters, etc.; One (1) Field Guides to ectoparasites in Central Visayas KBAs; Flyers, brochures, posters, and audio-visual materials B.PLACES AND PARTNERSHIPS: MOA with selected stakeholders (LGUs, Academe, and NGOs); MOA/MOU/Commitment agreement between and among stakeholders, LGUs C.POLICIES: Policy input recommendation based on result in support of environmental health ordinances D.PATENTS: Copyrights of the guidebooks and other IEC materials pertaining to ectoparasites in Central Visayas KBAs. E.PRODUCTS: Voucher specimens of ectoparasites; Updated database of information in Central Visayas KBAs featuring ectoparasites F.PEOPLE AND SERVICES: At least 30 People trained in dissecting and identifying ectoparasites including 11 project team members (project leader/study leaders/research assistants) and at least 30 BSc Forestry students.; Conduct 2 trainings on Ectoparasites Processing Protocol, Ecological Statistics on Species distribution modelling using R, and GIS. G.SOCIAL IMPACT: The output of this study will create awareness to people in the project sites about ectoparasites of bats. H.ECONOMIC IMPACT:Source of revenue when cave is engage in eco-tourism	CTU	A) ACADEME (Faculty, Researchers alike and Students) B) PROVINCIAL AND MUNICIPAL LOCAL GOVERNMENT UNITS (LGUs) C) ENVIRONMENTAL NON-GOVERNMENT ORGANIZATIONS (NGOs) D) GOVERNMENT AGENCIES - DENR (BMB AND ERDB) E) SCIENTISTS, ENVIRONMENTAL ENTHUSIASTS, PRIVATE INDIVIDUALS AND GROUPS F) FOREST COMMUNITIES (COMMUNITY RESIDENTS) G) VARIOUS STAKEHOLDERS	01-Dec-20	30-Nov-22	COMPLETED	3,500,000	889,419.09

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Diversity, distribution and conservation status of Anuran species in Mananga and Kotkot Watersheds, Cebu, Philippines	Rapid, Inclusive and Sustained Economic Growth	Cebu Island is in Central Visayas, Philippines, is the most denuded place in the country's central region (Collar et al., 1999). Records show that Cebu Island's forest cover is less than one percent of its total land area (Mallari et al., 2001). The region's high rate of deforestation has seemingly led to the local extinction of wildlife and many birds (Brooks et al., 1995; Rabor, 1959; Magsalay et al., 1995; Brooks et al., 1995; Collar et al., 1999). Moreover, deforestation has severely disturbed important ecosystems on the island including watershed forests and river watershed reserves that support the growth of both aquatic and terrestrial species. In Cebu, two critical watersheds namely, Mananga Watershed Forest Reserve and Kotkot River Watershed Reserve that supply water to the metropolis of Cebu City have been reported to be in bad shape due to the fast-growing number of people living within the vicinity of its basins accompanied by the destructive anthropogenic activities (Quimio, 2006; DENR, 2008). Amphibians, such as anurans, are dependent on terrestrial and aquatic environments, making them good biological indicators of environmental health (White, 1999). However, the local population of anuran species in disturbed ecosystems is greatly decreased with the increased habitat destruction and loss (Parris, 2004) as land-use changes can be unfitting for anuran survival and reproduction (Faruk et al., 2013). Yet, in some instances, anuran species that have high fecundity (Williams & Hero, 1998) seem to survive in disturbed ecosystems (Gibbs, 1998) though it is not guaranteed that they will continue to thrive in such situations in the long-run. If such situation persists, the decline of the anuran population may still lead to extinction (Jose, 2012), significantly impacting environmental processes and ecological functioning. Anurans are not only important in the balance of the watershed ecosystem. They also have economic value within the ecosystem. Particularly, anurans have been significant predators of insect pests that either destroy crops or transmit diseases. They are also served as food delicacies in some parts of the country either for local consumption or for commercial export, though wild species are not edible but rather poisonous. Moreover, the secretions of anurans are important in the production of anesthetics, painkillers as well as antibiotics (insert reference). Further research on the use of these anurans may unfold more economic potential in them.	Publications Year 1IEC materials (brochures) on the diversity of anurans associated flora and fauna in Mananga and Kotkot WatershedsAt least 1 paper presented in a scientific conferencePhoto and video documentation of Anuran and life forms in the two watersheds Year 21 Monograph of Species of Anurans in the two watershedsPaper for Publication on the impacts of watershed alteration on Anuran populationScientific paper submitted for publicationPatentsYear 2Copyrights of Guidebook ProductsYear 1Information on taxonomy, diversity, and ecology of Anurans and associated flora and fauna, GIS maps of the Anuran collection sitesGIS maps (Resource / Location Map) of watershedsDatabase (content build-up)Year 2Species listing of Associated flora and fauna associated with watershedsZoning plan of watersheds reflective of research, gleaning, reserve and tourism areasFarmers Alternative Livelihood PlanDatabase (content build-up) People and ServicesYear 1 and 24 Personnel trained in collection of samples and laboratory work;6 undergraduate students mentored Places and PartnershipYear 12 project sitesCollaboration with DENR, DA and LGUs of Talisay City and MingalnillaYear 22 project sitesCollaboration with DENR, DA and LGUs of Liloan and Compostela Policies Year 2Policy recommendation on watershed and anuran conservationPolicy recommendation on the control of extraction of some valuable species in the watersheds for sustainability	CTU	1. Municipal Local Government Units and Barangay Local Government Units2. Policymakers3. Academe, researchers, and environmentalists4. People€™s Organization and Local Communities; Women and Men and Youth Groups	01-Nov-22	31-Oct-24	ONGOING	5,000,000	3,323,367.80
	Evaluation of Philippine Bamboo Species for Textile Material (Old Title: Proj. 2 Bioprospecting the Philippine Bamboo Varieties/Species for Textile Fiber)	Rapid, Inclusive and Sustained Economic Growth	Sustainability of raw material is imperative for this research and this can be through proper cultivation and management. Having the desired fiber properties at hand, the performance of the bamboo production on a per hectare basis from planting to selective harvesting until utilization will be profiled. For the Y1 bioprospecting activity of the project, the Carolina and Ed/Flor Garden in Antipolo, Rizal will be tapped as a partner for the different bamboo species/varieties in their possession. Initially, six (6) already identified bamboo species will be screened for year 1 and another six (6) will be screened for year 2. The selection process for candidates in year 2 will be performed in year 1 following a criteria of properties optimized for yield and processing. If not available in the same region, other provinces, e.g. Pampanga, Ilocos, Abra, and Iloilo in the Visayas all of which have robust bamboo species, will be visited for inspection of potential candidates. The project also utilize this opportunity to build relationship with potential fiber processing technology adopters during the collection of bamboo poles and extracting fiber with properties optimized specifically for textile production. It will establish a model textile fiber facility consisting of all equipment necessary for the production of bamboo fiber for textiles. The fibers will then be sent to the laboratory of PTRI for fiber testing and characterization. The extracted textile fiber for each species will be characterized for its fiber property and processability. A laboratory pretreatment trial will also be conducted using the optimized pretreatment for Kawayang Tinik. A spinnability trial will be conducted using the mini-spinning machine to determine the yarn processability of every treated fiber.	Publications One (1) Technical paper submitted to a peer-reviewed journal (Y2) Patents/IP Two (2) IPs on natural fiber blended yarns/fabric developed resulting from screened species (Y2) Products At least twelve (12) of bamboo variety profiled for fiber extraction for textile manufacturing (Y1) At least six (6) prototype bamboo fabric from the identified species/variety (Y1) People services 4 personnel trained for bamboo cultivation practices based on local seminars or courses available online (Y1) Places and Partnership 2 linkages forged (Y1) Social Impact Bamboo can be easily transformed into a cash crop. Hence, it helps in easing the plight of poor farmers engaged in its production, By maximizing the use of bamboo other than producing products like furniture, handicrafts and construction materials, it will help increase job creation to stimulate economic growth particularly for the marginalized sectors in the countryside. The utilization of bamboo fiber for the manufacture of yarns and fabrics will increase the demand for the fiber supply which will benefit the	PTRI	Beneficiaries 1. Farmers/farming communities 2. Spinning mills 3. Weaving and Knitting companies 4. Handloom weaving communities 5. Fashion design industry 6. Uniform manufacturer 7. Government employee 8. Garment Producers/Retailers	01-Mar-21	28-Feb-23	ONGOING	9,998,099	2,257,481.93
	Evaluation of Promising Rubber Clones as Clonal Rootstocks	Rapid, Inclusive and Sustained Economic Growth	In line to the rubber industry problem related to the low productivity of the crop, selection of the seeds for rootstock is one of the factors contributing to the growth development that partly governs the yield of rubber tree. One major concern is the limited information on rootstocks that is suitable for propagation. Commonly, small-hold farmers were originally established with rootstocks from unselected sources of seeds. The use of varying unselected seeds will lead to considerable heterogeneity resulting to lower yield (Senanayake et al., 1968 as cited by Wiredo, 2015). The performance of the parent tree as the source of seeds is one thing to consider. Stock seedlings from clones with good performance producing vigorous roots is a good choice as it significantly improved the yield of the crop (Smith et al. 2008). Various promising rubber clones are newly introduced in the country and these could be a potential use as seedling stock. This study will evaluate the seedlings of these clones under nursery and field trial. Clonal rootstocks that possess commendable growth development will be recommended.	Publication: Flyers, leaflets, terminal reports, posters, journalPatent: NoneProduct: NonePeople: Rubber farmers, nursery operators, rubber stakeholdersPlace: NonePolicy: Use of recommended clones as clonal rootstocks	Department of Agriculture - Regional Field Office IX	Rubber farmers Nursery operators Rubber stakeholders	01-Jul-22	31-Dec-24	ONGOING	4,447,660	2,557,278.26

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Field trial plantation of indigenous tree species for the wood-based industry in Laguna and Quezon	Rapid, Inclusive and Sustained Economic Growth	Wood supply and demand study on Region 4-A by Villanueva et al, 2010 reported that the region's wood supply has been declining over the years. To satisfy the demand for wood, Region IV-A continues to import its wood supply from other regions and abroad. Based on the study, the gap between the wood demand and supply may narrow down if the industry €œfinds an alternative material to wood; the existing forest degradation is stopped; and more commercial plantations will be developed to meet local demand for timber.€• Highlighting the need to develop commercial or industrial tree plantations, ITP program in the Philippines has a lot of potential (Paler, Shinohara, del Castillo, & Nomura, 1998) in aiding the future of the wood-based industry. The DENR€™s Forest Management Bureau (FMB) estimated that the country requires 6 million cubic meters of wood-based on the average consumption from 2006 to 2014 (2019 Wood Summit, https://forestry.denr.gov.ph). Per FMB records, wood industries are still importing around 4 million cubic meters of round wood equivalent, as our local production only provides less than 1 million cubic meters (https://businessmirror.com.ph/2021/05/29/blessing-for-the-forest/). Hence, there is a need for around 42,000 hectares of mature plantation annually in order for us to be self-sufficient in meeting the wood requirements for the country. There is a need to promote indigenous tree species for plantation development as well as develop a science-based selection protocol for superior trees, as the future sustainability of the wood-based industries rests largely in developing ITPs with high-quality seedlings The provinces of Laguna and Quezon are known for their wood and wood-based industry. Paete has a great reputation for handcrafted wooden products, being named the €œCarving Capital of the Philippines.€• Other wood-based industries in the province are the following: JOPA Enterprise in Pagsanjan, Laguna manufactures chopsticks, toothpicks, ice cream spoons, lollipop and popsicle sticks from malapapaya, Pallet maker and producer in Atimonan, Quezon, New Gumaca Woodcraft Multi-Purpose Cooperative in Gumaca, Quezon; furniture maker	6Ps Publication Year 1 One (1) news and feature article of ITS for the wood-based industryTwo (2) training modules on seeds and fruits collection; and seedling production of ITS Year 2 One (1) IEC material in the form of a promotional pamphlet on ITS for the wood-based industry in Laguna and Quezon Year 3 Draft one (1) scientific article submitted for publication in peer-reviewed journal Year 4 One (1) news article on field trial establishment, layout and management Year 5 One (1) news feature article on develop 6 ha seedling seed orchards (SSO) from the established field trial plantation for the 3 species Patents Year 2 Application for copyright of the training modules Products Year 1 Spatial distribution maps of mother trees per species, with their phenology (fruiting and collection period) scheduled documented for the identified ITSFour thousand (4000) quality seedlings of P. nodosa, M. azedarach and L. cordata for field trial produced Year 2 Six (6)	UPLB-CFNR	The target industries to be catered and possible adoptors of the project are the following: Wood carvers of Paete, manufacturers of chopsticks, toothpicks, ice cream spoon, and popsicle sticks from Malapapaya in JOPA Enterprise Pagsanjan, Laguna, Pallet maker and producer in Atimonan for Laguna Southwood Products Inc (LSPI) in Laguna, New Gumaca Woodcraft MultiPurpose Cooperative in Gumaca, Quezon, lumber, sash factories, and furniture maker and designer of Canes Furniture in San Pablo City, Laguna, Laguna handicraft maker in Mulanay, Quezon, R.I Ordonez wood trading and woodcrafts in Calios, Sta. Cruz, Laguna and JMD Trading Sash Factory Furniture and Design in Candelaria, Quezon. Other beneficiaries will include upland farmers, wood-based industries, Provincial and concerned municipal LGUs, business partners, DENR Regional and Provincial Offices, Research Institutions, community residents in the project sites, and other interested groups who will be provided with better income opportunities through the establishment of field trial site for plantation development, increased supplies of raw materials, increased business activities and increased economic and	01-Dec-22	30-Nov-27	ONGOING	8,248,000	2,712,780.56
	Field verification of bamboo textile fiber technology using Giant bamboo (Dendrocalamus asper) in Northern Mindanao	Rapid, Inclusive and Sustained Economic Growth	In support of the CMU-Bamboo NICER R&D Center in Bukidnon, this project shall innovate in the utilization of giant bamboo (Dendrocalamus asper), endemic in Northern Mindanao, for natural textile fiber processing, upskill Higher Education Institute (HEI) personnel, students, laborers, and farmers, and establish a local Bamboo Textile Fiber Innovation Hub (BTFIH) in the region. The BTFIH shall provide cost-effective alternatives for textile processing out of giant bamboo in Northern Mindanao, as well as address the usage of underutilized sections of giant bamboo in manufacturing engineered bamboo. This project will verify the fiber processing and extraction of giant bamboo at the community level and process them into yarns. The same procedure will be conducted such as mechanical extraction, alkali treatment, yarn processing, and weaving of prototype fabrics. This project will also explore textile machinery innovation approaches related to bamboo textile fiber manufacturing in order to further improve its function, reduce production costs, and ensure ergonomic production and proper operation procedures. The initiative of this endeavor aligns with the goal of the CMU-Bamboo R&D Center to achieve sustainable management and utilization of bamboo resources, as well as in promoting industrial competitiveness and regional development of the region€™s bamboo industry.	Publication: One (1) publication on by-product utilization of engineered bamboo products One (1) publication on field verification of textile processing application using Giant bamboo (Dendrocalamus asper) One (1) publication on bamboo-related textile machinery fabrication and performance evaluation Patent: Two (2) utility models on Bamboo Slatting Machine and Bamboo Textile Fiber Extraction MachineProduct: 60kgs 75/25 Polyester/Bamboo and 60kgs 75/25 Cotton/ Bamboo (Y1) 200 meters fabric made from 75/25 Polyester/ Bamboo 200 meters fabric made from 75/25 Cotton/ Bamboo Two (2) apparel (tops) for each fabric produced from giant bamboo 80kgs yarns made from 75/25 Polyester/Bamboo and 75/25 Cotton/Bamboo (Y2) One (1) fabricated Bamboo Slatting Machine One (1) fabricated Bamboo Textile Fiber Extraction Machine People: At least ten (10) HEI personnel and students in CMU trained in material preparation, equipment operation and maintenance, fiber extraction, and treatment. (Y1) At least ten (10) farmers/laborers//technicians trained in material preparation, equipment operation and maintenance, fiber extraction, and treatment. (Y2) At least ten (10) HEI personnel and students in CMU trained yarn production.(Y2) At least six (6) personnel and students of CMU or members of the community trained in handloom weaving (Y2) Place: One (1) linkage established in Central Mindanao University (CMU)	DOST PTRI	The target beneficiary of this project is mainly the Central Mindanao University (CMU) which is in line with the initiative of CMU-Bamboo R&D Center in Bukidnon. Regardless, farmers/cooperatives may still benefit with this project in securing a steady supply of giant bamboo poles. This project will also benefit the local handloom weaving community in Northern Mindanao and its craft makers.	01-Jul-22	30-Jun-24	ONGOING	18,327,898	6,697,074.00
	Field Verification of Innovative Technologies on Rubber Farming System	Rapid, Inclusive and Sustained Economic Growth	The establishment of rubber farm by testing the effectivity of innovative approach on rubber farming system that aims to produce a sustainable higher production of rubber cup lumps.This project will generally achieve the following;Shorter maturity period starting at 3.5 yearsHigh percentage of productive trees up to 100% by year 5Uniformity of standsShorter trees that mitigate the impacts of strong winds.Contribute to the poverty alleviation of the farmers.	Publication: Production of IEC Materials (this will be undertaken during the year 3 of the project) Establishment of Rubber Model Farm using advanced rubber farming technology. Publishable articles to be submitted to scientific journals (referred journals)Patent: Rubber Production Training ManualProduct: Rubber Training Materials People: Training on the new technology in rubber production will be conducted.Place: Memorandum of Agreement/Understanding between 3 collaborating agencies for this project ASSCAT- San Teodoro, Bunawan, Agusan del Sur AMARBEMCO-Prosperidad, Agusan del Sur PHAVI- Makilala, North Cotabato PGAS-Provincial Government of Agusan del Sur Policy: .Inputs to protocol for establishment of rubber farm using	ASSCAT	AMARBEMCO ARUPA Rubber farmers of Trento, Agusan del Sur Rubber farmers of Butuan City, Agusan del Norte	01-Oct-22	30-Sep-25	ONGOING	4,957,522	2,010,173.97

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Field Verification of the Bamboo Textile Material Production and Treatment Technology(Old Title Proj. 1 Field Verification of the Bamboo Textile Fiber Production and Treatment Technology)	Rapid, Inclusive and Sustained Economic Growth	The bamboo fibers and fabrics that flood the market are products from the regenerated cellulose process. The downside to this process is the generation of toxic by-product gas CS2 poses a high risk to the people working in the manufacturing facility and also pollutes the environment. This prompted the DOST-PTRI to develop more environment-friendly processes to extract bamboo textile fibers. The methods include mechanical extraction, alkali treatment, and further mechanical processes. Bamboo fabrics are often referred to as bamboo linen possessing the characteristic grains of the extracted fibers. PTRI-developed technology on the extraction of bamboo textile fibers provides diversification and a value-adding proposition to bamboo utilization. This project will verify the technology/data and economic figures on the mainstreaming of bamboo textile fiber extraction at the community level. With as much as a 15x increase of per kilogram of bamboo when converted to fiber compared to the P5/kilo for a 20 kg, 20m pole, it hopes to ensure that the value addition is justly shared to the farmer. Areas under consideration include Terra Verde (Maragondon, Cavite) and Timpuyog ti Casilagan (Brgy Casilagan, Naguillan, La Union). This will include the integration of communities into bamboo fiber processing hubs where its members individually partake in gathering and fiber extraction in their homes and converge to the hub for the pooling and use of some equipment. the output then proceeds to the bench-scale treatment that renders these extracted fibers into spinnable forms ready for textile use. The community-based deployment enables the communities to partake in the most extensive material transformation thus leaving a considerable part of the value in the community as well.	Publications One (1) Technical paper submitted to a peer-reviewed journal (Y1) Patents/IP Three (3) IP filed: One (1) on natural fiber blended yarns developed resulting from community-based extraction. (Y1) One (1) on modified processing condition for treatment (Y2) One (1) on machine design and fabrication for fiber extraction (Y2) Products At least two hundred (200) kg of the extracted bamboo fiber system (Y1) One (1) optimized technology verified (Y2) Ten (10) kg treated bamboo Ten (10) kg bamboo blended yarn (Y2) People services Twelve (12) personnel, six (6) local members from each of the communities, will be trained and educated in operating the machines and performing the fiber treatment, retting, and extraction.(Y1 and Y2) Places and Partnership 2 linkages forged Social Impact Bamboo can be easily transformed into a cash crop. Hence, it helps in easing the plight of poor farmers engaged in its production, By maximizing the use of bamboo other than producing products like furniture, handicrafts and construction materials, it will help increase job creation to stimulate economic growth particularly for the marginalized sectors in the countryside.	PTRI	1. Farmers/farming communities 2. Spinning mills 3. Weaving and Knitting companies 4. Handloom weaving communities 5. Fashion design industry 6. Uniform manufacturer 7. Government employee 8. Garment Producers/Retailers	01-Mar-21	28-Feb-23	ONGOING	10,878,099	2,042,024.80
	Forest Tree Seed Quality Enhancement and Development of MTSC - Seed Tracking and Information Database System (Old Title: "Seed Quality Enhancement of Selected Forest Tree Seed and Development of Mindanao Tree Seed Center - Seed Tracking and Information Database System")	Rapid, Inclusive and Sustained Economic Growth	Caraga Region is known as the €œtimber corridor€•of the country. In 2017, the region is the top producing wood based industry which contributes 492,525 cu.m or 67.15% of logs produced, 30,584 cu m or 72.8% of veneer produced, and 110,647 cu.m or 63.2% of plywood produced. Tree plantation development is very necessary to sustain and improve the current production of wood based industries. In tree plantation development, using quality and improved seeds is very vital component of industrial tree plantation. A €œQuality seed€•s an attribute to produce a good yield, quality of wood based product and dictates high market value. In Caraga region, it was projected an area of 429,642 has. of forestland (opened), Community based Forest management Agreement(CBFMA) area and private tree farms have been identified that demand 37,124 kgs. of seeds of ITP species (Table 1). This tree plantation requires large volume of quality seeds to cater the current demand in Caraga region, less to mention the increasing tree plantation activity in Region 10, 11 and 12 in Mindanao. Mindanao Tree Seed Center (MTSC) is a distinct tree seed center of the country operated for a decade. The MTSC caters the production of quality seeds to support the industrial tree plantation of the country. Likewise, the center also serves as gene bank of high valued plant genetic materials that are risk for extinction and potential for advance scientific research. In 2008, the center was initiated and capacitated from the convergence initiative of DENR €"ERDS 10, 11, 13 through the support of AUS-AID Public Sector Linkage program by the Commonwealth Scientific and Industrial Research Organization, Australia. In 2009, DOST-PCAARRD approved €œITP Action Program on the Establishment of Commercial Plantation and Efficient utilization of Wood Products in Caraga.€•Project 1.1. Seed Collection and Management of Mindanao Tree Seed Center cum Production of Quality Seedlings (2009 -2012), this support initiated the full operation of MTSC that serves ITP tree famers of the country by providing quality seeds. By then, MTSC partly sustain its operation from the revenue generated from its operation, however it was not continued due to the promulgation of new policy of the bureau. Recently, the center relies on the minimal support from the national project to sustain the operation. In effect, some activities to improve our services were limited.	First Year - Developed seed technology on seed fortification, coating and pelletizing of forest tree seeds of nine forest tree species (i.e. falcata, mangium, yemane, kamagong, malapapaya, big leaf mahogany, nato and 2 dipterocarp species) from three (3) different seed storage classification - Determined the effect of various parameters on the tree seed quality enhancement treatments in the laboratory. - Consolidated seed information data for the development of seed tracking and information system. Second Year - Established three field trial experiments in the mined-out area, reforestation area and production forest. - Determined the effect of various growth parameters on the three field trials of the significant developed protocol of improved and enhanced tree seed. - Developed and adopted the seed tracking and information system Third Year - Identified the significant seed quality enhancement treatments in the three field trials for patent recommendation and production of improved and enhanced tree seeds. - Developed and adopted the tree seed tracking and information system - Submitted manuscript to scientific journal - Prepared terminal report for submission to PCAARRD	ERDB	€c DENR and corporate tree growers (IFMA) €c Mining companies for mined-out rehabilitation €c Community Based Forest Management Agreement holder through the people€™s organization. €c Small-scale tree farmers-small scale tree farmers/ private tree farmers engaged in tree farming €c Tree seed enterprise €c Academe, Researchers €c Forest managers	01-Jul-20	30-Jun-23	ONGOING	4,999,985	812,403.85
	From Waste to Wealth: Production of Nanosilica from Bamboo Harvesting and Processing Wastes (W2W-Bamboo)	Rapid, Inclusive and Sustained Economic Growth	The project will document and characterize the different forms of bamboo wastes generated during the harvesting and processing of bamboo and explore the generation of value-added products from these wastes. The objective of the project is within the scope of the research priorities under the Harmonized National R&D Agenda in Agriculture, Aquatic, and Natural Resources, cutting across innovative product development and value addition agenda specifically for bamboo, which is considered a priority commodity.In the course of processing bamboo, different forms of wastes are generated. Tops, branches, and leaves are left behind during harvesting, while trimmings, shavings, and saw dusts are generated during processing. More wastes are expected to be generated from the industry with the promotion of more investments in the local bamboo sector as the Philippines is being pushed to become a key player in the global bamboo industry. However, limited information is available about these wastes, especially those generated by our local bamboo processing industry. Hence, the documentation and characterization of these wastes or by-products specific to the local settings will provide valuable information.The prospects to be explored include the synthesis of nanosilica particles and the application of these nanomaterials to wood and bamboo modification for enhanced properties. The transformation of the bamboo harvesting and processing wastes into these products will contribute to the optimal utilization of the resource. Feasibility studies form another important component of the project to examine the viability of producing nanosilica from the wastes and its application to wood and bamboo modification, and determine the factors that can lead to their success. Bamboo waste valorization may create markets that will bring about additional opportunities and income for the different players in the bamboo industry and additional total value added to the supply chain, which ultimately will contribute to the creation of wealth from wastes being envisioned by the project.	Publication Year 2: One (1) IEC material, i.e., information bulletin/brochure on utilization of bamboo harvesting and processing wastes; Drafts of two (2) scientific articles for possible publication in peer-reviewed journals Patents Year 2: Invention disclosure application for the developed protocols for the production of nanosilica from bamboo harvesting and processing wastes Products Year 1: Nanosilica from bamboo harvesting and processing wastes; Year 2: Wood and bamboo modified with nanosilica People Services One (1) technical personnel trained; Two (2) graduate/undergraduate students with thesis on the utilization of bamboo harvesting and processing wastes Places and Partnership Improvement of the DFPPS Wood Chemistry and Forest bio-Materials Research Laboratory; One (1) industry partnership Social Impact This project aims to make Filipinos become more aware of the efficient utilization of bamboo resources through valorization of its harvesting and processing wastes. Economic Impact The project situates itself as part of the plan geared towards the alleviation of the economic status of smallholding bamboo farmers. In addition, this project is expected to improve competitiveness	UPLB	The target beneficiaries of this project are bamboo processing companies, bamboo plantation farmers, related downstream industries, and consumers who are willing to use sustainable and environmental-friendly products from bamboo processing wastes.	01-Dec-22	30-Nov-24	ONGOING	4,999,782	2,898,522.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Germplasm Conservation and DNA Marking of Selected Priority Industrial Tree Plantation Species	Rapid, Inclusive and Sustained Economic Growth	Eucalyptus deglupta Blume (Myrtaceae) commonly known as €œBagras,€ or €œRainbow eucalyptsâ€ •€œMindanao Gum,€ or €œRainbow Gum,€ is the only eucalyptus tree species found in the country, naturally distributed in Eastern and Southern Mindanao. Endospermum peltatum Merr. (Euphorbiaceae) and Casuarina equisetifolia Forst. (Casuarinaceae) are widely distributed throughout the Philippines. These forest tree species significantly contributed to the timber industries in early 70€™s to 80€™s, used as raw material for pulp and paper, poles, lumber, veneer and plywood, matchsticks and various forest products. Significant variability on various economic traits (wood quality and yield and resistance to pest) exists among populations of E. deglupta, C. equisetifolia and E. peltatum. Encouraged by this potential, in the 1970s, the Paper Industries Corporation of the Philippines (PICOP) ventured in the domestication of these species. They identified different wild populations and collected some genetic materials from its natural range in Eastern Mindanao for E. deglupta and other parts of the country for C. equisetifolia and E. peltatum to developed a industrial tree plantation. The company employed advanced research on tree improvement and produced a series of hybridization and infusion of other genetic materials from the other country. In the case of E. deglupta it was found out that the different provenances exhibit different morphological characteristics and growth performance. A provenance trial had been conducted in a limited area in PICOP in 1976, but there are no available records of seed sources. Growth and yield of E. deglupta plantations remain lower than expected, mostly due to poor genetic selection of seed sources and poor silvicultural practices. Further, the closure of PICOP in the 2000s is one of the timber industry€™s despondent times. All of the advance researches on tree improvement were halt and their efforts on tree breeding program were wasted. In 2012, the DENR-ERDS13 (recently the FWRDEC-ERDB) established the first generation progeny field trial/Seedling seed orchard(SSO) of E. deglupta, that composed of 31 individual families from tree plantations and one family from wild population. After six years, second generation progeny field trials/SSO were established in region 9, 10 and 13. Growth performance was observed in these field trials which later on will be converted into SSO to produce quality seeds.	PublicationOne draft manuscript of publishable article on Genetic diversity and structure of the E. deglupta, C. equisetifolia and E. peltatum used in the ex situ conservation siteProduction of 200 leaflets on E. deglupta, C. equisetifolia and E. peltatum species profile for distributionProductsMaps of identified clustered wild population of E. deglupta, C. equisetifolia and E. peltatum50 specimen for germplasm production and DNA genotype profiling collected1.5 hectare Ex-situ conservation areaestablished250 Genetic material for tree breeding and other by products utilizationPeople servicesMentoring of 4 undergraduate/graduate studentsPolicies	ERDB	Researchers, Academe, Tree farmers and other stakeholders	01-Mar-21	29-Feb-24	ONGOING	4,999,000	1,427,067.66
	Greenhouse Gas Inventory of Industrial Tree Plantation (ITP) Production Chain in Mindanao (Phase 2)	Integrity of the Environment and Climate Change Mitigation and Adaption	In 2019, the UPLB-CFNR successfully completed a one-year DOST-PCAARRD-funded research project in Caraga Region. The study involved inventory of GHG emissions from ITP activities that include harvesting, minor and major log transport, and veneer and lumber production. It also included determination of carbon stored in durable wood products particularly lumber and veneer. However, due to budgetary and time constraints, the study focused only on the GHG accounting of harvesting activities, transport and primary processing of falcata into lumber and veneer. It excluded carbon stock assessment of falcata plantation and secondary wood processing including its wastes and by-products. Thus, there is a need to conduct a study covering the remaining ITP activities and processes in the production chain to be able to come up with the complete assessment of GHG fluxes in the sector and demonstrate its role in mitigating climate change and highlight its economic viability and contribution to sustainable forest resources management.	Year 1 1. List of cooperators and target small-hold tree farmers, ITP owners, and IFMA holders 2. Location map of small-hold tree farms, ITP, and IFMA study sites 3. Tree inventory and biomass samples of understorey/ herbaceous (UH), litter/necromass, and soils in selected study sites collected 4. Preliminary calculations on carbon stored in tree biomass, UH/litter/necromass, root biomass and soils in selected study sites 5. Calculated GHG emissions from land clearings used for tree plantation development 6. Signed memorandum of agreement/ understanding between DENR and tree farmers, ITP owners, IFMA holders, and collaborating wood processing plants (WPPs) Year 2 1.Calculated carbon stored in tree biomass, UH/litter/ necromass, root biomass and soils in selected study sites 2. List of secondary wood processors 3. Types of secondary wood products produced by the ITP sector 4. Gathered samples on secondary wood products and their by-products for laboratory analysis 5. Preliminary calculations on GHG emissions from secondary wood and by-products processing ;Year 3: 1. Calculated GHG emissions from secondary wood and by-products processing 2. Carbon stored in durable wood products 3. Calculated total GHG storage and emissions from the ITP sector 4. Calculated net GHG fluxes from the ITP sector 5. Recommend protocols and policies to reduce GHG emissions from the ITP sector 6. Trained twenty (20) selected DENR and forestry school€™s research staff, and wood producers/WPPs on GHG inventory in Caraga Region 7. Patent application on GHG inventory of ITP production chain 8. Two (2) journal articles on GHG accounting in ITP sector 9. Reference data on GHG emissions on various ITP harvesting operations and stored C on harvested wood products (HWP) 10. Determination whether plantations are net sinks or emitters of CO2	UPLB	1. DENR €" for monitoring and evaluation and policy making 2. WPA €" for monitoring and evaluation and policy recommendations 3. Partner SUCs €" for training and research implementation 4. Small-hold tree farmers, ITP and IFMA holders/owners €" for implementation/compliance and guidance 5. Local communities - for implementation/compliance and passing of ordinances/resolutions 6. Wood processing industries €" for compliance and guidance	01-Nov-21	31-Oct-24	ONGOING	4,998,590	1,204,956.00
	Growth Stress Attributes and Measures to Minimize the Wood Defects of Falcata (Falcataria moluccana (Miq.) Barneby & Grimes) Old Title: Growth Stress Attributes and its Measures to Minimize the Wood Defects of Falcata (Falcataria moluccana (Miq.) Barneby & Grimes)	Rapid, Inclusive and Sustained Economic Growth	Falcata (Falcataria moluccana) (Miq.) Barneby & Grimes) tree plantation in Mindanao, Philippines is one of the lucrative ventures of tree farmers. Falcata is widely planted throughout Mindanao and some parts of Visayas and Luzon islands, because of its demands for different wood products. Caraga Region, is declared as the timber corridor of the country as per DENR - DAO no. 99-13. The order supports the timber industry to enhance and develop by providing appropriate land for investment. The region has vast open land, good climatic and environmental conditions ideal for tree plantations. Tree plantations as a common commodity for many decades made this a way of life for many Caraganons. In 2011, the region contributed 60% of the production for wood of the country. Sixty-seven percent (67%) of national log production is from falcata (Falcataria moluccana) trees (FMB-DENR, 2011). It is the major crop raised in the region. Its suitability to the site as exhibited by its fast growth rate; and the high market demand for plywood, lumber, boxes and crates production that encourage more farmers into falcata tree farming. The log demand of falcata increased spontaneously because of the log ban as per Executive order no. 23 (Declaring a moratorium on the cutting and harvesting of timber in the natural and residual forests and creating the anti-illegal task force). Despite this demand the falcata tree farmer recently experienced odd market price on logs because of the log defects e.g. radial cracks at the log-end and lumber crooking during harvesting, that depreciate the value of logs during marketing and this attributes also the low recovery of wood processing. These defects can be attributed to Longitudinal growth stress. Cassens & Serrano. (2004) emphasized that Longitudinal growth stresses are present in all standing timber and cut logs. In fact, if they did not exist, trees could not maintain a vertical position. Growth stresses are not visible although they can be measured and are called growth strain (GS). When trees are felled and cut into logs and logs processed into lumber the results of growth stresses being released become evident. a study conducted by the USDA Forest service showed that on the average 12.6 percent of the potential lumber tally is lost due to multiple defects (Cahill & Cegelka, 1989). Considering the total volume per hectare of falcata that is 30€" 40 m3 /ha (Krisnawati et al, 2011) and the price of falcata per volume which is 4,500 per cubic meter (as reported by Director Ricardo Calderon of DENR-FMB in a news article in 2016) an estimated 22,600 pesos/ha is lost due to wood defects.	The Project will have the following Expected Outputs: 6Ps Metrics Publications €¢One manuscript submitted for publication in peer reviewed journal €¢One paper submitted for publication in peer reviewed journal €¢Production of 200 brochure/leaflets on protocol on how to reduce/minimize falcata log defects Patents €¢1 submitted application for utility model for protocol on how to reduce/minimize falcata log defects Products €¢Identified the Physical, and anatomical characteristics of 12 Falcata (both tension and normal wood) for wet season €¢Identified the Physical, and anatomical characteristics of 24 Falcata (both tension and normal wood) for dry season €¢Determine d the SRS and RRS of 24 trees both wet and dry season (total of 1,248 strain measurements) €¢Two (2) experimental set up on the log treatment €¢1 protocol on how to reduce/minimize falcata log defects €¢Result of benefit cost analysis of treatment to minimize defects €¢Determined the Juvenile to Mature Wood Transition of Falcata People Services €¢1 MS student mentored and 3 undergrad students mentored Places and Partnership	CMU	Tree farmers and private plantation owners in Mindanao, academes and researcher	01-Nov-21	31-Oct-24	ONGOING	5,000,000	500,570.80

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Integration of Traditional and Modern Bioproduction Systems for Sustainable and Resilient Future Under Climate Ecosystems Changes (ITMoB)	Rapid, Inclusive and Sustained Economic Growth	Consistent with the global and regional efforts towards pursuing a more sustainable and climate resilient development pathways, the Philippine's National Climate Change Action Plan (NCCAP) comprehensively addresses the primary goal of increasing natural ecosystems' resilience to climate change to promote a climate risk-resilient Philippines. The NCCAP identified seven strategic priorities to sustainable and climate resilient development pathways. These are food security, water sufficiency, environmental and ecological stability, human security, climate-friendly industries and services, sustainable energy, and knowledge and capacity development (Climate Change Commission 2011). This project is a multilateral cooperative research between Japan, Indonesia and the Philippines under the e-ASIA Joint Research Project. However, the outputs enumerated in this proposal is exclusive to the Philippines only and hopes to contribute to the goal of NCCAP.	Database of traditional and modern bioproduction systems in Japan, Philippines and Indonesia jointly developed by participating research team and made accessible online to other researchers following a specific protocol. Framework document co-developed by project partners from Japan, Philippines and Indonesia and validated by key stakeholders detailing the process of creating multiple scenarios of bioproduction systems to determine sustainable and resilient future under climate and ecosystem changes. The framework can also guide the scaling up of the project to other areas in the participating countries for broader impacts. Analytical report on the detailed assessment and predicted impacts on selected bioproduction systems under multiple future scenarios in the project areas in the context of climate change, demographic change and land-use change from 2021 to 2050. Assessment report on the changes in ecosystem services in the project areas produced by selected modern and traditional bioproduction systems under multiple scenarios indicating the potential synergies and tradeoffs between ecosystem services. List of proposed interventions in the project sites to optimize ecosystem services within each scenario based on modeling outputs and consultations with different stakeholders. Workable networking and communication platform developed and institutionalized among project partners in Japan, Philippines and Indonesia like shared data base, project websites, and project output dissemination plan that provides research outputs, policy recommendations, and training materials available to relevant	UPLB	Researchers, academics, and students working on climate change, land use and demographic changes, and ecosystem services Policymakers working on the environment and food security issues Decision-makers like LGUs, national government agencies, and civil society involved in climate change adaptation and mitigation and ecosystem services especially those operating in the project areas Private sectors and development agents with investments/development interventions in the project sites Local communities depending on ecosystem services in the project areas	16-Oct-21	15-Oct-24	ONGOING	17,405,392	2,861,732.00
	Landslide Susceptibility Analysis, Monitoring, Mapping and Early Warning Systems for Selected Areas in the Cordillera Administrative Region	Integrity of the Environment and Climate Change Mitigation and Adaption	Landslides has become a major threat in CAR. Almost yearly, landslides occur induced by storms or major typhoons. Many occur outside of local residences and villages thus avoiding casualties and other adverse impacts. Occasionally, landslides occur in population centers often resulting in significant losses of lives and infrastructures, including buildings, roads, bridges and others.Because of the potential for extensive damage and high risk of lives when landslides occur, systematic efforts to investigate concepts and frameworks for forecasting landslides must be developed. This will help in better understanding of landslides and the causal factors that cause or trigger their occurrence. This project offers a strategic approach to addressing landslides by focusing on the root causes, the trigger factors, and the likelihood or probability of occurrences and the causes. Such knowledge, once generated by the Project, will allow better understanding of the phenomena and its dynamics, and ultimately enables the development of early warning systems. Such an early warning system enables agencies and local organizations to be better prepared, better informed, and affords them the opportunity to be proactive before and during the onset of major storm events, which appear to be the triggering event when landslides occur. Such capability ultimately provides better safety for the local communities, and potential economic benefits to local governments by minimizing economic costs of reconstruction if no mitigative actions are undertaken. Such actions can be planned in advance if adequate advisories can be provided by the early warning system which is one of the ultimate outputs of this project.	Publications Two (2) Publishable articles submitted (ISI and /or SCOPUS Journal) Patents/IP Copyrighted project brochures Patent application for UM on Landslide EWS developed Product 1 geographic database and platform on landslide EWS developed; copyrighted project brochures ; 1 Landslide Early Warning System prototype developed People & Services: 9 trainings for technical staff and 80 professionals (P/MDRRM and P/MPD Officers and researchers) on landslides GIS mapping and database development; landslide inventory survey spatial data generation; analytical tools modelling and mapping; rainfall-induced thresholds development and landslide EWS development conducted Places and Partnership: Partnership with at least six (6) LGUs and/or SUCs Policy 1 Policy briefer onlandslide DRRM	BSU	i¿Some of the more notable beneficiaries of the Project are: the local government units such as DRRMO and Planning and Development Office and their local constituents who are likely to benefit from the early warning systems and the likelihood that preemptive plans can be put in place in terms of proper advisories that can be given to them in advance or prior to the likelihood of landslide occurrence. Other beneficiaries also include professionals who are trained on the different concepts, principles, and tools in landslide assessment, monitoring and early warning systems.	01-Jul-22	30-Jun-24	ONGOING	4,999,442	2,588,220.80
	Management of White Root Rot (Rigidoporus lignosus) Using Endophytic Fungi from the Roots of Healthy Rubber Tree	Rapid, Inclusive and Sustained Economic Growth	White root rot of rubber is the most serious disease affecting in almost all rubber clones resulting in severe loss of production. The infective fungal organism of the white root rot disease is Rigidoporus lignosus (klozsch) Imazeki. It is the main cause of rubber tree losses with 40-60% of the trees destroyed over a period of 21 years. White root rot of rubber is being controlled using chemical fungicides. Aside from additional production cost, the continues use of chemicals becomes a public concern due to its detrimental effect in the environment. With the increasing awareness on environment conservation, it is vital to develop disease management technique which is environment-friendly and reduces the use of chemicals. Using biological control technique is an attempt to reduce the use of chemicals. Fungal endophytes are considered as potential candidate for biological control agent. Therefore, this project will provide information on the diversity of fungal endophytes associated in the roots of healthy rubber and screening for its potential antifungal activities to manage and control white root rot as biofungicide. Mass production of potential fungal endophytes as biofungicide against white root rot disease of rubber may lead to economical disease control that could increase farmers income.	Publications Year 1 -1 information bulletin/brochure on white root rot of rubber Year 2 - 1 article for publication in a refereed journal - 1 handbook guide on white root rot disease of rubber and biological control measure Patents At least one (1) patentable product (biofungicide formulation) using endophytic fungi Products - At least one (1) Formulated Endophytic Fungi as biofungicide. - At least 1 demo farm for field trial/experiments on the efficacy formulated biological control agent against white root rot disease on rubber People Services Year 1 Thesis conducted of at least 1 selected undergraduate student and at least 1 Graduate Student on the isolation and screening of endophytic fungi against WRR. Year 2 At least 1 information caravan conducted on the information dissemination of the new technology. Places and Partnerships Year 1 - Partnership and collaborations with rubber farmer cooperators, SUCs,	DA-XI	The results of this study will be useful to rubber growers especially in small-scale areas, agro-based industries, state universities and colleges, cooperatives and peoples€™ organization that into rubber venture. This also generate and benefit students especially agriculture practitioners that is interested in this new knowledge and information on endophytic fungi and its benefit to disease control.	01-Oct-21	30-Sep-23	ONGOING	5,000,000	1,036,966.10

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Pest and Disease Incidence and Severity in Falcata Plantations in Mindanao	Rapid, Inclusive and Sustained Economic Growth	This project is designed as an initial inquiry or evaluation of pests and diseases incidence and severity associated with Falcata plantations in Mindanao. The main goal is to generate empirical data as basis for IPDM system development and future detailed studies of pests and diseases control and management in Falcata plantations. The empirical data to be generated in this project will be achieved through the systematic sampling of Falcata plantations at various elevation ranges in five regions (i.e. Regions 9, 10, 11, 12, and CARAGA) in Mindanao where plantation forestry is a major source of livelihood for many smallholder farmers. Since the project covers multi-location, the involvement of experts from other SUCs/agencies such as ERDB-FWRDEC and University of Southeastern Philippines (USEP) will be tapped. ERDB-FWRDEC will be responsible in the implementation of the project in CARAGA region, while USEP will lead the project implementation in Regions 11 and 12. The participation of these partner SUCs/Agencies will ensure the simultaneous collection of data especially incidence and severity data and micro-climate data. As the lead agency, CMU will be responsible in the overall coordination and implementation of the project to ensure that the objectives or target outputs of the project are met. Aside from the overall coordination, CMU will handle the implementation of the project in Regions 9 and 10. The empirical data in this project will be generated through established methods and techniques in the parameterization of pests and diseases incidence and severity and will follow usual protocols in the conduct of field surveys such as courtesy calls with plantations owners and reconnaissance survey (Figure 1). The methods and techniques to be used will cover four major activities that include, (i) site characterization, (ii) quantification of incidence and severity of pests and diseases, (iii) geospatial analysis and map generation of pests and diseases incidence and severity, (iv) and statistical modelling looking at the main effects of different site factors and management systems and their two-way interactions on the incidence and severity of Falcata pests and diseases in the five regions. The data and information generated will be used as basis to identify options to control and manage the pests and diseases in Falcata plantations. The data will be consolidated and used for follow-up detailed research in the future on pest and disease control and management including as baseline data for temporal analysis of pests and diseases severity in	Publication One (1) paper is submitted for publication in scientific journal Product €c 5 Falcata plantations for each of the 5 elevation ranges in Regions 9, 10, 11, 12, and CARAGA are identified and selected. €c 125 plantation sites visited €c 123 sampling plots are established and geotagged. €c 123 sampling plots are sampled and characterized €c 123 samples (for insect, soil, and understorey vegetation) collected, analyzed or identified in the laboratory €c Five data sets are consolidated, encoded, verified, and summarized €c 5 sets of secondary information on environmental variables are collected for the 5 Regions. €c One progress report submitted Year 2 €c 150 sampling plots are established and geotagged. €c 150 sampling plots are sampled and characterized €c 150 samples (for insect, soil, and understorey vegetation) collected, analyzed, or identified in the laboratory €c Five data sets are consolidated, encoded, verified, and summarized €c One progress report submitted Year 3 €c 102 sampling plots are established and geotagged. €c 102 sampling plots are sampled and characterized €c 102 samples (for insect, soil, and understorey vegetation) collected, analyzed or identified in the laboratory €c Five data sets are consolidated, encoded, verified, and summarized	CMU, ERDB, USeP	At least five (5) people€™s organizations of tree farmers and five (5) regional offices in Regions 9, 10, 11, 12, and CARAGA, tree farmers and private plantation owners in Mindanao.	01-Jun-21	31-May-24	ONGOING	20,000,000	6,430,757.13
	Production of bamboo pellets for sustainable and alternative source of energy using commercial bamboo species in the Philippines	Rapid, Inclusive and Sustained Economic Growth	According to the United Nations, there is a growing coalition of countries, cities, businesses and other institutions that pledged to eliminate their carbon emissions to net zero including the biggest polluters €" China, the US and EU. This agreement opened up for a growing market demand for renewable energy sources such as biomass pellets which is expected to reach valuation of USD 31 Bn by the end of 2030. The Philippines, which has abundant supply of bamboos for biomass pellet production, has huge potential to enter the market. However, preliminary studies showed that bamboo pellets manufactured in the country require further research so that the properties will meet existing wood pellet standards. The bamboo pellets produced has high Cl and S. The qualities of the bamboo pellets must be improved at par with other exporting countries so Filipino companies can compete with and enter the biomass pellet global market. The study is aligned to the national S&T priorities of the government, i.e., conduct research in (1) forestry and natural resources: bamboo and (2) renewable energy solutions. Once successful, this will generate green jobs, income to micro, small and medium enterprises, and improvement of gender equality in the country. This will also add to the nationally determined contribution of the Philippines in reducing carbon emissions.	PublicationYear 13 local publications1 posterYear 2 3 local publications1 poster1 press releasePatentsYear 11 copyright filed Year 21 utility model filedProductsYear 16 bamboo pellet products (one for each species)Year 26 processes of optimized production of bamboo pellets (one for each species)People ServicesYear 15 student/on the job trainees Year 25 CS First Green AIDI personnel to be trained through a workshopPlaces and PartnershipYear 11 partnership with a university (Laguna State Polytechnic University)Year 21 partnership with a private company (CS First Green AIDI)	FPRDI	The target beneficiaries of the project are industry partners especially bamboo industries, policy makers, government institutions, and biomass and renewable energy sectors.	01-Nov-22	31-Oct-24	ONGOING	4,606,324	3,024,584.00
	Project 1. Inventory and Assessment of Flora and Fauna, and Macrofungi in Mt. Banahaw de Lucban (MT. BANAHAW DE LUCBAN BIODIVERSITY ASSESSMENT, VALUATION AND CONSERVATION PROGRAM)	Rapid, Inclusive and Sustained Economic Growth	This research is one of the component projects of the program of SLSU titled "Mt. Banahaw de Lucban Biodiversity Assessment, Valuation and Conservation Program". This program was initiated by the Southern Luzon State University (SLSU) as part of their responsibilities as steward of Mt. Banahaw San Cristobal Protected Landscape, one of the remaining forested areas in Luzon.	Year 1 Products €¢ Draft GIS maps of the locations of assessed flora, fauna and macrofungi in MBdL People Services €¢ One (1) graduate student and one (1) undergraduate student trained in the inventory and GIS mapping of the locations of flora, fauna and macrofungi in MBdL Places and Partnership €¢ At least one (1) MOA/MOU with selected stakeholders (LGUs, POs and DENR) Year 2 Publication €¢ At least one (1) publication either in a peer-reviewed journal article (ISI-indexed, SCOPUS, Thomson Reuters, etc.), book, or instructional material Patents €¢ Application for patent on the habitat suitability maps of species indigenous to MBdL Products €¢ GIS map locations of flora, fauna, and macrofungi in MBdL €¢ Updated information on the conservation status of flora and fauna	SLSU	Students, faculty researchers; nursery personnel; tree farmers, decision-makers; Government Institutions (DENR, PAMB, LGU€™s); Non- Government Institutions (NGO, PO€™s); SLSU; Students; other academic institutions (SUCs); Researchers; Local communities/stakeholders of MBSCPL and vicinities.	01-Apr-21	31-Mar-23	ONGOING	4,999,926	1,205,766.20

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Quality Assessment of Bamboo fibers from two economically important bamboo species for textile production	Rapid, Inclusive and Sustained Economic Growth	Bamboo is still an emerging technology at the Institute, as evidenced by four (4) PCAARRD-GIA-funded initiatives under the Bamboo Textiles PH trademark. Research and Development activities on the development of bamboo textile fiber began in 2015, as DOST-PTRI devised a fiber extraction procedure for Philippine bamboo types and determined its textile potential, in accordance with the Institute's goal of creating more sustainable products. In the pursuit of sustainability and improvement of the existing innovations of the Institute on bamboo as a textile material, the project aims to establish a plantation of selected bamboo species such as Giant Bamboo and Kawayan-Tinik to assess the harvested poles€™ potential in producing bamboo textile fiber (BTF). Along with pineapple, banana, abaca, and Philippine silk, the implementation of the project will serve as an extra consideration for bamboo to be included in the Implementing Rules and Regulations for Republic Act 9242. The goal of establishing a bamboo plantation is to ensure the long-term viability and availability of bamboo fiber extraction and manufacturing to meet the growing demand in the Philippine textile industry as well as determine the optimal age (6 months, 1 year old, 1 ½ year old, and 2 years old) and morphological section (top, middle, bottom) of two (2) bamboo species for textile use. Results from previous bamboo projects have revealed that Giant bamboo is the best species for fiber extraction due to its high fiber retention, whereas Kawayan-Tinik is a model bamboo species.	PublicationTwo (2) peer-reviewed technical papers Patents/IP One (1) IP/Utility model Products: Year 1300 bamboo seedlings producedEstablished bamboo plantation for D. asper and B. blumeana Year 2Information on fiber yield of the 6 mos old D. asper and B. blumeana * At least 10 kilograms of fiber extracted Information on fiber yield of 1 yr old D. asper and B. blumeana * At least 10 kilograms of fiber extractedYear 3Information on fiber yield of 1.5 yr old D. asper and B. blumeana * At least 10 kilograms of bamboo fiber extractedInformation on fiber yield of 2 yr old D. asper and B. blumeana * At least 10 kilograms of bamboo fiber extractedData on fiber and yarn properties of D. asper and B. blumeana People: At least 10 students/ staff trained in bamboo fiber extraction technology Partnership:	CMU	Farmers/farming communities Fiber Producers Garment manufacturers General Public Fashion design industry Government employees	01-Sep-22	31-Aug-25	ONGOING	5,000,000	1,750,896.00
	Regeneration of Spent Liquor in Bamboo Textile Fiber (BTF) Production Towards Circularity and Efficiency in BTF Processing	Rapid, Inclusive and Sustained Economic Growth	The establishment of various Bamboo Textile Fiber (BTF) Innovation Hubs in different parts of the country comes from the utilization of the Philippine Textile Research Institute (PTRI)-developed BTF Processing Technology that is highly efficient in producing natural, strong, and fine BTFs. As the output material quality is highly considered in such technology, water consumption, and wastewater generation also become an important concern, especially in local communities where wastewater treatment facilities are limited. In this regard, re-utilization and restoration of spent liquor in the BTF processing is a facile and low-cost approach to reduce the water input and output in the production process. In addition, the valorization of the waste liquor through the recovery of the fiber components such as lignin and hemicellulose for carbon-based materials production is a sustainable technique to obtain new functional materials from the generated wastewater. Thus, this project aims to establish a processing technology and system for the efficient and economical utilization and valorization of spent liquor in BTF production and its eventual application to textile manufacturing.	PublicationOne (1) technical paperPatentTwo (2) IP application ProductsOne (1) technology on recycling spent liquor in BTF processingTwenty (20) kg of treated BTF from the two speciesFive (5) kg of BTF blended yarns from each of the two speciesOne (1) technology on recovering waste carbon-based materials from waste liquorPeople ServicesFour (4) staff trained on bamboo textile fiber treatment technologyPlaces and PartnershipOne (1) Memorandum with Bamboo Textile Fiber Innovation Hub in Northern Luzon	DOST-PTRI	(14) TARGET BENEFICIARIES BTF Innovation Hub personnel BTF Innovation Hub nearby community Bamboo textile fiber producers General public	01-Sep-22	31-Aug-23	ONGOING	5,000,000	5,000,000.00
	Rehabilitation and Streambank Stabilization of Catubig River Through Vegetation Engineering Systems Using Bamboo, Nipa, Annona glabra (pond apple), and Mangrove	Rapid, Inclusive and Sustained Economic Growth	The project is an intervention for the Catubig river rehabilitation utilizing vegetation engineering systems through the establishment of bamboo, nipa, Annona glabra and mangrove to control streambank erosion that will stabilize the riverbanks. After stabilization of the riverbanks and successful plantation establishment, utilization of these resources will be pursued in order to gain economic benefits by continuously producing marketable products that could augment the income to farmers through sustainable use of these resources. For several decades, Catubig river continuously deteriorated due to population pressure, enhance economic activity in Catubig Valley and with the recurring weather disturbances due to climate change. The current state of the river is the result of the collective practices and activities that produces major damage to the Aquatic environment due to pollution from solid waste, animal waste, toxic chemicals, sedimentation, conversion, inorganic fertilizer run off and environmental aesthetic degradation. Study of Rebadulla (2004) revealed that the river very low species diversity indices between 0.09 to 0.74 at different sampling areas along the river. Similarly, showed severe stream bank erosion and siltation along the stretch of the river. After heavy rain, water become muddy indicative of erosion in the upper stream. Recently, climate change brought in prolonged high-intensity rainfall and frequent typhoon and low-pressure weather system that causes flooding affecting most of the barangays in Catubig valley. In Catubig alone, 45 out of 49 barangays are prone to flooding. In addition, 70% of the area in Catubig are classified under moderate to very high susceptibility to landslide or streambank erosion (CFNR-UPLB). With climate change impact to Catubig valley, communities are very vulnerable that further aggravate poverty situation in the area.	Publications: Year 1: 1 brochure and 2 press releases/articles about the project; Year 2: 2 promotional materials published; 2 articles published (Data base on streambank status and impact different plantbase bioengineering strategies in stabilizing riverbanks and erosion prevention); Year 3: 1 paper for presentation in a seminar or symposium 2 technical papers for publication in refereed journals; Manual on Bioengineering Protocol on Streambank Rehabilitation and Stabilization using the species used in the project and Training Manual on Nursery Establishment and Planting of the species used in the project Patents: Year 3: 1 Patent for Bioengineering Protocol using bamboo, nipa, Annona glabra and mangrove; 1 Copyright of the Manual Published on Bioengineering using bamboo, nipa, Annona glabra and mangrove) Products: Year 1: 3 temporary nurseries in strategic sites of the project established; Established an equivalent of at least 2 hectares of bamboo, nipa, Annona glabra and pagatpat planted along the streambank of the river; Year 2: 1 Hard Copy of the Training Manual on the Establishment of Nursery for bamboo, nipa, Annona glabra and mangrove; Year 3: 1 Hard Copy of the Manual on Bioengineering Protocol on Streambank Rehabilitation and Stabilization using bamboo, nipa, Annona glabra and mangrove Copyrights of all publications and manuals, and patent for bioengineering protocol People and Services: Year 1: Thirty (30) farmers trained on bamboo, nipa, Annona glabra and mangrove propagation; Thirty (30) LGU agricultural technicians trained; Twenty (20) faculty researchers trained on the use of GIS; Year 2: Graduated 2 MSc scholars in the field of watershed management; Year 3: 1 PhD scholar graduated in the field of Hydrology or Watershed management; 3 LGUs with enhanced river rehabilitation strategies Places and Partnership: Year 1: 3 MOAs established with LGUs of Las Navas, Catubig, and Laoang. ; Partnerships with 30 farmers in the LGUs	UEP	Clienteles LGU's of Las Navas, Catubig and Laoang, Northern Samar DENR The Academic Community	01-Oct-22	30-Sep-25	ONGOING	4,967,592	2,335,864.00
	Resource Assessment and Utilization of Indigenous Fruit Trees in CALABARZON (Old Title: Resource Assessment and Propagation of Underutilized Indigenous Fruit Trees for Natural Food Colorant, and Flavoring Agent)	Rapid, Inclusive and Sustained Economic Growth	The project will focus on the propagation and utilization of native trees which will result in increased awareness and knowledge of their economic importance thereby enhancing the conservation of these species. This project aims to collect and determine the distribution of the fruit trees above in CALABARZON; conduct ethnobotanical and market survey on the traditional and current use of these indigenous fruit trees; and establish protocol for the propagation of these indigenous fruit trees in nurseries. Moreover, this project aims to determine the phytochemical components of above-mentioned indigenous fruit trees; optimize the processing of natural colorant, and flavoring agents in the form of powder, puree and syrup from indigenous fruit trees using the UPLB-DOST Food Innovation facilities (ie. spray, freeze and cabinet dryers, can, pouch and vacuum sealers, and water retort); and determine their functional properties and potential application as natural colorant or flavoring agent in yoghurt and yoghurt drinks, baked products, beverages, confectionary, and meat products. Ultimately, we will recommend which plant species can be conserved or protected for their potential economic values based on the studies conducted.	1.Draft policy briefer/input on natural food colorant and flavoring agent from indigenous fruit trees, their exploration, conservation, propagation, wise utilization, trade and development 2.Optimized processing conditions for natural food colorant and flavoring agent from indigenous fruit trees 3.Optimized protocol for the propagation of the selected indigenous fruit trees	UPLB	Various stakeholders, Tree Farmers/Growers, Farmer organizations, LGUs and NGOs, Students, Filipino Consumers.	01-Aug-21	31-Jul-23	ONGOING	5,000,000	1,187,740.20

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Screening of Potential Endophytes as Biocontrol Agent Against Major and Emerging Diseases of Rubber(Old Title: Development of Biodiversity-based Management Strategies Utilizing Endophytes as Biocontrol Agent Against Major and Emerging Leaf Disease of Rubber)	Rapid, Inclusive and Sustained Economic Growth	Chemical, genetic and cultural practices have been used so far for the control of these diseases, but none has provided sufficient and economical methods for desired results. With the increasing concern in conserving the environment, and reducing the risk of health impact due to pesticides, it is imperative to develop sustainable disease management strategy with emphasis on reducing the use of chemicals such as the exploration of biological control agent utilizing endophytic fungi. Endophytes are considered as excellent candidate for biological control which exist ubiquitously in plant hosts which may provide defense mechanisms against pests, pathogens and adverse environmental conditions (Puig and Cumagun, 2019). Hence, this study was conceptualized.	At the end of the project, the following are the expected outputs: 1. Quantified disease severity of major and emerging leaf diseases of rubber in the different plantation areas/locations in North Cotabato. 2. Collected at least 100 endophytic fungi associated with rubber in North Cotabato. 3. Determined at least 1 effective endophyte (in vitro and in vivo) and determined mode of action (mycoparasitism, antibiosis, production of volatile compounds) against leaf diseases of rubber. 4. Identified effective endophytic fungi and generated DNA sequences and pure culture of the microorganism to be deposited in the database and culture databank. 5. Confirmed the endophytic nature/endophytism of at least 1 effective endophytes: the proof of an effective/potential biological control agent	USM	The results of this project will be beneficial to rubber growers both in nursery and small-scale areas, other agro-based industries, different government agencies such as DOST, DA. The information on antagonistic microorganisms generated in this project will also benefit the students, scientists, and other agriculture practitioners and will be recognized as new information in science particularly in plant health both for national and international levels.	01-May-21	30-Apr-23	ONGOING	5,000,000	1,427,897.30
	Smart Cacao Budwood Nursery and Greenhouse for Production of High-Quality Planting Materials	Rapid, Inclusive and Sustained Economic Growth	Cacao (Theobroma cacao L.) is one of the world's most valuable tree cash crops. World Cocoa Foundation (2014) estimates that global cocoa production is roughly 5 million tons per year, with 80 percent coming from smallholder farms, resulting in a total export value of $9 billion (ICCO 2020a). By 2020, worldwide cacao demand is expected to reach 4.7 million to 5 million metric tons (DA, 2016). The Philippine Statistics Authority has reported 9,340 MT from 31,285.36 hectares in 2020. In comparison, Ivory Coast produces one million metric tons per year, Ghana produces 800,000 metric tons per year, and Indonesia produces 400,000 metric tons per year.Cacao production is constrained by several factors including low yielding cultivars, a lack of quality planting materials, a limited area of cacao production, a lack of awareness and technical know-how about improved technologies, limited technical support, and a lack of access to market information and high-value markets. To boost cacao production in the country, efforts are exerted to expand cacao producing areas as well as plant high-yielding varieties. Cacao varieties such as UF18, BR25, UIT1, K1, ICS40, K2, K9, P7, DR1, S5, PBC123, USMCH1 and USMCH2 are recommended by the National Seed Industry Council (NSIC). Due to their excellent yielding capacities, UF18 and BR25 are the most preferred among these. Furthermore, Criollo, is one of the most widely grown chocolate cultivars because of its exquisite flavor and aroma (MuÃ±oz et al. 2019).Through the PCAARRD funded projects in cacao (Functional Genomics-assisted Development of Gene Markers for Economically Important Traits in Cacao Production and Varietal Improvement), (Validation of Molecular Markers for Identification of Cacao HYVs, Criollo Types and Disease Resistant Varieties Through Marker-assisted Breeding), and (Molecular Fingerprinting of Cacao Parental Recommended HYVs and True Criollo Ensuring Multiplication of Quality Planting Materials (QPMs) for Increased Productivity and Profitability), molecular makers were generated, validated and used for fingerprinting of NSIC recommended high yielding varieties enabling identification of molecularly verified and Bureau of Plant Industry (BPI)-certified mother trees and distribution or dispersal of authentic cacao planting stocks to various cacao nurseries. Other promising high yielding and disease resistant cacao accessions have also been identified.	Publication: At least 1 scientific paper; At least 2 paper presentations in conferences related to cacao genomics and smart cacao budwood nursery and smart cacao greenhouse; Leaflets, brochures on true criollos in the Philippines, smart cacao budwood nursery and smart cacao greenhouse Patent: Utility model for molecular identification of true Criollo; At least 2 utility models/ patents for apps; Product: At least 2 software applications; At least 20 authentic Criollo breeder/nucleus plants; At least 5 hybrids/crosses with Criollo as parent People: 2 undergraduate and 2 MS graduate students; Capacity building/training of at least 30 nursery operators; Place: Partnership with Bureau of Plant Industry BPI-NSQCS; DA Regions 11 and 12; PhilMechPolicy: Policies for BPI certification of true Criollo	USM	The beneficiaries of the project primarily include cacao breeders, cacao farmers, cacao plantation growers, nursery owners, cacao bean processors, cacao industry, consumers, and government agencies such as the Bureau of Plant Industry and DOST-PCAARRD for the product and technology.	01-Jan-23	31-Dec-25	ONGOING	24,176,623	4,385,707.60
	Stable Isotopes-based Evaluation of the Climate Change Mitigation Potential, Recovery Status, and Resilience of Reforested Soils under the National Greening Program (ReforeStable Carbon-Plus)	Rapid, Inclusive and Sustained Economic Growth	ReforeStable Carbon-Plus seeks to evaluate the country€™s most extensive reforestation program in relation to its climate change mitigation and environmental stability objectives, focusing on the soil component. In addition, the project will assess the resilience of reforested soils to natural and anthropogenic disturbances such as fires. As the top cause of destruction of NGP sites, fires not only affected the survival of seedlings and ultimately the Philippines€™ forest cover but may also aggravate, based on our initial findings, the very issues that the NGP seeks to address. This research will employ a €œspace-for-time€•pproach using stable isotopes-based techniques to arrive at robust estimates and projections. The project will be implemented in a critical watershed namely the Ipo-La Mesa Watershed. Beyond evaluation, this research will provide critical information that would serve as guide in implementing the country€™s reforestation programs towards achieving carbon neutrality, enhancing the overall productivity and resilience of Philippine soils, and fulfilling our pledge to the Paris Agreement.	Publications Year 1; One (1) publication in ISI/Scopus-indexed journal; One (1) presentation of accomplishment/ initial results in a local conference; Year 2; One (1) publication in ISI/Scopus-indexed journal; One (1) presentation of final results in a local conference Products; Year 1: Data on: 1. Total and component carbon stock of NGP forests and reference sites (grassland/denuded land and old-growth forest). 2. Carbon sequestration potential of the NGP. 3. Mean residence time of SOC in Philippine forests.; Year 2; Data on: 1. Changes in aggregate stability fertility status of reforested soils. 2. Recovery of nitrogen enrichment of reforested soils. 3. Post-fire changes in quantity, quality, and vulnerability to microbial degradation of organic matter in soils of NGP forests and reference sites. 4. Post-fire changes in aggregate stability fertility status, and nitrogen enrichment of NGP forests and reference sites. 5. Determinant and constraints of climate change mitigation potential, recovery status, and resilience of reforested soils under the NGP. People Services MOAs/MOUs re collaboration with DENR-FMB, Norzagaray LGU and CENRO, and San Jose Del Monte LGU and CENRO; Partnership with academe forged through student training and thesis assistance Policies Policy recommendations for the implementation of the Expanded National Greening Program	PNRI	Department of Environment and Natural Resources; Department of Agriculture; Climate Change Commission; People€™s Organizations; Local Government Units; Local Communities; and Academic Institutions	01-Sep-21	28-Feb-23	ONGOING	3,570,448	304,720.48

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Textile Fibers from Philippine Climbing Bamboo Species	Rapid, Inclusive and Sustained Economic Growth	In support of the Department of Science and Technology - Niche Centers in the Regions for R&D (DOST-NICER) Program of the Central Mindanao University entitled €œAccelerated R&D Program for Capacity Building of Research and Development Institutions and Industrial Competitiveness: Niche Centers in the Regions for R&D Center (NICER) Program: Bamboo R&D Center€•the Philippine Textile Research Institute explores the possibility of including the climbing bamboo species to be one of the fiber sources for textile material. This project aims to establish the technical and economic viability of textile fiber from different climbing bamboo species found in the Philippines. The fiber extraction technology will be applied through mechanical extraction, alkali treatment, and yarn processing. The extracted textile fiber for each species will be characterized for its fiber property and processability. Bamboo is a remarkably sustainable and versatile source of raw materials, especially for textile. Bamboo textile is known for its benefits such as being antibacterial, highly absorbent, hypoallergenic, and eco-friendly fabrics. These fabrics are usually subject to a high price in the market due to its intensive production process. Sustainability of raw materials is the priority to cope with the demand for naturally made fabrics. Erect bamboo is the common source of fibers for textile manufacturing, hence, making it more susceptible to the exploitation of raw materials as the demand for bamboo textile increases. Climbing bamboo characteristics are commonly compared to the same climber species which is Rattan (Calamus rotang) that is normally utilized for handicrafts. Climbing bamboo is less known for its market value since erect bamboo are commonly known to people due to its diverse purpose.	Publications One (1) technical article on the fiber quality of climbing Bamboo species from Northern Mindanao; One (1) technical article on the yarn quality of climbing Bamboo species from Northern Mindanao; One (1) technical article on the potential of climbing Bamboo species as textile materials Patent One (1) IP (Process of producing fibers from climbing bamboo species); One (1) IP (Utility model/industrial design for yarns rendered using the bamboo blended and natural textile fiber blended yarns) Products At least 100kgs of bamboo fibers for each identified four (4) climbing Bamboo species from Northern Mindanao; At least 40kgs bamboo blended yarns for each identified four (4) climbing Bamboo species from Northern Mindanao People Services Ten (10) technical personnel trained on bamboo textile fiber extraction and natural fiber treatment Places and Partnership One (1) Memorandum of Agreement forged with Central Mindanao University Policy One (1) policy recommendation on sustainable utilization of climbing bamboo species for office uniforms	DOST PTRI	Farmers/farming communities Craft makers Handloom weaving communities	01-Jul-22	30-Jun-24	ONGOING	10,184,196	5,525,848.00
	Validation of Molecular Markers for identification of Cacao HYVs, Criollo Types and Disease Resistant Varieties through Marker-assisted Breeding	Rapid, Inclusive and Sustained Economic Growth	Cacao is an economically important crop worldwide due to its strong domestic and export market demand by various industries. Cacao production in the Philippines is constrained by several factors including low production attributed to planting of low to average yielding cultivars, pests and diseases and fewer area of cacao production. There is a great need to increase production to meet global demand. To increase cacao production in the country, efforts are exerted towards increasing the area of production for cacao and by planting high yielding varieties. The National Seed Industry Council (NSIC) recommends high yielding cacao varieties for production. In commercial nurseries, these recommended varieties appear morphologically similar. Thus, the use of the desired high yielding varieties is compromised due to difficulty in visually identifying planting materials of the genuine variety in the nurseries. There is need to utilize the SSR markers that we generated in our PCAARRD-funded project to validate NSIC cacao recommended varieties. This is to guarantee that farmers use the correct high yielding varieties for increased cacao production and income. The completed cacao project has also produced functional SSR markers that differentiate true Criollo cacao types from non-Criollo cacao accessions. Criollo is one of the most cultivated varieties worldwide and the most favored cacao variety due to its fine flavor and aroma. In the Philippines, there are numerous collections claimed as Criollo but these accessions have not been verified as true Criollo type. There is a need to validate the claimed Criollo types in different regions in the country using the SSR markers. This is to identify the true Criollo types for utilization in clonal propagation for Criollo cacao production and as parents in cacao breeding. The completed cacao project has also identified SSR markers that are associated with resistance to VSD-causal pathogen Lasiodiplodia theobromae and phytophthora disease causal pathogen Phytophthora palmivora. There is a need to validate these molecular markers in cacao breeding populations and clones. This will facilitate the identification of cacao accessions with resistance to these pathogens thru marker-assisted selection for utility in cacao breeding or clonal propagation for cacao production using disease resistant clones or varieties.	Publications: Year 2: At least 3 scientific papers; At least 2 paper presentations in conferences People and Services: Year 1: 2 undergraduate and 2 MS graduate students; Year 2: 2 undergraduate and 2 MS graduate students Training of at least 8 BPI-NSQSC staff/personnel Product: Year 1-2: SSR markers for utility in plant certification agencies SSR markers to identify true Criollo cacao types; Year 2: Cacao cultivars with resistance to VSD and/or phytophthora disease Patent: Year 2: Utility model for cacao NSIC recommended variety identification and certification Places and Partnerships: Year 1-2: Partnership with Bureau of Plant Industry (BPI) Policies: Utilization of molecular technology and certification of true NSIC cacao varieties and Criollo types as requirement in BPI certification policy/protocol Social Impact: Year 1-2: Enhanced awareness of cacao growers of using authentic high yielding NSIC recommended varieties to ensure increased production; Increased consciousness of cacao scientists and growers in using true Criollo types for breeding, clonal propagation or production of cacao beans with fine flavor and aroma.; Year 2: Enhanced skills and capabilities in modern technologies due to training of molecular marker technology to students and BPI-NSQSC staff/personnel. Economic Impact: Year 2: Increased cacao production and profitability due to the use of authentic high yielding cacao varieties. Reduced yield losses due to identification or development of disease resistant cacao varieties.	USM	The beneficiaries include cacao breeders, cacao farmers, cacao plantation growers, nursery owners, cacao bean processors, cacao industry, consumers and government agencies such as Bureau of Plant Industry and DOST-PCAARRD for the product and technology.	01-May-21	30-Apr-23	ONGOING	5,000,000	1,057,875.00
	Valorization of Bamboo Processing Wastes for Adhesive and Coating Applications (BAMVALOR)	Rapid, Inclusive and Sustained Economic Growth	Valorization of bamboo processing wastes through the development of innovative, eco-friendly and economically-promising products, i.e. bio-adhesives and bio-coatings is aligned to the bamboo industry strategic S & T plan. The transformation of the bamboo processing wastes into value-added products will contribute to the optimal utilization of the resource. The €œnew adhesive material€ is intended to replace or substitute existing adhesive materials which contains phenols and formaldehyde. Both phenol and formaldehyde are considered environmentally unfavorable chemicals and associated with several health issues by the Environmental Protection Agency (EPA). The European Chemical Agency (ECHA) has also classified both phenol and formaldehyde as mutagenic, carcinogenic, and reprotoxic chemicals. Formaldehyde is also used in some other resins in addition to the phenol€"formaldehyde resin, such as urea formaldehyde (UF) and melamine formaldehyde (MF). The developed bio-adhesives will be used as a binder for plywood manufacture and engineered bamboo. In addition, its binding characteristics will be tested on different adherents including aluminum, polycarbonate plastic and papers. The coating material, on the other hand, is expected to protect wood and bamboo products used for outdoor applications from the harmful effects of UV radiation. This project will work on the new protocols or improvements on existing ones (if available and applicable) to come with products whose properties are at par with commercially-available ones in terms of quality and safety. As mentioned, these innovations are intended to be applied to bamboo products, thereby effectively repurposing the wastes into new products that could also directly benefit the bamboo industry. Bamboo waste valorization may create markets that will bring about benefits in the form of additional opportunities and income for the different players in the bamboo industry and additional total value added to the supply chain. The development and utization of these products may address the problems associated with the over reliance to fossil-based materials which are not infinite and have so many detrimental effects on the environment. The main objective of this study is also consistent with the achievements of the Sustainable Development Goals (SDGs) particulary goals 1, 8, 12, or No Poverty, Decent Work and Economic Growth, and Responsible Consumption and Production, respectively.	Publication Year 1: One (1) IEC material, i.e., information bulletin/brochure on utilization of bamboo processing wastes.; Year 2: One (1) IEC material, i.e., information bulletin/brochure on utilization of bamboo processing wastes (updated).; Drafts of two (2) scientific articles for possible publication in peer reviewed-journals Patents Year 2: Invention disclosure application for the developed protocols for the production of, adhesive and functional coating material from lignin bamboo processing wastes Products Year 1 : Adhesive and functional coating material from bamboo processing wastes/by-products; Year 2: Adhesive and functional coating material from bamboo processing wastes People Services One (1) technical personnel trained; Two (2) graduate/undergraduate students with thesis on the utilization of bamboo processing wastes Places and Partnership Improvement of the DFPPS Wood Chemistry and Forest bio-Materials Research Laboratory; One (1) industry Social Impact This project aims to make Filipinos become more aware of the efficient utilization of bamboo resources through valorization of its processing wastes. Economic Impact The project situates itself as part of the plan geared towards the alleviation of the economic status of smallholding bamboo farmers. In addition, this project is expected to improve competitiveness of Philippine bamboo market by coming up with value-added products using bamboo	UPLB	The target beneficiaries of this project are bamboo processing companies, bamboo plantation farmers, related downstream industries, and consumers who are willing to use sustainable and environmental-friendly products from bamboo processing wastes.	01-Dec-22	30-Nov-24	ONGOING	4,999,371	3,200,148.20

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Enhancement of Milkfish Aquaculture Productivity through Genomics [Bangus Aquaculture eNhancement through Genomics and Unified Sciences (BANGUS)]	Project 1. Milkfish Broodstock Development and Management	Rapid, Inclusive and Sustained Economic Growth	In spite the availability of well-established milkfish hatchery technologies and the implementation of local government programs to increase milkfish seed production, the milkfish aquaculture industry remains to be reliant on the wild fishery for its seedstock requirements (Garcia et al, 2019). While there are some government and private hatcheries that are able to support the Philippine milkfish industry, the supply of seedstock could not meet the demand and the farmers still resort to the use of imported hatchery-bred milkfish fry either from Indonesia or Taiwan. The shortage of milkfish fry/fingerling supply is a problem that could be addressed through the administration of improved broodstock feeds, the adoption of optimized feeding schemes, appropriate water quality management and more importantly through genetic means (in particular, increased effective population size, broodstock selection, management and genetic stock improvement). Since it takes years for milkfish broodstock to mature in captivity, a more practical approach would be to determine the genetic quality of the current, actively breeding stocks in a milkfish hatchery and assess how this is correlated with their on-farm breeding performance.	Year 1: € 1 Milkfish broodstock management/hatchery/nursery practices documented and will serve as reference information for both science and policy-based interventions to improve milkfish seed production in the Philippines € 2 RAD libraries will be available Year 2: € 1 Genetic information on milkfish brood stock used in the major Philippine milkfish hatcheries will be available (genetic variability data from actively spawning broodstock will be generated, extent of inbreeding determined from biomolecular marker data and genetic markers for detecting quality seedstock developed € 2 Loci involved in genetic sex determination in milkfish will be characterized € 1 Validation of sex-determining loci will be performed Year 3: € 1 Genetic structure of current local hatchery populations as inferred from microsatellite marker information correlated with reproductive performance traits, better genetic stocks identified, hatchery-specific broodstock development and management schemes formulated and recommended for use; scientific publications apart from the genetic database shall be written and made available € 1 Sex identification based of immature individuals based on genotype will be performed € 1 SNP profile of two generations of milkfish will be produced Product SNP and additional microsatellite markers for milkfish would be developed. Loci that could be targeted for early sex determination will be determined. Also, novel markers can be used for stock enhancement and	UPD	The results of this study shall benefit the Milkfish hatchery operators, milkfish growers, students, fellow researchers	01-Feb-21	31-Jan-24	ONGOING	24,912,505	5,824,369.36
Enhancement of Milkfish Aquaculture Productivity through Genomics [Bangus Aquaculture eNhancement through Genomics and Unified Sciences (BANGUS)]	Project 2. Developing Genomic Resources for Improved Production Traits in Hatchery-bred Milkfish	Rapid, Inclusive and Sustained Economic Growth	Seafood has a fundamental role in meeting current and future food needs. In view of the overexploitation and decline of capture fisheries, aquaculture production increasingly contributes to food supply and security. An important food fish in Southeast Asia, the milkfish (Chanos chanos, Family Chanidae) has a centuries-long history of farming in the region. In the Philippines, milkfish production is almost exclusively sourced from aquaculture, and is the leading aquaculture species in both production volume and economic value. However, hatchery production of seedstock is considered inadequate to supply industry needs, and continued improvements in scale, efficiency, and sustainability of aquaculture are essential. One strategy to improve aquaculture production is through genetic improvement of milkfish hatchery broodstock. Growth performance is considered one of the key production traits for selection programs in aquaculture. The development of genomic resources for milkfish, and characterization of the genetic determinants for growth performance are of scientific and commercial interest and are fundamental towards the development of marker-assisted selection protocols for broodstock management, selection, and improvement. The project will employ high-throughput sequencing of the milkfish genome and transcriptome to investigate the genomic basis of growth performance, and identify putative molecular markers such as candidate genes/gene regions and allelic variants. Identification of putative markers will be essential for the development of marker-assisted selection methods and genetic improvement of milkfish broodstock to enhance milkfish aquaculture production.	1. Profiling milkfish gene expression for growth performance through transcriptome sequencing and identification of growth-related genes/transcripts; 2. Identified genetic variants putatively associated with growth performance; 3. Discovery of putative molecular markers (genes, genetic variants) associated with growth performance for phenotype selection.	UPD	1. Stakeholders in the milkfish aquaculture industry (government, private sector) may benefit from the development of molecular markers for genetic improvement of hatchery broodstock; 2. Local researchers (research staff, graduate students) who will be provided opportunities for further training in advanced methods for genomic analysis and bioinformatic analysis; 3. The research/scientific community in general as results from these studies will provide further avenues for research related to milkfish genomics, biology, aquaculture, and resources management	01-Feb-21	31-Jan-24	ONGOING	22,256,906	9,819,550.06
Harnessing Emerging Technologies for Mangrove Crab Culture and Resource Management: 'Omics Approaches, Web-based and Mobile Computing Technologies	Project 1. A Rapid Cost-effective Method to Screen Potential Sources of Immunostimulants and Growth Promoting Feed Additives for Scylla serrata using a Functional Genomics Approach	Rapid, Inclusive and Sustained Economic Growth	Feed development will require expensive iterations in the formulation of functional feeds, starting from testing potential immunostimulants to checking for doses that work. The project proposes to shorten these processes of iteration by coming up with a qRT-PCR based assay kit that will allow prioritization of potential sources to use for development into feed additives. The project will then test 3 potential sources and use that which produces the best reaction from S. serrata, and move on to develop a novel feed. In the process of immunostimulant source screening and feed development, a better understanding of the mechanism for innate immune activation and the coupled process of imparting disease resistance and improving growth rates will be better understood. This work will focus on the response to WSSV infection.	1. A rapid cost-effective means to determine immunostimulant and growth promoting properties of potential sources of feed additives 2. qRT-PCR based panel of primers for rapid screening 3. Identified and characterized 3 novel sources of immunostumulants and growth promoter 4. Information on the coupled effect of disease resistance and growth rate improvement presenting pathways where interventions may be possible 5. One novel functional feed	DLSU	1. Mangrove crab farmers, pond owners and nursery operators 2. Research community working on the discovery and development of feed development R&D 3. Feed development industry 4. Biotech industry seeking to develop gene expression screening products for use in the agriculture/aquaculture sector	01-Aug-19	31-Dec-22	COMPLETED	16,326,495	1,686,479.70
Harnessing Emerging Technologies for Mangrove Crab Culture and Resource Management: 'Omics Approaches, Web-based and Mobile Computing Technologies	Project 2. Molecular Mechanisms Underlying Scylla serrata Response to White Spot Syndrome Virus (WSSV) Infection: Metagenomic and Transcriptomic Approaches	Rapid, Inclusive and Sustained Economic Growth	Microbiome and transcriptome studies of mangrove crabs in response to WSSV challenge will provide important insight into aspects of white spot disease dynamics, molecular mechanisms underlying host and holobiont response and host-pathogen interactions. The data generated using these omics technologies will be useful towards efforts to identify biomarkers associated disease status and disease resistance to support the development of disease mitigation and control strategies.	1. Information on dynamics of WSSV infection in S. serrata; 2. Microbiome community profile of S. serrata in response to WSSV infection. 3. Transcriptome profile of S. serrata in response to WSSV infection. 4. Identification of putative immune-related genes and biomarkers of physiological status of S. serrata associated with WSSV infection.	UPD	1. Local researchers, particularly graduate students and research staff, provided opportunities to develop capabilities in interdisciplinary studies and use of advanced molecular methods. 2. Research/Scientific community as results from these studies will provide further avenues for research related to the study of viral disease in mangrove crabs. 3. Stakeholders in the mangrove crab industry (government and private sector) may benefit from the development of biomarkers for monitoring physiological status, disease status, and potential novel directions for mitigation and disease.	01-May-19	30-Apr-23	ONGOING	15,101,598	1,353,106.60
Harnessing Emerging Technologies for Mangrove Crab Culture and Resource Management: 'Omics Approaches, Web-based and Mobile Computing Technologies	Project 3. Validation of local practices with genetic marker base and GIS technologies to maximize use wild caught and traded mangrove crab juveniles (Old Title: CrabTECH: Enhancing Mangrove Farm Productivity thru Genetics and Information Technology)	Rapid, Inclusive and Sustained Economic Growth	This study involves the deployment of genetic marker-based and GIS technologies to fisher communities and traders in Luzon, Visayas and Mindanao through workshops, and further needs assessment at the ground level. This would allow the validation of the effectiveness of new technologies side-by-side with local practices on juvenile species identification and mangrove crab site selection, develop a network of stakeholders that are willing to adopt new technologies, and assess the impact of these interventions to farm productivity and efficiency.	(1) An impact assessment report on genetic marker-based and GIS technologies and a compendium of local practices in juvenile species identification and mangrove crab site identification; (2) Database and network of mangrove crab stakeholders in the country that adopt new technologies and with updated knowledge in molecular biology and information technology; (3) A mangrove crab stakeholder website and database featuring an online CrabMAP updated regularly through data-mining algorithms and a nationwide network of contributors, and a feedback system on new technologies.	DLSU	Regulatory Bodies, LGUs, Research and Academic Institutions, and the General Public.	01-Aug-19	31-Dec-22	COMPLETED	4,606,476	300,000.00
Nursery of Eel Enhancement and Development Program	Development of Brackishwater Nursery Culture Systems for Tropical Anguillid Eel Anguilla marmorata in the Philippines	Rapid, Inclusive and Sustained Economic Growth	Due to the decline of the larval fishery of Japanese eel, other tropical anguillid species such as Anguilla bicolor pacifica and Anguilla marmorata which are richly found in Philippine estuaries were utilized as an alternative to satisfy the gaps in the market for the endangered A. japonica. In the Philippines, the requirement for an eel to be exported is at the size of 15 cm. Eel nursery growers follow the technique of culturing temperate eels for growing tropical eel species in the country. These culture systems require high capital input which only big businessmen in the country can afford. However, earlier studies prove that A. marmorata and A. bicolor pacifica can grow in higher water salinities. Thus, culture in brackishwater or seawater for the nursery of eel is possible for an economically feasible approach.This project aims to develop a brackishwater fishpond-based nursery system for AnguillidEel, Anguilla marmorata in the Philippines. It involves the identification of optimum stocking density of glass eels that would result in maximum survival and optimization of a feeding scheme for the larvae reared in the nursery conditions.	Publication: 2 science journal publications Patent: Protocols on brackishwater-based nursery system for glass eel Product: 1 product related to eel nursery growing People: Support 2 undergraduate and 2 MS studentsPlace: 3 industry and 4 academic partnerPolicy: N/A	UPV	Fisher folk/traders/Feed industry; Researchers/Scientists, the general public and science in general.	01-Jun-22	31-May-24	ONGOING	8,721,638	4,210,818.86

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Nursery of Eel Enhancement and Development Program	Glass Eel Early Weaning and Nursery Grow-Out Operations	Rapid, Inclusive and Sustained Economic Growth	The project will conduct research on early weaning and nursery rearing grow-out operation to develop protocol and policy recommendation on stock enhancement through aquaculture. This effort ensures sustainability and increase in production that would help the industry in moving forward.	Publication: Effect of different salinity and stocking density in pre-nursery rearing of glass eel Patent: Protocols on green water technology Protocols on cyclic feeding scheme for glass eel during early weaning and nursery rearing stage Product: Protocols on eel Pre-Nursery and Nursery Rearing People: Symposium, Training/Seminar-workshop on eel Pre-Nursery and Nursery Rearing, 2 undergraduate student Place: Local Government Unit, Small Scale Private Farm, Bureau of Fisheries and Aquatic Resources 01 (BFAR RO1), UPV, ISPSC Policy: Policy Brief on Eel Stock Enhancement Through Aquaculture	MMSU	Glass eel gatherers, glass eel traders, eel growers, extension workers and researchers, policy makers/legislators	01-Jun-22	31-May-24	ONGOING	9,453,394	5,997,473.80
Nursery of Eel Enhancement and Development Program	Nursery Rearing Performance of glass eel Anguilla marmorata in Pond-Based Culture System	Rapid, Inclusive and Sustained Economic Growth	Philippines is one of the few areas in the world where high-value species of eels thrive, making the country in a better position of becoming a major producer of eel. Locally, freshwater eels are locally known as €œkasili€?€œeigat€?or €œpalos€?and they usually thrive most of the rivers and estuaries of the country.Although there were already reported preliminary studies (Cremer, 1976, Rickards et al., 1978, Jessop, 2000, Leander et al., 2012, Wei-dong et al., 2013) conducted specially abroad which showed positive results and some eel farms are already established in the country, the protocols on rearing were still unknown since these were considered as trade secrets, that hinders advancement, dissemination and application of knowledge into technology in the country that could help build the eel industry in the country. Thus, the project was conceptualized.	Publication: 3 posters and 2 scientific papers Patent: Protocols for improved pre-weaning diets of glass eel in tank-based culture system Protocols for improved nursery rearing performance from glass eels to elvers in pond-based culture system Product: n/aPeople: 3 BS in Fisheries Students Place: Memorandum of Understanding on Research Collaboration between Isabela State University (ISU) and Bureau of Fisheries and Aquatic Resources-Region 02 (BFAR-R02). Memorandum of Agreement between ISU and Department of Science and Technology (DOST). Policy: n/a	Isabela State University	The target beneficiaries of the research will be as follows: Aquaculture industry Ã¢,¬Œ fish farmers may use the results of this project for commercial production of glass eels. Research institutions Ã¢,¬Œ results of the study will give insights to researchers about the potentials of nursery stage of glass eels in pond-based culture system. Academic institutions Ã¢,¬Œ students and professors will acquire new knowledge on the benefits of the nursery stage of glass eels in pond-based culture system. Government agencies/ policy makers- the results of this study can be used by the policy makers in the formulation of guidelines and regulations on nursery stage of glass eels in pond-based culture system.	01-Jun-22	31-May-24	ONGOING	8,600,163	5,090,081.00
Rebuilding the Agriculture, Aquatic and Natural Resources in Response to COVID-19 (ReAARRC)	Production of Smoked Tilapia and Tilanggit for Frontliners and Affected Communities in Southern Isabela	Rapid, Inclusive and Sustained Economic Growth	COVID Project	1.Publication €¢2 Poster 2.Products €¢5 smoked Tilapia €¢5 Tilanggit 3.People services €¢Covid19- affected communities in Southern Isabela (2,400 individuals) 4.Places and Partnerships €¢1 Memorandum of Understanding between ISU and LGU of selected municipalities of Southern Isabela 2 Is€™ 1.Social impact €¢Provide additional livelihood for the communities affected by the Covid-19 pandemic 2.Economic impact €¢Give additional income to the affected communities who will adopt the smoked tilapia and tilanggit production	Isabela State University	The target beneficiaries of the research will be Covid19-affected communities in Santiago City, Echague and Ramon. A total of 2,400 individuals are targeted.	01-Jan-21	31-Dec-22	COMPLETED	2,500,000	833,057.60
	Capability Enhancement of Local laboratories in the Determination of Inorganic Toxic Elements in Aquacultured Milkfish through Proficiency Testing Scheme	Rapid, Inclusive and Sustained Economic Growth	To support the enhancement of the capability of the local testing laboratories in the Philippines for the measurement of inorganic toxic element in fish, a proficiency testing (PT) scheme will be organized during the duration of the project. Milkfish is the chosen matrix as it is among major species produced in the Philippine aquaculture fisheries. While the toxic elements to be analyzed are lead, cadmium, arsenic and mercury. These toxic elements have been identified in the Focus group discussion conducted with the local testing laboratories.	Publication: One (1) presentation in scientific fora/conferencePatent: Not applicableProduct: Year 1 a. Four (4) validated method: for GF-AAS for Pb and Cd, HVG-AAS for As, and DMA for Hg in milkfish b. One (1) proficiency test item for toxic elements in milkfish Year 2 a. Four (4) validated ICP-MS method: for toxic elements Pb, Cd, As, Hg in milk fishPeople: Year 1 Two (2) staff trained on chemical test and analysis Year 2 PT scheme for toxic elements in milk fish (pre-and post-PT)Place: Bureau of Plant Industry (BPI) and other PT participantsPolicy: Not applicable	ITDI	Local testing laboratories are the primary beneficiaries of this project as support will be given through local PT provision. PTs are generally procured internationally because of the unavailability of PT providers for inorganic contaminants in the country. Prepared PT items will also support the QA/QC systems for method validation and internal quality control of these laboratories. Collaboration with the Philippine Accreditation Bureau (PAB) and Philippine Metrology, Standards, Testing & Quality (PhilMSTQ) enhance the involvement of these laboratories. In response ISO/IEC 17025:2017 requirement, the PAB LA/SR01- Supplementary Requirements on Participation to Proficiency Testing Programs states that Ã¢,¬Å"The laboratory shall participate in at least one (1) PT for each major area which accreditation is being sought and the validity of the PT participation shall be maximum of two (2) years prior to application for accreditationÃ¢,¬¶[24]. With this, cost savings are projected if there is a local provider, like the Metrology in Chemistry, for PTs and RMs in the Philippines. With this local capability to be established from the project, the needs of these laboratories will be addressed. Customers of these participant laboratories will also benefit from the gained competencies and improved QA systems resulting from the outputs of the project.	01-Dec-21	30-Nov-23	ONGOING	4,999,999	1,060,620.80
	Chemical Residue Profiling of Milkfish using XRF Technology	Rapid, Inclusive and Sustained Economic Growth	Research interest in mercury poisoning and other heavy metal contamination has recently risen due to their potential health implications. Heavy metal poisoning is chronic in nature, such that constant exposure over long periods of time results in accumulation which leads to a multitude of different medical conditions. Such medical conditions may at times be fatal. Due to the greater than average amount of heavy metals present in the environment of certain localities in the Philippines, there is a need to survey the heavy metal content in common food sources, specifically fishes. X-ray fluorescence (XRF) spectrometry has become one of the most effective methods for determining the elemental composition of samples because of its non-destructive, fast, and continuous measurements. This study aims to use a benchtop x-ray fluorescence (BXRF) analyzer to screen Philippine milkfish (Chanos chanos) for mercury (Hg), arsenic (As) content, and other toxic heavy metals. In effect, this would lead to generation of a heavy metal profile of Philippine milkfish obtained from various regions in the country. In addition, the study contributes to the method development, optimization, and validation of detecting heavy metals in milkfish using the handheld x-ray fluorescence (HXRF) available in ADMATEL Chemical and Metallurgical Laboratory, thus enhancing the capability of ADMATEL for heavy metals analysis. Efficiency between the BXRF and HXRF in heavy metal content determination in terms of the limit of detection, precision, and accuracy will also be compared in this research study.	Publication:One (1) publication or presentation in peer-reviewed scientific conference and/or conference proceedingsPatent:N/AProduct:Evaluated method on application of HXRF for Heavy Metal screening for Milkfish Validate method on application of XRF for Heavy Metal screening for MilkfishPeople:At least Two (2) staff trained on XRFPlace:Partnership with local aquaculturistPolicy:Advocate/propose safer milkfish sourcing based on the results of the study.	DOST-ITDI	Target beneficiaries include policy makers, small-scale aquaculture sector, local barangays, and everyday Filipino fish consumers.	01-Dec-22	31-May-24	ONGOING	4,999,239	2,969,564.32

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Conservation and Aquaculture Research and Development Project for Glossogobius giuris (Biyang Puti) in Naujan Lake (GoBy Project)	Rapid, Inclusive and Sustained Economic Growth	Glossogobius giuris (Bar-eyed Goby, White Goby) is an anadromous species of goby that are widely exploited for food in many countries. It is also used as an aquarium species and can attain a maximum size of 30-45 cm. In the Philippines, it is known to occur in rivers and inland lakes such as Laguna Lake, Taal Lake, Lake Mainit, and Lake Lanao, and Naujan Lake. From Naujan Lake, the fish is processed into dried fish. Relative to the fresh fish as food, dried biya is considered a delicacy fetching higher prices and adding value to fishermen€™s economic gains. There is, however, an equivocal taxonomic identity of the species. Recent studies on genetic diversity of G. giuris using isozyme, indicated high diversity among populations indicating limited gene flow between populations pointing to the need for area-based conservation measures for the species (Ardestani et al., 2014). Given the amphidromous nature of the taxa (Larson et al., 2016), and its wide distribution (Dihn et al., 2017), population dynamics may be assumed stable. Fish catch survey within the lake done by Urate et al.(2016) however, showed seasonality of catch possibly indicate dwindling population. This project will contribute to the growing body of knowledge on the biology and ecology of the species towards its conservation. Aspects of aquaculture towards the development of cultivation protocols will be dealt with in relation to its biology. Overall, this project is anticipated to contribute to the biodiversity conservation measures for Naujan Lake National Park with a balanced view of the species ecology and its commercial potentials.	The project is expected to provide baseline for the conservation and management of Naujan Goby population as well as develop the basic protocol for pond culture of the species. 6Ps Publications 3 Scientific Papers; 5 Presentations; 1 book; 2 Information Bulletins People Services 1 graduate and 5 undergraduate thesis students; at least 10 aquaculture farmers Places and Partnerships Mindanao State University Marawi (MSU Marawi), University of the Philippines Diliman Philippine Genomics Center (UPD-PGC), UP-MSI, Naujan Lake Protected Ares Management Board (NLPAMB), Provincial Government of Oriental Mindoro (PGORM), Bureau of Fisheries and Aquatic Resources MiMaRoPa (BFAR MiMaRoPa), and University of the Philippines Los Banos (UPLB) Policy link with communities and the Naujan Lake Protected Area Management Board (PAMB) for presentation of the possible rarity of the goby species in Naujan Lake 2Is Economic Impact technology development in aquaculture of the species will increase options for livelihood for 10 cooperating farmers Social Impact Fisherfolk community will develop the attitude to conserve and achieve	MinSCAT	The project will benefit the academe for producing basis for population study. This project will benefit fish farmers of the 30 BFAR-registered aquaculture farms in Oriental Mindoro who are target adopters of the technology. The students of the Institute of Fisheries of MinSCAT will also be benefited through enhancement of technical skills on fish breeding and aquaculture production of white goby.	01-Jan-21	31-Dec-23	ONGOING	10,946,618	3,015,764.78
	Development and Provision of Proficiency test Scheme in Shrimp Product for Local Microbiological Laboratories	Rapid, Inclusive and Sustained Economic Growth	This project aims to assist the shrimp industry by developing quality control materials for microbiological testing laboratories in the country. It is recognized that laboratory testing is an integral part in ensuring food safety through accurate measurement. The DOST-ITDI, through the National Metrology Laboratory, has developed its capability in the field of biological metrology for microbial measurement by developing of a microbiological proficiency test (PT) materials and the provision of PT schemes for local laboratories. This is in response to the need for local PT providers in the country. This project will develop the PT material, Salmonella sp. and APC in frozen, shelled shrimps product. The PT schemes is intended for the Bureau of Fisheries and Aquatic Resources laboratories and other microbiological testing laboratories in the country.	Year 1Product €“ two (2) PT materialsPeople Service €“ One (1) PT Orientation Training/ twenty - five (25) personnel Year 2Publication €“ One (1) Scientific Paper Patent/ Intellectual Property €“ One (1) patent application€“ Protocol on the optimized process of PT materials development People Service €“ One (1) PT Orientation Training/ twenty - five (25) personnel	ITDI	Local microbiological laboratories involved in food testing	01-Nov-21	31-Oct-23	ONGOING	4,997,326	1,169,792.00
	Development of Baculovirus Expression Vector System (BEVS)-based subunit protein vaccine against Tilapia Lake Virus	Rapid, Inclusive and Sustained Economic Growth	Tilapia Lake Virus (TiLV) has been reported to infect wild tilapia Sarotherodon galilaeus, farmed tilapia Oreochromis niloticus and commercial hybrid tilapia (O. niloticus X O. aureus) (Bacharach et al., 2016; Eyngor et al., 2014; Ferguson et al., 2014). In 2018, Abdullah and co-workers have also detected TiLV in wild river carp (Barbonymus schwanenfeldii) in Malaysia (Abdullah et al., 2018). Zebrafish (Danio rerio) was also found to be susceptible to TiLV infection and a good animal model to study fish-pathogen virus (Rakus et al., 2020). To date, only the mentioned species of fishes were found to be susceptible to TiLV infection but it is possible that other species will be found to be susceptible when epidemiologic studies on its susceptible hosts would be intensified. The emergence of TiLV is the first ever reported infectious disease in epidemic proportion in tilapia aquaculture which threatens the global tilapia industry. The risk is further exacerbated by irresponsible trade in live marine and fresh water animals and disregard to biosecurity. The very high mortality (20-90%) of tilapia caused by TiLV infection may also affect food security and nutrition since tilapia serves as a cheap protein source especially in the developing parts of the world. The threat of TiLV to global tilapia industry and to ecology, economy, food security, and nutrition is alarming. Immediate action to control, prevent, and mitigate this aquaculture disaster to farmed tilapia caused by TiLV is warranted through the development of prophylactic vaccine, diagnostics, and antivirals.	Publication: 1 ISI-indexed publicationPatent: 1 Oral subunit protein fish vaccine against TiLVProduct: 1 Potential vaccine candidates against TiLV 1 Oral subunit protein fish vaccine against TiLVPeople: 5 Training of project staff, students (MS, PhD), and other beneficiaries to be proficient to perform recombinant protein production 5 Training of project staff, students (MS, PhD) and other beneficiaries to be proficient on performing vaccine challenges and vaccine administrationPlace: 1 Coordination and consultation meeting with Cooperating agencies (Chung Yuan Christian University)Policy: It is expected that through this project, both National Fisheries Research and Development Institute, Department of Agriculture, Philippines and Chung Yuan Christian University, Taiwan, will come up with policy to share more resources, expertise, and best practices in aquaculture/agriculture biotechnology. This project may also be a basis for the institutionalization and establishment of Vaccine Research Institute in the Philippines and expand vaccine development cooperation with Taiwan not only for fisheries/aquaculture and animal use but also for human use to prevent human and animal disease to explode into another pandemic	DA-NFRDI	 Local fisherfolks, tilapia farm owners, tilapia industry Fish Health management sector (BFAR Fish Health Management and Quality Assurance Laboratory, BFAR Regional Offices/Regional Fish Health Laboratories) Local Government Units, NGOs, private stakeholders Researchers, academics, and extension workers. Individuals in the field of virology, aquatic pathology, fish production, molecular diagnostics, etc.	01-Oct-22	30-Sep-24	ONGOING	10,471,390	7,336,718.30
	Development of locally-available essential oil as a growth-promoting and anti-microbial feed additive for saline tolerant tilapia Oreochromis niloticus	Rapid, Inclusive and Sustained Economic Growth	As a vital support to the economic development of the country, the needs of the Tilapia farming industry should be continuously addressed to secure its profitability and sustainability. One of the ways to improve tilapia aquaculture production is to improve the quality of feeds. Addition of small doses of antibiotics in the fish feed has been practiced promoting growth and prevent infectious disease outbreak in fish culture. However, the negative impact of antibiotic use animal culture industry such the persistence of antibiotic-resistant bacteria and accumulation of residue in the environment and fish flesh which could harm the consumers, has resulted in the search for more sustainable and environment friendly materials as feed additive. Additive obtained naturally from plants such as essential oils have gained great interest as these compounds have been established to have low toxicity, beneficial bioactive components and are economically viable. Essential oils extracted from indigenous plant species such as ginger, garlic, lemon grass and bamboo leaves are now available in the market and can be utilized in variety of ways. The study will attempt to explore the potential of these locally available essential oils as growth promoter and antibacterial agent in tilapia aquaculture. The outcome of this project will provide aid in developing efficient management strategies for disease control and growth promotion, which will subsequently contribute to achieving sustainability in tilapia aquaculture.	Publication: 2 Scientific paper publicationsPatent: 1 patent applicationProduct: 1 Product related to essential oil-based feed additivePeople: support 2 undergraduate and 2 MS studentsPlace: 1 industry and 2 academic partner Industry Partner: Roxas City Aquaculture Association Academic Partner: University of Antique Tario Lim Memorial Campus, Poblacion, Tibiao, Antique Capiz State University-Dayao Satellite College, Fisheries Department/Roxas City, CapizPolicy: Policy related to the regulation of indiscriminate use of antibiotics as antimicrobial growth promoters in tilapia aquaculture through environment-friendly alternatives.	UPV	 Accredited Tilapia breeders Accredited Tilapia growers Feed Companies Scientific community	01-Mar-23	28-Feb-25	ONGOING	4,983,933	2,697,417.01
	Development of Propagation Protocol for Clarias macrocephalus Towards its Conservation (Old title: Evaluation of Reintroduction of Clarias macrocephalus through Conservation Genomics)	Rapid, Inclusive and Sustained Economic Growth	The project will apply translocation experiments in controlled systems to test whether functional genetic variation is a good predictor for long-term introduction success or whether transcriptional profiling can predict short-term acclimation and survival. It will conduct experimental re-introduction of Clarias microcephalus in Pangasinan and Panay Island and develop a propagation protocol towards its conservation.	Phase I €¢ Assembled transcriptome for the C. macrocephalus from Cagayan and Agusan population. €¢ Identification of differentially expressed genes (DEGs) of the Cagayan and Agusan catfish population and their functions Microsattelite markers and single nucleotide polymorphism (SNP) markers Phase 2 €¢ Identify functional differences that are related to important physiological processes and responses to environmental stressors; this can be used in the prediction of specific trait response upon reintroduction and will enable one to choose appropriate source of population for reintroduction. Phase 3 €¢ Performance of the identified catfish population from Phase 2 without competition and under competition; comparison of the transcriptome response with or without competition	UPV	Aquatic ecological scientists and managers as well as fish farmers.	01-Jan-20	31-Dec-22	COMPLETED	7,715,836	2,241,922.02

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	Effect of Biofloc Technology on Water Quality and Growth Performance of Macrobrachium rosenbergii and Assessment of the Associated Bacterial Communities	Rapid, Inclusive and Sustained Economic Growth	Biofloc technology has become a popular technology in the farming of tilapia, Penaeus monodon, Litopenaeus vannamei. It is an advanced technology identified for solving evolving viral problems and rising costs for energy. BFT has already been pilot tested in three farms in Luzon, two in Visayas, and two in Mindanao. Biofloc technology proved success in the culture and production of tilapia, and shrimp but there is no work on the effect of this tchnology in the culture of freshwater prawn in the Philippines. This study is the pioneer attempt to apply BFT in the culture of freshwater prawn in grow out culture. Moreover, characterization of the complex microbial communities associated with the biofloc might help in deciphering the bacterial influence towards optimal water quality and health of animals being cultivated. Since no study exists on the microbiome diversity associated with giant freshwater prawn in a biofloc system, this project will help understand the disease-free shrimp surface microbome as well as its rearing water microbiome in such a system and look for changes if there is any. This study will provide a basis for future work to understand the host-microbe interaction, and the relationships between disease outbreak and the bacterial community associated in the host organism. This will also provide a basis for future work on the production of effective artificial biofloc stock in laboratory using various microbial. And even future works combinations specially on biotechnological applications like screening microbes and small invertebrates in the biofloc for the production of antimicrobial products, probiotics, etc.	Publication At least 2 scientific manuscripts in publishable format that will describe the biofloc technology application in freshwater prawn and the characterization of bacterial flora in a biofloc technology culture Patent Bacterial isolates that will be isolated and identified will be stored as stock cultures for future use Product Microbial stock cultures of the bacterial isolates. People Service Trained personnel: 2 project staff and 4 Student assistants to be trained in freshwater prawn hatchery operations and microbiological methods. Trained personnel: 2 project staff and 4 Student assistants to be trained in freshwater prawn hatchery operations and microbiological methods. Place and Partnership MOU with 5 local fish farmers and private farms in Lanao de Sur Policy Results of this study can be incorporated in IECs and other campaigns by the LGUs or MAFAR in the local communities to increase awareness about the technology.	MSU-Marawi	This study would significantly benefit the Maranao freshwater prawn fish farmers of Lanao Lake, and other fish farmers and private stakeholders, the Ministry of Fisheries and Aquatic Resources (MAFAR), the government agency responsible for the development, improvement, management and conservation of the country€™s fisheries and aquatic resources in my country who wish to use the new technology in farming freshwater prawn. Also, MSU and academic community through this study, will be informed of the biofloc technology application to aquaculture where studies are still limited.	16-Oct-21	15-Oct-23	ONGOING	4,898,495	473,477.62
	Enhancing the Quality of Measurement of Local Testing Laboratories in the Philippines for the Analysis of Toxic Elements in Mussels through Proficiency Testing Scheme	Rapid, Inclusive and Sustained Economic Growth	In this project, the performance of local testing laboratories in determination of toxic elements in mussels will be assessed through proficiency testing scheme in accordance with the requirements of ISO 17043. Proficiency test items will be produced from mussel matrix in accordance to ISO Guide 35 standard. The assigned value of the proficiency test item will be determined using high order method and gravimetric sample preparation.	Publication: One (1) paper submitted to scientific forum; Product: Three (3) validated methods: GF-AAS for Pb and Cd, HVG-AAS for As, and DMA for Hg in mussels; One (1) proficiency test item for toxic elements in mussels; Three (3) validated ICP-MS methods for toxic elements (Pb, Cd, and Hg) in mussels; People Service: Two (2) staff trained on chemical test and analysis; One (1) staff trained on documentation and liason; PT scheme for toxic elements in mussels (pre-and post-PT) 1 Training to enhance capabilities for toxic elements in mussels (Target: 3-5 PT participants); Places and Partnerships: MOA with 3-5 local testing laboratories; Government Agencies: BFAR €“ (BFAR NFLD and BFAR Region VI); DOST-ITDI STD; DOST Regional Laboratories; (DOST Region IX); NFA - FDC; Private Laboratories:; SGS Philippines Inc. - Multi- Laboratory; Philippine Institute of Pure and Applied Chemistry (PIPAC); SENTROTEK; Other member laboratories of ONELAB; Policy: One (1) policy recommendation to advocate participation of local laboratories in accuracy-based proficiency testing schemes for toxic elements in food | Social Impact: NML as the PT provider influences social ties with the stakeholders of the services and products developed and this includes local testing laboratories in the Philippines. The establishment of chemical metrology in the country help ensures the reliability of testing results that could cause an impact in the quality infrastructure of the Philippines like in the applications of food safety and regulation, environment quality, and research and development in the mussels industry. | Economic Impact: The participation of local testing laboratories in the PT schemes will ensure the accuracy and reliability of their analytical method. Thus, it will secure assurance that their chemical test results will be reliable and will be accepted everywhere. Detention cases and economic loss of food producers will be avoided. In general, metrology facilitates fair trade, drives innovation, supports regulation,	DOST-ITDI	Local testing laboratories are the primary beneficiaries of this project as support will be given through local PT provision. These include DOST regional laboratories, Bureau of Fisheries and Aquatic Resources (BFAR), National Food Authority-Food Development Center, private testing laboratories and other ONELAB members which are capable of testing toxic elements in mussels.	01-Dec-22	30-Nov-24	ONGOING	4,999,987	3,018,232.00
	Epigenetic methylation variation between the Philippine-endemic, freshwater S. tawilis and in its marine counterpart relating to environmental adaptation	Rapid, Inclusive and Sustained Economic Growth	The sole freshwater sardine, S. tawilis occupies a unique ecological, cultural and evolutionary niche in the Philippines since the fish is endemic only to the country. This proposal seeks to understand the epigenetic-methylation changes enabling S. tawilis to adapt to the freshwater environment by comparing DNA methylation insights against its marine counterpart. By understanding such epigenetic-methylation changes, which seeks to understand phenotypic variations not ascribed to changes in the DNA sequence, this proposal seeks to uncover the salient genes and pathways that are differentially methylated in S. tawilis leading to its freshwater adaptation. Insights derived from this DNA methylation-based study would provide a pioneering technical framework to construct the genome of the economically-important Sardinella genus and to develop proposals and projects on breeding and molecular characterization as future endeavors.	Publication: At least one poster presented in a conference will illustrate such methylomic and/or pathway analysesAt least one ISI-level publication to describe differentially methylated DNA regions and associated pathways affected in the S. tawilis methylome compared to its marine counterpart Patent: At least a pair of PCR primers developed to distinguish S. tawilis from S. hualiensis following methylome and pathway analysesProduct: A registry of differentially methylated regions and pathways in S. tawilis compared to its marine relativePeople: At least one (1) graduate student and one (1) research-level staff proficient in epigenome and methylomic experimental techniques and analysis. Policy: At least one (1) policy maker, regulatory organization and /or extension personnel is engaged to utilize the insights from this work to employ methylation-based primers for molecular validation of S. tawilis sold in the market.	UPLB	ResearchersScientistsFacultyExtension workersStudentsFish breedersPolicy MakersRegulatory Personnel	01-Dec-22	30-Nov-23	ONGOING	3,030,655	3,030,654.90
	Establishment of Biological Water Quality Index Based on Diatoms for Fishery Production and Environmental Conservation in Batangas and Marikina Rivers, Philippines	Rapid, Inclusive and Sustained Economic Growth	The Philippines has a vast surface of freshwater resources. They provide a large percentage of its population. However, the fisheries productivity of freshwater bodies in some parts of the country has declined in recent years as a result of deteriorating water quality and degradation of freshwater ecosystems. To date, there are no existing guidelines and integrative indices to measure river health tailored for the Philippines and there are also gaps in performing river assessment in the country (Martinez, 2018). The establishment of Water Quality Management Areas (WQMA) by DENR-EMB includes consideration of water quality problems, potential sources of water pollution and measures to achieve improvement of water quality. However, there are means of quickly assessing water quality of rivers to present their deterioration. Hence, the need to develop an index of water quality using diatoms tailored for the Philippine condition.	Publication: Checklist of Diatoms of Marikina River and Batangas Rivers (Pansipit and Palanas)Patent: N/AProduct: Deposition of type diatom specimens and material references on Diatoms in the herbarium; Establishment of a Diatom Herbarium at the Museum of Natural History, UPLB; Publication of a website on the identification up to species level of common diatoms in Marikina River and Batangas Rivers (Pansipit and Palanas) and their diversity index in relation to some abiotic factors. People: Seminars: Importance of the Diversity of the Diatoms on the Sustainability of Marikina and Batangas Rivers (Pansipit and Palanas), with as many as 30 participants, including fisherfolks, students, professors, researchers, and administrators.Place: Region 4A- Bureau of Fisheries and Aquatic Resources Region 4A- Department of Environment and Natural Resources (MOA)Policy: Policy recommendation for the Sustainability of Marikina River and Batangas Rivers (Pansipit and Palanas) as Possible sources of Supply of Drinking Water and/or as Fish Sanctuary; Policy recommendation on the use of a standard measurement of water quality of Philippine rivers using diatoms as index of water quality.	UPLB	Researchers and Professors in Various Research and Academic Institutions; Students both in Secondary and Tertiary Level of Education; Regional and National Offices of the Bureau of Fisheries and the Department of Environment and Natural People around the river, like the fisherfolks, farmers, etc.	01-Dec-22	30-Nov-23	ONGOING	4,954,694	2,493,520.60

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Field Testing and performance evaluation of saline tolerant Philippine Tilapia strain cultured in different geographical brackish water ecosystems	Rapid, Inclusive and Sustained Economic Growth	The Philippine Tilapia aquaculture industry has a significant contribution to the national economy. Tilapia is the second largest aquaculture-produced fish species in the Philippines with a total production of 281,114 metric tons valued at Php24.26 Billion in 2021. However, the growth of this industry has become minimal with an average annual production rate of 0.82% from 2012-2021. This declining production trend could be attributed to congested production system in lake and in cages coupled with the dwindling water quality due to mismanaged production (high stocking density, without consideration of the lake carrying capacity). The productivity of lakes and freshwater fishponds in terms of tilapia production appeared to reach its maximum capacity and for the industry to further expand. Farming of tilapia is expected to expand towards the estuarine and brackish coastal areas. Brackishwater ponds and estuarine coastal water cages are seen to have a high potential for growth and expansion of tilapia farming. The research would identify the best performing saline tolerant tilapia strains, existing in the Philippines, when cultured in brackishwater ponds, coastal brackishwater and estuarine cages. The best strain that would exhibit better growth, feed efficiency, survival and harvest yield will be identified as per particular culture environment. Result of this project would be vital in designating particular strain to specific brackishwater and estuarine culture	Year 1:People Services: Train and mentor 3- 5 tilapia culture technicians and 2 students.Places and Partnership: MOU or collaboration with 1 tilapia grower and 2 state college researchersYear 2: Publications: 1 IEC material, Saline tolerant tilapia rearing manual, 2 Academic journal publicationProduct: 1 protocol for saline tilapia culture in estuarine cages and 1 protocol for saline tilapia culture in brackishwater ponds People Services: Train and mentor 3- 5 tilapia culture technicians and 2 students.Places and Partnership: MOU or collaboration with 1 tilapia grower and 2 state college researchers	UPV	Tilapia hatchery operators, tilapia growers, coastal, estuary and river dependent communities.	01-Oct-22	30-Sep-24	ONGOING	4,999,179	2,791,984.00
	GeM-Phil: Genetic Characterization of Macrobrachium populations in the Philippines for Broodstock Development and Seed Production	Rapid, Inclusive and Sustained Economic Growth	Due to various human interventions like overexploitation, environmental pollution and habitat loss, the natural population of Macrobrachium species is declining. There is also a great deal of confusion over the exact identity of both wild and hatchery-bred M. rosenbergii stocks in the Philippines. The use of mtDNA genes, microsatellite markers and EST/Next gen sequencing data have been used to identify populations as well as to discover genes that code for important traits in Macrobrachium.This project will map the genetic resources of M. rosenbergii in the Philippines through comparison of the mtDNA sequences from shrimp collected from various places in the country and discovery of biomarkers related to growth and sexual differentiation. Through this project, it is envisioned that by identifying suitable populations of M. rosenbergii for subsequent broodstock development, a carefully laid out blueprint is implemented to ensure continuous production of good quality fry for the development of a sustainable aquaculture of M. rosenbergii in the Philippines.	Appropriate/Fit Macrobrachium rosenbergii strain will be identified, developed, produced, and maintained as quality broodstock by the project for potential freshwater prawn hatchery operators in Palawan€¢High quality Macrobrachium fry will be produced and maintained by the project for selective breeding in Palawan€¢Sufficient data to prove that Macrobrachium rosenbergii is an indicator species of good water quality	WPU	Freshwater prawn hatchery operators, Population geneticists, Freshwater prawn farmers, Researchers, and Policy makers	01-Oct-20	31-Mar-23	ONGOING	10,858,430	1,879,250.12
	Hatchery Development for Four (4) Indigenous Macrobrachium freshwater prawn species in Marinduque	Rapid, Inclusive and Sustained Economic Growth	Among the recorded nine (9) naturally-occurring Macrobrachium species in Marinduque, there are 4 species with potentials for culture for their size, including M. australe, M. latimanus, M. lar, and M. latidactylus. These species are among the target species captured by local residents from the wild for domestic consumption and occasionally sold at the local market for extra income. This project is deemed to investigate some aspects of the reproductive biology of the freshwater prawn species, its fecundity, egg size, hatching rate and larvae survival rate in hatchery conditions with the hope that a new commodity for the local fishermen to produce can be identified, at the same time conserve and protect the remaining freshwater prawns in the wild.	€¢Good quality berried female and matured male broodstock for each species€¢Information on fecundity, hatching rates, larval survival and growth rates€¢Manual on Customized Hatchery Protocol for the species that will perform best and have the potential for the grow-out phase Publications: 1 Hatchery Operations Manual; 1 Scientific paper Products: Most promising freshwater prawn for aquaculture that is found in Marinduque People Services: 23 Student-interns; 12 fisherfolk; 23 student-researchers; 4 faculty/staff researchers; 6 LGU fishery technicians Places and Partnerships: 1 MOA/MOU with LGUs of Marinduque Patent: 1 Copyright of the Manual; 1 Utility Model of the protocol of culturing local Macrobrachium species; Policy: Policy support (advocacy) for the protection and conservation of the freshwater prawns	MSC	Student-interns; fisherfolk; student, faculty/staff researchers; LGU fishery technicians	16-Aug-21	15-Feb-23	ONGOING	4,100,000	249,252.00
	Improvement of Milkfish larval rearing and nursery culture through Gut Metagenome, transcriptome analysis and gut microbial community manipulations	Rapid, Inclusive and Sustained Economic Growth	Milkfish is an important food commodity in the Philippines and is considered as the main pillar of the country€™s aquaculture in terms of value (P40.8 billion, PSA, 2019). Currently, the industry is facing insufficient supply of fry and hampers production efforts thus restraining the growth of the milkfish industry. The Philippines€™ requirement for bangus fry is close to four billion yearly, but hatcheries can produce only 800 million fry a year. Vulnerability of milkfish production is further aggravated by deformities and low survival of hatchery produced milkfish fry. The reduced in fitness of hatchery reared milkfish fry is linked to physiological challenges caused by poor genetic quality and environmental issues.The gut microbiota of fish has been shown to play an important role in nutritional provisioning, metabolic homeostasis, and immune defense. Further knowledge of these microorganisms will facilitate the selection of probiotics, prebiotics and chemical compounds with potentials to improve the gut homoeostasis and health of fish, which are promising alternatives to antibiotics and would be a helpful tool in designing rearing protocols for efficient hatchery production of milkfish. Generally, the gut microbiota can significantly alter the host€™s physiology, metabolism of nutrients and exogenous toxic substances, and can significantly affect the immune system. However, only limited information about the metagenomic analysis of fish GI microbiome is available. The present study will evaluate the gut Metagenomics composition of milkfish fry and juveniles. The influence of gut micro biome on overall larval physiology will be evaluated by the transcriptome analysis. Information generated will establish the link between epigenetic differences and look for direct evidence of functional consequences to understand the physiological fitness mechanism of milkfish larvae. With these information, protocols to produce a better and €œrobust€•milkfish will be developed thus increasing the survival and yield of the farmers.	Publication 1 IEC material 2 Journal Article 1 Protocol manual on basic metagenomic and transcriptome analysis for fish larvae Patent: 1 protocol for milkfish larvae gut metagenomic analysis 1 protocol for milkfish larvae transcriptome analysis 1 protocol for probiotic application on milkfish hatchery and nursery operation Product At least 2 probiotic products1 process of improving milkfish hatchery and nursery productivity by application of microbial manipulation techniques People At least 1 graduate student Places and Partnerships 1 industry and 1 academic partner PolicyNone	UPV	Hatchery operators, nursery grwoers, milkfish growers.	01-Jul-22	30-Jun-25	ONGOING	21,035,101	4,007,716.96
	Mannan Oligosaccharides (MOS) Prebiotic Feed Ingredient for Aquafeeds From Bioprocessed Coconut Residue	Rapid, Inclusive and Sustained Economic Growth	Mannan oligosaccharide (MOS) is the most used prebiotic in aquaculture. It has been shown in various studies to be effective in enhancing the growth and disease resistance of milkfish and other fishes like tilapia, and common carp. MOS is produced from the hydrolysis of mannan, a polysaccharide commonly found in yeast and plant cell walls. Coconut residue or €œsapal€•is the by-product after the extraction of coconut milk either for virgin coconut oil production or household use. It is high in fiber. And the fiber is mostly composed of mannan making it a good source of MOS. The project aims to bioprocess coconut residue using solid state fermentation and a mannanase producing microorganism to produce a MOS prebiotic product that can be used in aquafeeds formulations. The microbe€™s mannanase will produce MOS from the mannan, reducing the fiber content. The fermentation will also improve the protein content. Since coconut residue also contains residual oil, the resulting MOS prebiotic bioprocessed coconut residue can also be used as partial substitute for fish oil, and soybean meal in aquafeeds. The solid fermentation parameters will be optimized using the expertise in bioprocessing that has have developed in BIOTECH-UPLB.	Publication: At least 2 publications in ISI/Scopus Journal At least 1 paper presentation in conferencesPatent: At least 1 patent/utility model for the prebiotic bioprocessed coconut residue (BCR) feed ingredient productionProduct: One (1) established process of producing Mannan oligosaccharide (MOS) prebiotic feed ingredient product; Characteristics of MOS produced from bioprocessing of coconut residue. One (1) product (MOS prebiotic feed ingredient product); Gut microbiome profile of milkfish fed with MOS prebiotic feed ingredient product enhanced aquafeed.People: Mentored/Trained at least 2 researchers Mentored/Trained at least 2 researchers, and 1 undergraduate studentPlace: At least one partnership with aquaculture or coconut processing stakeholder on further field testing of developed product	UPLB	Local farmers engaged in aquaculture farming LGUs and cooperatives Feed manufacturers and compounders Food industry Academe	01-Dec-22	30-Nov-24	ONGOING	4,999,298	3,129,099.00
	Medium Chain Fatty Acids and Mannose Polysaccharide from Coconut as Dietary Supplement to Promote Growth and Improve Health of Cultured Saline Tolerant Strain of Tilapia nilotica	Rapid, Inclusive and Sustained Economic Growth	The research work will involve the utilization of medium-chain rich coconut oil and Mannan polysaccharide as bioactive feed additive to improve health and promote growth of seawater Nile Tilapia. Optimization of dose and blend of Coconut oil with soyabean oil as dietary supplement to tilapia as to promote growth and improve health condition of this fish will be done. The work would also evaluate the production and use of Mannan polysaccharide from coconut and dos-response will be optimized as to maximize the effects of this bioactive additive in improving the growth performance of tilapia.	1.Optimum dose of coconut oil to promote better growth and efficient feed conversion in saline-tolerant strain of Oreochromis niloticus 2.Mannose polysaccharide with bioactivity to promote better growth of saline-tolerant strain of Oreochromis niloticus 3.Probiotic isolated from tilapia gut that act in tandem with medium chain fatty acids	UPV	Tilapia growers, fish cage culture operators, feed companies, consumers, LGUs, and entire aquaculture industry	01-Nov-20	30-Apr-23	ONGOING	4,797,498	826,965.91

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	Method Optimization of Digestion and Extraction of Microplastics in Milkfish (Chanos chanos)	Rapid, Inclusive and Sustained Economic Growth	Research interest in microplastics has risen due to their occurrence and potential health risks/implications. However, In the Philippines, only a few studies were conducted regarding the microplastics ingestion (i.e. bivalves and mussels) in the commonly consumed seafoods. There is still a need for more research which can contribute further understanding of this global pollutant, and possibly address solutions/or mitigations. Hence, this research proposal will serve as an exploratory study on the detection of microplastics found in milkfish, a major species farmed in our local aquacultures. The spatial distribution of identified microplastics in milkfish found in freshwater, marine and brackishwater systems will be covered in this work. Results from this study may provide identification and correlation of possible sources and distribution of microplastics in fish at different water habitats.	Publication: "One (1) publication or presentation in scientific fora/ conference (Year 2)"Patent: "N/A"Product: "1. Optimized procedure on microplastics isolation from milkfish (Year 1) 2. Microplastics profile of freshwater and brackish water milkfish (Year 1 to Year 2)"People: "1. At least Two (2) staff trained on Microplastics analysis (Year 1 to Year 2) 2. At least one (1) MS or related field graduate (Year 1 to Year 2)"Place: "N/A"Policy: "N/A"	DOST-ITDI	Policy makers Small-scale aquaculture sector Local barangays Everyday Filipino fish consumers	01-Dec-22	30-Nov-23	ONGOING	3,223,955	3,223,954.80
	Molecular Marker Assisted YY Male Tilapia Production	Rapid, Inclusive and Sustained Economic Growth	This research would try to apply the use of sex specific marker as a selection marker for the efficient development of a YY male saline tolerant tilapia. To our knowledge development of a YY male saline tolerant tilapia is for the first time to be developed in the world. And hopefully it is the Philippines that could lead in the development of this technology that could be vital for the efficient aquaculture of saline tilapia. This project further hopes to increase the national production of all XY natural male saline tolerant tilapia through YY male technology and increase the acceptability and marketability of saline tolerant tilapia to the general consumers. The findings of this research proposal will have a significant contribution to human food security and will contribute toward SDG2 Zero Hunger.	Year 1:Product: YY male and SR YY female saline tolerant tilapia population producedPeople: at least two (2) undergraduate and/or graduate students supportedPlace: one (1) research partnership at the Philippine Genome Center Visayas in Miagao, IloiloYear 2: Publication: at least two (2) publications in reputable / ISI journals Patent: At least one (1) patent of the protocol/product applied Product: all natural XY male saline tolerant tilapia population through YY male technology produced People: at least two (2) undergraduate and/or graduate students supported Place: one (1) research partnership at the Philippine Genome Center Visayas in Miagao, Iloilo	UPV	Broodstock growers, Hatcheries, Consumers, Tilapia industry, and Researchers	01-Mar-23	28-Feb-25	ONGOING	4,953,073	2,889,099.20
	PECM in Aquaculture Diets for Gut Health Modulation	Rapid, Inclusive and Sustained Economic Growth	Feed intake and feed conversion efficiency of cultured species is an essential parameter because feed inputs account for 50€"70% of production costs in the aquaculture industry. The productivity of the aquaculture sector is centered towards utilization of nutrients and health status of aquaculture species which are mainly dependent on the modulation of gut microbiome. Intestinal microbiota confers numerous services such as nutrient digestion, disease resistance and production of vitamins and beneficial metabolites. Metagenomics and metabolomics in aquaculture research are multi-omics approaches in understanding microbial diversity and its metabolites that affect the overall health status of farmed fishes. Understanding how feed types and different biotic additives shape the intestinal microbiota and the biological interactions between host and bacteria is of paramount importance to continually boost sustainability of animal production. Non-targeted multi-omics approach can unravel the functional effects on the intestinal microbiota and intestinal metabolism in response to dietary inclusion with PECM. Through this approach, several insights can be inferred such as: (1) investigation on microbial shifts in the gut environment caused by PECM; (2) elucidation of functional diversity particularly on disease resistance and immunostimulation; (3) differentiation on the abundance of key growth and health-related metabolites in light of metagenomic profiles amongfish reared on feed types with and without PECM; and the (4) establishm ent of network-based approaches for key metabolites which may be correlated with higher feed efficiency performance finfish aquaculture.	Publication: At least 2 publications in ISI/Scopus Journal At least 1 paper presentation in conferencesPatent: NoneProduct: NonePeople: Mentored/Trained at least 2 researchers, 2 undergraduate studentsPlace: MOA with private sectorPolicy: At least 1 policy recommendation for other potential uses/functionality of PECM in aquaculture farming	UPLB	Local farmers engaged in aquaculture farming Coconut farmers and stakeholders LGUs and cooperatives Feed manufacturers and compounders Food industry Academe	01-Dec-22	30-Nov-24	ONGOING	4,999,298	3,474,949.00
	Pilot Testing of Nanogold-based DNA Probe Rapid Detection Kit for Aeromonas hydrophila	Rapid, Inclusive and Sustained Economic Growth	Emerging and re-emerging diseases in tilapia and other aquaculture species pose threat to the industry, food availability and human safety. Diagnosis of fish affected by bacterial or viral pathogens is a tedious procedure and requires knowledgeable individuals to do laboratory work and run the equipment. With the development of friendly rapid detection kit, the spread of disease can be easily contained. In like manner, a kitchen-type laboratory established within a farm or in any diagnostic centers can easily manage to perform the analysis.	1. Pilot tested the developed RDK from kitchen-type laboratories of cooperating SUCs 2. Evaluated the economic feasibility and viability of the developed detection kit 3. More refined and improved RDK	CLSU	1. Diagnostic laboratories (public and private) 2. Academic and research institutions 3. Tilapia Farmers	01-Sep-21	28-Feb-23	ONGOING	3,330,486	1,642,673.28
	Pilot Testing on the Use of Nano (Zeolite-silica) Composites in Freshwater Tilapia Production Systems	Rapid, Inclusive and Sustained Economic Growth	Tilapias are important food fish cultured in developing countries. In the Philippines, tilapia is second only to milkfish in importance in terms of annual production. Tilapias can be grown easily, hardy and high-yielding. However, one of the challenges that tilapia industries are experiencing today includes competition on land use as a result of conversion of agri-fishery areas to residential and industrial purposes. Also, the advent of climate change resulting to global warming poses a problem and competition on water use between aquaculture, agriculture, domestic-use and industrial-use. In order to attain food security, intensification of aquaculture operation is the only foreseen solution on the dwindling capture fisheries from the wild. However, intensification has been resulting to several problems particularly in the deterioration of water quality which include the following: a) frequent incidences of fish mortalities due to diseases, and b) fishkill outbreaks due to fish exposure to water quality parameters outside their ideal required water quality levels. Among the solutions being applied in the industry are the following: a) the use of bioaugmentors to improve water quality, b) the use of recirculating aquaculture system, and c) application of organic/inorganic materials that would reduce acidity and toxic nitrites in the water. Since the use of charcoal has been a traditional practice in reducing toxic gases and substances in the air and water, the use of nanochar (nano silica) technology for water and soil quality improvement in aquaculture can be an environmentally sound and gender-responsive approach to solve problems caused by aquaculture operations.	1. Pilot tested nano (zeolite-silica) composites in freshwater tilapia production systems. 2. Evaluated the economic feasibility of using nano (zeolite-silica) composites in the grow-out production of tilapia in ponds. 3. Improved nano (zeolite-silica composite) 4. Accessible technology for the utilization of all farmers	CLSU	The target clienteles are: 1. Tilapia farmers specially those frequently affected with fish kill 2. Researchers 3. Educators 4. Extension workers 5. Students 6. All stakeholders regardless of gender (manager, middleman, retailers, etc.)	01-Sep-21	28-Feb-23	ONGOING	4,998,889	1,656,709.13
	Product process optimization at up-scale production and market planning for low-salt fermented mussel (Perna viridis) sauce	Rapid, Inclusive and Sustained Economic Growth	The development and production of salt-fermented mussel sauce was a challenge to come up with potential functional food or ingredient (Peralta et al 2019). However, in any product development process, the product needs to undergo scale-up production. The project intends to conduct a product process optimization to determine a feasible and profitable level where fixed costs in production can be absorbed by the product volume production and eventually reducing product final cost. Process modifications and innovations, if applicable, can be drawn to efficiently increase yield without compromising end-product quality. Financial viability in the production of low-salt mussel sauce will necessitate adopting an effective pricing policy and cutting down its production cost. The increase in production capacity will spread out its fixed cost resulting to a lower cost per unit of output. Market promotion is significant in translating R&D results into technological products for the useand benefit of society. Market promotion strategies will be designed for the product to highlight its features and benefits and will introduce the product to consumers through institutional end-users and market influencers. Lastly, there is also a need to come up with concrete science-based policy recommendations that would address effective sustainable resource management. This could be achieved through the crafting of a policy brief that includes all issues, identified policy options, and recommendations.	Publications 3 papers published and /or training/manual guide Patents/IP 1 IP filed (UM and/or copyright) Products 1 optimized process; 1 freedom to operate report 1 Improved fermented mussel sauce; 1 Marketing Plan; 1 Business plan, and 1 Valuation report, People & Services 1 people€™s organization trained (at least 10 participants) Places and Partnerships 1 Capiz mussel farmer association; 1 industry partner: Lorenzana Foods Inc.; 1 SUCs (Capiz State University); 2 BFAR: Regions 3 1 Capiz mussel farmer association; 1 industry partner: Lorenzana Foods Inc.; 1 SUCs (Capiz State University); 2BFAR: Regions 5 Policy 1 policy recommendation on product standards Social Impact Alternative livelihood for community organizations (PO/Cooperatives) as village-based processors; integration/increase participation of village women to labor force (pre-processing) Economic Impact Increased economic value of mussel as a value-added product; increase income of mussel farmers; Provide more employment opportunities	UPV-TTBDO	Mussel farmers; Fish sauce industry (manufacturing); Consumers; Local government units; Fisherfolk Organizations; Academe	01-Dec-22	30-Nov-24	ONGOING	4,995,184	3,612,403.27

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	Production and evaluation of dried microalgal biomass for improved shelf-life and product diversification	Rapid, Inclusive and Sustained Economic Growth	Microalgae are known to be beneficial in a diverse field of applications but, very limited extensive studies have been conducted for its post-harvest development and its other functionality aspects.One of the challenges faced by local producers is maintaining microalgal post-harvest quality. The high moisture and nutrient-rich medium (fresh and paste form) make it susceptible to fast deterioration. In order to keep it fresh, it needs to be stored in refrigerated temperature, and storage life varies (few days to weeks only) depending on the harvesting method. If proper storage conditions are not properly maintained, supplies could lead to deterioration and wastage. It also makes product transportation very challenging. In addition, the production is based on the immediate market demand to prevent deterioration and wastage during storage. Producers could not stockpile supplies during good weather conditions, and reserve for eventual market demands. This study was conceptualized to be able to address this issue through the different post-harvest methods of moisture removal. In addition, finished products will be characterized using physico-chemical analyses and storage viability studies. The findings of this study aim to help microalgal biomass producers by	Publication: at least 1 in refereed ISI-indexed scientific journalPatent: 1 possible utility modelProduct: at least 1 developed and characterized dried microalgal biomass productPeople: at least 2 project personnel trained in research and laboratory techniques; at least 1 MS student trainedPlace: partnership with at last 1 local producer of microalgae (Algacon Aquafeed Manufacturing)Policy: n/a	University of the Philippines Visayas - Regional Research Center	1. Local microalgae producers2. Consumers of microalgae: Aquaculture and Food Industry 3. Product developers in Food, Health, Nutrition, Pharmaceutical Industry 4. Academe	01-Jul-22	30-Jun-24	ONGOING	4,989,330	3,285,640.10
	Supporting Cyanotoxin Risk Assessment through Nuclear and Isotopic Techniques for Food Safety and Water Quality Management of Freshwater Lake Systems	Rapid, Inclusive and Sustained Economic Growth	Freshwater cyanobacterial blooms (cyanoHABs) has been in the rise globally in recent years. The secondary metabolites produced during these blooms are collectively called cyanotoxins, which are known hepatotoxic, cytotoxic, or genotoxic agents. The presence of yanotoxins in the waters and fishes in areas with cyanoHABs indicates a potentially underestimated exposure routes for human intoxication. The Laguna Lake, which is the largest lake in the Philippines, provides freshwater reservoir and resource for the fisheries industry. However, extensive fisheries and aquaculture practices, accompanied by nutrient oversupply and effect of climate change, have caused recurrent episodes of cyanoHABs over the years thus putting public health at high risks of intoxication through the consumption of fish and water likely contaminated with highly noxious cyanotoxins. The lack of detailed assessment of toxin and other metabolite levels released in the waters or accumulated in fishes, and the non-implementation of water safety regulations call for a timely and more efficient monitoring and management approach. The project intends to support the existing analytical capabilities as well as promote nuclear technologies in the development of risk assessment tools to effectively monitor cyanotoxins and help implement measures and policies towards sustainable management of the lake. The overall program will comprise two R&D components: (1) toxin and/or metabolite analysis of the bloom-forming algal species, lake waters and farmed fishes using advanced analytical methods to support risk assessment strategies; and (2) development of an aptamer-based test kit through radiation-induced graft polymerization (RIGP) technique to augment the current capabilities for toxin detection and decontamination. We anticipate that the project will increase our knowledge and understanding of inland water algal blooms, cyanotoxins in foods farmed using waters that may contain cyanotoxins, and their potential effects on human and environmental health for a more effective management of the lake and its resources.	Publication: Attached file (DOST Form 5-B - Expected Outputs) Two (2) research papers for dissemination of findings and promotion of technologyPatent: Attached file (DOST Form 5-B - Expected Outputs) Three (3) IPs: 1 patent, 1 utility model, & 1 trademark Discovery & development of reagent, processes, and utilization of Aptamers & RIGiTox Aptasensor for MCs detectionProduct: Attached file (DOST Form 5-B - Expected Outputs) Two (2) products: Aptamer & Prototype test kit (RIGiTox)People: Attached file (DOST Form 5-B - Expected Outputs) Two (2) undergraduate/graduate thesis studentsPlace: Attached file (DOST Form 5-B - Expected Outputs) Establish one (1) new collaborative partnership with the Laguna Lake Development Authority (LLDA) as technology adopterPolicy: Attached file (DOST Form 5-B - Expected Outputs) Science-based recommendations to adopt toxin risk analysis matrix in the formulation of regulations & policies in the management of Laguna Lake resources and activities to safeguard the environment and public health	PNRI	The target beneficiaries include the following industry: regulatory & resource management agencies; fisheries and aquaculture sectors that include the common fisherfolk, fish pen/cage owners; food & export industry that includes the farmed fish product developers and exporters; general public.	01-Oct-22	30-Sep-24	ONGOING	11,901,181	4,557,535.60
	Thraustochytrid Cultivation in Wastewater for Polyunsaturated Fatty Acid Production as Alternative Fish Feed/ Ingredient for Fish and Seafood Products	Rapid, Inclusive and Sustained Economic Growth	The demand for aquaculture products and docosahexaenoic and eicosapentaenoic acids (DHA and EPA)-enriched food will continue to increase, but the production using fish oil dependent on catchment of fish will eventually reach their limits. If the technology in this project is implemented for alternative fish oil production, it will contribute to the realization of a robust and sustainable fishery, as well as the development of new industries such as production of high-value poultry products and human supplements. The novelty of this project in the Philippines is centered on using wastewater streams as substrate for growing thraustochytrid meant to replace or enrich fish feed. This methodology of culturing thraustochytrids in wastewater offers a number of advantages addressing particular problems in the Philippines: 1) alternative and more sustainable source of fish oil for the aquaculture industry, thereby lessening the demands of fish oil meant for human consumption, which in the long run can decrease incidences of overfishing, 2) recycling organic residuals and wastes as an improvement of wastewater treatment technology towards zero-waste discharge, and 3) decreased cost associated with feeding valuable high-PUFA to farmed fish, that ultimately helps the aquaculture industry.	6PsYear 1Year 2Year 3Publication1 publications in scientific journals;At least 1 paper/poster presentationPatent/ Intellectual PropertyAt least 3 patents on Improved treatment technology for food wastes;optimized conditions for the propagation of thraustochytrids using low-cost substrates and organic residuals; and advanced aqua feed formulation with thraustochytridsProduct/ Process1 product - Thraustochytrid biomass as alternative fish oil for farmed fish and seafood productsPeople Services2 MS students 2 MS students2 MS studentsPlaces and Partnerships3 collaborations (Hiroshima University (Japan), Institut Teknologi Sepuluh Nopember (Indonesia), and UP VisayasPolicyAt least 2 Policy recommendations: 1. use of alternative industrial or manufacturing wastewater treatment methods aimed at zero-liquid waste discharge 2. sustainable sources of fish oil for animals, fish, and seafood products to lessen competition for human consumption and lessen overfishing due to the demands of fish meat and fish oil2Is1Social Impact1.Increased knowledge and awareness on the social contributions of the projects among the three countries, particularly in the use of sustainable resources in aquaculture and livestock feeding2.Enhanced exchange of knowledge, skills, technology among relevant stakeholders for the realization of the positive effects of recycling carbon systems through the use of organic residuals and high-organic wastes and wastewaters for production of highly valuable organic products3.Strengthened cooperation between research institutions and stakeholders (food and beverage processing industries, aquaculture industry) towards achieving technologies that solve premier issues in the society (waste and wastewater management, high-cost feed products for aquaculture and livestock, overfishing)Economic Impact1.Fish feed or fish ingredient from the thraustochytrids can be commercialized and sold to fish farmers for a much lower cost decreasing operation and maintenance cost in seafood product-rearing.2.Using wastewater	University of the Philippines Los Baños	1. Scientific Community2. Feed manufacturing industry3. Aquaculture Industry Early career researchers	01-Apr-22	31-Mar-25	ONGOING	11,387,157	4,659,498.96

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	Utilization of fruit processing waste as a source of prebiotics and immunostimulants for the development of healthy and improved aquaculture feeds	Rapid, Inclusive and Sustained Economic Growth	The fruit processing industries in the Philippines are thriving, however, these industries produced a significant amount of waste, if unutilized they can cause negative effects in the environment (e.g. clogging of waterways due to indiscriminate disposal of waste, emission of greenhouse gases such as methane during the decomposition process). Pomace and peelings are common waste produced and are discarded after fruit processing. These waste products are rich in fiber and still contain a significant amount of bioactive compounds. Thus, they can be a good source of prebiotics and antioxidants that can improve the health and growth of the organism. Hence, these wastes can be utilized as feed ingredients to develop healthy and improved aquaculture feeds. This research project plans to develop aquaculture feeds for tilapia and/or shrimp to utilize pineapple and calamansi wastes which are abundant in Mindanao. Furthermore, there are already established fruit-processing industries for both commodities thus supply of these fruit-processing by-products is readily available. Further, the present study will also determine the nutritional profile and antioxidant activities of fruit waste. Further the project will also utilize and optimize the fermentation process to improve nutrient availability and minimize anti-nutritional factors present in the fruit waste. The study will also determine the optimum inclusion rate of fermented and unfermented fruit waste in the diet of saline tilapia and shrimp, as well as evaluate their physiological effect on the cultured organism if they can modulate immune response as well increase the beneficial microorganism in the gut.	Publication: (1) Publications on the nutritional profile, antioxidant activities and levels of anti-nutritional factors in fermented and unfermented fruit waste meal (1) Publications on the nutritional profile, antioxidant levels of the formulated diets (2) Publications on the growth and physiological response of the cultured organism fed with different inclusion levels of fermented and unfermented fruit wastePatent: Utility Models (1) Optimized method for processing fruit waste meal as feed additive (1) Optimized methodology for fermentation of fruit waste. (1) Feed formulation with optimum inclusion of fermented fruit waste meal (calamansi or pineapple) (1) Feed formulation with optimum inclusion of fermented fruit waste mealProduct: (1) Formulated feeds with unfermented food waste as feed additive (1) Formulated feeds with fermented food waste as feed additive (1) Unfermented fruit waste meal (1) Fermented fruit waste mealPeople: 2 MS Student 2 Ph.D. StudentPlace: UP Visayas Iloilo Science and Technology-University Fisheries Biotechnology Center-National Fisheries Reasearch and Development Institute Mindanao State University-Buug Charles and Charlie Food Products DOLE Pineapple PhilippinesPolicy: (1) Policy recommendation that will utilize fruit processing waste as sustainable sources of feed additive	MSU Naawan	Feed industry Aquaculture industry Researchers Students Fruit processing industry Government agencies (BFAR, NFRDI), and universities	01-Feb-23	31-Jan-25	ONGOING	4,998,347	3,085,773.32
	Utilization of Marine Diatoms as Dietary Additives to enhance the Omega-3 Fatty Acid Profile of Seawater Strain Tilapia nilotica	Rapid, Inclusive and Sustained Economic Growth	The research work will involve the optimization of marine diatoms supplementation to tilapia diets as to increase the levels of EPA and DHA incorporation to tilapia flesh. This research will assess at what period of grow-out the algae supplemented feed will be applied as to maximize the incorporation of EPA and DHA in tilapia tissue. Optimization of dose and frequency will also be done as to optimize the efficacy of the strategy in manipulating the fatty acid profile of Tilapia. Biological growth performance and the biochemical changes in flesh of these aquatic animals fed with the marine diatoms supplemented diets will also be evaluated.	1.Optimized dietary inclusion levels, frequency and period of application of Marine diatoms supplement to attain maximum bioaccumulation of EPA and DHA in saline tilapia flesh. 2.Diets containing Marine diatoms and its influence on carcass composition, sensory quality and health of tilapia.	UPV	Fisher folks/traders/feed industry; researchers/scientists, the general public and science in general.	01-Nov-20	30-Apr-23	ONGOING	4,911,490	1,004,891.24
Assisted Reproduction, Nutrition and Health Interventions for Enhancing Dairy Cattle Productivity and Milk Safety (Old Title: Science and Technology-based Interventions to Improve Dairy Cattle Productivity and Profitability in the Philippines)	Project 5. Establishment of a Farm to Consumer Milk Quality and Safety Assurance Systems(Old Title: Establishment of Milk Quality and Safety System from Farm to Consumers)	Rapid, Inclusive and Sustained Economic Growth	At present, there are no available data on the quality of raw milk and dairy products that are produced locally. Neither there are locally established management and handling systems in the milking parlor to the processing plant and outlet stores that could ensure food safety. The study will assess existing milking, handling, processing, transport and retailing practices of milk and milk products in the Philippines. Critical control points will be identified and proper intervention technologies will be developed to address issues on food safety.	ï¿· Profile on the quality of the locally produced raw and processed dairy products. ï¿· Manual for the production of safe and quality milk. ï¿· Interventions to address issues on milk safety.	UPLB	ï¿· Dairy cattle farmers in the target regions ï¿· Dairy processors ï¿· Distributors of raw milk and processed dairy products	01-Dec-18	31-May-22	COMPLETED	9,256,459	115,000.00
Conservation, Improvement and Production of Central Luzon Native Pig	Project 2 Establishment of Foundation Breeder Stocks of Central Luzon Native Pig: Project 2.2 Breeding and Selection to Establish Foundation Breeder Stocks	Rapid, Inclusive and Sustained Economic Growth	A nucleus farm of native pig will be established. Breeding objectives will be formulated based on the parameters important to the native pig farmers and also based on the requirement of the lechon processors. The results of phenotypic and molecular characterization of native pigs in Project 1 will be the basis of selection of foundation native breeders. Further evaluation of male and female breeder stocks will be conducted and the sperm of male animals will be evaluated based on visual and olfactory assessment of ejaculate, such as semen volume and sperm concentration, motility, and morphology. Preferably, males with acceptable physical characteristics, and sperm quality will be used as breeders based on the description of Rosenbloom (2000).	€¢ Established foundation herd at PSAU €¢ Established breeding and selection protocols €¢ Produced foundation stocks populations of CL native pig	PSAU	a. Native pig raisers b. Researchers and development workers c. Students d. Consumers e. Market agents f. Local government	01-May-21	30-Apr-24	ONGOING	6,354,300	1,439,955.95
Conservation, Improvement and Production of Central Luzon Native Pig	Project 3: Performance Evaluation of Selected Native Pigs following the Most Common Feeding and Management Practices in the Area	Rapid, Inclusive and Sustained Economic Growth	Breeder animals from the nucleus farm will be tested and evaluated at the multiplier farms based on their reproductive and growth performance.	€¢ Reproductive and growth performance data of improved CL native pigs €¢ Trade name/mark applied for registration at IPO €¢ Established multiplier farm at PSAU €¢ Established feeding and healthcare management protocols €¢ Conducted techno-promotional activities €¢ Trained 40 farmer co-operators on production and management of CL native pig €¢ Established 4 private techno-demo farms €¢ Developed techno-guide on €œProduction of CL native pig€•	CLSU	a. Native pig raisers b. Researchers and development workers c. Students d. Consumers e. Market agents f. Local government	01-Jul-22	30-Jun-26	ONGOING	4,177,066	289,793.00
	Development of Antibodies Against African Swine Fever Virus Intended for Feed Fortification to Prevent Farm-To-Farm Transmission	Rapid, Inclusive and Sustained Economic Growth	African Swine Fever (ASF) is a viral hemorrhagic disease of swine that currently poses a serious threat to global food security. In the Philippines, the ASF outbreak started in mid-2019, which resulted in the death of more than 3 million heads of pigs due to the virus. Despite various preventive actions, there is an absence of any drug or vaccine vs. ASF anywhere in the world indicating that ASF will be here for the long haul. This proposal addresses the ASF problem head-on by targeting the virus itself to keep it from being transmitted by designing an antibody product that will bind to and neutralize the ASF virus inside the gut to block its entry into the systemic circulation and prevent colonization/infection by the virus.	The project aims to deliver the following output: 10 project members trained for BSL3 protocol; 2. samples collected from infected pigs; 3. viral material isolated and inoculated onto cell lines; 4. Verified ASF virus; 5. Isolation pens established; 6. Successful inoculation in chicken; 7. Anti-ASF antibodies have been quantified from poultry.	DLSU	Swine Farmers, Feed manufacturers, Research community, Researchers and graduate students.	01-Jan-22	31-Dec-23	ONGOING	21,828,595	9,164,247.72
	Development of Real-time Ultrasound Scanning and DNA Marker Selection Protocols for Meat, Carcass and Fertility Traits of Philippine Native Pig	Rapid, Inclusive and Sustained Economic Growth	This project will develop a selection protocol utilizing real-time ultra sound and DNA marker technology as tools for selection of breeding animals to improve the production and reproduction performance of the native pig to benefit the native pig farmers and the swine industry.	—€established genetic testing protocol using DNA marker technology for selected traits for use in breeding program. —€established protocol for live animal scanning for loin eye area and intramuscular fat composition for use as selection tool in animal breeding program and in meat quality evaluation prior to sale of live animal. —€established a genetic evaluation model that combines estimated breeding values and genomic information for selection/ranking of individual breeding animals. —€ontribute to increase in reproduction performance based on litter size at birth from 8.0 to 10.0 and improved the farrowing index from 1.7 to 2.0	PCC	ïƒ¼ Swine industry (in general) ïƒ¼ Native pig breeder farms ïƒ¼ Academe and researchers	01-Apr-19	31-May-22	COMPLETED	12,734,782	571,668.17

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	Development of Screening Protocol for Genetic Defects and other Economically Important Traits in Cattle and Buffaloes in the Philippines	Rapid, Inclusive and Sustained Economic Growth	The Philippines is an agricultural country, owing the major contributions from plants and animal resources. Over the years, the interest and efforts of the government livestock sector and private breeders in the development of cattle and buffalo industry in the Philippines have grown rapidly. However, despite of its contribution to the meat and milk supply of the country, the industry still needs to keep up with the demand of the consumers. One of the challenges that affect the growth of the cattle and buffalo industry is the poor production performance and low reproductive efficiency. To address these challenges, most of the private cattle and buffalo breeder farms, including the government itself outsource their stocks and genetic resource from other countries which facilitated the entry of new genetics for improved production efficiency in terms of meat and milk but also entry of genetic defects. In addition to importation, the use of assisted reproductive technologies like artificial insemination, as it is widely used in the industry has resulted to a selection from relatively limited number of elite bulls, which might have facilitated the spread of these genetic defects in the local herds. Several economically important genetic defects have been reported in cattle, but there are still limited studies on buffalo. Although genetic disorders are of minor concern in livestock industry, the increase in number of carrier animals may lead significant losses in the production. Several cases are still not reported, causing an underestimation of the real burden of genetic diseases in these animals. Understanding these genetic defects and economically significant traits at the molecular level will aid in the identification of carrier animals even at earlier stage in animal€™s life. Screening of semen donor bulls should be aimed to identify carriers of genetic defects and eradicate them from the breeding program. Furthermore, directly screening for genes that have huge effect on the production traits will greatly aid in the selection of replacement animals and hasten genetic improvement.	€¢ Identified significant markers for genetic defects and other economically important traits present in cattle and buffalo that are possibly be incorporated in the culling and selection program of breeder farms. €¢ Established genetic testing protocol using DNA marker technology for economically important traits and genetic defects in cattle and buffalo. At least 10 gene markers optimized €¢ Policy recommendation on the use of the technology for the local livestock industry.	PCC	€¢ Cattle and buffalo breeder farms and research agencies both government and private-owned. €¢ Breed associations whose work focuses on the genetic improvement as well as conservation of livestock species. €¢ Local large ruminant industry in general	01-Jan-21	31-Dec-23	ONGOING	14,109,528	2,799,437.23
	Development of Sustainable breeding and production systems for Paraoakan native chicken in Palawan	Rapid, Inclusive and Sustained Economic Growth	Paraoakan, the known genetic group of native chicken in Palawan has varying phenotypic characteristics and production performance within its group as perceived by paraoakan raisers. A sustainable breeding and selection R&D program for paraoakan native chicken can intensify the improvement of the native chicken industry.	> Information on the productive and reproductive performance of breeding true-to-type Paraoakan native chicken; > Information on appropriate production and management practices for Paraoakan native chicken; > Paraoakan breeding and selection, and hatchery technology; > 5,000 head breeder Paraoakan native chicken; > 20,000 head quality Paraoakan hardened chicks > Two (2) private entrepreneurs identified as multiplier farms; > Two (2) scientific articles published in refereed journal; > Improvement of Paraoakan NC breeding and production facilities.	WPU/PSU	Native chicken raisers in the province and in the region, faculty, students, NGOs, cooperatives, and other institutions who wish to engage in native chicken production, native chicken domestic and institutional consumers	01-Aug-21	31-Jul-24	ONGOING	8,478,601	1,204,695.50
	Establishment of Foundation Breeding Herd of Zampen Native Pig	Rapid, Inclusive and Sustained Economic Growth	The Philippine native pig is very popular across the country for "lechon". However, its development is constraint by inconsistency of phenotypic traits, reproductive and growth performance. Therefore, the R&D project aims to establish breeding population through purification using the most dominant phenotypic and economic traits of native pigs found in the entire Zamboanga peninsula with a total budget of about P16 million for three years implementation.	Year 1 —• 1 articlepresented to regional/national fora —• 30 heads weaners F1 — 5 personnel trained, 15 PDL€™s trained —• 1 MOA and 1 MOU —• 2 nucleus herd established at JHCSC and SRPPF Year 2 —• 1 article presented to regional/national fora —• 50 gilts and 15 boars F1 —• 1 IEC material (production guide) —• 1 trademark application —• 4 MTA farmer-beneficiaries — 15 PDL€™s, 20 BSA students and 4 farmers trained Year 3 —• 2 articles presented and published —• 2 IEC materials copyrighted —• 55 gilts F1, 100 gilts F2, 15 boars F1 and 20 boars F2 — 15 PDL€™s, 10 BSA students and 8 farmers trained	Western Mindanao State University J.H. Cerilles State College	—• Native pig farmers, students and agripreneurs—• Academe and R&D stations—• Persons Deprived of Liberty (PDL) —• Native pig processors and consumers	01-Jul-22	30-Jun-25	ONGOING	16,538,814	7,422,984.00
	Genome-wide Association Study (GWAS) for Growth and Egg Production Traits of Darag Native Chicken (Genome-wide Association Study for Egg Production Traits of Darag Native Chicken)	Rapid, Inclusive and Sustained Economic Growth	Research and development efforts have been done considerably for Darag native chicken for several decades now. The breed has already been purified while the management system is continuously being optimized by the West Visayas State University.	The project aims to deliver the following output: 1. Information on the degree of variations in growth and egg production traits of Darag native chicken; 2. Information on the heritability, genetic and phenotypic correlations of growth and egg production traits of Darag native chicken; 3. Information on possible genetic marker(s) associated with growth rate, egg production and other economically important traits of Darag native chicken; 4. Whole-genome sequence of Darag native chicken; 5. Optimized protocol on genome-wide association study for growth rate and egg production traits of Philippine native chicken; 6. At least five (5) trained WVSU staff and PADABA members on the use of molecular-assisted selection; 7. At least two (2) scientific article published in refereed journal.	UPLB	Darag breeders and producers, Academe, Research and Extension workers, Funding agencies, Native chicken producers, consumers, and traders	01-Jan-21	31-Dec-23	ONGOING	21,051,418	8,195,200.72
	Improving the Microbial Quality and Shelf-Life of BEPCO Pasteurized Liquid Egg Products thru On-line Processing Equipment Intervention	Rapid, Inclusive and Sustained Economic Growth	This project will address the seasonal supply of table eggs and fluctuations in egg price by processing the excess egg during summer months brought by high egg production of layer chickens and low consumption of eggs. Moreover extending the shelf life will further widen the distribution and market of processed liquid egg products.	Comprehensive scientific assessment with recommendations regarding the evaluation of the implementation and integration of four On-Line Processing Equipment Interventions proposed by BEPCO. Specific outputs are detailed further below using the 6Ps metric. Publication Two (2) undergraduate theses and/or One (1) graduate thesis / at least one (1) paper submitted for publication in a scientific journal Product/Technology Improvement of product specifications based on FDA Philippine microbial standards ; New shelf-life declaration resulting from implemented equipment interventions originally set at 14 days ; Expected extension of shelf-life with possible sales growth from original Shelf-life declaration from 14 days People and Place Knowledge-transfer to 15 BEPCO technical staff Partnership Partnership with BEPCO processing plant and egg-producers. Policies New processing parameters for BEPCO (in-house policy) taking into consideration the equipment-enhanced processing line.	UPD	Egg Producers and Processors Batangas Egg Producers Cooperative (BEPCO) Egg Product Consumers	01-Aug-21	31-May-23	ONGOING	4,765,299	757,460.00

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	Optimizing Boar Semen Cryopreservation Towards Effective Industry Utilization and Genetic Conservation	Rapid, Inclusive and Sustained Economic Growth	This project is a solicited proposal to respond to the need of the swine industry as part of their efforts to mitigate the impacts of ASF. This project was conceptualized during the industry consultation meeting conducted with the swine breeder farms and animal science researchers. The objective of this project is to proactively conserve the genetics of superior boars from local swine breeder farms to ensure availability of desired genetics for immediate and future use by the local swine industry. The establishment of a technology on the use of frozen-thawed semen in swine artificial insemination is vital in the recovery and repopulation efforts of the local pig industry.	Year 1 —Boar semen cryopreservation laboratory established (with additional funding requirement for facilities enhancement). —Well-defined linkages and coordination with cooperating swine breeder farmers. —Optimized boar semen cryopreservation protocol. Year 2 —Developed boar semen cryopreservation protocol —Research data from experimental boar semen before and after cryopreservation. —Publishable manuscripts: —‹Boar semen cryopreservation protocol optimized for the Philippine breeder swine industry. —‹Baseline data on the semen quality profile between fresh chilled and frozen-thawed boar sperm from different swine breeds.	VSU	—Swine breeder farms —Commercial AI companies —Commercial swine farms —Academe and R&D stations —Swine organizations/associations —Government policy makers and program implementers	01-Aug-21	31-Jan-23	ONGOING	4,998,562	447,384.00
	Semen Quality Evaluation of the Philippine Native Boar	Rapid, Inclusive and Sustained Economic Growth	With pigs providing as much as 40% of the global meat consumption [1] boasting from steady economic growth and a robust meat demand in many countries [2], pig farming is a major contributor to a sustainable food production. Sustained efforts for continued improvement of the reproductive performance of breeder boars are required to increase reproductive efficiency and production potential in swine operations.	Year 1 €¢Collection & optimization of semen evaluation protocol €¢Capacity building of staff at 6 native pig R&D stations €¢Semen evaluation expertise developed €¢Well-equipped swine semen laboratory Year 2 —Semen and sperm characteristics, environmental factors affecting semen quality, and Philippine native boar fertility information —Selection criteria for Philippine native boars —Philippine native boar selection model —4 Publishable manuscripts —‹Empirical standards and semen quality profile of the seven Philippine Native Pig (Boar) Groups —‹Epidemiological investigations on the breeding soundness of the seven Philippine Native Pig (Boar) Groups —‹Prevalence of and risk factors associated with potential bacteriospermia in Philippines Native boar semen —‹Correlation between seminal plasma components and semen quality characteristics of the Philippine Native Boars	VSU	ïƒ¾Swine industry (in general) ïƒ¾Native pig breeder farms ïƒ¾Academe, pig research networks and LGU€™s	01-Jul-20	31-Dec-22	COMPLETED	4,921,566	292,405.72
	VALIDATION OF MILK PRODUCTION TECHNOLOGIES IN SMALL DAIRY GOAT FARMS	Rapid, Inclusive and Sustained Economic Growth	This proposal was conceptualized to respond to the need to provide livelihood to our small farmers in the countryside and also to produce more food for the Filipino people.	€¢Goat breeding, feeding, healthcare and management, milk handling and processing technologies validated €¢Innovations on R&D derived technologies developed (by incorporating best farm practices of successful dairy goat farms) €¢Feasibility of small dairy goat farm enterprise evaluated	DOST-VII	€¢Dairy goat farmers €¢Academe Researchers and students	01-Aug-21	31-Jul-23	ONGOING	4,600,000	687,929.20
Biodiversity and Resilience of Coral Reef and Other Ecosystems in Submarine Groundwater Discharge Areas	Proj 3. Response of Coral Communities in Various Submarine Groundwater Discharge (SGD) sites	Rapid, Inclusive and Sustained Economic Growth	SGD is now slowly recognized as an important factor that determines the chemistry of ocean waters. Compared to rivers which has a defined entry to the sea, SGD can potentially discharge into the sea all along the coastal area and into the shelf highlighting the wider influence that SGD may contribute. SGD is also in contact with rocks, soils and sediments which are main sources of dissolved metals, nutrients, and potential urban contaminants can impact the coastal environment as much as or maybe even more than rivers. SGD and its influence on the coral reef ecosystem in Mabini is an area where we might find ways of preserving our reefs given the threats of warming, ocean acidification, and eutrophication. If SGD indeed factors in, then there are more reasons to include this factor in marine surveys, setting-up of marine protected areas, and in environmental protection guidelines for sustainable tourism, which are not included in any of the guidelines worldwide.	1. Spatio-temporal characterization of coral communities (benthos, fish and macroinvetebrates) and coral recruitment in SGD and non-SGD sites 2. Physiological characterization (growth rate, chlorophyll a content, zooxanthellae density, and diversity €“ Symbiodinium clade identification) of common species in SGD and non-SGD sites	UPD	Fisheries managers, Resource planners, local and global scientists	01-Aug-21	31-Jul-24	ONGOING	13,511,330	2,040,052.80
Biodiversity and Resilience of Coral Reef and Other Ecosystems in Submarine Groundwater Discharge Areas	Proj 4. Probing Microbial Diversity in Submarine Groundwater Discharges (SGD) Areas	Rapid, Inclusive and Sustained Economic Growth	SGD is now slowly recognized as an important factor that determines the chemistry of ocean waters. Compared to rivers which has a defined entry to the sea, SGD can potentially discharge into the sea all along the coastal area and into the shelf highlighting the wider influence that SGD may contribute. SGD is also in contact with rocks, soils and sediments which are main sources of dissolved metals, nutrients, and potential urban contaminants can impact the coastal environment as much as or maybe even more than rivers. SGD and its influence on the coral reef ecosystem in Mabini is an area where we might find ways of preserving our reefs given the threats of warming, ocean acidification, and eutrophication. If SGD indeed factors in, then there are more reasons to include this factor in marine surveys, setting-up of marine protected areas, and in environmental protection guidelines for sustainable tourism, which are not included in any of the guidelines worldwide.	€c Database on the diversity of microbial communities in selected SGD affected sites €c Database on microbial community structures in selected SGD affected sites €c Protocols for culture-independent methods for microbial diversity studies, such as sample preparation, DNA extraction, PCR amplification and DNA fingerprinting	UPD	Academe, Biotechnologists Microbiologists, microbial ecologists and systematists Natural products chemists and researchers Researchers and scientists involved in microbial diversity conservation	01-Aug-21	31-Jul-24	ONGOING	14,884,593	1,919,293.00
Biodiversity and Resilience of Coral Reef and Other Ecosystems in Submarine Groundwater Discharge Areas	Proj. 1 Distribution, Type and Fluxes of Submarine Groundwater Discharge (SGD) in Mabini, Batangas	Rapid, Inclusive and Sustained Economic Growth	SGD is now slowly recognized as an important factor that determines the chemistry of ocean waters. Compared to rivers which has a defined entry to the sea, SGD can potentially discharge into the sea all along the coastal area and into the shelf highlighting the wider influence that SGD may contribute. SGD is also in contact with rocks, soils and sediments which are main sources of dissolved metals, nutrients, and potential urban contaminants can impact the coastal environment as much as or maybe even more than rivers. SGD and its influence on the coral reef ecosystem in Mabini is an area where we might find ways of preserving our reefs given the threats of warming, ocean acidification, and eutrophication. If SGD indeed factors in, then there are more reasons to include this factor in marine surveys, setting-up of marine protected areas, and in environmental protection guidelines for sustainable tourism, which are not included in any of the guidelines worldwide.	1. Map of SGD occurrences from the coast to a depth of 30 m in Mabini, Batangas 2. Characterization of acoustic signal of differing SGD types 3. Estimates of spatio-temporal variation in fluxes over. 4. Protocols in the use of satellite images and acoustics for rapid assessment of SGD occurrences.	UPD	Fisheries managers, resource planners, local and global scientists	01-Aug-21	31-Jul-24	ONGOING	7,562,840	1,160,589.00
Biodiversity and Resilience of Coral Reef and Other Ecosystems in Submarine Groundwater Discharge Areas	Proj. 2 Marine Benthic Geochemistry and Ecosystems Associated with Submarine Groundwater Discharge (SGD)	Rapid, Inclusive and Sustained Economic Growth	SGD is now slowly recognized as an important factor that determines the chemistry of ocean waters. Compared to rivers which has a defined entry to the sea, SGD can potentially discharge into the sea all along the coastal area and into the shelf highlighting the wider influence that SGD may contribute. SGD is also in contact with rocks, soils and sediments which are main sources of dissolved metals, nutrients, and potential urban contaminants can impact the coastal environment as much as or maybe even more than rivers. SGD and its influence on the coral reef ecosystem in Mabini is an area where we might find ways of preserving our reefs given the threats of warming, ocean acidification, and eutrophication. If SGD indeed factors in, then there are more reasons to include this factor in marine surveys, setting-up of marine protected areas, and in environmental protection guidelines for sustainable tourism, which are not included in any of the guidelines worldwide.	1 Protocols for successful water, sediment, biomass sample collection from various environmental conditions of SGD Areas 2 Isotopic characterization of water from SGD and non-SGD sites 3 Ionic composition of the waters (SGD, ambient seawater) 4 Trace metal composition of the waters (SGD, ambient seawater) 5 Map of seagrass occurrence and type 6 Summary of lipids of dominant seagrasses across physico-chemical conditions 7 Synthesis of molecular markers in the sediments that will provide information on the biosynthetic pathways and diagenetic degradation. 8 Compound-specific C and H of select lipids	UPD	Local communities in Mabini (resort owners, teachers, students, LGUs, tourists) and nearby HEIs (i.e. Batangas State University)	01-Aug-21	31-Jul-24	ONGOING	20,395,005	2,099,445.90

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Discovery of High Value Biomolecules from the Sea Cucumber Stichopus spp.	Project 1. Characterization of High Value Biomolecules from the Sea Cucumber Stichopus spp. (Old Title: Discovery of high value biomolecules from Stichopus spp.)	Rapid, Inclusive and Sustained Economic Growth	The main objective is to identify potential high-value biomolecules from Stichopus spp. In particular, we will capitalize on the inherent diversity of saponin congeners found in sea cucumber and extract and purify saponins for potential use as vaccine adjuvants. Identification and systematic analysis of small molecule metabolites and proteins derived from these organisms can provide candidate active ingredients for therapeutic and cosmetic products as well as inspiration and materials for smart and responsive polymers. 1. To characterize the chemical diversity of secondary metabolites from Stichopus spp. a. To develop standardized LC-MS methods for the analysis of the small molecular weight metabolites; b. To create a chemical database of metabolites with associate metadata (rearing conditions, natural populations) for bioactive compound mining; c. To obtain preliminary bioactivity data on select sea cucumber extracts; 2. To isolate potential high value biomolecules (HVB) from Stichopus spp. a. To develop standardized mass spectrometric methods for the analysis of saponins and other lipids; b. To determine the lipid and saponin profiles of sea cucumbers via mass spectrometry; c. To extract and purify potential HVBs such as saponins and arachidonic acid. 3. To characterize the physico- and chemomechanical properties of mutable collagenous tissues a. To measure the mechanical properties of S. cf. horrens MCT at different states; b. To elucidate the chemical structure and crystallization state of collagenous biomaterials; c. To investigate the influence of changing ionic strength on MCT aggregation and ion-induced tissue contractures.	Publication €¢ Three (3) publications in Scopus/SCI-E indexed journals Products €¢ Optimized protocols for LC-MS and MS/MS for metabolites and saponin analysis, tissue sampling and sample preparation for advanced imaging and spectroscopic methods, protocols for saponin extraction and fractionation €¢ Transcriptome sequences; putative gene identification; secondary metabolite list for S. horrens; SHG instrument People and Services €¢ Three graduate students supported €¢ Open laboratory for services for common physicochemical analysis for materials, mass spectrometry €¢ Three training workshops for MS students Partnerships €¢ Potential partnerships with foreign collaborators (materials research groups in US and Taiwan) if active saponins will be discovered through this project	UPD	Public and private hatcheries with capabilities to culture and can be trained, research/scientific community, local fisher partners in pilot grow-out trials, LGU, local resource managers, NAARRDN agencies and DOST-PCAARRD consortia.	01-May-20	30-Apr-23	ONGOING	18,617,310	4,504,841.40
Ecological factors affecting mesophotic coral reef ecosystems: potential refuge from disturbances	Proj. 1 Biodiversity in Mesophotic Coral Reef Ecosystems	Rapid, Inclusive and Sustained Economic Growth	Coral reefs today are threatened by multiple stressors at varying spatio-temporal scales. Mesophotic coral reef ecosystems, which are coral reefs that occur at depths of 30 m and deeper, have been to provide a refuge against such large-scale stressors, considering their ability to buffer against disturbances such as increased temperatures and storms (Lesser et al. 2009), and their often close proximity to euphotic (i.e., shallow-water; 0 to 30 m deep) reefs (Bridge et al. 2013).Recent work has suggested that the potential of mesophotic reefs to function as a refuge for euphotic reefs is not universal and depends on various biological and physical factors that are taxa- and site-specific (Bongaerts et al. 2010, 2017). Refuge potential is partly determined by the connectivity of reef sites (i.e., are adjacent reefs biologically and physically connected), which is determined by species-specific dispersal potential and post-settlement survival of reef organisms, and site-specific oceanographic patterns (Cowen & Sponaugle 2009), as well as the adaptive capacity of mesophotic organisms. Thus, there is a need to improve understanding of these various factors in order to better assess the refuge potential of mesophotic reef ecosystems.	€¢ Biodiversity of coral, including precious corals, and reef fish communities in selected mesophotic sites in the Philippines €¢ Differential susceptibility of the shallow and mesophotic reefs to thermal stress-induced coral bleaching, based on the presence of coral taxa that are susceptible to thermal stress €¢ Trained at least five staff in technical diving (mesophotic diving)€¢ Training workshop (at least one at each of the five sites) on biodiversity survey and thermal stress impact assessment€¢ Engage MS and/or PhD DOST-PCAARRD scholars who intend to do their research on mesophotic coral ecosystem €¢ Information, Education, and Communication (IEC) materials distributed and biodiversity and role of mesophotic coral ecosystems as refuge from disturbances €¢ At least two (2) manuscript prepared for publication on mesophotic coral ecosystems €¢ Handbook on mesophotic coral ecosystems in the Philippines€¢ Video production summarizing the output of the Program€¢ Science-based inputs to policy recommendations on biodiversity conservation and climate change adaptation	UPD, MMSU, Holy Name University	Local communities, local government units (LGUs), fishers, research/scientific community and students	01-Aug-22	31-Jul-25	ONGOING	40,847,667	12,152,139.00
Ecological factors affecting mesophotic coral reef ecosystems: potential refuge from disturbances	Proj. 2 Investigating the Genetic Basis of Adaptive Capacity in Mesophotic Organisms	Rapid, Inclusive and Sustained Economic Growth	Coral reefs today are threatened by multiple stressors at varying spatio-temporal scales. Mesophotic coral reef ecosystems, which are coral reefs that occur at depths of 30 m and deeper, have been to provide a refuge against such large-scale stressors, considering their ability to buffer against disturbances such as increased temperatures and storms (Lesser et al. 2009), and their often close proximity to euphotic (i.e., shallow-water; 0 to 30 m deep) reefs (Bridge et al. 2013).Recent work has suggested that the potential of mesophotic reefs to function as a refuge for euphotic reefs is not universal and depends on various biological and physical factors that are taxa- and site-specific (Bongaerts et al. 2010, 2017). Refuge potential is partly determined by the connectivity of reef sites (i.e., are adjacent reefs biologically and physically connected), which is determined by species-specific dispersal potential and post-settlement survival of reef organisms, and site-specific oceanographic patterns (Cowen & Sponaugle 2009), as well as the adaptive capacity of mesophotic organisms. Thus, there is a need to improve understanding of these various factors in order to better assess the refuge potential of mesophotic reef ecosystems.	€¢ Characterized microbial symbiont diversity in at least two species of mesophotic corals and sponges€¢ Generated reference transcriptome sequences for at least one species of coral and sponge from selected mesophotic reefs€¢ Evaluated gene expression responses of at least one species of coral and sponge transplanted at different depths€¢ At least two (2) manuscripts prepared for publication on mesophotic coral ecosystems€¢ Information, Education, and Communication (IEC) materials distributed and biodiversity and role of mesophotic coral ecosystems as refuge from disturbances €¢ Trained at least 2 staff in microbiome and transcriptome analysis €¢ Training workshop (at least one at each of the three sites) on adaptive capacity of organisms in mesophotic coral ecosystems €¢ Engage MS and/or PhD DOST-PCAARRD scholars who intend to do their research on mesophotic coral ecosystem €¢ Science-based inputs to policy recommendations on biodiversity conservation and climate change adaptation	UPD	Local communities, local government units (LGUs), fishers, research/scientific community and students	01-Aug-22	31-Jul-25	ONGOING	26,163,174	5,938,708.00
Ecological factors affecting mesophotic coral reef ecosystems: potential refuge from disturbances	Proj. 3 Examining Population Connectivity between Euphotic and Mesophotic Coral Reef Ecosystems	Rapid, Inclusive and Sustained Economic Growth	Coral reefs today are threatened by multiple stressors at varying spatio-temporal scales. Mesophotic coral reef ecosystems, which are coral reefs that occur at depths of 30 m and deeper, have been to provide a refuge against such large-scale stressors, considering their ability to buffer against disturbances such as increased temperatures and storms (Lesser et al. 2009), and their often close proximity to euphotic (i.e., shallow-water; 0 to 30 m deep) reefs (Bridge et al. 2013).Recent work has suggested that the potential of mesophotic reefs to function as a refuge for euphotic reefs is not universal and depends on various biological and physical factors that are taxa- and site-specific (Bongaerts et al. 2010, 2017). Refuge potential is partly determined by the connectivity of reef sites (i.e., are adjacent reefs biologically and physically connected), which is determined by species-specific dispersal potential and post-settlement survival of reef organisms, and site-specific oceanographic patterns (Cowen & Sponaugle 2009), as well as the adaptive capacity of mesophotic organisms. Thus, there is a need to improve understanding of these various factors in order to better assess the refuge potential of mesophotic reef ecosystems.	€¢ Short read sequences and single nucleotide polymorphism markers generated for two depth-generalist coral species collected from western Luzon populations.€¢ Characterized spatial patterns and degree of genetic connectivity between MCEs and shallow-water reefs along the western Luzon coast based on single nucleotide polymorphism (SNP) markers€¢ Inferred spatial patterns and scales of population connectivity between MCEs and shallow-water reefs along the western Luzon coast based on biophysical modelling approaches€¢ Trained at least 3 staff in analysis of population connectivity €¢ Training workshop (at least one at each of the three sites) on population connectivity in mesophotic coral ecosystems €¢ Engage MS and/or PhD DOST-PCAARRD scholars who intend to do their research on mesophotic coral ecosystem €¢ Information, Education, and Communication (IEC) materials produced and distributed (Handbook on mesophotic coral ecosystems, videos and other reference and training materials)€¢ Science-based inputs to policy recommendations on biodiversity conservation and climate change adaptation	UPD	Local communities, local government units (LGUs), fishers, research/scientific community and students	01-Aug-22	31-Jul-25	ONGOING	17,570,647	4,709,424.00
Rebuilding the Agriculture, Aquatic and Natural Resources in Response to COVID-19 (ReAARRC)	Field Testing of Laboratory-reared Seaweed Cultivars from PSU-MSL Culture Facilities in MIMAROPA Region	Rapid, Inclusive and Sustained Economic Growth	This new project aims to roll-out the same initiatives to neighboring provinces of Palawan (Mindoro, Marinduque and Romblon) to provide supplemental livelihood to seaweed farmers affected by Luzon Lockdown in the said provinces and to likewise generate information about the growth performance and quality of cultivars from PSU culture facilities and established sea-based nurseries when grown in areas outside Palawan. During the entire ECQ, seaweed farmers had suffered the above-economic consequence as demand for raw material decreased and the prices have fallen (https://moderndiplomacy.eu).	Products €¢ Twelve (12) hectares of seaweed techno demo farms €¢ Four (4) floating seaweed dryers Publication €¢ Three (3) technical papers presented in scientific conferences People and Services €¢ At least 450-500 families benefited from livelihood component of the project €¢ At least 450-500 seaweed families, 40 LGUs, 20 from partner institutions capacitated on community-based seaweed enterprise Places and Partnerships €¢ At least 11 partnership agreements with LGUs, seaweed farmer associations, and academic institutions	PaISU	€¢ Seaweed Farmers/Association €¢ Fishing Communities €¢ LGUs €¢ Academe, Researchers, Students	01-Jan-21	31-Dec-22	COMPLETED	11,293,972	2,729,519.90

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Reproductive Biology Studies, Dietary Analysis, and Life-History of Philippine Tuna Species towards Sustainable Fishing Industry in Mindanao	Project 1. Reproductive Biology Studies of 3 Neritic Tuna Species in Mindanao	Rapid, Inclusive and Sustained Economic Growth	This project will evaluate neritic tuna species with its reproductive biology to establish a proper data that will be used primarily in fish management efforts and will further provide more inputs to stock population density implications in the future. Inter and intra-species reproductive variations will, therefore, be generated that will be instrumental in crafting policies that will ensure a sustainable tuna fishing in Mindanao and the country. If the following objectives are realized, the results of this research will be able to provide an updated information on the reproductive biology of neritic tuna species. It would provide relevant knowledge to help understand the reproductive condition of male and female individuals of each species. Having a better picture of the species€™ reproductive biology on a tissue level would help understand its population dynamics as much as reproduction is concerned. Wholly, this undertaking will be able to provide essential and required biological knowledge that would facilitate stock assessments and efficient management of tuna and tuna-like species in the future, in consideration of sustainability of the tuna resources. Among these policies that might be supported by the data that will be generated from this project are: 1) control of fishing seasons, 2) control of the fishery areas (spawning areas), and 3) control of juvenile fish through the regulation of minimum net mesh size and the prohibition of the sale of juvenile fishes. Thus, this project is important for the assessment of the reproductive potential of the populations as well as to well understand the productivity of fish populations and their resilience to fisheries and environmental changes.	Publications €¢At least 3 publications on the reproductive biology of Eastern Little Tuna (Euthynnus affinis), Tuna (Auxis thazard) and Bullet Tuna (Auxis rochei) in the seas of Mindanao, Philippines Products €¢Atlas of the neritic tuna species with updated information on its reproductive biology based on the results of this project People Services €¢Awareness campaign for local Fisherfok, canning industries or tuna consumers on the target preys and food preferences of these 6 commercially important tuna species €¢Two research assistants and two MS Bio students will be trained in reproductive characterization of neritic tuna species Places and Partnerships €¢MOU with Bureau of Fisheries & Aquatic Resources, private tuna industries, and local government units Patents/Intellectual Properties €¢Copyright for an atlas of the neritic tuna species with an updated information on its reproductive biology based on the results of this project Policy €¢Science based information that will input to policy on the 1) control of fishing seasons, 2) control of the fishery areas (spawning areas), and 3) control of juvenile fish through the regulation of minimum net mesh size	MSU-GSC	Stakeholders (Tuna Industry). This project can provide the stakeholders recommendations in tuna fishery management, especially for the small-scale fishers that could potentially result to an increased and efficient catch. The results may be used to provide guidance to the fishing industries to improve their management practices in order to save valuable time and resources. Government Sectors (LGUs and DA). Results from this project can serve as a basis for the development of species atlas that the LGUs and the DA can extend to their clienteles. Furthermore, the results can serve as benchmark information in crafting new technologies in management especially for research purposes, and in developing policies and regulations related to the management and sustainability of the tuna industry and the marine ecosystem in the country. This will also pave the way for LGUs, DA and SUCs to craft complementary technologies for research, development, and extension purposes. Academe and Scientific Community. The results of this project will be shared to the scientific community through various platforms such as local, national, and/or international conferences/ symposia and journal publication as a form of contribution to the body of knowledge. Moreover, this project can be a good avenue for interested graduate and undergraduate students to strengthen their capacities in the field.	01-Jan-20	31-Dec-22	COMPLETED	6,478,990	921,647.80
Reproductive Biology Studies, Dietary Analysis, and Life-History of Philippine Tuna Species towards Sustainable Fishing Industry in Mindanao	Project 2. Dietary Analysis and Feeding Habits of 6 Philippine Tuna Species Using Metagenomics	Rapid, Inclusive and Sustained Economic Growth	Application of NGS in metagenomics is currently explored in a plethora of fields such as microbial ecology, molecular taxonomy, and more recently in dietary composition analysis of organisms with high ecological value. In the Philippines, this will be the first time to investigate the dietary composition and feeding habits of tuna or any fish in general caught in its natural environment. Results of this research will provide crucial information on the identification of their target preys directly influencing their spatial distribution and population dynamics, which is important for tuna resource management. An accurate and confident model of the factors affecting species distribution and population structure is essential to managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region.	Publications (2) €¢At least 2 papers on the Dietary Analysis of Intestinal Contents of Oceanic Tunas Thunnus albacares (yellowfin), Katsuwonus pelamis (skipjack), and Thunnus obesus (bigeye) via Metabarcoding; and Metagenomic Analysis of Intestinal Contents of Euthynnus affinis (eastern little tuna), Auxis thazard (frigate tuna), and Auxis rochei (bullet tuna) for Dietary Composition Patents/Intellectual Property €¢Original scientific data on the diet composition of neritic and oceanic tunas catched from the wild using metabarcoding. More specifically on: 1.DNA profiles and taxonomic identification of plants and animals eaten by each of the 6 tuna species 2.Dietary breadth and food overlap between the 6 tuna species 3.Dietary preferences and feeding habits of each tuna species at varying life stages 4.Species diversity and richness in the dietary composition of the 6 tuna species Products €¢Handbook on Target Preys of 6 Philippine Tuna Species People Services €¢Awareness campaign for local fisherfolk, canning industries or tuna consumers on the target preys and food preferences of these 6 commercially important tuna species €¢Two research assistants and two MS students will be trained for DNA extraction, NGS analysis, metabarcoding, and bioinformatics. Places & Partnerships €¢MOU with Bureau of Fisheries & Aquatic Resources and private tuna	MSU-GSC	Results of this research will provide crucial information on the identification of tuna€™s target preys directly influencing their spatial distribution and population dynamics, which is important for tuna resource management. An accurate and confident model of the factors affecting species distribution and population structure is essential to managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region. Therefore, the findings of this research will significantly contribute to the scientific community, academe, local fisher folks, tuna industry, local and national economy, marine ecosystem, and the Philippines as a whole.	01-Jan-20	31-Dec-22	COMPLETED	21,188,459	4,848,729.40
Reproductive Biology Studies, Dietary Analysis, and Life-History of Philippine Tuna Species towards Sustainable Fishing Industry in Mindanao	Project 3. Otolith Elemental Fingerprinting, Shape Analysis, and Microstructural Analysis of the 3 Philippine Neritic Tuna Species	Rapid, Inclusive and Sustained Economic Growth	The analysis of otoliths for elemental fingerprinting, shape analysis, and microstructural description will pave the baseline data for the establishment of its age at varying life stages in correlation to its total fish length, growth patterns, life history traits, migratory patterns, and species discrimination between the 6 tuna species that abound within Mindanao waters. Data generated from this research will significantly contribute to an accurate and confident model of the factors affecting species distribution, migration patterns, and population structure of tuna in the Philippines which are crucial for managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region.	Publications €¢At least 3 papers on Otolith Shape & Macrostructural Analysis of 3 Philippine Tuna Species; Otolith Microstructural Analysis for Age Determination, Growth, and Life History Patterns of 3 Tuna Species; and Natal Origin and Migratory Patterns of Tuna Species using Otolith Elemental Fingerprinting Patents/Intellectual Property €¢Original scientific data on the otolith macrostructural, microstructural, and chemical characterization of the 3 Philippine neritic tuna species will be generated. More specifically, 1.Otolith shapes of the 3 tuna species 2.Establishment of landmarks for the changes in otolith shape for discrimination between species 3.Age range approximation correlating fish length with otolith€™s structural attributes 4.Otolith elemental fingerprints of the 6 tuna species at varying life stages 5.Elemental signatures between otoliths collected at varying sites Products €¢Handbook on Otolith Morphometrics and Life History Patterns of 3 Philippine Neritic Tuna Species Euthynnus affinis, Auxis thazard, and Auxis rochei People & Services €¢Awareness campaign for local fisherfok, canning industries or tuna consumers on the approximate age of these 3 neritic tuna species relative to its size and weight, migration patterns, and breeding areas for protection €¢Three research assistants and two MS students will be trained	MSU-GSC	Results of this research will provide crucial, scientifically sound information on the size-age approximation, migratory patterns, and life history patterns of the 6 tuna species within the waters of Mindanao which is essential for tuna resource management. An accurate and confident model of the factors affecting species distribution and population structure is important for managing species viability and sustainability. Thus, this research undertaking aims to ensure the conservation and sustainability of tuna as a major and valuable economic product of the region. Therefore, the findings of this research will significantly contribute to the scientific community, academe, local fisher folks, tuna industry, local and national economy, marine ecosystem, and the Philippines as a whole as the data generated will be essential used for the crafting of policies for the management and sustainability of the tuna industry in the country.	01-Jan-20	31-Dec-22	COMPLETED	14,097,959	2,981,391.50

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Aquaculture Development of Ulva for Sustainable Production and Product Formulation	Rapid, Inclusive and Sustained Economic Growth	Establish stable production of Ulva biomass in outdoor tank for feed, food and biomedical applications • Collect wild Ulva thalli and examine spores to be used as seedstock for culture production. • Culture and maintenance of seedstock • Growth rate examination of Ulva in outdoor tanks • Preparation of dried Ulva flakes from selected strains • Nutrient/proximate composition analyses of wild and cultured; wet and dried Ulva • Screening/extraction of Ulvan from selected strain • Purification/characterization of Ulvan	1. Publications. At least 2 publications in refereed Scopus or ISI-indexed journal; 2. Patents/IP. One (1) patent application on the culture technology of Ulva for the entire Philippines; and copyrighted manual for the outdoor culture of Ulva; 3. Products. Ulva seed strain and biomass products (wet or preserved-dried) as base ingredient for agriculture and food industry; including the isolated and purified Ulvan polysaccharide products which will be used in pharmaceutical and nutraceutical companies/industries; 4. People and Services. At least 2 graduate scholars to be trained; 5. Places and Partnerships. Technology transfer collaboration with seaweed industry, pharmaceutical company and government agencies (BFAR-R7 and DA-R7) 6. Policy. Policy brief on a sustainable aquaculture of Ulva and the promotion of the its uses to agriculture and pharmaceutical industries.	USC	The target beneficiaries of this project are the following: a. Seaweed company/industry €" seaweed farmers and companies may obtain Ulva seed stock material as potential strain for biomass culture; including trainings to individuals interested in Ulva cultivation for agricultural purposes. b. Research institutions and pharmaceutical industry €" results of the study will provide various applications in various fields in the product formulation as feed/food and biomedical applications. c. Academic institutions €" students, researchers and professors will acquire knowledge in understanding the culture processes and production of Ulva as commercial species desirable in value chain programs. d. Government agencies €" adoption and registry of Ulva seedstocks as culture strains for biomass cultivation and product formulation, such as BFAR-R7 and DA-R7.	01-May-21	30-Apr-23	ONGOING	8,901,556	1,858,558.00
	Assessment of the Reproductive Biology, Ecology and Biomass Production of Porphyra in Northwestern Luzon	Rapid, Inclusive and Sustained Economic Growth	This study will focus on the assessment of the Porphyra biomass in the natural ground, look for possible establishment of mariculture technology and development of harvesting technology	Products Brochures of Porphyra species in the Philippines (Y2) Publications -Reproductive Biology and Ecology of Porphyra in Northwestern Luzon (Y1) -Conchocelis Culture Technology of Porphyra in the Philippines (Y2) -Field Culture of Porphyra (Y2) Patents -Conchocelis Culture Technology (Y2) -Maricutlure technology (Y2) Places and Partnerships -Local Government Units of Burgos, Pagudpud in Ilocos Norte and Sta. Praxedes and Claveria (MOA) -DA-Bureau of Fisheries and Aquatic Resources -Department of Environment and Natural Resources People and Services -2 MS student trained (Y2) -60 of stakeholders attended in Public Consultation (Y1-Y2) Policy Scientific data as inputs osn the formulation of Regulation of Harvesting Porphyra Thallus in the Natural Grounds (Y2)	MMSU	Researchers, Local Government Units, Students, Residents, Academe	01-Nov-20	31-Oct-22	COMPLETED	4,912,394	1,052,372.00
	Biological and Ecological Studies on Asparagopsis taxiformis (BEAT) for Culture Technology Development	Rapid, Inclusive and Sustained Economic Growth	The Philippines has among the most diverse seaweed flora (~ 1000 spp.) in the western tropical Pacific yet we are only utilizing about 20 seaweed species. Of these, the Philippine seaweed industry is heavily reliant on three carrageenan-producing species (i.e., Eucheuma denticulatum, Kappaphycus alvarezii, and Kappaphycus striatus). To lessen our dependence on these species, we need to maximize our seaweed resources by tapping and developing those that hold great socio-economic potentials. Among these underdeveloped and underutilized seaweed resources is the red seaweed Asparagopsis taxiformis. The species can be sold and consumed as food, possess high-value natural products such as phycobiliproteins, and produce bioactive compounds that can be used in the medical, pharmaceutical, and nutraceutical industries (Trono 1997, 2001). Extracts of A. taxiformis was also reported to have anti-microbial properties against pathogenic bacteria in cultured fish and shrimps (Genovese et al. 2012). As feed additives, the bioactive compound bromoform they produce was known to reduce the amount of methane released by cows when they belch (Machado et al. 2014, 2015, Kinley et al. 2020). Recent findings also suggest that as low as 0.20% Asparagopsis addition to feeds, decrease in methane release from cows can go as high as 98%; that, while promoting weight gain among those fed with it (Kinley et al. 2020). Consequently, this alleviates the contribution of livestock to greenhouse gas emissions. However, the culture technology for the large-scale biomass production of A. taxiformis is yet to be developed and this is largely due to our lack of knowledge and poor understanding of the basic aspects of its biology, physiology, and ecology. Thus, we propose to conduct this research for development work to: 1) fill our foundational knowledge gaps on the biology, physiology, and ecology of A. taxiformis; and, 2) facilitate the cultivation technology development for A. taxiformis to sustainably produce biomass for the abovementioned purposes.	Products —Technology package for sporulation and short- to the medium-term culture maintenance of Asparagopsis taxiformis spores —DNA barcodes of Asparagopsis —Catalogued of Herbarium specimens —Data on the biology, ecology, and physiology of Asparagopsis taxiformis Publication —Two (2) publications on ISI, SCI-indexed or peer-reviewed journal People and Services —Six (6) trained researchers, four (4) project staff and two (2) graduate students mentored on seaweed biodiversity, ecology, physiology, and in vitro culture Places and Partnerships —MOA with BatStateU —MOA with Local Government Units and BFAR Policy —Information as input to policy recommendation on the conservation and protection of Asparagopsis taxiformis resources. Currently, A. taxiformis is being targeted by both local and international seaweed researchers and industries due to the high economic potential of the species.	UPD, BatSU	—Seaweed Farmers —Seaweed Industry —Coastal populations —BA-BFAR —Academe, Researchers, Students	01-May-21	30-Apr-23	ONGOING	9,983,854	2,122,071.20
	Examination of Possible Eutrophication of the Reefs in Tubbataha (ExPERT) Project	Rapid, Inclusive and Sustained Economic Growth	The research seeks to undertake a detailed examination and analysis of the changes in community composition in Tubbataha. This will entail rescoring and reprocessing of transect and fixed plot images collected over (at least) a nine-year period since the Tubbataha Management Office (TMO) continues the monitoring of the sites and stations of Licuanan et al. (2017) using the same methods even during the quarantine. The rescoring will be done at a more detailed level than the taxonomic agglomeration units (TAUs) used in NACRE. Images to measure turf algae height and coral recruitment will also be processed to determine if there	Data on patterns of benthic composition throughout 2012-2019 in sampling sitesMap of coral cover distribution in sampling sitesAnalyzed data will be published in a peer-reviewed, abstracted journal (one publication)List of management interventions that can be adopted by TMOOne policy brief that will contain the direct application of scientific data to changes in policy related to marine protected areas	DLSU	€¢The Tubbataha Management Office (TMO)€¢Stakeholders from diving tourism industry€¢Scientists and researchers€¢Policy makers	01-Aug-21	31-Jul-23	ONGOING	4,982,859	1,340,286.80
	Fisheries Catch Assessment Using GPS Trackers and Effort Survey of Municipal and Commercial Fishers in Mindanao (Fisheries Catch Assessment using IoT (Internet of Things) based GPS Trackers and Effort Survey of Municipal Hook and Line and Ringnet Fishers and Purse Seine Fishers in Mindanao)	Rapid, Inclusive and Sustained Economic Growth	This project will focus on utilizing internet-based gps trackers that will be used to track the movement and distance fished by municipal and commercial fishers. The gps tracker will send signals that will utilize both satellite, existing cellular and radio antennas.	1. Five ISI/SCOPUS publications 2. 2 Patentable tracker prototypes 3. 6 presnetations 4. Development of IEC materials 5. Policy guide on fishing effort distribution and mapping	DOSCST	Tuna industry, municipal and commercial fishers of tuna and pelagic resources, LGUs, academe, fishing companies	01-Aug-19	31-Jul-22	COMPLETED	8,617,167	529,727.48

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Jellyfish Ecology and Envenomations	Rapid, Inclusive and Sustained Economic Growth	This project seeks to generate basic information on the taxonomy and ecology of box jellyfish in the Philippines through a collaboration of experts at DLSU, MSU-IIT and Ateneo de Naga. The information will be used to inform the public and guide local officials and tourism operators.	Products - Profile of box jellyfish (Caramoan, Cam Sur and Lian, Batangas) Publication - One scientific paper in a peer reviewed, abstracted publication - Posters, Brochures, Infographics People and Services - Public seminars or consultations Places and Partnerships - MOU between DLSU and Lian, Batangas (existing), MOA between DLSU and MSU-IIT (existing) Policy - Policy brief targeting local officials Social Impact -Help dispel fears and misconceptions about jellyfish envenomation Economic Impact - Help reduce impact on tourism and fishing	DLSU	Policy makers, Coastal residents, researchers, tourism operators, and fishers	01-Feb-21	31-Jan-23	ONGOING	4,874,706	2,214,334.00
	Macronutrient, Carbon Cycling, and Aerosol Deposition: Impacts on Phytoplankton Community Structure and Toxin Production of Harmful Algal Blooms (Trace-HABs)	Rapid, Inclusive and Sustained Economic Growth	The project will look into the interactive effects of various growth factors (e.g., light intensity, temperature, macro- and micronutrient availability) on the occurrence and toxicity of Alexandrium and Pyrodinium blooms in two major sites in the Philippines: Bolinao in Pangasinan and Cancabato Bay in Tacloban City. These areas are identified as study areas because harmful Alexandrium and Pyrodinium blooms have been reported in these sites where coastal communities also rely on fisheries as a major source of food and income. The project results are expected to benefit coastal communities in the study areas as well as the Philippine population, in general.	Product: -Knowledge/knowhow/information regarding interactive effects of trace metals with other growth factors of HABs -Database of macronutrient concentrations -Module/training program for trace metal-defined algal cell culturing conditions People services: -Trained personnel in metallomics and trace metal biogeochemistry (including all 3 research staff that will be hired during the project duration) -On the job trainees/interns (about 5 per year) -Addition to scientific workforce by graduating science majors (estimated 3 graduate students for the duration of the project) Publications: -ISI-indexed publication (estimated 2-4 peer-reviewed articles for the duration of implementation) -Papers in national and international conferences (estimated 1 per year) -IEC materials: posters, proceedings Places and Partnerships: -Established laboratories including ï‚§ laboratory equipped with facilities for trace metal-defined algal cultures ï‚§ core measurement facility for major nutrients -Partnership with Academia Sinica Policy: -Policy briefs on discharge of riverine and anthropogenic wastes especially those that are metal-containing -Science-based information as input into the crafting of policies on the management of HAB	UPD	General Public Coastal Communities Academic/Scientific Community	01-Jun-20	31-May-23	ONGOING	12,508,077	1,526,932.65
	Marine Resource Assesment within Mansalay Bay, Oriental Mindoro, Philippines	Rapid, Inclusive and Sustained Economic Growth	The southern tip of Mindoro with its coasts facing the Mindoro Strait on the south and Tablas Strait on the east is a rich fishing ground being known for high value fish species as well as invertebrates such as shellfishes. Tablas Strait is the part of Sibuyan Sea bounded by Masbate in the East, Romblon on the North, Mindoro on the west and Panay in the East. This is the narrow point where waters from Sibuyan Sea meets waters from the Pacific Ocean through San Bernardino Strait and water of the West Philippine Sea through the Verde Island Passage. The complexity of hydrodynamics factors and habitat makes the site ecologically important. Vallejo (2003) found out that the Strait is part of the center of diversity for marine mollusks, while Carpenter and Springer (2005) indicated that the Verde Island Passage is the center of shorefish diversity. Tablas Strait thus may be considered a highway for larval dispersal with sites around it accumulating species. Mansalay Bay is part of Tablas Strait facing Tablas Island to the East. The municipality is home the Hanunuo Mangyans with 22% of its population composed of the indigenous group (MPA Management Plan, 2020). Much of its marine biodiversity is largely unexplored except for some sites. Sanchez-Escalona et al. (2010) documented over 32 molluscan species on a study that includes Mansalay Bay. This include Cassis, locally known as budyong, previously a threatened species declared under CITES (https://www.sealifebase.ca, downloaded on August 5, 2019). Recent survey on Mangal Marine Protected Area observed a Spotted Ray (Actobatus narinari), a nearly threatened ray species (dela Cruz et al., 2019). Marine turtles are also known to nest within the 71-kilometer shoreline of the municipality. The shallow coastal area of Mansalay Bay is also an important resource to coastal communities (Sanchez-Escalona, 2017). Coastal dwellers in Cabalwa, Manaul, and Budburan depend largely on shallow marine resources for livelihood. Specifically, artisanal fishermen exploit the shallow intertidal areas for shellfish, finfish, and other invertebrates as source of cash and household consumption, including the Mangyans. The rich marine biodiversity of the bay as well as its economic important to the general population had been largely undocumented. Profiling of the biodiversity of Mansalay Bay would illustrate its importance to the general management of the neighboring VIP and the active role of TS in maintaining this variety of life.	ProductsMansalay Bay Marine Resources ProfileDraft Management Plan for Mansalay BayPublicationOne (1) paper published and presented in conferenceOne (1) field guidePeople and ServicesCapacity building for different stakeholders: 20 fisherfolks, 2 fisherfolk organizations, 10 Bantay Dagat personnel, and 2 representatives from the coastal communities.Other possible people that may benefit for information campaign may include local school teachers and students.Places and PartnershipsPartnership with LGU of Mansalay, Oriental Mindoro Partnership with Haribon Foundation, Conservation International, Blue Finance and UPD Marine Science InstitutePolicyInformation as input to enabling policy for the establishment of MPA in Mansalay BaySocioeconomic ImpactThe project will enhance the knowledge on management and conservation of resources for better appreciation of concerned communities of its ecotourism and ecological values.The project is expected to increase and sustain economic gains of coastal communities through management and conservation of coastal resources	MinSCAT	The project is expected to benefit coastal communities in general, small scale fishers in particular, specifically the gleaners.	01-Feb-21	31-Jan-23	ONGOING	4,984,059	1,879,753.23

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Product Development of Vacuum Fried Tuna Skin	Rapid, Inclusive and Sustained Economic Growth	As the human population is growing and their consumption behavior changing, the worldwide demand for fishery products is increasing. Fish is considered safer and healthier to be consumed when compared with animals as source of protein. Fish is also one of the main source of protein in the developing countries. Fishing is one of the major industries in the Philippines€™ agriculture, fisheries and forestry sector. It is still one of the top fish producing countries in the world. Over 1.6 million Filipinos depend on the fishing industry for their livelihood. The Philippines is also considered a major tuna producer in the Western and Central Pacific Ocean (WCPO). The fishing industry€™s contribution to the country€™s Gross Domestic Products (GDP) in 2015 was 1.5% and 1.7% at current and constant prices, respectively (Philippine Fisheries Profile, 2015). Tuna remain as the top export commodity with a collective volume of 104,984 MT for fresh/chilled/frozen, smoked/dried and canned tuna products valued at US $296 million. Canned tuna constitutes the major bulk of tuna products being exported (Philippine Fisheries Profile, 2015). It is identified as one the priority commodity from the DOST harmonized national research and development agenda for 2017-2022 focusing on processing and new product development of the aquatic priority commodity aside from seaweeds. Most of the municipal and commercial catch of tuna is increasingly directed towards processing canneries which utilized only the meat portion. These kinds of processed products generate a large amount of by-products like head (13%), skin (10%), visceral organs (8%), bones (6%), fins (1%). These are sold to village people for human consumption (main ingredient for soups, while others are prepared as fried products). Tuna skin is also processed further. It is prepared as €œdried tuna skin€• which when fried it becomes crispy tuna skin called tuna chicharon (FAO, 2013). However, this tuna chicharon is oily and has a fishy after taste because it is fried conventionally at normal atmospheric pressure. To address this problem, this project will use vacuum frying technology to process tuna skin with better nutritional and sensory properties. This technology has gained popularity nowadays due to	Products €¢1 vacuum fried tuna skin. €¢1 information on the acceptability and nutritive value of the newly developed product from tuna wastes. Publications €¢1 At least 1 paper for publication (acceptability of vacuum fried tuna products through consumer test/processing optimization of vacuum fried tuna products). People Services €¢15 trained panelists on descriptive testing and product sensory evaluation. Places and Partnerships €¢1 partnership with Southern Philippines Agri-Business and Marine and Aquatic School of Technology (SPAMAST) and Philippine Women College. €¢1 partnership with the Department of Science and Technology-Region 11 Patents €¢1 utility model (Process of producing vacuum fried tuna skin)	DNSC	Tuna industry LOcal Fisherfolk Small, Medium and Micro Enterprises	01-Jan-20	31-Dec-22	COMPLETED	5,000,000	1,240,232.00
	Reproductive Biology and Catch Documentation and Traceability of Small-scale Commercial Sardine Fishery in the Sulu Archipelago	Rapid, Inclusive and Sustained Economic Growth	The project will assess the sardine fisheries stock in selected sites in the Sulu Archipelago including the reproductive biology of dominant species. Comprehensive surveys shall be conducted for the small-scale commercial fishery sectors, specifically for the €œkulibu€• or ringnet which operate mostly in Tawi-Tawi and other coastal fishing grounds in the Sulu Archipelago.	Products €¢1 Map of fishing effort €¢1 information on the reproductive biology of dominant sardine species €¢1 harvest control reference points €¢5 sardine fisheries profiles for LGUs Publication €¢1 At least 2 manuscripts submitted for publication in ISI indexed journal €¢1 At least 2 IEC materials (posters) on species and reproductive patterns of sardines in the Sulu Archipelago People and Services €¢5 supported at least 1 undergraduate thesis student €¢1 capacitated staff of MSU Sulu, MSU TCTO, MAFAR on sardine stock assessment Places and Partnerships €¢1 MOA with Mindanao State University (MSU) Sulu €¢1 local partnership with LGUs of Bongao, Tawi-Tawi, Jolo, Sulu and MAFAR Policy €¢5 S&T based information that will input into policies or guidelines for the harvest control rules/measures and other fisheries management plans in the study areas Social and Economic Impact €¢1 The fisheries management plans that will be developed through the project can optimize fishing effort and maintain the viability of local sardine stocks in Sulu Archipelago. This is important in sustaining the	MSU-TCTO	€¢1 local small-scale commercial and municipal fisheries sector €¢5 fisheries stakeholders & consumers €¢3 LGUs €¢1 MAFAR €¢1 Academe/researchers	01-Mar-21	28-Feb-23	ONGOING	4,846,300	1,612,775.00
	Spatio-temporal Monitoring and Rehabilitation Technology for the Enhanced Recovery of Coral Reefs (SMaRTER-Corals)	Rapid, Inclusive and Sustained Economic Growth	SMaRTER-Corals project adopts a programmatic approach to improve resilience of Apo Reef National Park. The study focuses on four key areas: coral reef monitoring of the reef complex; coral and reef fish recruitment studies; identification of important functional groups; and the patch scale rehabilitation of selected sections of ARNP. The goal is to generate empirical information to address data gaps and aid in the formulation of a strong science-based management plan for the reef complex. Historical data in ARNP reports changes in benthic and reef fish community structure. Utilizing data from 2017 and from SMaRT-Corals surveys, this project aims to continue the monitoring program to further elucidate factors that prevent phase shifts in ARNP. The project aims to add surveys targeting coral and reef fish recruitment, crown-of-thorns starfish population connectivity, and functional group identification assessment. Coral reef resilience points to the importance of minimizing large scale disturbance drivers, recruitment, and herbivory, particularly in offshore reefs, hence their inclusion in the monitoring program is critical. Climate-driven disturbances impacted the reef complex. In ARNP, long term data showed that the frequency of large-scale disturbances occur at intervals, shorter than what is required for recovery. Loose substrate coverage increased after major storm events in certain areas of ARNP. It is critical that assisted rehabilitation must be implemented in sections of the reef where it is needed with a high probability of successful binding and colonization. SMaRT-Corals provided initial data necessary to support scaling up of the rubble stabilization in a high-energy reef. The project aims to further develop local expertise through training and collaborative output. An important undertaking in the project is the Citizen Science training of MPA managers in Sablayan. This was identified during the roundtable discussion conducted under the previous project.	ARNP ecology, particularly processes that contribute to stability, resilience, and recovery.; Genetic structure of COT population to help managers gain initial insights and understand future outbreaks.; Capacitated personnel and volunteers on coral reef community monitoring and restoration work to help ARNP-PAMO and other stakeholders in monitoring the reef complex.; Production of a habitat map with a minimum of four classes (i.e., live coral dominated, dead coral with algae, sand, rubble) and with an overall accuracy of no less than 50%, to be used in change detection and spatial planning. The production of an ARNP ecosystem vulnerability model to show sections of ARNP that are most vulnerable to disturbance and those that have the highest potential for recovery. Establishment of a coral rehabilitation pilot site to showcase the technology used in coral rehabilitation. BS and MS graduates specializing on coral reef ecology and coral restoration. Research staff with expertise on coral reef ecology, ecological modelling, remote sensing, and coral and reef fish taxonomy. Contribution to science based information as input to policy on: § The creation of a spatial management plan § The implementation of strict no-fishing ban on ARNP § Strengthened partnerships with among collaborating agencies (i.e., DOST-PCAARRD; DENR-PAMO, Sanlayan MENRO, MinSCATand UPLB).	UPLB	Managing bodies ARNP PAMO/MENRO Fishing community of Sablayan and neighboring municipalities Tourism sector of Sablayan SUCs and HEIs	16-Jan-23	15-Jan-26	ONGOING	19,306,775	7,385,460.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Understanding Physiological Vulnerability of Ulva spp.: Implication to Green Tide Blooms (ULVA Project)	Rapid, Inclusive and Sustained Economic Growth	To provide baseline information on aspects of the biology, ecology, and physiology of green tide bloom-forming Ulva species in selected coastal areas in Batangas for coastal resources management. 1. To assess the diversity, distribution, phenology, and standing crop of different Ulva spp. in selected coastal areas in Batangas Province; 2. To characterize the photosynthetic characteristics of the naturally growing Ulva spp., under different physicochemical parameters; and, 3. To examine the growth and development responses of Ulva spores grown different physicochemical parameters.	1.Publication -Two (2) Research papers: local and international publication (peer-reviewed) -IEC Materials (e.g., brochure, flyers, video) 2.Product -Two (2) Database and Herbarium: one in BatStateU VIP CORALS and one in UPMSI -DNA barcodes of Ulva species from Batangas 3.People services -Eight (8) trained personnel: Two (2) trained research assistants -Six (6) trained personnel form LGUs 4.Places and partnerships -MOA with six (6) coastal areas in Batangas & one (1) National University 5.Policy -Scientific inputs to policy 6.Social Impact -Public information and awareness about green tide blooms -Capacitating locals on monitoring possible green tide bloom 7.Economic Impact -Data from the project can be used for scientific valuation aiding MPAs eco-tourism area establishment and EAFM action planning; -Possible development of alternative livelihood	UPD, BatSU	The target beneficiaries of this project are the following: €¢Research Staff of VIP CORALS and UPD MSI €¢Government Agencies €¢Non-Government Organizations €¢Environmental Practitioners of Hotels in the VIP €¢Resorts and Hotel Owners €¢Coastal Resource Managers	01-Jul-21	30-Jun-23	ONGOING	4,264,660	936,062.50
Accelerating the Growth and Assessing the Impacts of Gender-sensitive and Technology Enhanced Organic Vegetable Production in the Province of Laguna	Proj. 2 Assessing the economic impacts of technological intervention on organic vegetable farm profitability and gender roles in organic farming	Rapid, Inclusive and Sustained Economic Growth	This initiative would evaluate the economic impacts of technological interventions in organic vegetable production on both farmer profits and household wellbeing using a randomized controlled trial (RCT). RCTs offer more rigorous documentation of impacts than commonly used methods such as before-and-after designs or enrolled-versus-unenrolled designs.	The expected outputs of the projects are the following: Publications €¢2 journal publications in peer-reviewed journals; €¢Impact Assessment bulletin €¢Policy report that documents the programâ€™s outcomes and social, economic and environmental impacts to society in the Philippines. €¢Enterprise budget for organic vegetable farmers and factsheet; Places and partnerships €¢Linkages with LGUs and NGAs People and services €¢Capacities built on the use of RCT enhanced Policy €¢Discuss policy implications in relation to development and deployment of the technological interventions	UPLB	1.Farmers who have not tried organic vegetable production; 2.Policy and decision makers, national R&D/S&T system and the funding agencies supporting R&D activities; 3.Researchers who are directly involved in technology generation as well as those whose field of study included technology assessment and impact assessment; and 4.Evaluators of R&D programs, including PCAARRDâ€™s Socio-Economics Research Division.	01-Oct-21	30-Sep-23	ONGOING	2,546,392	923,193.50
	Assessing the Feasibility of Brackish Water Tilapia Production Towards Developing an Effective Business Model	Rapid, Inclusive and Sustained Economic Growth	Increasing production of saline tilapia because of high demand in the market as consumers would prefer this variety of tilapia due to absence of â€˜mud odorâ€™. Similarly, BFAR has also identified several product variants that can be produced out of fresh tilapia such as fish fillet and vacuum packed for whole or cut tilapia. All of which had also been identified to have an export potential. Likewise, BFAR XI has relayed that production of saline tilapia is relatively easier as compared to fresh water tilapia because the former is more resilient to changes in temperature. Recently, Dr. Ferdinand Rex Traifalgar of the University of the Philippines (UP) Visayas has developed the 7th generation of tilapia breed from the Nile Tilapia Egypt Strain (PCAARRD, 2020). This breed could grow at a rate equivalent to the freshwater growth rate under seawater condition of 35ppt. The breed can also thrive after transfer from 15 to 35 ppt. Mortality rate is only 5% and recovery time is 10 hours. With this new breed, this study intends to assess the opportunity for potential expansion of tilapia production in brackish water areas particularly in the Visayas and Mindanao regions where these areas are mostly identified by BFAR.	Publication -One (1) Policy brief on how to enhance acceptability of brackish water tilapia production among aquaculture farmers AT least two information bulletin regarding the brackishwater tilapia production for Visayas and Mindanao Product -Business model for brackish water tilapia production validated and tested - Profile of market participants (producers, distributors, wholesalers, retailers, importers, exporters, governmental structure, etc.) -Supply chain maps for brackishwater tilapia in Visayas and Mindanao - Information on desirability, operational efficiency, technology adoption, and viability of brackish water tilapia production People and Services At least thirty (30) capacitated tilapia fisherfolk/farmers and other value chain players/ beneficiaries Four researchers trained in conducting feasibility and business model development Partnerships At least five (5) partnerships/collaborations with SUCs (i.e. UP Visayas), Bureau of Fisheries and Aquatic Resources, Municipal Agricultural Offices in Visayas and Mindanao, and other stakeholders Policy Policy recommendations on how to unlock the business potential of tilapia production ventures in the Philippines	UPMin	The intended beneficiaries of this study include the following: — Tilapia industry stakeholders in selected areas in the Visayas and Mindanao Regions (e.g. smallholder fisher folks/farmers, traders, processors, consumers) — Researchers (SUCs/HEIs and other national agencies) — Policy makers — LGUs of selected areas in the Visayas and Mindanao Regions — BFAR — PCAARRD	15-Sep-21	14-May-23	ONGOING	5,000,000	1,500,000.00
	Advocating Policy Reforms Towards Effective and Efficient Conduct of Public R & D in the Philippines	Rapid, Inclusive and Sustained Economic Growth	In keeping with PCAARRD's Policy Analysis and Advocacy framework, this study will use Kingdon's multiple stream framework to understand the challenges and interests involved with advancing the utilization of Sec 53.6 of RA 9184 and in promoting the granting of honoraria to researchers. The use of policy scanning and stakeholder mapping will allow for a deeper understanding of the problem. The policy streams which intend to provide policy solutions will be addressed through the conduct of policy dialogues, round-table discussions among others. The politics stream will involve identification of cooperating policy champions to engage in the coproduction of policy instruments and serve as primary actors in the targeted advocacy campaign aimed at the particular government agencies. At the end of the project, a policy instrument that provides guidance to the research community is envisioned.	Publication: 1 Journal Article 2 Policy briefs Advocacy materials tailored for specific audiences 3-5 minute video explainer Process documentation of the advocacy People Services: Round Table Discussions Regional and National Policy Dialogues Information Dissemination Seminars/Workshops Places and Partnerships: With NGAs involved in the procurement and granting of honoraria Agreements or partnerships on advocacy and campaign formed through technical working groups or interagency groups Policy: Policy recommendations drafted and formally endorsed 2 Policy instruments advocated and endorsed	UPLB	Cooperating policy entrepreneurs of DBM, COA, GPPB, DOST, DENR, DA, CHED, CPBRD, RDIs	01-Oct-22	31-Mar-24	ONGOING	5,000,000	3,794,230.00

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	Annotated Compendium of Gender and Development Research in Agriculture, Aquatic, and Natural Resources (AANR): Towards Developing the AANR Gender and Development and Development Research and Development Agenda and Framework	Rapid, Inclusive and Sustained Economic Growth	The creation of a compendium provides an analytical review of the research findings of gender perspective related researchers. It will begin by determining what are current gender perspective related researches, what are the gender-perspective methodologies done; what specific knowledge areas in gender and development in AANR research in the Philippines will focus on; and will determine the existing research and knowledge gaps that exist in AANR research in the Philippine context. Further, it can provide a critique to the existing publications.	Policies €¢Provision of resources to know future directions of gender-related researches in AANR; Recommendation for capacity building program for researchers necessary for the conduct of potential studies; Policy brief; Development of the AANR GAD R&D Agenda and Framework Product €¢Collection of published and unpublished research outputs People and services €¢Practical training on Qualitative Content Analysis to 3 Science Research Analysts Publication €¢Compendium of Gender and Development Research in Agriculture, Aquatic, and Natural Resource One journal article Partnerships €¢Established linkages with state universities and colleges and private universities and colleges	UPMin	State universities and colleges, Private universities and colleges, PCW, LGUs, and National Government Agencies	01-Jul-21	30-Jun-23	ONGOING	5,000,000	1,216,691.00
	Assessing the Economics and Policy Environment of Custom Hiring of Rice Mechanization Services in the Philippines	Rapid, Inclusive and Sustained Economic Growth	Despite the recognition that agricultural mechanization can lead to an increase in farm productivity, and the fact that farm mechanization is one of the identified policy/program components for agricultural modernization in the country, the level of mechanization in rice and corn farming lags behind comparable countries such as Thailand. Moreover, even with the availability of agricultural machineries in the country, some rice production operations are still predominantly done manually. This only shows that there is a slow progress in terms of agricultural mechanization in the country. The study aims to assess the economics and policy environment of custom hiring agriculture mechanization services in the Philippine rice industry by examining the following areas: policy environment, industry support, extent of and factors affecting adoption of custom hiring services, effects of custom hiring services on productivity, profitability, labor displacement and gender differences. By the end of the project, it aims to recommend policy options on how custom services can be further enhanced to increase the level of agricultural mechanization in the rice industry.	Products ¡¸ Policy Framework for CHS ¡¸ R&D Framework for CHS Publications: œ" 3 Draft Journal articles Places and Partnerships: œ" Strengthened partnerships with Philippine Rice Research Institute (PhilRice), Center for Agri- Fisheries and Biosystems Mechanization (BIOMECH), Philippine Center for Postharvest Development and Mechanization (PhilMech) People and services œ" Provision of Financial Feasibility Study of CHS farmer adoption and of CHS providers. Policy œ" Formulation of 2 Policy Briefs on increasing level of agricultural	UPLB	The beneficiaries of the project will include Policy- and decisionmakers, farmers, CSF providers (e.g., farmers€™ association/cooperatives, privately-owned facilities), researchers and other stakeholders.	01-Sep-21	28-Feb-23	ONGOING	5,000,000	1,387,571.74
	Building Rural Community Capacity Towards Resiliency of the Mango and Coconut Livelihoods in Luzon	Rapid, Inclusive and Sustained Economic Growth	Agriculture is among the most vulnerable sectors to risks arising from climate variability and other non-climate forces such as political, socio-cultural, economic, or institutional circumstances. Risks create vulnerabilities that can potentially harm livelihoods and human well-being. To effectively manage vulnerabilities, it is imperative to build community adaptive capacity. Adaptation can be approached by reducing livelihood vulnerabilities through the collective actions of community stakeholders and adoption of technology innovations that can help manage such vulnerabilities leading towards livelihood resilience. The livelihood resilience framework analyzes and develops the livelihood strategies and capitals of marginalized and poor peoples, through social structures and processes that builds community capacity, to achieve valued well-being outcomes but in such a manner as not to degrade the natural resource base of livelihoods while reducing livelihood vulnerabilities. The proposal argues that social structures and processes that builds community capacity and engenders adaptation using appropriate S&T innovations, can pave the attainment of valued resilience development and well-being outcomes in rural farming communities with coconut- and mango-based livelihoods	Publication: One conference paper One publishable journal article or working paper Product: 2 General resiliency framework 2 Typologies of mango- and coconut-based livelihood systems People: at least 50 male farmers capacitated at least 50 women farmers capacitated Place: Established linkages with private, public, NGOs, and other stakeholders in Luzon (Camarines Sur, Isabela, Batangas, Laguna)Policy: 2 Policy recommendation/paper identifying the sociological factors that contribute to the sustainable production and resiliency of mango and coconut livelihoods Social Impact —€established linkages with government, private, public, NGOs, and other stakeholders. —• Capacitated men and women farmers. Economics Impact —€established resiliency framework for the sustainable development of the mango and coconut livelihood systems in rural communities. —€capacity building interventions, appropriate S&T innovation strategies, and technology delivery innovations into the value chain nodes lead to increased income, improved well-being and capabilities, reduced vulnerability, improved food security, and more sustainable use of natural resources.	UPLB	Beneficiaries of the project will include policy makers, researchers of R&D agencies, development organizations, and ultimately, the citizens (men, women, children) in each target area.	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,545,000.00
	Development and Piloting of Digital Marketing to Facilitate Market Access of Vegetable and Tropical Fruits Value Chain Participants in CALABARZON	Rapid, Inclusive and Sustained Economic Growth	The project would assist producers to overcome information asymmetry and to have coordinated exchange (bringing together of buyers and sellers) while minimizing face-to-face interactions. However, much like other types of industries, digital marketing in agriculture need to focus on understanding first the current client base to be able to promote effectively. Digital marketing in the Philippines is challenged by slow internet connectivity, way too low in fact, when compared with that of our neighboring countries. This is crucial since with digital marketing, slow or intermittent connectivity (if any) could translate to slow or no e-business at all. Since agricultural products are highly perishable, this could translate to postharvest losses and for some, non-marketing of their harvested crops. It is also important to understand how people would be able to connect to this new and exciting platforms. Ryan (2017) pointed out that digital marketing is not about technology alone but also about understanding people, how they are using the technology and how they can leverage to engage with others more effectively. These therefore points to the general questions of how ready are the vegetable and fruit farmers for digital marketing and what are their needs for this growing trend in the marketing of goods, including agricultural commodities.	Publication €¢At least (2) information bulletin and one (1) policy brief Patent €¢Database (cooperators ready/already into digital marketing and their best practices, list of value chain players, supply and demand, prices) Product €¢Operational model for the provision of marketing services for vegetable and fruit; market information system covering production and supply data and list of value chain players; market advisories People and Services €¢At least four (4) farmer organizations/cooperatives linked to AABH and buyers Partnerships €¢At least six (6) partnership developed such as with PCAARRD Agri-Aqua Business Hub, farmer cooperators/organizations/cooperatives, government agencies and private sector Policy €¢Policy framework for digital marketing	UPLB	Vegetable and tropical fruit producers in CALABARZON, traders, PCAARRD AABH, policy makers, farmer organizations, cooperatives and agricultural information service providers	01-Jul-21	30-Jun-23	ONGOING	5,000,000	2,427,232.94

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Development of a Gender-Responsive Knowledge Transfer Pathway for Potential Adoption of Best Practices in Philippine Vegetable Production Systems	Rapid, Inclusive and Sustained Economic Growth	The project complements the ACIAR-funded SLAM Project by providing enabling mechanisms for the adoption of the strategies generated by the SLAM project on vegetable crop and soil management that can optimize crop inputs, reduce soil loading of plant essential heavy metals, and enhance the quality of soil and pathogen management. The project is participatory action research and will employ mixed method approaches. Project sites are Leyte, Claveria, and Benguet.	Publication· Two (2) publishable papers on any of the following topics/titles:- Enhancing women€™s contribution to vegetable technology adoption through better knowledge transfer pathways -Gender-responsive knowledge transfer pathways for key stakeholders- Literature review on gender€™s role in technology adoption and knowledge transfer Product· Sex disaggregated database People Services· One (1) Capacity-building activity for project team development· One (1) Gender-related training for farmer participants Places and Partnerships · Memorandum of Agreement (MOA) between cooperating agencies: (1) PCAARRD, (2) VSU, (3) UPLB, and (4) USTP· Linkages forged with Institutions engaged in knowledge transfer: (1) Input suppliers, (2) Agricultural Offices, (3) Agricultural Training Institute (ATI)· Three (3) Letters of Commitments signed by the Local Government Unit in Leyte, Claveria, and Benguet (one per site) - adoption of policy recommendations per site Policy	VSU	Male and female farmers in three project sites Project Communities Implementing universities in terms of improved research competence Project staff in terms of professional development	16-Nov-22	15-Nov-24	ONGOING	5,000,000	2,917,371.20
	Development of an S&T based Gender-responsive and Crisis-resilient Root and Tuber Crops Value Chain through a Participatory Market Chain Approach	Rapid, Inclusive and Sustained Economic Growth	This project hopes to bring the opportunities in root and tuber (R/T) crops production and utilization into a pilot of the Participatory Market Chain Approach (PMCA) to facilitate a gender- and crisis-responsive R/Tmarket chains. This project will seek to facilitate the development of shorter and more inclusive S&T-based R/T crops value chain(s) where actors conduct business as partners and collaborators. With a greater sensitivity to gender dimensions of R/T value chains built in, inclusiveness is promoted on two fronts: by facilitating smallholder participation and by conducting gender analyses at key points to inform the innovation process	Publication €¢Two (2) articles €¢One (1) Facilitators€™ basic guide for public institution-led gender-responsive value chains innovation (electronic format) Products €¢At least one (1) new R/T value chain developed and launched per site €¢Process documentation People and Services €¢At least three (3) personnel in total from cooperating LGU(s) trained in the principles of PMCA and gaining actual experience in facilitating gender-responsive value chain innovation Policy €¢Local ordinance formulated for adoption by the three (3) LGUs of the selected sites to promote gendered PMCA Places and Partnerships €¢Collaboration among value chain actors with LGU €¢Link value chains to Food Innovation Centers	UPLB	Communities €¢ Livelihood opportunities in new value chains accessible to rural women €¢ Sustainable utilization of indigenous root/tuber crops €¢ Capacity development in value chain engagement Local government units - Capacity building in facilitating value chain development - Development of a guide for a crisis- and gender-responsive approach for facilitating value chains Researchers/RDE €¢ Methodological innovation in facilitating crisis- and gender-responsive value chain development €¢ Empirical data on gender dynamics, relations as well as benefits and challenges in a crisis- and gender-responsive value chain	16-Nov-21	15-Nov-23	ONGOING	5,000,000	932,443.90
	Development of Sustainable and Inclusive Value Chains for Selected Commodities in Laguna	Rapid, Inclusive and Sustained Economic Growth	For this project, three commodity value chains would serve as case studies covering rice, tilapia and bitter gourd. These commodities have significant roles in environmental, social and economic sustainability. Rice leads the agricultural sector in terms of greenhouse gas emissions attributed to the use of nitrogen fertilizers. Tilapia farming in Laguna de Bay contributes to increased biological oxygen demand. High value crops such as bitter gourd in conventional farming are normally exposed to excessive synthetic pesticide usage that contribute to air pollution, deteriorate soil fertility and contaminate the surface runoff. Farmer groups working on these commodities have also been identified as partner-cooperators. The project will leverage on the role of organizations in ensuring efficient and effective value chains and will develop partnerships with enabling players like the local government units (including the Municipal Agriculturists), attached agencies of the Department of Agriculture like the Agricultural Training Institute and Bureau of Fisheries and Aquatic Resources, Laguna Lake Development Authority and DOST-PCAARRD€™s own Agri-Aqua Business Hub. In the case of AABH, the project will form part of its Enterprise Development Program	Publication: At least two (2) articles based on the results of the project (including one policy brief)Patent: N/AProduct: Intervention/strategy models; improved and/or new products/services of enterprises; improved enterprisesPeople: At least 100 women and men personnel from 3 associations; At least 15 market services (linkaging, advisories) providedPlace: At least ten (10) partnerships developed with LGUs, value chain actors, and enabling playersPolicy: Policy recommendations on promoting sustainable and inclusive value chains	UPLB	Smallholder farmers and fisher-folk in selected locations in Laguna, specifically from the municipalities of Rizal and Pila, as well as the city of Calamba; value chain players; policy makers; local government units (LGUs);agribusiness service providers	01-Apr-22	30-Sep-23	ONGOING	5,000,000	3,397,090.00
	Development of Time Series Forecasting Models for Selected Agricultural Commodities and Commodity Groups in the Philippines	Rapid, Inclusive and Sustained Economic Growth	This project is part of a wider modeling program which seeks to develop two groups of models: a set of time series models; and a multi-market model of the agricultural sector. The multi-market model (MMM) project is being to ACIAR for funding. The time series models being and the multi-market model are complimentary tools for evaluating the agricultural sector. The small time series models help generate good forecasts and can also be used to forecast exogenous variables in the MMM. The MMM, on the other hand, is very useful in evaluating the simultaneous impacts of actions and/or external events on a multitude of variables and commodities. The impacts will also be consistent with the sense that equations explicitly state the relationships and assumptions behind each commodity or variable. The models developed will be lodged at the Socio-Economics Research and Data Analytics Laboratory (SERDAL) hosted by CEM, UPLB. Part of the objectives of the laboratory is to provide socio-economic technical assistance to the other R&D sectors and provide commodity-specific data analytics. These forecasting models can be used toward the achievements of these objectives. Through the use of these tools the laboratory can serve students, faculty, researchers, policymakers and private individuals	1. Publication €¢Two (2) discussion papers €¢ Two (2) drafts for journal article publication€¢ One (1) operations manual for utilization and updating of models 2. Product €¢ One (1) set of econometric models for use in forecasting and policy analysis3. People €¢ At least two (2) agencies provided with consultancy or technical services €¢ At least five (5) researchers and other stakeholders that were trained/assisted4. Partnerships €¢ Partnerships with other government agencies like the Department of Agriculture and DOST-PCAARRD on the use of these models.5. Policy €¢ Estimates and forecasts as inputs to policy recommendations in relation to designing quick response efforts or long-term initiatives for the AANR sector.	UPLB	Government policy makers, industry players, faculty, students, researchers	16-Mar-22	15-Mar-23	ONGOING	3,817,207	3,817,207.00

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	Development of Traceability System for Cacao in Southern Philippines	Rapid, Inclusive and Sustained Economic Growth	Given that there is a need to address the consumersâ€™ concerns about food safety due to the increasing demand for cacao products, the development of a transparent traceability system is timely and important. Anchoring on the PCAARRD-funded study titled, "Supply Chain Management Cacao Agro-Logistics in the Southern Philippine Context", this study aims to develop a Transparent Traceability System (TTS) for Cacao in Southern Philippines. The project will focus on the development and application of the transparent traceability system to the cacao industry to (1) help the key players increase or strengthen their competitiveness in terms of quality of beans and compliance with food safety standards; (2) establish linkages, and (3) widen their markets. It will utilize the results/outputs of the supply chain analysis done in Phase 1, including the critical tracking events (CTEs) and key data elements (KDEs). In addition, it will be supplemented with secondary data to trace and track the produce from its point of production up to its consumption. As a tool for transparency, accountability, and reliability, the traceability system can address concerns by providing relevant information to industry players where in the long-run, industry players should benefit from efficiencies and sustainability that the project may bring as cited in many recent studies on traceability. The study will be conducted in five stages following the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) framework. In stage 1, a system requirement will be conducted to gather, update and check necessary items for the system. The 2nd stage will determine the appropriate framework/algorithm matching the requirements gathered in stage 1. Stage 3 is on the development of the system, while stage 4 is on the implementation of the traceability system. The final stage of the study will be the turnover of the system and the conduct of monitoring and evaluation	Publication: At least one (1) article discussing how the traceability system can help improve the competitiveness of the cacao in the international markets Patent: One (1) utility model application Product:—One (1) Transparency Traceability System (TTS)—One (1) framework for the TTS—At least one (1) traceability protocol for the cacao production, manufacturing of cacao products, and distribution People Services: At least 100 cacao farmers trained on how to use the traceability system with at least nine (9) farmers and other key players directly involved for the pilot testing of the traceability system Place and Partnership —• One (1) Memorandum of Agreement with an industry partner (Kennemer Food International) to serve as the TTS adopter At least three (3) consultation meetings with the stakeholders Policy: One (1) institutional policy on traceabilitySocial Impact —Increased awareness of the cacao farmers on the importance of food safety and traceability system in the cacao products. —Improved practices of cacao farmers and other key playersEconomic Impact —More competitive cacao industry with an established traceability system —Sustainable cacao production in the	USeP	The scope of this study will be the players of the supply Chain in Region XI. Primarily it will include farmers, and the corporate buyers (KFI, Buyer cooperatives) involved in the production, trading, and manufacturing of Cacao in Region XI. —Kennemer Foods International and its cacao farmers, and similar farmer cooperatives/associations or companies in the Philippines—Manufacturing factories and their auditors—Consumers who are using the product in their daily life—Policymakers, program planners, and researchers working on cacao industry development	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,728,944.00
	Enhancing the Development and Growth of Seaweed-based Enterprises in Sorsogon (EDGES)	Rapid, Inclusive and Sustained Economic Growth	Sorsogon was historically one of the major producers of wild stock seaweeds in the Philippines and was the pioneer of seaweed farming in the Bicol region. However, in the past two decades, the production of seaweed in the province has been continuously declining. The industry is hampered with various issues throughout the different stages in the value chain, such as lack of low-cost quality seedlings, poor post harvest practices, limited equipment, disorganized farmers, limited market access, and lack of credit access. With the growing demand for seaweed products globally, it presents an opportunity to revive the industry in the province by helping the seaweed farmers and other value chain players in developing viable enterprises.In this project, appropriate interventions will be identified and applied to address issues and tap opportunities for the development of viable enterprises in the seaweed value chains. Geo-mapping the seaweed farms will be conducted to assess the resource capital and characterize existing seaweed farms in the province. This is important since environmental pressures like typhoons can cause seaweed value chain vulnerabilities and disruptions. Consequently, this project will focus on addressing the value chain challenges faced by the seaweed-based enterprises whose livelihood are vulnerable to natural hazards.A key factor concerning the future economic impacts of the seaweed industry in the province of Sorsogon is the need to identify which communities are most vulnerable to natural disasters that can affect their livelihood. This study seeks to support the vulnerable seaweed farmers in improving their livelihoods by developing and implementing intervention strategies to address the specific needs of the industry and their farm enterprises. These may include capacity building, market and institutional networking, forging partnerships with relevant players in the value chain, developing local industry player databases for the benefit of the local seaweed enterprises among others. In addition, a policy brief will also be made that will highlight key and actual challenges facing seaweed production in Sorsogon and recommendations promoting sustainability of this important industry in the province. The intervention designs will be geared towards the growth and development of the production and operations of the key players in the seaweed industry.	Publication: At least one (1) draft article for publication in highly regarded peer-reviewed journals; One (1) policy briefProduct: One (1) geo-map database to be easily accessed by various stakeholders, a database of seaweed producers and consolidators.People: At least 81 seaweed farmers and processors directly benefiting from the interventionsPlaces and Partnership: At least 10 partnership agreements with LGUs, seaweed farmers, key players in the value chains, government agencies (e.g. BFAR), and international partners. Policy: A policy recommendation to be distributed among LGUs in Sorsogon, seaweed farmers/associations and key institutions working on seaweed to further the growth of the industrySocial ImpactCreation of livelihood opportunities for otherwise economically and socially marginalized rural coastal communities.Economic ImpactCreation of livelihood opportunities for otherwise economically and socially marginalized rural coastal communities. The information that will be generated will help seaweed farmers, cooperators and policy makers to address key challenges on how to improve production and market.	SorSU	It is estimated that at least 81 men and women seaweed farmers belonging to three (3) seaweed producer groups will benefit from this study. As indirect beneficiaries, the LGU, academe and policy makers within the province may benefit from the replication and/or scaling of interventions.	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,730,000.00
	Enhancing the Growth of Tree Plantation Industries in the Philippines: Simplification and Harmonization of Policies and Governance along the Value Chain	Rapid, Inclusive and Sustained Economic Growth	This study will be conducted in Regions 10,11, and 13 that covers different stages of the industrial tree plantation along the value chain. This research intends to review the policies and identify issues and problems associated with the ITP value chain. It aims to develop a draft policy to simplify and harmonize policies and governance systems to improve the competitiveness and economic development of tree planters and other stakeholders of the wood industry in local, regional and national level.	Policy:Draft policy to simplify and harmonize ITP in both tenured and private lands (Y2) and policy recommendations for inclusion to the Proposed SFM BilResolution with ITP stakeholders adopting the proposed policy recommendationPublication:—Information Bulletins (Y1 & Y2) - 1 brochure/primer on value chain of ITP (Y1)- 1 policy brief (Y2) —1 Journal article/publication after completion of the project Places and Partnership: Technical Working Group (TWG) with members from key agencies formed through issuance of appointments. Social Impacts:Improvement in access to investment opportunities for local farmersEconomic Impacts:—• Increase in sustainably sourced logs satisfying the demand of the local industries —Increase in employment opportunities as more private investments are directed to the ITP industry, particularly in wood processing —Increase in income of the key players in the ITP value chain resulting from a more efficient processing of permits and other requirements	UPLB	The primary beneficiaries of this project will be the Department of Environment and Natural Resources (DENR), ITP developers, private investors, and the Philippines wood-based industry.	01-Oct-22	31-Mar-24	ONGOING	5,000,000	3,296,920.00

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	Examining Co-production of Gender and Sustainability Dynamics with Indigenous Peoples for Sustainable Nature-based Livelihoods of Selected Priority Commodities in the Philippines (CP4SL)	Rapid, Inclusive and Sustained Economic Growth	This research will examine the gender and sustainability dynamics of coproduction processes in projects that aim to promote sustainable nature-based livelihoods of selected priority commodities in the Philippines. This focuses on projects with indigenous peoples. Co-production is a key approach employed by the public sector to promote inclusive and integrative knowledge production and sustainability. Thus, it is critical to unpack the co-production processes, facilitative and hindering factors, process outcomes to target IP communities including its gendered impacts and technology adoption for sustainable nature-based livelihoods focusing on selected priority commodities. This study is in line with the HNRDA-AANR 2022-2028 Socio-economics Policy Research and Governance specifically as it integrates gender impact dimensions and how IP practices and beliefs affect technology adoption including how social institutions and institutional arrangements specifically power relations promote or hinder coproduction. The study will use case studies of selected national agencies (i.e. DOST) and NGO interventions to IP communities for sustainable livelihoods in 5 case sites across the Philippines. It will employ a qualitative sociological inquiry using grounded theory, feminist political ecology lens, and a systems-based Human Ecology framework as organizing framework. The study will also be informed by the €˜two-eyed seeing€™ concept as guiding principle (Marshalls, 2004), which highlights knowledge pairing of IKSP and modern knowledge systems for integrative science and innovation	Publication: at least one journal article published; at least one working paper for a conference presentation; at least one policy brief for gender-inclusive and sustainable coproduction of NBL programs / projectsPatent: copyright on the Manual on Human Ecology Gender Assessment Tools and Coproduction with IPs for SNBL Framework Product: Produced one final research report that examines the coproduction with IPs for SNBL People Service: at least 30 researchers capacitated from UPLB andpartner member institutions (e.g. SUCs and DOST) capacitated IP SNBL;5 KIs per site and 20 FGD pax from IP groups and local project implementors per site (at least 50% female representatives) for the Human Ecology Gender Assessment for IP-SNBL withat least 50 pax for the webinar on co-production based on study results Place andPartnerships:3 letter of agreements on the partnership between UPLB, LGU, SUC and CBOs in the conduct of the research, and jointly organized trainings or dialogue for policy recommendations that includes other beneficiaries (IP groups)Policy:at least one policy recommendation for gender-inclusive and sustainable coproduction of NBL programs/projects;Social and EconomicImpactThe study€™s potential social impact is a greater appreciation and value for indigenous knowledge systems and practices for AANR in the Philippines. Echoing Voorberg, W. H., Bekkers, V. J., & Tummers, L. G. 2015: 133, the research project€™s potential impact is the establishment of adoption pathways which are €˜pathways to a plural coexistence, where time-tested Indigenous knowledge systems can be paired with, not subsumed by, Western scientific insights for an equitable and sustainable future.€™. It could better inform national technical agencies and local development organizations in codesigning and co-producing initiatives for sustainability managing community-based nature-based livelihoods in IP communities	UPLB	National agencies like DOST Indigenous communities with IP women and children as indirect beneficiaries of the study local IP community and womenÃ¢,¬,¢s organizations State Universities and Colleges Local Government Units Non-government organizations	01-Oct-22	31-Mar-24	ONGOING	5,000,000	4,140,425.90
	Ex-ante Analysis of the PCAARRD Industry Strategic S&T Plans for Muscovy Duck for 2022 - 2028	Rapid, Inclusive and Sustained Economic Growth	The project can help in priority setting and in rationalizing the use of DOST-PCAARRD€™s funds byestimating the economic value and potential impacts of the alternative programs/projects for Muscovy duckunder the Duck S&T Roadmap for 2022-2028. It can also provide a cursory analysis of the soundness andvalidity of the methods of the S&T interventions and help identify the data and indicatorsnecessary in analyzing/assessing the achievement of the Duck ISP€™s goals for Muscovy duck.	Publication€¢At least one (1) journal articleProduct €¢Information on the economic value of 2022-2028 ISP projects for Muscovy duckPeople Services €¢At least five (5) people trained in ex-ante/impact assessment of Duck ISPPlaces and Partnerships€¢Linkages/partnerships with government agencies, SUCs, and other relevant institutions Policy €¢Policy recommendations on how to improve the design of the planned programs for the Muscovy duck industrySocial Impact- Improved well-being of farmers and livelihood/employment opportunities for thepeopleEconomic Impact-Economic growth and development through increased production and foodsecurity	UPLB	Government policy and decision-makers Industry Players Research and Academe Farmers Other stakeholders	01-Dec-22	30-Nov-23	ONGOING	3,926,788	3,926,788.00
	Ex-ante Evaluation of the PCAARRD Industry Strategic S&T Plans for Eel for 2022-2028	Rapid, Inclusive and Sustained Economic Growth	In 2021, the PSA recorded 2,239 metric tons of Eel captured from inland municipal fisheries or a 52% growth in production from the previous year. But opportunities from the eel industry is not limited to this growth in production coming from inland waters. A greater prospect is the export value associated with specific species of eel present in key freshwater ecosystems the Philippines and highly sought by countries in Northeast Asia. In support of this industry opportunities, DOST-PCAARRD actively engages in strategic S&T investments to key inland aquatic species to improve the country€™s inland aquatic biodiversity. With an over-all S&T goal of addressing the declining fish population in freshwater ecosystems though conservation and management, the Inland Aquatic Biodiversity S&T Roadmap (2022-2028) includes eel as one of these high-valued species with great production and income potential and with extensive development opportunities for the eel industry in the Philippines. To get a better sense of whether or not the interventions in the ISP for eel are in line with expected results, an ex-ante assessment is deemed as an essential first step to rationalize planned investments that would be allocated to finance the relevant activities of the program.	Publication€¢At least one (1) journal articleProducts€¢Documentation of the potential use of outputs and expected outcomes and impacts of the ISP for Eel through the potential adoption pathways developed€¢Information on the best possible adoption and impact pathways through which target outcomes and impacts may be generatedPeople Services€¢At least three (3) faculty and/or researchers capacitated in ex-ante assessmentPlaces and Partnerships€¢At least five (5) partnerships/collaborations with HEIs, NGAs and/or LGUsPolicy€¢Policy recommendations on how to improve the design of the planned programs for the eel industrySocial and Economic Impact: Increased productivity, employment, and income of stakeholders from production-related livelihoods brought about by an effective implementation of S&T-based investments and RD&E initiatives for eel.	UPLB	€¢ Policy and decision makers involved in the development and implementation of the Inland Aquatic Biodiversity S&T Roadmap (20222028), national R&D/S&T system and the funding agencies supporting R&D activities especially PCAARRD and DOST. €¢ Researchers who are directly involved in technology generation/transfer as well as those whose field of study included technology and impact assessment. €¢ Evaluators of R&D programs €¢ Grantees of PCAARRD/DOST funding €¢ Fishery planners and managers, policymakers and eel industry stakeholders	01-Dec-22	31-May-24	ONGOING	3,482,000	2,352,984.00
	Gender Impact Assessment of Forest Conservation Projects among Indigenous Peoples in Luzon, Philippines	Rapid, Inclusive and Sustained Economic Growth	This proposal assesses the gender impacts of forest conservation projects introduced to indigenous peoples (IP) in Luzon. It focuses on four indigenous peoples, namely, the Kalanguya/Ikalahan, and Ifugao-Ayangan of Nueva Vizcaya, Aeta of Nueva Ecija, and Molbog of Palawan. This research conducts a Gender Impact Assessment (GIA) on forest conservation projects, including the National Greening Program (NGP), and watershed management involving valuation and assessment of payment for ecosystem services. In conducting GIA, this proposal analyzes: (1) gender-disaggregated socio-economic impacts of forest conservation projects on indigenous peoples; (2) gender gaps engendered by these initiatives in terms of access and control of benefits and opportunities, participation in decision-making, leadership positions, and employment status; and, (3) policy recommendations to close gender gaps and improve the project design and delivery to promote gender empowerment in forest conservation projects. It uses mixed methods, where both quantitative and qualitative tools generate gender-disaggregated data on: (a) roles and activities; (b) access and control; (c) practical and strategic needs; (d) decision-making participation; (e) gender impacts on labor, time, resources, and socio-cultural factors; (f) influencing factors (economic, social, environmental and education); and, (g) level of equality and recognition of women€™s issues.	Publication -One (1) state of the art literature review on the selected indigenous peoples and their situations-One (1) compendium of documented case studies on gender-specific impacts of forest conservation in selected research sites-At least two (2) journal articles on gender-specific impacts of forest conservation projects on indigenous communitiesProduct -One (1) information database system on the gender impacts of forest conservation projects among indigenous communities in the selected research sitesPeople and Services-Three (3) graduate students gaining support for their research work under PCAARRD assistance program -Six (6) undergraduate students gaining experience in conducting fieldwork in research sites-Four (4) IP guide/translators gaining work experience and involvement in the research activities - Twenty (20) survey enumerators from the research sites gaining training and experience in conducting surveys -Four (4) LGU facilitators gaining mentorship and hands-on experience in conducting research activitiesPlaces and Partnerships-Four (4) partnership/linkage with LGUs, GAs, NGOs, POs, and selected indigenous peoples for selected research sitesPolicy -One (1) policy brief on the relevance of studying gender-specific impacts of forest conservation projects on indigenous communities	UPLB-CFNR	The target beneficiaries of this project are the men and women of the indigenous communities. The results of this research will also benefit the sponsoring GA and LGU as well as the participating PO and NGO as they learn from the lived experiences among men and women of the indigenous communities.	01-Jul-22	30-Jun-24	ONGOING	5,000,000	3,104,044.00
	Impact Assessment of Floods and Droughts in Selected Agricultural Municipalities in Laguna	Rapid, Inclusive and Sustained Economic Growth	The project is anchored on the end-to-end theoretical framework/approach (Koike, 2009) which is composed of three main facets, namely: scientific, engineering and agricultural, and socio-economic approach. The framework aims to characterize the effects of climate change through various global circulation models under specific greenhouse emission scenarios. This guiding framework aims towards more resilient Filipino communities that are characterized by healthy surroundings, rich biodiversity, good governance, and robust economy. Hence, the socioeconomic impacts of the identified flood and drought risks are assessed for the environment and the inhabitants. This involves assessment of interventions through policies, programs, and coping practices, in relation to the identified impacts of climate change hazards.	Publication: One (1) publication in scopus/ISI-indexed journalPatent: No Patent/IPProduct: Policy brief; evidence-based recommendations to be incorporated to development plansPeople: Capacity-building to LGU personnel and stakeholdersPlaces and Partnerships: LGU of Bay, Pila, Santa Cruz, Provincial Government of LagunaPolicy: One (1) policy brief	UPLB	Farmers/fishers and farming/fishing communities LGU of Bay, Pila and Santa Cruz Policy-makers	16-Mar-22	15-Mar-24	ONGOING	5,000,000	2,461,854.92
	Impact Assessment of the Balik Scientist Program (BSP) under the Department of Science and Technology	Rapid, Inclusive and Sustained Economic Growth	DOST launched the Balik Scientist Program (BSP) in 1975 to address the brain drain phenomena in the Philippines. The BSP was meant to entice scientists, researchers, engineers and other skilled workers to return to the Philippines to share their knowledge and expertise in building the country's human resource capacity. In return, several benefits and incentives were afforded to those who took part in the program such as insurance, daily subsistence allowance, research fund, housing and transportation allowance, among others. BSP is on its 45th year this 2020 and the outputs, outcomes, and impacts will have to be measured against its target. Further, the need to investigate what has been the contribution of BSP in the decreasing number of researchers in the country and in lessening the development gap, specifically in S&T will have to be done as well.	Publications: Impact Assessment Bulletin and Journal Article People Services: Targeted seminar series for the presentation of findings to relevant stakeholders Policy: Policy options for the enhancement of BSP	UPLB	DOST, implementing partner institutions of BSP scientists, researchers and R&D personnel	01-Jun-21	31-Dec-22	COMPLETED	5,000,000	1,173,253.00

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	Impact Assessment of the DOST International Science and Technology Cooperation	Rapid, Inclusive and Sustained Economic Growth	The role of international collaboration on science and technology has become more prominent in the context of national development with the increasing recognition that science and innovation are intricately linked to economic development and vital to enable developing countries to move up the value chain. Hence deliberate government policies to support science and technology capacity building includes forging international partnerships on science, technology, and innovation to promote and foster research collaboration across organizational, disciplinal, cultural, and economic boundaries. Governments around the world are recognizing the value of international collaboration through new policies, including around science and research diplomacy, and designing programs that aim to foster international cooperation. Over the years, the Department of Science and Technology (DOST) have established scientific linkages here and abroad with its counterpart entities. It had forged numerous partnerships and cooperation for mutual benefit. However, the resulting impact of these joint cooperation has not been assessed and documented.	Publications -At least two (2) discussion/policy papers-One (1) journal articleProducts -Report containing the documentation and assessment of the impacts of DOST S&T internal cooperation efforts/programs for policy analysis-Theory of change established for international cooperation People and Services-At least five (5) people trained in the impact assessment of international S&T cooperationPlaces and Partnerships -Linkages/partnerships with government agencies, SUCs, and other relevant institutions with similar international (S&T) cooperation programs Policies -Policy recommendations for the improvement of international cooperation programs	UPLB	Government policy makers, industry players, faculty, students, researchers	16-Jun-22	15-Jun-23	ONGOING	5,000,000	5,000,000.00
	Industry Assessment of Citronella and Lemongrass in Key Areas in the Philippines	Rapid, Inclusive and Sustained Economic Growth	The industry assessment of Citronella (Cymbopogon confertiflorus) and lemongrass (Cymbopogon citratus) would look at the status of the industries and its potential. To give a comprehensive detail on the production and marketing, it will use the methodology of mapping the supply chain industries. As for the performance of the chains, it will be analyzed using indicators. It will also identify threats and opportunities in the industries, interventions to enhance the efficiency and management that may be addressed through science and technology (S&T) solutions. The assessment of these industries will identify areas that require intervention, allowing for enhancement and development to maximize their potential. Results of the study will contribute to the body of knowledge on the status of the lemongrass and citronella industries in the country. Improvement of the industry may help a number of farmers to augment their income as well as provide employment to individuals thereby contributing to community development. This will support the development of the industry strategic plan (ISP) of DOST-PCAARRD for citronella and lemongrass as it will provide knowledge and information regarding present situation and potentials of the said industries as well as help identify the areas for improvement that requires proper research and development (R&D) interventions to make it more well established.	PublicationAt least two (2) draft articles; one for citronella and one for lemongrass to be published in a journalPeople and ServicesAt least 4 consultation meetings will be conducted for lemongrass and citronella. ProductDatabase for citronella and lemongrass industry (including production, processing, and marketing aspects)Framework as basis for in-depth investigation of the R&D support for Citronella and Lemongrass industriesInformation on levels of supply and demand situation/ market breakdown by origin and typeInformation on market opportunities and threats in citronella and lemongrass industries (market opportunities, growth drivers, restraints, government, and private-led programs, etc.)Place and PartnershipsAt least five (5) partnerships established comprising the Local Government Units (LGU)and Department of Agriculture (DA) in Regions 2, 4-B, 6, 7, 10, and 13, as well as respective state universities and colleges (SUCs), and citronella and lemongrass associationsPolicyPolicy recommendations for the development of citronella and lemongrass industry	CMU/UPV/CSU	The lemongrass and citronella men and women farmers and processors of R10, R13, R6 and R7 are the primary beneficiaries of this study as the assessment provides information and the opportunity to them on how to maximize their production and market their produce in the most efficient way.	01-Mar-23	29-Feb-24	ONGOING	5,000,000	5,000,000.00
	Institutionalization of Guidelines on Watershed-Based Integrated Area Land Use Planning Towards Resiliency	Rapid, Inclusive and Sustained Economic Growth	To facilitate the institutionalization of WILUP, a systematic advocacy program is needed. Fragmented advocacy efforts to adopt watershed-based approaches to local land use and development planning in the past had limited success despite existing guidelines. Comprehensive systematic advocacy program directed to LGUs, NGAs, policy makers, academe, among others is needed to promote sufficient understanding on WILUP covering its fundamental basis, its importance, and how to operationalize it. This advocacy program will need to employ blended strategies including use of printed IEC materials, AVPs, social media, fora and workshops in order to reach different target audience. It will also need for piloting WILUP to provide a venue for showcasing actual operationalization of WILUP, experiential learning, and capacity building. Likewise, it will also be instrumental to facilitate the formation of core group of advocacy champions consisting of prominent personalities from the government and civil society. Advocacy for the passage of related national legislations such as the National Land Use Act and Sustainable Forest Management Act that both provides for the adoption of watershed and ecosystem-based approach to land use planning and development should also be included. Towards the end of operationalizing the WILUP this advocacy project proposal is submitted for funding support.	6Ps metrics: 1. Publications a. One (1) advocacy kit containing the following: i. 3 policy briefer ii. 1 brochure about the policy reform being advocated iii. Print and digital IEC materials on watershed resiliency and the need for watershed-based land use planning b. WILUP tool kit: Guidelines on how to do WILUP, other reference materials c. Publication / stories from the pilot-testing experience: good practices, challenges encountered 2. Product a. Guidelines on WILUP 3. People Services a. 1 Policy forum for targeted audience organized b. 1 training among land use planners and practitioners c. (At least) 1 round table discussion on WILUP 4. Places and Partnerships a. Partnership with LGUs on the pilot-testing of WILUP b. Agreements in in the conduct of advocacy activities among DOST-PCAARRD, implementing agencies, others. c. Partnership with DENR, DILG, DHSUD, DA, DAR, DPWH, CCC, NDRRMC, NEDA, and other concerned agencies 5. Policies a. Draft policy documents on the adoption of Guidelines to WILUP b. Draft proposed modifications of salient sections of concerned DAOs, Technical Bulletins and Guidelines c. Draft CLUP (for adoption through SB Resolution and LGU Ordinance)	UPLB	At the end of the project, it is expected to benefit the following sectors: €c Fisherfolk and lake-dependent communities in Laguna de Bay €c Farmers and communities within the Baroro watershed in San Gabriel, La Union €c Laguna Lake Development Authority €c Department of Environment and Natural Resources €c Department of Interior and Local Government €c Department of Human Settlements and Urban Development €c Local Government Units, including the Province of Laguna and La Union	16-Oct-21	15-Oct-23	ONGOING	8,166,318	1,872,873.15
	Market Study of the Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines (SARAI) - Developed Technologies for rice and corn (Old Title: Assessment of Cost and Benefits of Various Crop Management Options using Crop Advisories of SARAI Advisory System (Assessing the Market Potential of Selected Technological Outputs of SARAI))	Rapid, Inclusive and Sustained Economic Growth	Farmers must be assisted in becoming wiser in their farm decision making process by ensuring that they are knowledgeable in how utilize weather and climate forecasting results provided by SARAI along with the market trends of the agricultural commodities they intend to plant. As such, the costs and benefits to be incurred by the farmer in relation to utilizing a combination of SARAI technological outputs would be critical in understanding its likelihood of adoption both in the short- and the long-term farming decision scenarios. Given that this kind of analysis is usually absent in many technological interventions in the agricultural sector in the Philippines in general and in the case of SARAI in particular, this study will specifically assess the costs and benefits of various crop management options using technological outputs of SARAI, and to be complemented with market analysis of technological outputs of the SARAI program. Combining all these information, once available in due time, will surely afford all government planners and regulators a clear basis as to how large-scale agricultural technological systems interventions like SARAI be made more effective and responsive to the need of its target farmer beneficiaries. Thereby ensuring that massive investment on large agricultural technological systems will indeed redound to substantial net benefits.	Publication: €c One (1) information bulletin €c One (1) draft journal for publication in ISI journal Policy: €c Policy advocacy for the enhancement of uptake of the advisory system People and services: €c 5 researchers trained on choice experiment, demand forecasting, and crop management options analysis	UPLB	Local farmers, cooperatives, and organizations in the Philippines Government agencies such as Department of Agriculture (DA) and the Department of Science and Technology (DOST)	01-Jul-20	30-Jun-22	COMPLETED	4,934,693	54,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Profiling and Assessment of the Ornamental Plants Industry for Sustained Supply of Selected Locally and Globally Competitive Ornamental Plants in the Philippines	Rapid, Inclusive and Sustained Economic Growth	This initiative would support the Ornamental Plants Industry Strategic S&T Plan with the goal of ensuring the supply of locally and globally competitive ornamental plants in the country and increasing year-round production. With this project, it would understand the current industry situation, including profiles of various ornamental plants grown in the country, understand the market potential and prospects, and identify the direction and priority research areas that PCAARRD may support.	PublicationAt least one (1) drafted article regarding ornamental plants industry is to be published in a journal At least one (1) information bulletin regarding the current status and prospects of the ornamental industry ProductDatabase for the selected ornamentals plants (includes among others production/area planted, market trends/prospects,Proposed R&D activities for the sustained competitiveness of the selected ornamental plants (for recommendation to the Ornamentals Plant ISP)Information on the ornamental plants that will be prioritized for funding and support by PCAARRD and/or other government agenciesPeople and ServicesAt least three (3) stakeholder consultations composed of at least 20 key industry participants in Visayas, Mindanao, and Luzon.At least two (2) researchers trained in conducting an industry assessmentPolicyPolicy recommendations for the improved competitiveness of the selected ornamental plants and increased supply of these plants in the Philippines all year round.Social Impact Social impact can be generated when the growers work together to meet or supply the requirements of the target markets for the project-identified ornamental plants that have the high potential to be commercially produced. It is highly possible that growers and other industry participants can work together for their common good. For example, in order to widen their market, as a form of advertisement, growers and other industry players unite and work together to set up trade fairs (whether local or abroad). Economic Impact The economic impact of the research project will stem from its ability to identify the ornamental plants that have high potential to be commercially produced and offered in the market (even in the export market). This can help increase the income of the growers and once exported, can boost the local, regional, and eventually the national economy at a faster rate.	UPLB	The target beneficiaries of the project are the following: key players of the ornamental industry, ornamental plant growers, policy makers, government agencies, DOST-PCAARRD, and research institutions including state universities and academe.	01-Sep-22	31-Aug-23	ONGOING	5,000,000	5,000,000.00
	Research for Development: Payment for Ecosystem Services Outcome for Sustainable Water Provision (R4D: PESO SWaP) in Barobbob Watershed, Nueva Vizcaya, Philippines	Rapid, Inclusive and Sustained Economic Growth	Implementing payment for ecosystem services (PES) mechanism as an approach towards sustainability is a relatively novel approach in environmental conservation. PES mechanisms create a market for ecosystem services by making users/beneficiaries pay for the services while compensating conservation activities of service providers. While the mechanism has already been implemented in several areas in the country, this action research is needed to design a PESmechanism tailor-fit to the needs of the Barobbob watershed stakeholders to be successful. This study consciously integrates the science, economics, and institutions and governance aspects of PES while continuously engaging and capacitating stakeholders. The results of this study are envisioned to provide inputs to a national policy on PES. A national policy may stimulate the establishment of PES mechanisms across the country, boosting efforts for sustainability.	Product €¢ Implementation and monitoring plan for PES €¢ Water supply provision map/model €¢ Process documentation of PES design and implementation People and services €¢ Capacity building of stakeholders and project staff €¢ Capacity building of faculty and staff of the local university (Nueva Vizcaya State University) Places and partnership €¢ Partnership with LGU, NVSU, water district, NIA (if applicable), farmer organizations, NGAs €¢ Memorandum of Agreement with NVSU Policy €¢ PES scheme initiated €¢ Local ordinance initiating PES €¢ Policy outputs as inputs to advocacy on national act on PES Publication €¢ IEC materials: leaflets, flyers and brochures, training materials €¢ Training modules (PowerPoint) €¢ Policy brief	UPLB	The PES mechanism to be implemented in Barobbob watershed will benefit the local community. Upland dwellers will receive income from practicing sustainable management and downstream households, farmers, farmers organizations and the local water district will benefit from improved water quality and stable water supply. Throughout the project, the mentioned stakeholders and representatives from the LGU and the academe will be capacitated regarding the design and implementation of PES.	16-Oct-21	15-Oct-23	ONGOING	5,000,000	1,291,085.60
	STRENGTHENING THE ADVISORY ROLE OF NAST PHILIPPINES	Rapid, Inclusive and Sustained Economic Growth	Considering the budget allocated for the advisory function of NAST PHL, it cannot conduct its activities without the support of other institutions and funding agencies. The funding support will greatly help in attaining the organizational outcome of NAST PHL indicated by the number and percentage of policies, recommendations, formulated, submitted to concerned offices and accepted by said offices. The topics for discussion will be in accordance with the NAST Strategic Plan as a continuing assessment of the needs of the country. Each division of NAST will have topics assigned to them in line with the continuing concerns, special initiatives, and support mobilization for S&T and Academy programs. In order to provide science-based solutions, scientific meetings and conferences, policy fora, science information and legislative fora, and such other activities will be conducted whichever is appropriate. In general, this project aims to effectively promote the advisory role of NAST PHL through enhanced and effective interactions with the concerned institutions, agencies, and the general public.	Product: €¢ NAST Corporate Identity and Brand Guidelines €¢ Three-year Communication Plan of NAST €¢ One (1) manual derived from the study on science communication units among selected science academies and government agencies completed €¢ At least five (5) NAST Advisory Notes and/or Position Papers on important science and technology related topics (i.e., sustainable development goals, etc.) published in every project year Patent/Intellectual Property: €¢ One (1) copyrighted manual derived from the study on science communication units among selected science academies and government agencies People Services: €¢ At least eight (8) NAST Advisory staff trained on policy analysis and formulation €¢ At least 15 NAST Secretariat staff trained on strategic science communication €¢ 1500 men and women students, researchers, scientists, media, policymakers, government employees and officials participated (participants of scientific meetings and science fora) Places and Partnerships €¢ Linkages or partnerships formed with various agencies and institutions (e.g. partnership in the conduct of science fora, stakeholder analysis, strategic communication workshops and consultations) Policy €¢ Five (5) policy recommendations generated from the different advisory-related activities to be submitted to policy and decision makers in every project year Social impact: €¢ Increased trust and improved social acceptability of scientific findings as reflected in the increase in demand and/or request for NAST expert advice on science and technology issues €¢ Improved public understanding of scientific researches Economic impact: €¢ Improved decision-making of policy and law makers and formulation of optimal policies, resulting in more efficient use of public resource and effective government interventions and support services €¢ Increased public and private investments in R&D activities ultimately result in the development of new products, technologies, and processes that can further improve the country€™s productivity and economic growth €¢ More harmonized R&D efforts in	National Academy of Science and Technology	Policy makers / Lawmakers Science Community Officials and key personnel from both the government and the private sector Advisory staff of NAST Secretariat General Public	01-Oct-22	30-Sep-25	ONGOING	36,748,404	11,806,368.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Supply Chain Analysis of Pummelo in Selected Regions of the Philippines	Rapid, Inclusive and Sustained Economic Growth	The latest available information on the production of pummelo in the country was reported in the study of Pangan and Alaba in 2008 entitled €œSupply Chain of Pummelo in Davao Region.€ This reported that the country€™s pummelo production experienced a 3% average decline. The country€™s pummelo production has also been declining since 2003 and the industry clearly awaits for the needed intervention. Multiple issues leading to low production and low farm productivity has to be addressed. The country€™s pummelo industry suffers from very low farm productivity, only averaging at 5.414 MT/Ha or 5,414 Kgs/Ha. In Davao City the highest average production per tree was 175.37 kgs/bearing tree compared to 108 kgs/bearing tree in Isabela. Furthermore, a study by Pangan and Alaba in 2008 concluded that Davao regions€™ production subsystem was even relatively inefficient and produces low quality products at high costs on top of significant pest and disease incidence among pummelo farms in the area. Issues regarding profitability, land conversion or crop shifting and the lack of institutional support to motivate and encourage pummelo farmers, nonadoption of good agricultural practices and proper insect pest management to promote farm productivity and poor post-harvest facilities and product handling may still be surrounding the industry as of the present. In addition, the control of citrus rind borer as the major insect pest for pummelo which claims around 60 to 80% of the entire produce might still be affecting commercial productivity of pummelo farmers. Marketing activities of pummelo also claimed a significant role in the overall supply chain. Pangan and Alaba in 2008 reported about the high marketing margin of middlemen in the pummelo supply chains making its price highly sensitive to its supply. They documented high product losses ranging 30% to 50% that were experienced during the handling activities of middlemen such as wholesalers while minimal losses around 5% were experienced by the retailers. These findings in 2008 were indications of existing problems and issues surrounding the different channels and nodes in the pummelo supply chain which directly affect its retail price.	Publications ī¸ Published scientific journals on agriculture, economics and business management. People Services ī¸ Inputs to decision makers and policy makers on the improvement of pummelo industry in the regions. Pummelo farmers are also expected to benefit from information outputs (production, processing, and marketing). Places and Partnerships ī¸ Department of Trade and Industry (DTI), Davao Pummelo Stakeholders Association Inc. (DPSAI), Department of Agriculture R11 (DA 11), University of Southeastern Philippines (USeP) Policy ī¸ Policy recommendations based on issues and problems that would arise from the project	USeP, CMU, NVSU, USM	ī¸ Pummelo farmers ī¸ Pummelo traders and processors	01-Jan-21	31-Mar-22	COMPLETED	3,000,000	475,978.00
	Toward the Institutionalization of the Philippine Science, Technology and Innovation Foresight (PAGTANAW 2050)	Rapid, Inclusive and Sustained Economic Growth	The National Academy of Science and Technology, Philippines (NAST PHL) with support from the Department of Science and Technology (DOST) has produced the country€™s first Science Technology, and Innovation (STI) Foresight document entitled PAGTANAW 2050. This Foresight includes a compendium of STI megatrends; global and national societal goals; and transdisciplinary-interdisciplinary operational areas; and current and emerging technologies. With backcasting of the pre- and peri-pandemic period, the report suggests significant drivers of change and provides insights and reflections on plausible STI development paths that will impact on the aspirations of the Filipino people by 2050. The foresight has been firmly grounded on the nation€™s aspirations and within the context of the country€™s natural and physical endowments€"an archipelago with abundant marine resources, as well as our shared Filipino values and skills, and other potentials as embodied in our Constitution and other national documents. In addition, the STI Roadmap was produced to guide national development towards our preferred future which traces the foresighted trajectories of the enablers, drivers, and opportunities that are seen to shape the Philippine STI for the next three decades	Publication: €¢ One (1) Translated Version of PAGTANAW 2050 (Filipino) €¢ One (1) Philippine STI Foresight Identity and Branding €¢ One (1) Philippine STI Foresight Website that will serve as database €¢ Four (4) Social Media Accounts/Pages Created and Maintained (Facebook, Twitter, Instagram, and LinkedIn) €¢ Twelve (12) reports on the actual events vs. assumptions of the foresight to be prepared €¢ One (1) consolidated report of STI foresight projects and adaptation of PAGTANAW 2050. Product €¢ One (1) Grand Launching of PAGTANAW 2050 €¢ Twelve (12) FGDs to be conducted: Periodic review of the needs of the identified sectors. People Service: €¢ at least 150 participants in three (3) press conferences. €¢ 50 stakeholders consulted in six (6) consultation meetings with the stakeholders €¢ at least 600 personnel/staff capacitated in nine (9) regional seminar workshops on the use of foresight methods for strategic planning. Place and Partnership: €¢ Linkages with policymakers (2 from the Senate; 2 from the HOR) established. €¢ Linkages with international academies of sciences/relevant organizations established. Policy: €¢ One (1) drafted legislative bill for Institutionalization of the Philippine STI Foresight. €¢ One (1) Proposed development of Philippine Foresight Institute. Social Impact €¢ Improved understanding and appreciation of STI Foresight in the Philippines Economic Impact: €¢ Increased public and private investments in R&D activities, ultimately resulting in the development of future-oriented products, technologies, and processes that can further improve the country€™s productivity and economic growth €¢ More harmonized R&D efforts in the country and increased contribution in the continuity of future-oriented S&T innovation systems	NAST	Target beneficiaries: 1. Legislators2. Government officials3. Students4. General Public5. Stakeholders	01-Jul-22	30-Jun-25	ONGOING	33,725,878	11,549,576.00
	Value Chain Analysis for Selected Bamboo Products in the Philippines	Rapid, Inclusive and Sustained Economic Growth	Bamboo is a fast-growing, renewable, and versatile resource, which is found in numerous communities in the Philippines. Bamboo development could contribute to at least seven of the UN Sustainable Development Goals, including poverty alleviation, affordable and clean energy, affordable and resilient housing, sustainable consumption, climate change mitigation, and terrestrial ecosystem protection (Gauli et al., 2018). It also provides enormous opportunities for developing an inclusive, sustainable and green value chain.Bamboo plantations and natural stands exist all over the Philippines, both on government and private lands. Region 7 has the highest number of available culms yearly with 129,820 clumps, followed by Region 3 with 111,314 clumps. Major provincial sources of bamboo include Abra, Benguet, Ilocos provinces, La Union, Pangasinan, Isabela, Batangas, Quezon and Camarines Sur in Luzon; Iloilo, Bohol, Negros provinces and Leyte in the Visayas; and Davao del Norte and Bukidnon in Mindanao (Virtucio and Roxas, 2003). In terms of number of bamboo enterprises, Region XI has the most number (590 enterprises) followed by Regions XII and VI with 363 and 356 enterprises, respectively.The Philippines is being pushed to become a key player in the global bamboo industry. The global bamboo market size was estimated at USD 53.28 billion in 2020 and is anticipated to expand at a compound annual growth rate (CAGR) of 5.7% from 2021 to 2028. Major driving factors include growing investments in infrastructure development, increasing use of sustainable building/ construction resources, and rising consumer awareness on the benefits of using bamboo. Bamboo has been declared as a €œhigh-value crop€• as part of the efforts to develop the local bamboo industry. From 2021 to 2022, the government has allocated at least PhP 22 billion for the development of the bamboo industry in the country. Indeed, the growing global bamboo market and the initiatives of the government present opportunities to the bamboo industry players that they can take advantage of.	Publication: Two (2) draft article for possible publication in a peer-reviewed journal (1 per year)Patent: NAProduct: Value chain map Matrix of VC players profiles and corresponding informationPeople and ServicesTwo (2) graduate students mentored Two (2) technical personnel trainedPlaces and Partnerships: At least six (6) partnerships established comprising of the Department of Environment and Natural Resources-Forest Management Bureau (DENR-FMB), state universities and colleges (SUCs), and value chain players Policy: At least two (2) policy recommendations for the development of the bamboo industry	UPLB-CFNR	The target beneficiaries of this project are the different value chain players, such as: farmers, traders, processors, and end-users who will benefit once the bamboo industry is invigorated. It also include government agencies involved in the development of the National Inventory System (i.e., DOST-PCAARRD and DENR-FMB)	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,776,681.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Value Chain Analysis of Bamboo Textile Products in the Philippines	Rapid, Inclusive and Sustained Economic Growth	In this project, bamboo textiles will be analyzed through a value chain lens to uncover the bottlenecks of the industry and find opportunitiesfor improvement in the chain. Furthermore, it would support the development of programs, projects and activities for the developmentand use of bamboo fiber and textile in the Philippines.	Publication — •At least one (1) draft article for possible publication in a peer-reviewed journal Product — •Value chain map — •Matrix of value chain players profiles and corresponding information People Services — •At least one (1) undergraduate student mentored — •At least one (1) technical personnel trained Partnerships — •At least six (6) partnerships established comprising of the Philippine Textile Research Institute, state universities and colleges (SUCs), and value chain players Policy — •At least one (1) policy recommendation for the development of the bamboo textile industryEconomic Impacts Through the information that will be produced from tracing the bamboo textile value chain, the project positions itself as a component of the strategy aimed at improving the competitiveness of the Philippine bamboo sector and improving the economic situation of smallholder bamboo farmers. Social Impacts This project intends to empower stakeholders and players in the bamboo textile value chain in order to promote a more thriving bamboo industry in the Philippines. It would encourage the awareness of the market on bamboo textile which may attract individuals to enter on bamboo textile-related livelihood.	UPLB	The target beneficiaries of this project are the different bamboo textile value chain players, such as farmers, traders, processors, and end-users who will benefit once the bamboo industry is invigorated. It also includes government organizations working to build the National Inventory System and the bamboo textile industry such as DOST-PTRI, DOST-PCAARRD and DENR-FMB.	01-Oct-22	31-Mar-24	ONGOING	2,000,000	1,355,344.00
	Value Chain Development of Tamarind in Central Luzon	Rapid, Inclusive and Sustained Economic Growth	The project will build from the results of the two previous value chain studies funded by PCAARRD and DOST on tamarind to address the need for a supply chain management system and capacity building of the tamarind producers. Considering the economic importance of tamarind, this project will promote entrepreneurship from production and processing through strengthening the market linkage which will, in turn, induce job creation, economic activity, and socio-economic conditions of the target communities. By establishing a supply chain hub, a direct linkage between growers and processors will be conducted. This will yield guaranteed markets for growersâ€™ produce, encourage large-scale processing, and attract new entrants into the industry. Also, creating a direct link would diminish the dependence of growers to middlemen in terms of collection (i.e., collecting and receiving delayed payments) and marketing. This would enable the growers to secure higher prices by eliminating brokerage fees or commissions. Moreover, the removal of intermediaries in the chain will lower the delays and post-harvest losses incurred by the wholesalers and retailers.	Publication â€¢At least two (2) articles based on the results of the projectProductsâ€¢One (1) Supply Chain Hubâ€¢One (1) information system on tamarindPeople Services â€¢At least fifty (50) men and women tamarind growers organized, trained and linked with the processorsPlaces and Partnershipâ€¢At least five (5) partnerships developed with LGUs, value chain actors (e.g., processors) and enabling players Policy â€¢At least two (2) policy recommendations to address constraints identified	PSAU	Three (3) groups of beneficiaries are foreseen to benefit from this proposed project. The following are: — • Stakeholders of the tamarind industry, such as the growers, processors, and other entities providing support services along the value chain of tamarind in Central Luzon. —Policy/decision makers —Researchers and development workers involved in technology transfer and agribusiness development	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,670,000.00
Agroforestry Support Program for Enhancing Resiliency of Community-based Forest Management Areas (ASPIRE-CBFM)	Project 1. Development of Agroforestry Support System for Sustainable CBFM Areas	Integrity of the Environment and Climate Change Mitigation and Adaption	This project will focus on the capacity-building programs of the upland farmers, existing peopleâ€™s organizations (POs), concerned government organizations/agencies (GOs/GAs) and other key stakeholders to improve processes, networking, marketing and policy support in CBFM communities. Up-to-date knowledge and information on various aspects of agroforestry as the main production technology of CBFM is a key towards promoting sustainable CBFM implementation. Thus, this project will also highlight the Agroforestry Database Information System (ADISS) that will provide and disseminate information about the practice of agroforestry in selected and specific CBFM sites in CALABARZON areas with mostly records and information generated by associated projects within the program. The system will generate timely and relevant information about promoting agroforestry technologies and models for farmer beneficiaries and all other users in support for their decisions demanding detailed information about agroforestry products and services of CBFM sites. Stakeholders will be capacitated and manual will be developed to ensure continuing maintenance and updates of the database after project completion.	1 baseline data 4 sites measured (level of resiliency) 4 sites identified (land capability class) 4 ALCAMS applied 1 agroforestry design for 4 sites developed, established and maintained 1 AF database and info system developed and maintained 1 handbook on database management 5 flyers produced 4 training modules 2 scientific publication 1 guidebook 80 key leaders and beneficiaries identified and trained per site 20 forestry students carried out and conducted their research and practicum in the sites 8 training on agroforestry conducted 20 personnel from LGUs, DENR-ERDB, DENR CENRO and PENRO in Region IVA and POs in four sites trained on agroforestry database and information system Technical and organizational capabilities of four (4) CBFM POs strengthened 4 local partnerships strengthened Soil erosion in four (4) agroforestry models within the tolerable soil loss rate of less than 10 tons/ha/year 4 organizational policies 1 policy forum convened 1 policy recommendation 10 MOAs forged 9 copyrights filed 2 copyright on guidebook	UPLB	CBFM Beneficiaries	01-Jul-19	30-Jun-23	ONGOING	14,822,836	1,050,273.89
Agroforestry Support Program for Enhancing Resiliency of Community-based Forest Management Areas (ASPIRE-CBFM)	Project 2. Assessment of Ecological Services of Agroforestry in Selected CBFM Areas	Integrity of the Environment and Climate Change Mitigation and Adaption	The Philippines is known as one of the megadiverse countries in terms of flora and fauna. Addressing biodiversity conservation through various strategies will give a healthful and balanced ecology. CBFM was adopted as the national strategy to ensure the sustainable development of the country's forestlands resources. It is a key component in the conservation of biodiversity in the Philippines. Under CBFM is agroforestry which is one of the successful and effective activities leading to more ecological and economic benefits. Agroforestry activities vary in some ways. Assessment of agroforestry in various sites where it is implemented will give the baseline information/data on the ecological and even in the socio-economic dimensions of the area.	8 CBFM Biophysical profiles 4 general recommendations on the use of CBFM areas 4 sets of info effects of interventions established 1 handbok 1 comparative analysis of the soil physico-chemical properties, soil fertility, carbon stocks, biodiversity of flora and fauna and water quality and quantity of the four (4) CBFM areas based on the interventions made by Project 1 8 PO members oriented 1 GREAT Scholar 30 technical people oriented and trained 4 IEC materials 2 technical/ popular articles prepared 2 technical publications 1 guidebook 2 flyers and brochures 10 MOAs forged 1 policy recommendations	ERDB	CBFM beneficiaries	01-Jul-19	30-Jun-23	ONGOING	8,494,080	820,413.20

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Agroforestry Support Program for Enhancing Resiliency of Community-based Forest Management Areas (ASPIRE-CBFM)	Project 3. Community Empowerment thru S&T (CEST) Program for Community-based Forest Managment (CBFM) Sites	Integrity of the Environment and Climate Change Mitigation and Adaption	The Department of Science and Technology €" CALABARZON (DOST CALABARZON) has initiated various poverty reduction projects which focuses on achieving sustainable solutions to existing and emerging pressing issues in the country. One of which is the program on €œCommunity Empowerment thru Science and Technology€•dubbed as the CEST Program. The said program aims to empower the poor and the marginalized sector and to improve the quality of their life thru science and technology. Packaged S&T interventions are focused to five (5) entry points: Health and Nutrition, Water and Sanitation, Basic Education Literacy, Economic Enterprise Development, and Disaster Risk Reduction/Climate Change Mitigation. As part of poverty elimination, the use of forest resources will help lift a household€™s status. In the publication, €œManaging Ecosystems to Fight Poverty€•four main strategies are identified to improve the poverty reduction potential of local ecosystems. These include: 1.Strengthening resource management to ensure higher productivity and greater returns; 2.Improving governance so that the poor are empowered to "profit from nature"; 3.Commercializing goods and services through marketing and enterprise development; 4.Developing mechanisms for payments for environmental services (WRI et al., 2005). The empowerment of CBFM communities, will take place thru capacity-building of the upland farmers and existing people€™s organizations for Economic Enterprise Development while also supporting other aspects of improvement in Health and Nutrition, Education, DRR/CCA, and Water and Sanitation; these holistic approach will be part of the CEST Program for CBFM areas.	4 CNA profile produced 4 assessment reports 4 profitability analysis produced 4 units ARG 1 unit LGUIDS 1 unit WLMS 2 units EWS 80 CBFM members participated in the CNA/TNA, trained on livelihood equipment 14 trainings condcuted 13 MOAs forged 4 linkages 16 IEC materials produced 4 AVPs produced 16 copyrights filed	DOST 4A	CBFM Beneficiaries	01-Jul-19	31-Dec-22	COMPLETED	9,424,458	1,049,594.85
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	BISU IP-TBM Phase II: Patent Mining for Rice Commodity through Strengthen BISU Intellectual Property and Technology Business Management	Rapid, Inclusive and Sustained Economic Growth	BISU was one of the members in PCAARRD program Developing Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies-Batch 2 in 2018 under the project Strengthening the Capacity of BISU on Intellectual Property and Technology Business Management (IP-TBM) for Sustained Technology Commercialization. It signifies the serious intention of the government in pushing forward the policy and objectives of the RA10055 and the mandate of DOST relative to R&D outputs€™ technology transfer and commercialization.	At least 2 promotional IECs for SUC/RDI technologies At least 10 IP applications (5 patents) 1 Patent Mining Report 1 Updated inventory of IP Assets 1 Technology Commercialized 1 sustainability plan (in consultation with Consortium) 1 set of entries to support content build-up of the RTMS 1 IP-TBM staff (plantilla) extensively trained under the Patent Mining Mentorship Series 1 exploratory meeting with potential technology adoptor 1 technology taker/adoptor At least 20 SUC staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainor/speaker At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 1 commercialization agreement executed Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs)	BISU	The target beneficiaries are the BISU IP-TBM personnel, researchers and innovators and prospect adoptors of IP-protected and/or commerciable Rice technologies.	01-Jan-21	31-Dec-22	COMPLETED	2,483,658	1,131,915.50
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	BPSU IP-TBM Phase II: Patent Mining Program for Mango Through Strengthened BPSU IP-TBM Office	Rapid, Inclusive and Sustained Economic Growth	With the emergence of knowledge economy, universities are prompted to focus researches on the solutions or inventions, exploitation, diffusion of the technology-based research. Approaches in the innovation process give emphasis on the entire innovation cycle, adoption and commercialization, integrating innovation with entrepreneurship, building and creating an environment that is conducive to innovation. The idea of technology generation is geared towards market-oriented research policy with focus on promotion, commercialization and diffusion of R & D investments.	1 IP-TBM Staff (plantilla) extensively trained under the Patent Mining Mentorship series At least 2 industry practitioners and technical experts consultation meetings conducted 1 Exploratory Meeting with potential technology adoptor 1 technology taker adoptor At least 20 SUC staff trained (short duration/echo seminar0 on IP Management and Technology Commercialization with IP-TBM Mentor Staff as trainor/speaker At least 2 promotional IECs for SUC/RDI technologies At least 10 IP applications (5 patents) At least 1 partnership agreement with the Philippine Chamber of Commerce, Inc/ Business Groups/ Marketing or Trade Institutions At least 1 commercialization agreement executed Full implementation of IP (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs) 1 Patent Mining Report 1 Updated Inventory of Assets 1 Technology Commercialized 1 Sustainability Plan 1 set of entries to support content build-up of the RTMS Social Impact: IP protection of generated technologies Sustained training/education on IP protection and commercialization Advocacies on IP protection and commercialization Professional networks and talks to prospective adoptors	BPSU	BPSU IP-TBM Office Technology Transfer officers and staff BPSU Faculty and student researchers/inventors Community stakeholders External agencies (other universities, MSMEs, LGUs)	01-Jan-21	31-Dec-22	COMPLETED	2,409,901	1,112,892.02

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	CMU IP-TBM Phase II: Sustaining the Capacity of CMU-IPTBM Office Through IP Management, Technology Transfer and Commercialization, and Patent Mining.	Rapid, Inclusive and Sustained Economic Growth	An examination of the IPs filed by CMU-IPTBM would reveal that very few of them were DOST-funded. IPs generated through minimal annual research allocation of CMU dominated the IP filings. Most of the IPs are not earth-shaking nor market-driven technologies. They are mostly researcher-driven with minor incremental improvement from the prior arts. Based on experience as IP filer, there were even IP applications on technologies generated from DOST-funded, but CMU implemented, researches that were rejected by the patent examiners during prosecution due to lack of novelty.	Updated inventory of IP Assets Patent Mining Report on Swine Prior Art Search Reports Technology Commercialized Sustainability Plan (in consultation with NOMCAARRD, the PCAARRD Consortium in Region X Fundable research proposal Thesis proposals 1 set of entries to support content build-up of the RTMS IP-TBM staff (plantilla) extensively trained on patent mining At least 2 industry practitioners and technical experts consultation meetings conducted Exploratory meeting with potential technology adopter Faculty researchers with completed researches trained on claim drafting Faculty researchers from AnSci and Vetmed trained on patent mining Thesis advisers trained on patent mining Graduating students preparing thesis proposals trained on patent mining Faculty researchers with Certificate of Registration trained on IP Valuation Faculty researchers with Certificate of Registration trained on Pitching Technologies pitched during Pitch Day At least 4 promotional IECs for SUC/RDI technologies At least 10 patent applications 1 PCT application At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 2 commercialization agreements executed Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal	CMU	CMU-IPTBM Personnel Faculty researchers Thesis advisers Students preparing thesis proposals	01-Jan-21	31-Dec-22	COMPLETED	2,473,901	1,138,929.40
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	CSU IP-TBM Phase II: Patent Mining for Cacao through Enhanced IP-TBM	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Caraga State University, with a total PCAARRD-GIA funding of Php 2,483,658.36. Hence, the project aims to enhance and sustain the operation of IP-TBM in CSU. This entails hiring and/or retaining technical personnel to work for its operation. Also, the project, with the funds available, will help increase the universityâ€™s IP registrations to somehow support the country in sustaining its improved ranking in the Global Innovative Index (GII).	At least four (4) promotional IECs for CSU technologies At least 10 IP (5) patents and utility model only) applications At least one (1) Patent Mining Report specifically on cacao; One (1) updated inventory of IP assets in CSU, and if applicable, related to cacao; One (1) Technology commercialized One (1) Sustainability Plan One (1) set of entries to support content build-up of the RTMS At least one (1) IP-TBM staff extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted One (1) Exploratory meeting with potential technology adoptor One (1) Technology taker/adoptor At least twenty (20) CSU staff/researchers trained (short duration/echo seminar) on Patent Mining with the IP-TBM staff as trainer/speaker. 1 Memorandum of Agreement signed 1 Letter of Commitment from CSU 1 At least one (1) commercialization agreement executed At least one (1) partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions 1 CSU IP-TBM enhanced Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs)	CarSU	Direct Beneficiaries: CSU Researchers/Inventors Intellectual Property and Technology Business Management (IP-TBM) Team in CSU CSU ITSO Technical Staff/Experts Indirect Beneficiaries: MSMEâ€™s in Caraga Region Inventors in Caraga Region	01-Jan-21	31-Dec-22	COMPLETED	2,483,658	1,125,226.18
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	CvSU IP-TBM Phase II: Coordination, Capacity Building and Policy Assessment	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 â€“ December 31, 2022) by the Cavite State University, with a total PCAARRD-GIA funding of Php 16,777,886.43. While sustaining our initiatives on intellectual property and technology business management, Patent mining is also important in Influencing changes in prioritization in AANR R&D and Technology Transfer. Patent mining can help determine early IP management strategies needed for the technologies in the pipeline. It can unlock the IP assets in a larger context and can reveal the position in the market of a certain technology category and expose roadblocks to maneuver around and opportunities for moving forward with confidence. It can also help us understand the strength and breadth of our IP portfolio and whether obstacles are something to challenge or to design around.	Subscription to Derwent patent Data base IP-TBM Real Time monitoring System Conduct of training on Derwent Patent Database Conduct the 1st DOST-PCAARRD Patent Mining Mentorship Series in collaboration with IPOPHL and APP Trained at least 17 TTOs on patent mining Conduct industry consultation meeting Conduct policy seminar and review for 50 (new) SUCs Conduct presentation of patent mining outputs Conduct 1 Technology Pitch Day At least 4 promotional IECs Training Module on Patent Mining 50 revised/crafted IP policies and technology transfer protocols IP Policy template Technology Transfer Protocol template	CvSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers Students IP-TBM staff Technology adopters	01-Jan-21	31-Dec-22	COMPLETED	14,777,886	3,785,673.63
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	CvSU IP-TBM Phase II: Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	Rapid, Inclusive and Sustained Economic Growth	Its mission is to strengthen research and development activities, and enhance the extension delivery system that will lead to increased productivity, sustainability, and global competitiveness of the Philippine coffee. Coffee is today the second most consumed beverage after water, and the second most traded commodity after petroleum. In fact, it is considered as €œblack goldâ€•an asset of the Philippines (Papa, 2019). Coffee is considered to be among the country's top 10 agricultural crops in terms of value (www.bar.gov.ph). Coffee, does not only occupy an important role in the Filipino's morning and economy, but also in the world economy. The National Coffee Research, Development and Extension Center (NCRDEC) of the Cavite State University (CvSU) envisioned the country €œto be locally and internationally known for coffee research, development and extension programs.â€•	1 Patent Mining Report 1 updated inventory of IP Assets 1 Technology commercialized 1 web-based management information system for real-time monitoring of IP filings 1 sustainability plan (in consultation with Consortium) 1 IP-TBM staff (plantilla) extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted 1 exploratory meeting with potential technology adoptor 1 technology taker/adoptor At least 20 SUC staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainor/speaker At least 4 promotional IECs for SUC/RDI technologies At least 10 IP applications (5 patents) At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 1 commercialization agreement executed Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs)	CvSU	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers Students IP-TBM staff Technology adopters	16-Dec-20	15-Dec-22	COMPLETED	2,493,493	1,219,870.68

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	FPRDI IP-TBM Phase II: Patent Mining of Bamboo Thru Intellectual Property and Technology Business Management Office in the Department of Science and Technology-Forest Products Research and Development Institute (DOST-FPRDI)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 €" December 31, 2022) by Forest Products Research and Development Institute in Narra St., Forestry Campus, UPLB, College, Laguna with a total PCAARRD-GIA funding of Php 3,497,198.36. Hence, thru Patent mining the summary of the research efforts can be analyzed. The information to be gathered will contain valuable information and early IP management strategies be determined to guide targeted investments in R and D. Likewise, Patent mining helps determine early IP management strategies of the technologies to be studied and understanding the assets in a larger position and can reveal the position in the market of a certain commodity or technology.	At least four (4) promotional IECs for CSU technologies At least 10 IP (5) patents and utility model only) applications At least one (1) Patent Mining Report One (1) updated inventory of IP assets in CSU, and if applicable, related to cacao; One (1) Technology commercialized One (1) Sustainability Plan One (1) set of entries to support content build-up of the RTMS At least one (1) IP-TBM staff extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted One (1) Exploratory meeting with potential technology adoptor One (1) Technology taker/adoptor At least twenty (20) CSU	FPRDI	-At least 2 FPRDI IP-TBM personnel -FPRDI researchers and scientists with interest in writing proposals for Bamboo -Prospective adoptors of IP-protected and/or commerciable Bamboo technologies	01-Jan-21	31-Dec-22	COMPLETED	2,483,658	1,112,088.12
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	IFSU IP-TBM Phase II: Patent Mining of Banana Towards a Sustainable Ifugao State University Intellectual Property and Technology Business Management Office (IFSU IPTBM)	Rapid, Inclusive and Sustained Economic Growth	Patent documents for banana is very important in developing and finding more opportunities that can be developed for innovation and further improved commercialization purposes. Patent mining will help determine early IP management strategies of the technologies to be studied and understanding the assets in a larger position and can reveal the position in the market of a certain commodity or technology.	-At least 4 promotional IEC for IFSU technologies -At least 5 IP applications (2 Patents Y1, 3 patents Y2) -At least 1 Patent mining report -1 updated inventory of IP assets -1 Technology commercialized -1 Sustainability Plan -1 set of entries to support content build-up of the RTMS -At least 1 IP-TBM staff extensively trained under the Patent Mining Mentorship Series -At least 2 industry practitioners and technical experts consultation meetings conducted -1 Exploratory meeting with potential technology adopter -1 Technology taker/adopter -At least 20 IFSU staff trained (short duration/echo seminar) on IP Management and Technology	IfSU	-IP-TBM Personnel -Entrepreneurs/Technology adopters -Researchers -5 Home Technology faculty -3 Civil Engineering faculty -2 Industrial Technology faculty -1 Mechanical Engineering -2 Computer Engineering -11 College of Business Management -3 Accountants -3 Business Administration faculty -3 Agriculture faculty -3 Information Technology faculty	01-Jan-21	31-Dec-22	COMPLETED	2,484,827	1,190,560.66
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	ISU IP-TBM Phase II: Patent Mining of Goat through Strengthened Isabela State University Intellectual Property and Technology Business Management Office (ISU IPTBM)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Isabela State University, with a total PCAARRD-GIA funding of Php 2,489,249.64. The project will be undertaken Virtual Technology Commercialization Training with Business Pitching. The Technology Transfer Protocol of the University has been drafted, for review and approval by the BOD. The University Policy has been revised, reviewed and was already approved by the University€™s Board of Regents last December 2018. To sustain these activities, there is a need to develop or enhance the skills of the IP-TBM researchers on Patent Mining and to continue the Institute€™s IP management and technology commercialization initiatives, hence this proposal.	At least 1 IP-TBM staff extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted 1 Exploratory meeting with potential technology adopter 1 Technology taker/adopter At least 20 ISU trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 4 promotional IECs for ISU technologies At least 10 IP (5 patents and utility model only) applications At least 1 commercialization agreement executed At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade	ISU	-IP TBM personnel -Entrepreneurs/Technology adoptors -Researchers -At least 20 ISU personnel trained on IP and Commercialization from the echo seminar to be conducted by the IP TBM staff.	01-Jan-21	31-Dec-22	COMPLETED	2,489,250	1,136,366.06

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	LSPU IP-TBM Phase II: Strengthening the Laguna State Polytechnic University Intellectual Property, Technology Business Management Office Through Patent Mining Program	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Laguna State Polytechnic University, with a total PCAARRD-GIA funding of Php 2,489,500.80. As there is a need to strengthen the IP offices of the Institutions, LSPU responded to the call to establish the IP-TBM through the project titled €œReestablishment and Enhancement of Intellectual Property-Technology Business Management in Laguna State Polytechnic University€•is implemented by PCAARRD through the program €œDeveloping the Intellectual Property and Technology Business Management (IP-TBM) Operations in Consortia Member Agencies - Batch 2€•The program also aims that after IP protection is sought, IPs can then be commercialized.	At least 1 IP-TBM staff extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted 1 Exploratory meeting with potential technology adopter 1 Technology taker/adopter At least 20 LSPU trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 4 promotional IECs for LSPU technologies At least 10 IP (5 patents and utility model only) applications At least 1 commercialization agreement executed At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs) At least 1 Patent mining report 1 updated inventory of IP assets 1 Technology commercialized 1 Sustainability Plan 1 set of entries to support content build-up of the RTMS	LSPU	The project is beneficial primarily to LSPU faculty and staff as this will enhance their skills in terms of research and processes of IP protection. Further, it will benefit students as IP Rights was approved was approved to be added in the syllabus in the selected areas of course work. It is also useful for the accreditation of the school as commercialization and IP Protection is now encouraged by the national government.	01-Jan-21	31-Dec-22	COMPLETED	2,489,501	1,124,041.68
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	NVSU IP-TBM Phase II: Sustaining the Nueva Vizcaya State University Intellectual Property and Technology Business Management Operations (NVSU IP-TBM) Through Patent Mining of Citrus Commodity	Rapid, Inclusive and Sustained Economic Growth	This project primarily aims to sustain the operations and management of the NVSU IP-TBM Phase I for more effective and efficient IP management thru Patent Mining activities to generate more earth-shaking technologies and eventually commercialize them.	At least 1 Patent mining report 1 updated inventory of IP assets 1 set of entries to support content build-up of the RTMS 1 Technology commercialized 1 Sustainability Plan	NVSU	- At least 2 NVSU IP-TBM personnel trained on patent mining - At least 20 NVSU personnel trained on patent mining through re-echo seminar with trained IP-TBM as resource persons. ī,· NVSU citrus researchers and scientists with interest in writing proposals for Citrus - Prospective adopters of IP-protected and/or commerciable Citrus	01-Jan-21	31-Dec-22	COMPLETED	2,483,658	972,080.62
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	PCC IP-TBM Phase II: Patent Mining in Dairy Buffalo and Cattle Thru Intellectual Property and Technology Business Management in the Philippine Carabao Center (PCC), Department of Agriculture	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 €" December 31, 2022) by the Philippine Carabao Center, Department of Agriculture, with a total PCAARRD-GIA funding of Php 2,473,900.80. This project primarily aims to enhance and strengthen PCC€™s IP-TBM researchers€™ capacity for a more effective and efficient IP management thru Patent mining. To sustain the IP management system and effective generation of technologies and eventually commercialize.	1 Technology commercialized 1 Sustainability Plan 1 Exploratory meeting with potential technology adopter 1 Technology taker/adoptor At least 20 PCC staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 promotional IEC for PCC technologies At least 5 IP applications (3 Patents) At least 1 commercialization agreement executed Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs)	PCC	At least 2 PCC IP-TBM personnel PCC researchers and scientists with interest in writing proposals for Dairy buffaloes and cattle Prospective adoptors of IP-protected and/or commerciable Dairy Buffaloes and Cattle technologies Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs)	01-Jan-21	31-Dec-22	COMPLETED	2,473,901	1,169,854.12
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	PSAU IP-TBM Phase II: Patent Mining on Selected ISP as an Approach in Advancing Industry-Based S&T for Milkfish	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 €" December 31, 2022) by Pampanga State Agricultural University, with a total PCAARRD-GIA funding of Php 2,499,300.80. It generally Patent documents are a great source of information that may not be available anywhere else (Zhang, 2015) it aims to transform such patent data into competitive intelligence, they are developed into patent landscape reports (PLRs). They are a tool used in assisting long-term strategic technical planning. As such, they provide an overview of the existing technologies and trends within a given field so as to track the advances in specific areas of technology. They are aimed at exposing and explicating present complex information and analyze essential connections in order to provide offer in-depth insights for policy discussion, research and development planning, technology transfer, and business strategies. Thus, such landscapes are being crafted, especially in the health, agriculture and environment fields, to serve as basis in making high-level policy matters (WIPO, 2015).	At least 2 promotional IECs for SUC/RDI technologies At least 10 IP applications (5 patents) 1 Patent Mining Report 1 Updated inventory of IP Assets 1 Technology Commercialized 1 sustainability plan (in consultation with Consortium) 1 set of entries to support content build-up of the RTMS 1 IP-TBM staff (plantilla) extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted At least 20 SUC staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainor/speaker €•Œ technology taker/adoptor €•Œ exploratory meeting with potential technology adoptor At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 1 commercialization agreement executed €•Œull implementation of IP policy €•Œarmonized IP policy in respect to other existing policies and guidelines of the University	PSAU	The present project aims to further contribute to the R&D activities and success of PSAU, assisting its technology generators / innovators/ researchers not only in protecting their intellectual properties but also in promoting and making these ready for the competitive market. PSAU IP-TBM is also targeting the private sector as potential takers of the technologies that they will promote. Linkages and collaboration with the private sectors and industries, local government units, associations, and other stakeholders will be made as them being potential partners and/or prospective adaptors of the commerciable technologies generated by the University.	01-Jan-21	31-Dec-22	COMPLETED	2,499,301	1,164,467.12

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	SSU IP-TBM Phase II: Patent Mining Project for Crabs (Mudcrabs and Blue Swimming Crabs) Commodity through the Strengthened IP-TBM Office of Samar State University	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Samar State University, with a total PCAARRD-GIA funding of Php 2,464,033.36. The strengthening of the IPTBM of SSU paved the way to the revision of its IP Policy, crafting of the University Technology Transfer Protocol, protection of a number of intellectual properties such as patent and utility models, partnership with business sectors, and technology transfer of technologies. Moreover, the IP-TBM offices also developed their expertise in patent drafting, patent prosecution, and patent searching. In fact, Samar State University has trained other universities in Region VIII in relation to this expertise. Today, each of the IP-TBM offices is operating across the Philippines with different research priorities according to commodity abundant to the locality. With the strengthened IPTBM offices, it is appropriate to level up this expertise that further digs into the patents and databases.	2 IEC materials for SSU technologies 10 utility models 5 patents 1 Patent Mining Report/PLR; 1 technology commercialized and/or licensing agreement 1 updated inventory of IP assets 1 sustainability plan 1 set of entries to support content build-up of the RTMS 1 IPTBM staff extensively trained in Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted At least 20 SUC staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainor/speaker 1 IP and/or commercialization training conducted 1 partnership agreement with industry or Business group as lecturer/trainer 1 networking event conducted Full implementation of IP Policy Full implementation of Technology Transfer Protocol	SSU	1. SSU IP-TBM personnel/staff 2. SSU researchers as well as those researchers from other universities and institution (Those interested in learning Patent Mining and in conducting innovations related to crab€™s commodity) 3. Prospective adoptors of technologies generated from this project 4. Government partners interested in formulating policies and information regarding the crab commodity	01-Jan-21	31-Dec-22	COMPLETED	2,464,033	1,067,226.88
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	UPV IP-TBM Phase II: Patent Mining Program for Selected AANR Commodities Through Strengthened IP-TBM Offices	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by University of the Philippines Visayas, with a total PCAARRD-GIA funding of Php 2,473,399.40. It generally aims to harness and strengthen the capacity of UPV TTBDO staff for the enhancement and sustainability of the IP TBM operations. Specifically it aims to update IP Audit on completed and existing researches of UP Visayas; capacitate UPV TTBDO staff and selected faculty/researchers in generating patent landscape and patent mining reports; generate patent landscape and patent mining reports for shrimp commodity; determine emerging agri-aqua commercial trends in shrimp commodity; ramp up information dissemination activities on IP policy and tech transfer protocol of the University; and support the development of a web-based management information system for real-time monitoring of IP filings of the UPV TTBDO.	4 promotional IECs for SUC/RDI technologies 1 Updated inventory of IP Assets At least 5 IP applications (5 patents) At least 10 IP applications (10 UM) 1 Patent Mining Report 1 Patent Landscape Report 1 sustainability plan (in consultation with Consortium) 1 Technology Commercialized 1 set of entries to support content build-up of the RTMS 1 IP-TBM staff (plantilla) extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted 1 exploratory meeting with potential technology adopter At least 20 SUC staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainer/speaker 1 technology taker/adopter At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 1 commercialization agreement executed per year Full implementation of IP policy (with internal memos, AOs)	UPV	The target beneficiaries for this project are those working in the Fisheries Industry, fisheries research funding institutions, and Technology Generators of UPV especially, UPV researchers involved in shrimp related research.	01-Jan-21	31-Dec-22	COMPLETED	2,473,399	1,061,707.20
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	USM IP-TBM PHASE II: Patent Mining of Rubber Technologies thru Intellectual Property and Technology Business Management (IP-TBM) Operations of the University of Southern Mindanao	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by University of Southern Mindanao, with a total PCAARRD-GIA funding of Php 2,462,158.36. USM IP-TBM seeks to continue towards its goal of mobilizing technology transfer in the University through strengthened IP management. In order to realize this, it recognizes the role of patent mining to provide a system of tracking patent information, database and patent trends of a specific commodity. A concrete patent mining system will be a key to retooling R&D system particularly in the University in that it can be applied prior to R&D s and entrepreneurial activities. Enterprises must first need to retrieve IP information and conduct deep level patent search that can be done only through patent mining.	2 promotional IEC for USM technologies 10 IP applications (Patents and Utility Model) 1 Patent Mining Report 1 updated inventory of IP assets 1 technology Commercialized 1 sustainability plan 1 set of entries to support content build-up of the RTMS 1 IPTBM staff extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted 1 exploratory meeting with potential technology adoptor 1 commercialization agreement executed 1 partnership agreement with the Philippine Chamber of Commerce Inc./ Business Groups/ Marketing or Trade Institutions 1 technology taker/adoptor 20 SUC staff trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM-Mentor staff as trainor/speaker Full implementation of IP policy Full implementation of technology transfer protocol Social Impact: 2 echo-seminar from patent landscape reports	USM	The target beneficiaries include IP-TBM staff, University researchers, faculty, IP-TBM staff, students, technology adopters, mainly rubber operators and rubber cooperatives and etc.	01-Jan-21	31-Dec-22	COMPLETED	2,462,158	1,170,749.44
Patent Mining for Selected AANR Commodities in Consortia Member Agencies Through Strengthened IP-TBM Offices	WMSU IP-TBM Phase II: Patent Mining Project for Native Chicken	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Western Mindanao State University, with a total PCAARRD-GIA funding of Php 2,473,900.80.The proponent believes that there is a need to further enhance and intensify the Intellectual property and technology business management operations in the University. With the recent plan to establish a NICER on native chicken in the University, even more there is a need to intensify the use of patent information and conduct patent mining activities; thus, this proposal is submitted.	1 Patent Mining Report 1 Updated inventory of IP Assets 1 set of entries to support content build-up of the RTMS 1 IP-TBM staff (plantilla) extensively trained under the Patent Mining Mentorship Series At least 2 industry practitioners and technical experts consultation meetings conducted At least 2 promotional IECs for SUC/RDI technologies At least 5 IP applications At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions Full implementation of IP policy (with internal memos, AOs) Full implementation of technology transfer protocol (with internal memos, AOs)	WMSU	IP-TBM Personnel €¢ Researchers €¢ Students €¢ Technology Adopters/Entrepreneurs	01-Jan-21	31-Dec-22	COMPLETED	2,473,901	1,158,198.38

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1: Regional Intellectual Property-Technology Business Management (IP-TBM) through RAISE Bicol	Rapid, Inclusive and Sustained Economic Growth	Bicol University has been identified as the mentoring agency for the SUSTAIN IP-TBM program due to its experience and programs in IP protection and commercialization.BU as the mentoring agency is now starting to commercialize its Protected IPs and the mentee SUCs are now mastering the process of IPs protection and will eventually go into commercialization. Thus, the Regional Agri-Aqua Innovation System Enhancement (RAISE) Bicol program is . The RAISE Bicol program will not only cater to the IP protection and pre-commercialization process of the technology, but it will cater to creating agribusiness start-ups, technology incubation, and knowledge management. The program will be the mirror image of the DPITC in the Regions. It will serve as a one-stop-information service shop and convergence hub for technology generators and users. It will be a Platform to package, promote, and commercialize S&T creations to enhance the innovation ecosystem in the AANR sector. It will be the IP-centric technology transfer mechanisms of the region. The program will increase the number of mentee agencies from five (5) to seven (7). It aims to increase the number of IPs protected by mentor and mentee agencies. It aims to enhance the awareness of establishing start-ups, introducing technology incubation and marketing of products and technologies, and realize the process and importance of knowledge management. This will zero the gap between the academe, researchers, market end-users, and industry. The program developed partnership between participating agencies within the Bicol Region and in the entire country. Through the program, the developers of the identified technologies will be assisted in the process of filing IP protection for their developed technology, start-up establishment, packaging and labeling their product, negotiating deals that champion the interests of both parties, and inventory and creation of technology management system.	Publication: 1 Training Module on IP Management; 1 Training Module on Technopreneurship; 5 IEC; 1 Regional Sustainability Plan Patent: 10 IP ApplicationsProduct: 10 Prior art search of R&D Proposals; 2 RegÃ¢,¬„¢I inventory of potential IPs; 2 RegÃ¢,¬„¢I Inventory of IP Assets; 2 RegÃ¢,¬„¢I Inventory of Mature Technologies; 2 technology with pre-comm reports; 2 Product manufactured for pre-comm/ market tested; 2 Technology CommercializedPeople: RegÃ¢,¬„¢I Prior Art Search & IP Audit; Trained at least 11 CMI Staff; 1 Regional Pitch Day; 10 CMIs trained/coordinated business network; 2 Regional Pitch Days; 11 CMIs trained/coordinated business network RegÃ¢,¬„¢I Technology Commercialization Mentorship Series Trained at least 11CMI Staff Place: 2 Commercialization Agreement Signed; 3 partnership agreement with Business Groups/Trade Institutions Policy: 2 IP Policy Reviewed and Approved	Bicol University	The completion of the program through Bicol University College of Agriculture and Forestry in their continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the Ã¢,¬Â"Publish and PerishÃ¢,¬¶mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the university incubator and building a solid platform for helping ideas shape into commercial ventures through the right kind of support system and mentorship in addition to commercializing research.	01-Jan-22	31-Dec-23	ONGOING	-	1,507,787.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1-A. Enhancing IP-TBM in CNSC through RAISE (Old Title: Camarines Norte State College (CNSC) Agri-Aqua Innovation System Enhancement)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 1, 2022 €" December 31, 2023) by Camarines Norte State College - Main in F. PIMENTEL AVE., BRGY. II, DAET, CAMARINES NORTE with a total PCAARRD-GIA funding of Php 1,600,000.00.	Publication: 1 Training Module on IP Management 5 IEC 1 Regional Sustainability PlanPatent: 10 IP ApplicationsProduct: 10 Prior art search of R&D Proposals 2 Institutional inventory of potential IPs 2 Institutional Inventory of IP Assets 2 Institutional Inventory of Mature Technologies 2 technology with pre-comm reports 2 Product manufactured for pre-comm/ market tested 2 Technology CommercializedPeople: 1 Institutional Prior Art Search & IP Audit Send at least 2 CMI Staff to IP Masterclass At least 2 CMI Staff send to be trained for Technology Commercialization Mentorship Series 1 Institutional Pitch DayPlace: 1 Commercialization Agreement Signed 1 partnership agreement with Business Groups/Trade InstitutionsPolicy: None	Camarines Norte State College - Main	The RAISE program will benefit the institution especially faculty members researchers, and students who will pursue research to create technological products. The IP application and technology commercialization will safeguard the research products of the university while earning revenue. This will also benefit the community who will be part of the production team and the target community for the use of the technological product. The completion of the program and the continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the mentor and mentee agencies, Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the "Publish and Perish" mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the university	01-Jan-22	31-Dec-23	ONGOING	1,600,000	795,974.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1B: Enhancing IP-TBM in CSPC through RAISE (Former Title: Camarines Sur Polytechnic Colleges (CSPC) Agri-Aqua Innovation System Enhancement	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 1, 2022 €" December 31, 2023) by Camarines Sur Polytechnic College - Main in Nabua, Camarines Sur with a total PCAARRD-GIA funding of Php 1,600,000.00.	Publication: 1 Training Module on IP Management 5 IEC 1 Regional Sustainability PlanPatent: 10 IP Applications Product: 10 Prior art search of R&D Proposals 2 Institutional inventory of potential IPs 2 Institutional Inventory of IP Assets 2 Institutional Inventory of Mature Technologies 2 technology with pre-comm reports 2 Product manufactured for pre-comm/ market tested 2 Technology CommercializedPeople: 1 Institutional Prior Art Search & IP Audit Send at least 2 CMI Staff to IP Masterclass At least 2 CMI Staff send to be trained for Technology Commercialization Mentorship Series 1 Institutional Pitch DayPlace: 1 Commercialization Agreement Signed 1 partnership agreement with Business Groups/Trade InstitutionsPolicy: None	Camarines Sur Polytechnic College - Main	The RAISE program will benefit the institution especially faculty members researchers, and students who will pursue research to create technological products. The IP application and technology commercialization will safeguard the research products of the university while earning revenue. This will also benefit the community who will be part of the production team and the target community for the use of the technological product. The completion of the program and the continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the mentor and mentee agencies, Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the "Publish and Perish" mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the university	01-Jan-22	31-Dec-23	ONGOING	-	795,974.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1C: Enhancing IP-TBM in SORSU through RAISE (Former Title: Sorsogon State University (SSU) Agri-Aqua Innovation System Enhancement)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 1, 2022 - December 31, 2023) by Sorsogon State University (SorSU) in Sorsogon State College - Main; Magsaysay Street, Sorsogon City with a total PCAARRD-GIA funding of Php 1,600,000.00.	Publication: 1 Training Module on IP Management 5 IEC 1 Regional Sustainability PlanPatent: 10 IP ApplicationsProduct: 10 Prior art search of R&D Proposals 2 Institutional inventory of potential IPs 2 Institutional Inventory of IP Assets 2 Institutional Inventory of Mature Technologies 2 technology with pre-comm reports 2 Product manufactured for pre-comm/ market tested 2 Technology CommercializedPeople: 1 Institutional Prior Art Search & IP Audit Send at least 2 CMI Staff to IP Masterclass At least 2 CMI Staff send to be trained for Technology Commercialization Mentorship Series 1 Institutional Pitch DayPlace: 1 Commercialization Agreement Signed 1 partnership agreement with Business Groups/Trade InstitutionsPolicy: Policy	Sorsogon State College - Main	The RAISE program will benefit the institution especially faculty members researchers, and students who will pursue research to create technological products. The IP application and technology commercialization will safeguard the research products of the university while earning revenue. This will also benefit the community who will be part of the production team and the target community for the use of the technological product. The completion of the program and the continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the mentor and mentee agencies, Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the "Publish and Perish" mentality through technopreneurship	01-Jan-22	31-Dec-23	ONGOING	-	795,974.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1-D: Enhancing IP-TBM in CatSU through RAISE	Rapid, Inclusive and Sustained Economic Growth	Catanduanes State University has been identified as one of the mentee agency for the SUSTAIN IP-TBM program. It was mentored by PCAARRD, IPOPhil and BU in terms of IP protection and commercialization. As per IP audit of IPTBM, there are numerous technologies developed through the researches and studies conducted by the faculty and students of Catanduanes State University. CatSU as a mentee agency is now mastering IP protection and its commericalization. By this there is a need mastering IP protection and will start commercializing its IP's. By this there is a need to continue the mentoring process to make the mentor and the mentees very able in the IP protection and commercialization. Nevertheless, the program should be enhanced and must be added with the knowhow in agribusiness, technology incubation and the knowledge management to ensure that the technology develop by faculty funded by the government will reach the market and the intended users. The SUSTAIN IP-TBM Program has given the opportunity to strengthen the efforts of the institution for IPR and Technology Commercialization. CatSU was able to apply for different IPRs since the beginning of the program and as it is about to end this December 2021, CatSU has been pushing forward to prepare faculty members and researchers to pursue technology commercialization. The CatSU IP-TBM team has been holding different echo seminars and coaching sessions to equip faculty members with the knowledge and background in pursing patent applications and commercialization. CatSU sees the need for more seminars and trainings that will address the lacking avenues for technology partnerships and commercialization of AANR products of the institution. The RAISE Program can also provide the capability training and building on technology transfer to R&D partners while developing CatSUÃ¢,¬,¢s technology transfer programs.	Publication: 1 Training Module on IP Management 5 IEC 1 Regional Sustainability PlanPatent: 10 IP ApplicationsProduct: 10 Prior art search of R&D Proposals 2 Institutional inventory of potential IPs 2 Institutional Inventory of IP Assets 2 Institutional Inventory of Mature Technologies 2 technology with pre-comm reports 2 Product manufactured for pre-comm/ market tested 2 Technology CommercializedPeople: 1 Institutional Prior Art Search & IP Audit Send at least 2 CMI Staff to IP Masterclass At least 2 CMI Staff send to be trained for Technology Commercialization Mentorship Series 1 Institutional Pitch DayPlace: 1 Commercialization Agreement Signed 1 partnership agreement with Business Groups/Trade InstitutionsPolicy: Noted	Catanduanes State University	The RAISE program will benefit the institution especially faculty members researchers, and students who will pursue research to create technological products. The IP application and technology commercialization will safeguard the research products of the university while earning revenue. This will also benefit the community who will be part of the production team and the target community for the use of the technological product. The completion of the program and the continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the mentor and mentee agencies, Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the Ã¢,¬Â"Publish and PerishÃ¢,¬Â¶mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the	01-Jan-22	31-Dec-23	ONGOING	-	795,974.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1-E: Enhancing IP-TBM in CBSUA through RAISE (Old Title: Central Bicol State University of Agriculture (CBSUA) Agri-Aqua Innovation System Enhancement)	Rapid, Inclusive and Sustained Economic Growth	General Objective: The general objective of the program is to mirror the function a Regional Agri-Aqua Innovation System Enhancement in the member CMIs of the Bicol Consortium for Agriculture, Resources, Research and Development Specific Objective: Facilitate public-private access to AANR technologies to improve the innovation ecosystem in the region; Provide a venue for convergence of regional AANR stakeholders from the academe, public, private sectors, NGOs and international partners; Manage regional AANR technologies and Intellectual Properties; Provide capability building on tech transfer to R&D partners; Strengthen existing and forge new Public Private Partnerships for RDRU;	Publication: 1 Training Module on IP Management; 5 IEC; 1 Regional Sustainability Plan Patent: 10 IP ApplicationsProduct: 10 Prior art search of R&D Proposals; 2 Institutional inventory of potential IPs; 2 Institutional Inventory of IP Assets; 2 Institutional Inventory of Mature Technologies; 2 technology with pre-comm reports; 2 Product manufactured for pre-comm/ market tested; 2 Technology Commercialized; People: 1 Institutional Prior Art Search & IP Audit; Send at least 2 CMI Staff to IP Masterclass; At least 2 CMI Staff send to be trained for Technology Commercialization Mentorship Series; 1 Institutional Pitch DayPlace: 1 Commercialization Agreement Signed; 1 partnership agreement with Business Groups/Trade Institutions	Central Bicol State University of Agriculture	The RAISE program will benefit the institution especially faculty members researchers, and students who will pursue research to create technological products. The IP application and technology commercialization will safeguard the research products of the university while earning revenue. This will also benefit the community who will be part of the production team and the target community for the use of the technological product. The completion of the program and the continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the mentor and mentee agencies, Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the "Publish and Perish" mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the university	01-Jan-22	31-Dec-23	ONGOING	-	795,974.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1-F. Developing the IP-TBM in ParSU through RAISE (Old title: Partido State University (ParSU) Agri-Aqua Innovation System Enhancement)	Rapid, Inclusive and Sustained Economic Growth	General Objective: The general objective of the program is to mirror the function of a Regional Agri-Aqua Innovation System Enhancement in the member CMIs of the Bicol Consortium for Agriculture, Resources, Research and Development Specific Objective: Facilitate public-private access to AANR technologies to improve the innovation ecosystem in the region; Provide a venue for convergence of regional AANR stakeholders from the academe, public, private sectors, NGOs, and international partners; Manage regional AANR technologies and Intellectual Properties; Provide capability building on tech transfer to R&D partners; Strengthen existing and forge new Public-Private Partnerships for RDRU; Support regional partners in developing their respective tech transfer programs	Publication: 1 Training Module on IP Management 5 IEC 1 Regional Sustainability PlanPatent: 10 IP ApplicationsProduct: 10 Prior art search of R&D Proposals 2 Institutional inventory of potential IPs 2 Institutional Inventory of IP Assets 2 Institutional Inventory of Mature Technologies 2 technology with pre-comm reports 2 Product manufactured for pre-comm/ market tested 2 Technology CommercializedPeople: 1 Institutional Prior Art Search & IP Audit Send at least 2 CMI Staff to IP Masterclass At least 2 CMI Staff send to be trained for Technology Commercialization Mentorship Series 1 Institutional Pitch DayPlace: 1 Commercialization Agreement Signed 1 partnership agreement with Business Groups/Trade InstitutionsPolicy: None	Partido State University - Main	The RAISE program will benefit the institution especially faculty members researchers, and students who will pursue research to create technological products. The IP application and technology commercialization will safeguard the research products of the university while earning revenue. This will also benefit the community who will be part of the production team and the target community for the use of the technological product. The completion of the program and the continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the mentor and mentee agencies, Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the Ã¢,¬Ã"Publish and PerishÃ¢,¬¶mentality through technopreneurship and technology business incubation.	01-Jan-22	31-Dec-23	ONGOING	-	1,027,549.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 1G: Developing the IP-TBM in DEBESMSCAT through RAISE (Former Title: Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology (DEBESMSCAT) Agri-Aqua Innovation System Enhancement)	Rapid, Inclusive and Sustained Economic Growth	DOST as one of the identified "start-up enablers" in the country has made a significant contribution to this achievement through various initiatives. In 2016, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) which caters to the technology commercialization initiatives of the agency. Under the initiatives of the DPITC, the Intellectual Property-Technology Business Management (IP-TBM) program was conceptualized and approved. For batch 1 of the program, 5 licensing agreements were executed against the target of 10. for Batch 2, exploratory meetings with potential investors are still ongoing. To sustain and pursue the initial efforts in protecting the technologies generated by the participating HEIs in Batch 1 and 2 of the IP-TBM program. The SUSTAIN IP-TBM Phase II was implemented using the mentor-mentee approach where there are five mentor agencies that taught and guided thirty mentor agencies on IP Protection and CommercializationDr. Emilio B. Espinosa Sr Memorial State College of Agriculture and Technology is now beginning to transform into a university where it sees IP and knowledge protection and commercialization as the backbone for instruction, research, and extension. The college faculty will redefine quality education in the context of DEBESMSCAT to meet the demands of the quality expected of a university.With the aforementioned vision, DEBESMSCAT sees the need for seminars and training on IP protection and Commercialization that will address the lacking avenues for technology partnerships and commercialization of AANR products of the institution. The RAISE Program can provide the capability training and building on technology transfer to R&D partners while developing DEBESMSCAT's establishment of a technology transfer office. This will also bring forth a maximized economic potential of science and technology innovations.	Publication: 1 Training Module on IP Management 5 IEC 1 Regional Sustainability PlanPatent: 10 IP ApplicationsProduct: 10 Prior art search of R&D Proposals 2 Institutional inventory of potential IPs 2 Institutional Inventory of IP Assets 2 Institutional Inventory of Mature Technologies 2 technology with pre-comm reports 2 Product manufactured for pre-comm/ market tested 2 Technology Commercialized People: 1 Institutional Prior Art Search & IP Audit Send at least 2 CMI Staff to IP Masterclass At least 2 CMI Staff send to be trained for Technology Commercialization Mentorship Series 1 Institutional Pitch DayPlace: 1 Commercialization Agreement Signed 1 partnership agreement with Business Groups/Trade InstitutionsPolicy: None	Dr. Emilio B. Espinosa, Sr. Memorial State College of Agriculture and Technology	The RAISE program will benefit the institution especially faculty members researchers, and students who will pursue research to create technological products. The IP application and technology commercialization will safeguard the university's research products while earning revenue. This will also benefit the community who will be part of the production team and the target community for the use of the technological product. The completion of the program and the continuous efforts to bring the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the mentor and mentee agencies, Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors, and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the Ã¢,¬Ã"Publish and PerishÃ¢,¬¶mentality through technopreneurship and technology business incubation.	01-Jan-22	31-Dec-23	ONGOING	-	1,027,549.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 2. Regional Agri-business Hub through RAISE Bicol	Rapid, Inclusive and Sustained Economic Growth	To establish the Regional Intellectual Property Business Management (IP-TBM) in the Bicol Consortium for Agriculture, Aquatic and Natural Resources Research and Development (BCAARRD) through the Regional Agri-Aqua Innovation System Enhancement (RAISE) Program	Publication: 1 Training Module on Agribusiness; 5 IEC; 1 Training Module on Technopreneurship; 1 Regional Sustainability Plan Patent: 4 Trademarks endorsed to IP TBM for application Product: 2 RegÃ¢,¬„¢l Inventory of Mature Technologies; 2 Product manufactured for pre-comm/ market tested; 2 technology with pre-comm reports; 2 Technology Commercialized; 2 Business Plan created for identified technologies for commercialization People: At least 11 CMI Staff attended and trained for RegÃ¢,¬„¢l Agribusiness MasterClass 11 CMIs trained/coordinated business networkPlace: 2 Commercialization Agreement Signed 3 partnership agreement with Business Groups/Trade InstitutionsPolicy: None	Bicol University (BU)	The completion of the program through Bicol University College of Agriculture and Forestry in their continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the Ã¢,¬Ã"Publish and PerishÃ¢,¬¶mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the university incubator and building a solid platform for helping ideas shape into commercial ventures through the right kind of support system and mentorship in addition to commercializing research.	01-Jan-22	31-Dec-23	ONGOING	-	1,044,374.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 3: Establishment of the Bicol Agri-Aqua Technology Business Incubation (BATBI) Center (Old Title: Regional Agri-Aqua Technology Business Incubation (ATBI)	Rapid, Inclusive and Sustained Economic Growth	To establish the Regional Intellectual Property Business Management (IP-TBM) in the Bicol Consortium for Agriculture, Aquatic and Natural Resources Research and Development (BCAARRD) through the Regional Agri-Aqua Innovation System Enhancement (RAISE) Program	Publication: 10 TBI Business Plan prepared; 1 Operations Manual Prepared; 1 TBI Curricular Developed; 1 Technopreneurship Manual Developed Patent: NoneProduct: 10 Technology Portfolio prepared; 10 technology incubated; 10 Business Model Crafted; 2 incubatees graduatedPeople: 12 Pre-commercialization service provided; 10 technologies accepted for incubation; 10 Incubatees Trained/Mentored; 15 faculty researcher involved in training and mentoring; 4 Mentoring and Training activities conductedPlace: 7 HEIs involve in TBI; 5 Private sector partner;2 NGA partner; 3 Funding Institution Partner: 3 MOA Executed; 2 Farming Community involve in Incubation	Bicol University (BU)	The completion of the program through Bicol University College of Agriculture and Forestry in their continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the Ã¢â‚¬Â“Publish and PerishÃ¢â‚¬â„¢mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the university incubator and building a solid platform for helping ideas shape into commercial ventures through the right kind of support system and mentorship in addition to commercializing research.	01-Jan-22	31-Dec-23	ONGOING	-	3,154,592.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Bicol Region	Project 4: Regional Knowledge Management Hub through RAISE Bicol (Old Title: Knowledge Management Hub)	Rapid, Inclusive and Sustained Economic Growth	To establish the Regional Intellectual Property Business Management (IP-TBM) in the Bicol Consortium for Agriculture, Aquatic and Natural Resources Research and Development (BCAARRD) through the Regional Agri-Aqua Innovation System Enhancement (RAISE) Program	Publication: 4 Research Presentation monitored 6 IEC encoded in the databasePatent: 20 Copyright endorsed to IP TBM for ApplicationProduct: 1 RTMS developed 20 Agri-aqua technologies encoded in the database 5 New agri-aqua Products added in the databasePeople: 4 patent mining report endorsed to IP TBM (project 1)Place: NonePolicy: None	Bicol University (BU)	The completion of the program through Bicol University College of Agriculture and Forestry in their continuous efforts to bringing the knowledge and technologies closer to the industries through technology business incubation in the realization of their goals to be a conduit of connection and collaboration between the Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs and the incubatees. The industries, private sectors and MSMEs to be able to address their needs in increasing their efficiency and effectiveness without compromising quality over quantity and productivity and building valuable partnerships with them. The Faculty and students by making them researches realize its societal impact anchored in the mind to market concept. Plus, be able to combat the status quo that is the Ã¢â‚¬Â“Publish and PerishÃ¢â‚¬â„¢mentality through technopreneurship and technology business incubation. The Alumni by strengthening our ties and recognizing their roles as key partners in establishing the university incubator and building a solid platform for helping ideas shape into commercial ventures through the right kind of support system and mentorship in addition to commercializing research.	01-Jan-22	31-Dec-23	ONGOING	-	982,149.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Cordillera Administrative Region	Project 1: Regional Intellectual Property and Technology Business Management (IP-TBM) with Member Institutions in the Cordillera Consortium for Agriculture, Aquatic and Resources Research and Development (CorCAARRD)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (October 1, 2021 €" September 30, 2023) by Mariano Marcos State University in # 16 Quiling Sur, City of Batac, Ilocos Norte with a total PCAARRD-GIA funding of Php 3,650,073.60.	Publication: 1 Training Module (IP Masterclass)Patent: 20 IP filingsProduct: 1 Regional list of potential IPs and IP Assets2 Technology Commercialized2 Prior Art Search of R&D Proposal1 Regional priority R&D areas 1 Regional Sustainability PlanPeople: 1 Regional workshop on IP Audit/Inventory1 Regional workshop on Prior art search1 Regional IP Masterclass (5-module)Trained 20 CMI Staff in IP1 Policy Webinar/Workshop (new CMIs)1 Regional workshop on patent analytics/patent miningRegional Sustainability Planning WorkshopPlace: 1 Commitment LetterCoordinated/managed business network of 10 CMIs2 Commercialization Agreement SignedPolicy: Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)AO to adopt prior art search report for R&D proposals	Benguet State University - Main	IPTBMs in IFSU and ASCIPTBM project teamsResearchers/Technology generators in CMIs in the regionTechnology users/takers	01-Jan-22	31-Dec-23	ONGOING	3,000,000	1,767,451.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Cordillera Administrative Region	Project 1-A: Enhancing the Intellectual Property and Technology Business Management Office (IP-TBM) in Ifugao State University (IfSU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Ifugao State University in Nayun, Lamut with a total PCAARRD-GIA funding of Php 1,318,451.20 .	Publication: 5 IECs developed and utilizedPatent: 5 IP ApplicationsProduct: 5 prior art search reports 1 inventory of IP assets (potential IPs & IPs filed) 1 inventory of matured technologies of SUC 1 inventory of knowledge resources 2 technologies pitched 1 technology with pre-commercialization reports (valuation, FS, market study) People: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained inTCMS 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff Trained in Agribusiness Master Class 2 CMI Staff attended CommPlan Workshop 2 CMI Staff participated in the technology pitch day Place: 1 commitment letterPolicy: Full implementation of IP Policy and	Ifugao State College of Agriculture and Forestry - Main	Incubatees Technology Business Incubator personnel and manager IFSU Researchers/ Inventors Technology adapters Entrepreneurs ASC-IPTBM Other CorCAARRD CMIs	01-Jan-22	31-Dec-23	ONGOING	1,318,451	421,200.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Cordillera Administrative Region	Project 1-B: Establishing the Intellectual Property and Technology Business Management (IP-TBM) in Apayao State College (ASC)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 1, 2022 €" December 31, 2023) by Apayao State College - Luna in San Isidro Sur,, Luna, Apayao with a total PCAARRD-GIA funding of Php 1,855,000.00.	Publication: 5 IECs developed and utilizedPatent: 5 IP ApplicationsProduct: 4 prior art search reports 1 inventory of IP assets (potential IPs & IPs filed) 1 inventory of matured technologies of SUC 1 inventory of knowledge resources 1 product enhanced or co-incubated or market tested 1 technology commercialized 1 technologies pitched 1 technology with pre-commercialization reports (valuation, FS, market study) People: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained inTCMS 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff Trained in Agribusiness Master Class 2 CMI Staff attended CommPlan Workshop 2 CMI Staff participated in the technology pitch day Conducted re-echo seminars Trained at least 30 CMI staff in re-echo seminars Place: 1 commitment letter 1 commercialization agreement signedPolicy: 1 Institutional IP Policies reviewed/ crafted1 Technology Transfer Protocols reviewed/ crafted 1 Institutional IP Policies BOR approved1 Technology Transfer Protocols	Apayao State College - Luna	Researchers/ Inventors Technology adapters Project team Other stakeholders	01-Jan-22	31-Dec-23	ONGOING	1,855,000	1,030,549.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Cordillera Administrative Region	Project 2: Regional Agribusiness Hub in the Cordillera Consortium for Agriculture, Aquatic and Resources Research and Development (CorCAARRD)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 1, 2022 €" December 31, 2023) by Benguet State University - Main in College of Agriculture, Benguet State University, KmS., Balili, La Trinidad, Benguet with a total PCAARRD-GIA funding of Php 2,000,000.00.	Publication: 1 Training Module (Agribusiness Masterclass)Patent: Copyright of training moduleProduct: 2 technologies (of the SUC/Implementing Agency) with value proposition report; business plan; FS; market study; 1 product market tested (of the SUC/Implementing Agency)People: 1 Regional Agribusiness Masterclass conductedTrained 20 CMI StaffAssisted 10 CMIs/Mentees in pre-commercialization services (market study, business plan)Serve as mentor/coach in regional pitching activitiesPlace: 2 Partnership agreement with business organizations in CARPolicy: Regional Agribusiness Hub institutionalized	Benguet State University - Main	CMI Researchers Technology adopters MSMEs Industry stakeholders	01-Jan-22	31-Dec-23	ONGOING	2,000,000	1,074,051.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Cordillera Administrative Region	Project 3: Regional Agri-Aqua Technology Business Incubation in the Cordillera Consortium for Agriculture, Aquatic and Resources Research and Development (CorCAARRD)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 1, 2022 €" December 31, 2023) by Benguet State University - Main in College of Agriculture, Benguet State University, KmS., Balili, La Trinidad, Benguet with a total PCAARRD-GIA funding of Php 4,954,357.00. The project aims to provide support to consortia member institutions (CMIs) and other ATBIs in the transfer of technologies through technology business incubation or co-incubation. Specifically, it seeks to provide capability building on technology transfer to R&D partners; provide a venue for convergence of regional AANR stakeholders from the academe, public, private sectors, NGOs and international partners; provide incubation services to at least 10 adopters/incubatees/co-incubatees; facilitate public-private access to AANR technologies to improve the innovation ecosystem in the region; and strengthen existing and forge new Public Private Partnerships for R&D Results Utilization (RDRU).	Publication: 1 ATBI Operations Manual enhanced1 training module on technology commercialization mentorship series (TCMS)Patent: 10 IP applications filedProduct: 1 regional list of mature technologies developed 1 regional list of ATBI curriculum/services1 product enhanced (development, packaging, branding)1 product manufactured for pre-commercializationAt least 10 technologies adopted/co-incubated 1 inventory of IP Assets (potential IP & Ips filed)1 inventory of knowledge resourcesPeople: 1 regional workshop in Inventory of Mature Technologies1 regional workshop of ATBI Curriculum/ServicesAt least 10 incubatees assisted/co-incubatedAt least 2 business pitching event,industry meet-up, or networking event conducted or participated in1 regional technology commercialization mentorship series (TCMS) 5-module conductedAt least 20 CMI trained in the regional technology commercialization mentorship seriesPlace: At least 10 MOAs/MOUs with incubatees forgedPolicy: Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)	Benguet State University	The target beneficiaries in the project are the technology users with their enterprise that will be incubated, the technology generators who will offer their protected technologies and serve as mentors, and the CMIs who will participate in the capacity building activities.	01-Jan-22	31-Dec-23	ONGOING	4,504,357	1,450,898.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Cordillera Administrative Region	Project 4: Regional Knowledge Management Enhancement in Member Institutions of the Cordillera Consortium for Agriculture, Aquatic and Resources Research and Development (CorCAARRD)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 1, 2022 €" December 31, 2023) by Benguet State University - Main in College of Agriculture, Benguet State University, KmS., Balili, La Trinidad, Benguet with a total PCAARRD-GIA funding of Php 1,840,000.00. The transfer of government-funded R&D results depends on the proper management, capability of RDIs to ensure greater public access to technologies and knowledge generated. While enabling the appropriate management and protection of research results, there are strategies to reach out to the intended recipient.	Publication: 10 IEC materials developed and utilizedPatent: 10 copyrights of 10 IECs filedProduct: 1 regional Communications Plan developed in Year 1 1 regional Communications Plan updated in Year 21 technology pitch deck developed 1 Regional inventory of knowledge resources developed in Year 1 1 Regional inventory of knowledge resources updated in Year 21 RTMS established in Year 11 RTMS updated in Year 2People: 1 Regional workshop on the Communications Plan preparation and inventory of knowledge resources conducted1Technology Promotions Mentorship (IEC and technology pitch deck) 2-module conducted2 Regional Technology Pitch DayTrained 20 CMI staff on technology promotionsPlace: 1 Partnership agreement with KM group/consultant in CARPolicy: KM institutionalized	Benguet State University	CMI researchers/technology generatorsTechnology users	01-Jan-22	31-Dec-23	ONGOING	1,849,000	950,014.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 1. Regional Intellectual Property and Technology Business Management in ViCARP through RAISE	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Samar State University (SSU) in Arteche Road, Brgy. Guindapunan, Catbalogan City, Samar 6700 with a total PCAARRD-GIA funding of Php 2,995,551.00. The strengthening of the IPTBM of SSU paved way to the revision of its IP Policy, crafting of the University Technology Transfer Protocol, protection of a number of intellectual properties such as patent and utility models, partnership with business sectors and technology transfer of technologies. Moreover, the IPTBM offices also developed their expertise in patent drafting, patent prosecution and patent searching.	Publication: 1 Training Module (IP Master Class)Patent: At least 20 IP FilingsProduct: 1 Regional list of potential IPs and IP Assets 2 Technology Commercialized 1 Regional Priority R&D areas 2 Prior Art Search of R&D Proposal 1 Regional Sustainability PlanPeople: 1 Regional workshop on IP Audit/Inventory 1 Regional workshop on Prior Art Search 1 Regional IP Master Class (6-Module) Trained 20 CMI Staff 1 Policy Webinar/Workshop (New CMI)Place: 1 Commitment Letter 2 Coordinated/managed business network of 10CMIs 2 Commercialization Agreement signedPolicy: Full implementation of IP policy and technology transfer protocol (with internal memos, AOs) AO to adopt prior art search report for R&D proposals	Samar State University	The target beneficiaries of the project are the following: IP-TBM personnel/staff Consortia CMI researchers and technology transfer officers Prospective adoptors of technologies generated from this project Government partners/Provate industry Government partners/Private industry	01-Jan-22	31-Dec-23	ONGOING	2,995,551	1,587,776.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 1-A: Establishing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Biliran Province State University (Naval State University)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Biliran Province State University (BiPSU) in Naval State University; Naval, Biliran with a total PCAARRD-GIA funding of Php 1,701,240.00. One of the main problems faced by BiPSU, in general, is how to bridge the gap between R&D and technology transfer and commercialization, which leads to more socio-economic gains. This project under ViCAARPâ€™s helm is a step toward solving this problem through the establishment of the intellectual property and technology business management (IP-TBM) in BiPSU, which is imperative through the Philippine Technology Transfer Act of 2009 (Presidential Communications Operations Office, 2018).	Publication: At least one (1) IEC material will be developed for each year of the project. Copyright will also be applied for the IEC materials developed. Patent: At least one (1) patent/utility model applications will be submitted to IPOPHL for BiPSU AANR R&D products for each year of the project.Product: At least one (1) AANR R&D IP/technology will be commercialized after the entire duration of the project.People: At least three (3) IP-TBM personnel mentored in the PCAARRD Master Class Mentorship Series after the first year of the project.Place: At least (1) IP-TBM operations institutionalized after the duration of the project. Policy: None	Biliran Province State University	The target beneficiaries are the faculty researchers of BiPSUÃ¢,¬,¢s School (college) of Agriculture and Fisheries as well as personnel who will man the universityÃ¢,¬,¢s IP-TBM operations. Likewise, MSME cooperators of BiPSU who are into development of AANR products will benefit from this project.	01-Jan-22	31-Dec-23	ONGOING	1,701,240	1,041,245.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 1-B: Establishing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Eastern Visayas State University (EVSU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Eastern Visayas State University (EVSU) in Eastern Visayas State University; Lino Gonzaga Avenue / Philippines with a total PCAARRD-GIA funding of Php 1,701,240.00. VSU is motivated to develop and capacitate its human resource in IP protection and management, licensing its technologies, or securing commercialization. EVSU also aims to help its community by developing and equipping local entrepreneurs with the skills and stamina to turn novel ideas into successful ventures in today's fast-paced economy. Enhancing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Eastern Visayas State University will serve as an essential tool to accomplish these goals. It will significantly improve its filing of patent and utility model applications and have a greater chance to penetrate the market through the commercialization of its technologies.	Publication: 5 IECs 1 Publication Patent: 5 IP ApplicationsProduct: 1 Inventory of IP assets (potential IPs & IPs filed) 1 Inventory of matured technologies 1 Inventory of knowledge resources 4 Prior art search reports 1 Technology with pre-commercialization reports (valuation, FS, market study) 1 product enhanced or co-incubated or market tested At least 1 Technology Commercialized 1 technology pitchedPeople: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained inTCMS 2 CMI Staff Trained in Agribusiness Master Class 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff Attended CommPlan Workshop 2 CMI Staff Participated in the Technology Pitch Day Conducted Re-echo Seminars Trained at least 20 CMI Staff in Re-echo Seminars Place: 1 Commitment Letter 1 Commercialization Agreement signedPolicy: 1 Institutional IP Policies reviewed/ crafted 1 Technology Transfer Protocols reviewed/ crafted	Eastern Visayas State University	The following sectors are target beneficiaries of this project: MSMEs Partner Communities of the University Farmers and Fisherfolk Associations Start-Ups	01-Jan-22	31-Dec-23	ONGOING	1,996,829	1,065,914.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 1-C: Establishing the Agri-Fishery Intellectual Property and Technology Business Management (IP-TBM) Operations in Southern Leyte State University (SLSU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Southern Leyte State University (SLSU) in Naval State University; Naval, Biliran with a total PCAARRD-GIA funding of Php 1,701,240.00	Publication: At least 2 promotional IEC for SUC/RDI technologiesPatent: At least 8 IP (patent and utility model only) applicationsProduct: 1 inventory of IP assets 1 technology commercialized People: At least 2 IP-TBM staff attended a local/foreign IP workshop/fora At least 1 IP-TBM staff extensively trained under the IP Master Class and Technology Commercialization Mentorship Series At least 20 SUC/RDI trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainor/speaker At least 2 networking events and technology promotion conducted by the SUC/RDI At least 1 technology taker/adoptor Place: 1 IP-TBM established 1 Letter of Commitment from SUC/RDI 1 Memoranda of Agreement signed At least 1 partnership agreement with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions 1 IP-TBM institutionalized At least 1 commercialization agreement executedPolicy: 1 Institutional IP Policies reviewed.	Southern Leyte State University - San Juan Campus	Technology transfer personnel SLSU faculty/researchers with technologies potential for IP protection Agri-Aqua and natural resources graduates MSMEs Young entrepreneurs/start-up	01-Jan-22	31-Dec-23	ONGOING	3,456,022	1,262,776.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 1-D: Establishing the Intellectual Property and Technology Business Management (IP-TBM) Operations of University of Eastern Philippines (UEP)	Rapid, Inclusive and Sustained Economic Growth	General Objective: To establish the Intellectual Property and Technology Business Management (IP-TBM) Operations in University of Eastern Philippines. Specific Objective: Capacitate the Technology Transfer personnel of the University. Enhance the technology promotion and commercialization activities of the University. Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization;	Publication: 5 IECs Patent: 5 IP ApplicationsProduct: 1 inventory of IP assets (potential IPs & IPs filed) 4 prior art search reports 1 inventory of matured technologies 1 technology with pre-commercialization reports (valuation, FS, market study) 1 product enhanced or co-incubated or market tested At least 1 Technology Commercialized 1 inventory of knowledge resources 1 technology pitched People: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained in TCMS Conducted re-echo seminars 2 CMI Staff Trained in Agribusiness Master Class Trained at least 20 CMI staff in re-echo seminars 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff attended CommPlan Workshop 2 CMI Staff participated in the technology pitch dayPlace: 1 commitment letter 1 commercialization agreement signedPolicy: 1 Institutional IP Policies reviewed/ crafted 1 Institutional IP Policies BOR approved	University of Eastern Philippines (UEP)	This project will help the proprietor of small and medium enterprises	01-Jan-22	31-Dec-23	ONGOING	1,853,298	1,024,149.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 1-E: Establishing the Intellectual Property and Technology Business Management (IP-TBM) Operations in Visayas State University	Rapid, Inclusive and Sustained Economic Growth	General Objective: To establish the Intellectual Property and Technology Business Management (IP-TBM) Operations in Visayas State University. Specific Objective: Build the capacity of technology transfer personnel in VSU. Establish the technology promotion and commercialization activities of the University. Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization.	Publication: 3 IECs Patent: 3 IP Applications Products: 3 prior art search reports At least 1 Technology Commercialized People and Services: Conducted re-echo seminars Trained at least 20 CMI staff in re-echo seminars Participate to content build-up of RTMS Places and Partnerships: 1 commercialization agreement signed Policies: Continued Enhancement of IP Policies and Technology Transfer Protocols	Visayas State University	Technology transfer personnel VSU faculty/researchers with technologies potential for IP protection Agri-Aqua and natural resources graduates MSMEs Young entrepreneurs/start-up	01-Jan-22	31-Dec-23	ONGOING	1,791,500	928,250.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 2: Establishing the Regional Agribusiness Hub for the Pre-Commercialization of Technologies through the Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Region 8	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Visayas State University (VSU) in Visayas State University; VSU, Visca, Baybay City, Leyte with a total PCAARRD-GIA funding of Php 2,148,153.00. Its main function is to provide assistance, information and advice for regional consortia members to facilitate the transfer and commercialization of technologies. This is important because policy makers, funders and investors of publicly funded research longs for an approach that can efficiently connect between technology generation and commercialization.	Publication: At least 1 publication in peer-reviewed and indexed journal Patent: Product: At least pre-commercialization report including technology assessment, valuation, market research and business plan People: At least 1 CMI staff trained on pre-commercialization mentorship At least three trainings conducted At least 1 agribusiness master class implemented participated by at least 30 entrepreneurs, start ups, business planners, researchers in Region 8 At least 10 entrepreneurs, start ups, business planners, researchers in Region 8 served for technical advisory services Place: Policy:	Visayas State University	The target beneficiaries of the project are the following: Entrepreneurs, start ups Market researchers Consortia researchers and technology transfer officers Prospective adopters of technologies or product generated from agri-aqua sector Governmebt partners	01-Jan-22	31-Dec-23	ONGOING	2,148,153	1,134,077.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 3: Regional Agri-aqua Technology Business Incubation Program of ViCARP	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Visayas State University (VSU) in Visayas State University; Brgy. Pangasugan, Visca, Baybay City, Leyte with a total PCAARRD-GIA funding of Php 4,139,923.00. For technology-based businesses to make real contribution in the economy of the EV, it is logical to aim for a region-wide co-incubation system that will harness the potentials of the technologies, inventions, and creations of AANR technologies for commercialization. The region-wide co-incubation system will enable promotion of innovation and Technopreneurship, provide support services, and networking opportunities in the Agriculture, Aquatic and Natural Resources (AANR) sector.	Publication: 1 operations manual developed for Regional ATBI 1 Training Module developed for TCMS 1 Terminal report prepared and submitted Patent: 10 IP ApplicationsProduct: 1 Regional list of mature technologies 10 Technologies adopted/co-incubated 1 Regional list of ATBI Curriculum/services 1 product enhanced and manufactured for pre-commercialization 1 Market acceptability and product assessment conducted At least 10 label designs crafted(packaging and branding) People: 1 awareness seminar conducted 1 inventory of IP assets (potential Ips & Ips filed) 1 inventory of knowledge resources 1 Regional workshop on Inventory of Mature Technologies 10 incubatees assisted/co-incubated 1 Regional workshop of ATBI Curriculum/Services 1 Regional Technology Commercialization Mentorship Series (TMCS) 5-module Trained 20 CMI Staff 2 business pitching event, industry meetup, or networking event conducted or participated in 2 Boot camps conducted At least 10 entrepreneurship trainings conducted At least 1 per year Monitoring and Evaluation conducted per incubate Place: 10 MOAs/MOUs with incubates forgedPolicy: At least 1 ATBI related-policy approved by the University Administrative Council(UADCO)	Visayas State University	Agri-Aqua and natural resources graduates MSMEs Young entrepreneurs ViCARP Member SUCs	01-Jan-22	31-Dec-23	ONGOING	4,139,923	2,109,962.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Eastern Visayas	Project 4: Regional Knowledge Management of ViCARP	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 24 months (January 01, 2022 - December 31, 2023) by Visayas State University (VSU) in Visayas State University; VSU, Visca, Baybay City, Leyte with a total PCAARRD-GIA funding of Php 3,355,955.00. One of the components of the program is the Knowledge Management System in ViCARP. It is a one-stop-information service shop and convergence hub for technology generators and users. A platform to package, promote, and commercialize S&T creations to enhance the innovation ecosystem in the AANR sector and an IP-centric technology transfer mechanisms	Publication: 20 IECsPatent: Copyright of IECsProduct: 2 Regional CommPlan 2 Regional inventory of knowledge resources 1 technology pitch deck 1 e-library enhance 1 Real Time Monitoring System updatedPeople: Regional workshop on the commplan preparationand inventory of knowledge resources Technology Promotions Mentorship (IEC and technology pitch deck) 2-module 1 Regional Technology Pitch Day Trained 24 CMI staff on technology promotionsPlace: 1 Partnership agreement with KM group/consultantPolicy: N/A	Visayas State University	Knowledge Management CMIs Representatives Consortia CMI researchers and technology generator Prospective adoptors of technologies generated from this project Government partners/Private industry and students	01-Jan-22	31-Dec-23	ONGOING	3,355,955	1,857,978.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 1: Strengthening the IP-TBM Offices in ILAARRDEC's CMIs through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	To establish the Regional Intellectual Property and Technology Business Management (IP-TBM) in the Ilocos Agriculture, Aquatic, and Natiral Resources Research and Development Consortium (ILAARRDEC) through the Regional Agri-aqua Innovation System Enhancement (RAISE) Program.	Publication: - 1 training module IP Master Class - 1 Regional Sustainability PlanPatent: - At least 10 IP applicationsProduct: - 2 Prior art searches of R&D Proposals - 1 Regional inventory of potential IPs - 1 technology commercialized - 1 Regional Sustainability PlanningPeople: - 1 Regional Workshop on IP Audit and Inventory - 1 Regional Workshop on Prior Art Search - 1 Regional Workshop on Patent Analytics/ Patent Mining - 1 Regional IP Masterclass - Trained 40 CMI staff - 1 Policy webinar or workshop (New CMIs) - 1 Regional Sustainability Planning Workshop - 1 Regional Technology Commercialization Mentorship Series (TCMS)Place: - 2 Commercialization Agreement Signed - 2 Coordinated/manage business network of 10 CMIs - 1 commitment LetterPolicy: - Full implementation of IP policy and technology transfer protocols (internal AOs, etc)	MMSU	Faculty and fulltime researchers of the different CMIs involved will be the major beneficiary of the program also for the external stakeholders of each CMI.	01-Jan-22	31-Dec-23	ONGOING	4,092,931	1,582,110.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 1A : Strengthening the IP-TBM Office in Don Mariano Marcos Memorial State University through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	General Objective: Strengthen the IP-TBM Office in Don Mariano Marcos Memorial State University through the RAISE Program Specific Objective: Identify matured technologies with IP potential; Capacitate CMIs on invention spotting and patent drafting through mentorship series; Develop training module on IP Management; and Conduct IP Audit.	Publication: 1 Regional Sustainability PlanPatent: At least 10 utility models filed At least 10 copyrights filed At least 10 trademarks filesProduct: 5 Prior art searches of R&D Proposals 1 University inventory of potential IPsPeople: Participate in the RegÃ¢,¬„¢I Prior Art Search & IP Audit Workshop Trained at least 2 DMMMSU Staff Participate in the RegÃ¢,¬„¢I IP Master Class Participate in the RegÃ¢,¬„¢I Agribusiness Master Class RegÃ¢,¬„¢I Technology Commercialization Mentorship Series Trained at least 11 CMI Staff Regional Pitch DayPlace: NonePolicy: Full implementation of IP policy and technology transfer protocols	DMMMSU	All CMIs, SMEs, private individuals, technology generators/developers.	01-Jan-22	31-Dec-23	ONGOING	1,600,000	825,451.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 1B: Strengthening the IP-TBM Office in Ilocos Sur Polytechnic State College through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	General Objective: To strengthen the Intellectual Property and Technology Business Management Offices of Ilocos Sur Polytechnic State College (ISPSC) through the RAISE Program. Specific Objective: Manage AANR technologies of ISPSC by identifying matured technologies with IP potential; Develop technology transfer programs of ISPSC through capacity building Train ISPSC Researchers on invention spotting and patent drafting; Conduct IP Audit; and Develop a training module on IP protection and management.	Publication: - At least 1 training module - 1 IEC - 1 Sustainability planPatent: At least 5 IP applicationProduct: At least 1 inventory of Potential IPs At least 1 Inventory of IP Assets At least 1 Prior Art Search of R&D Proposal At least 1 technology with pre-commercialization reports At least 1 business plan of incubate At least 1Product manufactured form pre-commercialization/ market tested At least 1 Inventory of knowledge resources At least 1 technology CommercializedPeople: Trained At least 5 ISPSC Researchers IP Masterclass At least 1 Prior Art Search & IP Audit Workshop Technology Commercialization Mentorship Series Pitch Commercialization Day At least 1 ISPSC Researcher trained/coordinated business networkPlace: - At least 1 Commercialization Agreement - At least 1 partnership Agreement with Business Groups/ Trade	Ilocos Sur Polytechnic State College	Faculty and fulltime researchers of ISPSC will be the major beneficiary of the program and also for the external stakeholders of the College.	01-Jan-22	31-Dec-23	ONGOING	1,600,000	802,451.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 1C: Strengthening the IP-TBM Office in North Luzon Philippines State College through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	General Objective: To strengthen the Intellectual Property and Technology Business Management (IP-TBM) office of North Luzon Philippines State College (NLPSC). Specific Objective: Manage AANR technologies of NLPSC by identifying matured technologies with IP potential; Support the NLPSC to develop their technology transfer programs through capacity building; Train NLPSC faculty and researchers on invention spotting and patent drafting; Conduct IP Audit; and Develop a training module on IP protection and management.	Publication: 10 IECsPatent: 10 IP applicationsProduct: 10 prior art search report 1 inventory of IP assets 1 inventory of mature technologies 1 technology commercialized 4 technologies pitchedPeople: 1 inventory of knowledge resources 1 technology with pre-commercialization reports (valuation, FS, market study) 2 CMI Staff Trained in IP Masterclass 2 CMI Staff Trained in TCMS Conducted re-echo seminars 2 CMI Staff Trained in Agribusiness Master Class Trained at least 20 CMI staff in re-echo seminars Place: 2 CMI Staff Trained in Technology Promotion Mentorship 1 commercialization agreement signed Policy: Full implementation of IP Policy and Technology Transfer Protocol	North Luzon Philippines State College	Faculty and fulltime researchers of the different colleges/departments of NLPSC will be the major beneficiary of the program. Furthermore, partnership from different LGUs among the province will be encouraged.	01-Jan-22	31-Dec-23	ONGOING	1,600,000	807,451.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 1D: Strengthening the IP-TBM Office in Pangasinan State University through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	General Objective: To strengthen the Intellectual Property and Technology Business Management (IP-TBM) Offices of Pangasinan State University (PSU). Specific Objective: Manage AANR technologies of PSU by identifying matured technologies with IP potentials; Develop technology transfer programs of PSU through capacity building Conduct IP Audit; and Train PSU Researcher in Invention Spotting. Develop a training module on IP protection and management.	Publication: 5 IECs Patent: 10 IP ApplicationsProduct: - At least 1 Inventory of IP Assets - 5 Prior art searches reports - 1 product enhanced (packaging, branding) - 2 technologies pitch - 1 Technology CommercializedPeople: - 2 CMIs staff trained in IP masterclass - 2 CMI staff trained in TCMS - 20 CMI staff trained in re-echo seminar - 2 CMI staff trained in technology promotionsPlace: - 1 Commercialization Agreement Signed - 1 partnership agreement with Business Groups/Trade Institutions - 1 MOA/MOU with incubatee forgedPolicy: Revision of IP policy in accordance with the trend and TTP incorporating the ATBI related policies of the Univ., knowledge management and agri-business crafted	Pangasinan State University	Faculty and fulltime researchers of the different CMIs involved will be the major beneficiary of the program also for the external stakeholders of each CMI.	01-Jan-22	31-Dec-23	ONGOING	1,600,000	807,451.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 1E: Strengthening the IP-TBM Office in University of Northern Philippines through Raise Program	Rapid, Inclusive and Sustained Economic Growth	General Objective: To strengthen the Intellectual Property and Technology Business Management (IP-TBM) Office of University of Northern Philippines. Specific Objective: Manage AANR technologies of UNP by identifying matured technologies with IP potential; Support the researchers of the University to develop their technology transfer programs through capacity building Train UNP Faculty/ Researchers on invention spotting and patent drafting; Conduct IP Audit; and Develop a training module on IP protection and management. Implement IP policy and technology transfer protocols	Publication: 10 IEC materialsPatent: 10 IP ApplicationsProduct: - 10 prior art search reports - 1 inventory of IP assets - 1 inventory of mature technologies - 1 technology commercializedPeople: - 4 technologies pitched - 1 inventory of knowledge resources - 1 technology with pre-commercialization reports (valuation, FS, market study) - 1 CMI Staff Trained in IP Masterclass - 1 CMI Staff Trained in TCMS - 1 CMI Staff Trained in Agribusiness Master Class - 1 CMI Trained in Prior Art Search & IP Audit Workshop - Trained at least 20 CMI Faculty/researcher in re-echo seminarsPlace: - 2 CMI Staff Trained in Technology Promotion Mentorship -1 commercialization agreement signedPolicy: - Full implementation of IP policy and technology transfer protocols (internal AOs, etc)	University of Northern Philippines	Faculty and researches of the University of Northern Philippines will be the major beneficiaries of the program. it will also benefit the stakeholders of the University.	01-Jan-22	31-Dec-23	ONGOING	1,600,000	817,451.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 2: Reinforcing the Agri-business Hub in ILAARRDEC's CMIs through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	General Objective: Generally, it aims to reinforce the agri-business management capacity of ILAARDEC€™s CMIs through RAISE Program. Specific Objective: Develop a training module on agribusiness master class; Provide capacity/technical services, training, and consultancy services to ILAARRDEC€™s CMIs and R&D partners in Ilocos Region on technology transfer such as preparation of technology value proposition report, business plan, financial statement preparation, market study and value chain analysis; and	Publication: - 1 Agri-business Training ModulePatent: - 1 copyright of training moduleProduct: - 2 technologies with value proposition report, business plan, feasibility study and market study of developer - 2 Value Chain Analysis - 1 product manufactured for precom/market testedPeople: - 1 Regional l Agribusiness Master Class - Trained at least 20 CMI StaffPlace: - 2 partnership per region agreement with Business Groups/Trade InstitutionsPolicy: None	Mariano Marcos State University	Faculty and fulltime researchers of the different CMIs involved will be the major beneficiary of the program also for the external stakeholders of each CMI.	01-Jan-22	31-Dec-23	ONGOING	2,126,298	1,153,149.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 3: Boosting the Agri-aqua Technology Business Incubation in DMMMSU and MMSU through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	To establish the Regional Intellectual Property and Technology Business Management (IP-TBM) in the Ilocos Agriculture, Aquatic, and Natiral Resources Research and Development Consortium (ILAARRDEC) through the Regional Agri-aqua Innovation System Enhancement (RAISE) Program.	Publication: 1 ATBI operations manual enhanced At least 5 ATBI basic incubation curricula At least 6 ATBI advanced incubation curricula developed At least 1 promotional video for Regional ATBI developed At least 5 IEC or promotional materials for incubatees developed At least 1 promotional video for incubatees developed 1 ATBI sustainability plan developed 1 ATBI communication plan developed and implementedPatent: NoneProduct: 1 technology with pre-comm reports* 1 business plan of incubatee 1 product manufactured for precom/market tested At least 5 technologies adopted by new incubatees At least 1 technology commercialized with issued Fairness Opinion Report and signed Technology Licensing AgreementPeople: 10 CMIs trained/coordinated business network At least 2 incubatees enrolled/CMI at basic incubation program At least 3 trainings for ATBI staff conducted or participated in At least 5 trainings for incubatees conducted At least 5 business plans for new incubatees developed At least 2 awareness seminars or promotional activities conducted At least 2 business pitching events, industry meetups, or networking events conducted or participated in At least 2 consortium member-agency mentored on ATBI operationsPlace: At least 5 MOAs/MOUs with new incubatees forged At least 5 co-incubation forged with CMIs At least 5 MOAs/MOUs with organizations from public and private sectors forgedPolicy: Regional ATBI institutionalized ATBI-related policies for Region 1	Don Mariano Marcos Memorial State University - South La Union Campus	All CMIs, SMEs, private individuals, technology generators/developers.	01-Jan-22	31-Dec-23	ONGOING	4,043,155	1,625,377.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 3A: Boosting the Agri-aqua Technology Business Incubation in MMSU through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	To establish the Regional Intellectual Property and Technology Business Management (IP-TBM) in the Ilocos Agriculture, Aquatic, and Natiral Resources Research and Development Consortium (ILAARRDEC) through the Regional Agri-aqua Innovation System Enhancement (RAISE) Program.	Publication: - 8 IECPatent: - 2 copyrights of IEC - 2 TrademarkProduct: - 1 List of Mature Technology - 6 Technologies adopted/co-incubated - 1 Product enhanced (packaging, branding) - 1 Product Manufactured for Pre-Commercialization People: - 1 Workshop on inventory of Mature Technology - 6 Incubatees assisted - 2 Business/technology pitching event, industry meetup, or networking event conducted or participatedPlace: - 6 MOAs/MOUs with incubatees	Mariano Marcos State University - Main	Faculty and fulltime researchers of the different CMIs involved will be the major beneficiary of the program also for the external stakeholders of each CMI.	01-Jan-22	31-Dec-23	ONGOING	2,166,155	220,000.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Ilocos Region	Project 4: Championing Agri-aqua Knowledge Products/Technologies via new media platform through the RAISE Program	Rapid, Inclusive and Sustained Economic Growth	To establish the Regional Intellectual Property and Technology Business Management (IP-TBM) in the Ilocos Agriculture, Aquatic, and Natiral Resources Research and Development Consortium (ILAARRDEC) through the Regional Agri-aqua Innovation System Enhancement (RAISE) Program.	Publication: - 10 IECPatent: - 4 copyrights of IECProduct: - 2 regional inventory of knowledge recourses - 2 E-libPeople: - 1 Regional Workshop on the Inventory of Knowledge Resources - 2 Regional Pitch Day - 1 Technology Promotions Mentorship (IEC and technology pitch deck) - Trained 20 CMI staff on technology promotionsPlace: NonePolicy: None	Mariano Marcos State University	Faculty and fulltime researchers of the different CMIs involved will be the major beneficiary of the program also for the external stakeholders of each CMI.	01-Jan-22	31-Dec-23	ONGOING	1,898,200	998,149.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1H: Developing IP-TBM in SPAMAST through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: Establish an IPBTM office at Philippine Coconut Authority-Davao Research Authority. Specific Objective: Improve the capacity and capability of DRC on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement services of IPTBM at DRC; Strengthen/explore a partnership to potential adopters of technologies for joint R&D, promotion, and adoption.	Publication: 5 IECs Patent: At least 5 IP applications Product: 10 Prior Art Search Reports 1 Inventory of IP assets (Potential IP) 1 product enhanced or co-incubated or market tested 2 Inventory of matured technologies 1 technology with pre-commercialization reports (valuation, FS, market study) 1 Inventory of knowledge resources 2 technologies pitched 1 technology commercialized People: 2 DRC Staff Trained in IP MasterClass 2 DRC Staff Trained in TCMS 2 DRC Staff Trained in Agribusiness Master Class 2 DRC Staff Trained in Technology Promotion Mentorship 2 DRC Staff attended CommPlan Workshop 2 DRC Staff participated in the technology pitch day Trained at least 5 CMI staff in re-echo seminars Conducted re-echo seminars Place: 1 Letter of Commitment from SUC/RDI 1 Commercialization agreement signed Policy: Review/Revision and Approval of 1 IP Policy and 1 Technology Transfer	outhern Philippines Agri-Business Marine and Aquaculture School of Technology	Technology Generators/Inventors from CMI Technology Users and General Public Technology Investors/VCs/Angels Technology Transfer and RDRU Staff from CMI Tech Commercialization Service Providers Local & International R&D/S&T Partners	01-Jan-22	31-Dec-23	ONGOING	1,829,348	944,674.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1: Establishment of a Regional Hub on Intellectual Property and Technology Business Management (IP-TBM) Hub of SMAARRDEC in Davao Region	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to establish a regional hub of IPTBM, enhance the services of the existing IPTBM and establish new IPBTM offices among the selected CMIs of SMARRDEC. Specific Objective: Specifically, it aims to: Provide regional IPTBM support services and mentorship to CMIs in capacity development, R&D direction, linkages and monitoring; Improve the capacity and capability of CMIs on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement continued/new services of IPTBM in select CMIs; Strengthen/explore partnership to potential adopters of technologies for joint R&D, promotion and adoption.	Publication: 10 IECs; 1 Training Module Patent: At least 35 IP applications Product: Atleast 15 Prior Art Search Report; Atleast 2 Prior Art Search of R&D Proposal; 2 Inventory of IP Assets; 3 Inventory of Matured Technology 2 Inventory of Knowledge resources; 5 Technologies pitched; 3 Technologies with pre-commercialization; 3 Technologies commercialized 1 Reginal List of IP Assets; 1 Sustainability Plan; 1 Product enhance People: 4 CMI staff trained in IP MasterClass; 4 CMI staff trained in TCMS; 4 CMI staff trained in Agribusiness MasterClass; 4 CMI staff trained in CommPlan; 4 CMI staff trained in Technology Promotion 2 Re-echo seminars; 4 CMI staff participated in technology pitch day; 70 CMI staff trained in re-echo seminar 1 Regional Workshop on IP Audit 1 Regional Workshop on Prior Art Search 1 Regional Workshop on IP MasterClass (5-module) 1 Regional Workshop on Patent 1 Regional Workshop on Sustainability Planning 1 Policy Webinar with New CMIs Place: 4 Commercialization Agreement Signed 3 Commitment Letter Coordinated/managed business network of 10 CMIs Policy: Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs) AO to adopt prior art search report for R&D proposals	University of Southeastern Philippines	Technology Generators/Inventors from CMI Technology Users and General Public Technology Investors/VCs/Angels Technology Transfer and RDRU Staff from CMI Tech Commercialization Service Providers Local & International R&D/S&T Partners	01-Jan-22	31-Dec-23	ONGOING	2,935,374	1,572,687.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1A: Developing IP-TBM in DA-BPI- DNCRDPSC through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: Establish new IPBTM offices in Southern Philippines Agribusiness and Marine and Aquatic School of Technology (SPAMAST). Specific Objective: Improve the capacity and capability of SPAMAST on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement new services of IPTBM in SPAMAST; Strengthen/explore partnership to potential adopters of technologies for joint R&D, promotion and adoption.	Publication: At least 5 IECs Patent: At least 5 IP applications Product: 1 inventory of IP assets (potential IPs & IPs filed); 4 prior art search reports; 1 inventory of matured technologies; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 technology pitched; 1 inventory of knowledge resources; 1 product enhanced or co-incubated or market tested People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 20 CMI staff in re-echo seminars Place: 1 Letter of Commitment from SUC/RDI; 1 Commercialization Policy: 1 Institutional IP Policies reviewed/ crafted; 1 Technology Transfer Protocols reviewed/ crafted; 1 Institutional IP Policies BOR approved 1 Technology Transfer Protocols BOR approved	Bureau of Plant Industry - Davao National Crops Research and Development Center	Technology Generators/Inventors from CMI Technology Users and General Public Technology Investors/VCs/Angels Technology Transfer and RDRU Staff from CMI Tech Commercialization Service Providers Local & International R&D/S&T Partners	01-Jan-22	31-Dec-23	ONGOING	1,829,348	944,674.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1B: Enhancing IP-TBM in (DdOSC) through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to enhance the services of the existing IPTBM in Davao del Norte State College. Specific Objective: Specifically, it aims to: Improve the capacity and capability of Davao del Norte State College on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement continued services of IPTBM in Davao del Norte State College; Strengthen/explore partnerships with potential adopters of technologies for joint R&D, promotion, and adoption.	Publication: 10 IECs Patent: At least 10 IP applications Product: At least 10 Prior Art Search Report 1 Inventory of IP assets (Potential IP) 1 product enhanced or co-incubated or market tested 2 Inventory of matured technologies 1 Inventory of knowledge resources 1 technology with pre-commercialization reports (valuation, FS, market study) 1 technology commercialized 2 technologies pitched People: 2 CMI Staff Trained in IP MasterClass TCMS Agribusiness Master Class Technology Promotion Mentorship CommPlan Workshop Technology Pitch Day Conducted re-echo seminar Trained at least 30 CMI staff in re-echo seminars Place: 1 Letter of Commitment from SUC/RDI 1 Commercialization Agreement signed Policy:	Davao de Oro State College (formerly Compostela Valley State College)	Faculty, students, and staff Industry partners Entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	1,572,422	816,211.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1C: Enhancing IP-TBM in (DNSC) through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to enhance the services of the DORSU in IP-TBM. Specific Objective: Specifically, it aims to: Improve the capacity and capability of Davao Oriental State University on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement continued services of IPTBM in Davao del Norte State College; Strengthen/explore partnerships with potential adopters of technologies for joint R&D, promotion, and adoption.	Publication: 10 IECs Patent: Atleast 10 IP Applications Product: At least 10 Prior Art Search Report 1 Inventory of IP assets (Potential IP) 1 product enhanced or co-incubated or market tested 2 Inventory of matured technologies 1 Inventory of knowledge resources 1 technology with pre-commercialization reports (valuation, FS, market study) 1 technology commercialized 2 technologies pitched People: 2 CMI Staff Trained in IP MasterClass TCMS Agribusiness Master Class Technology Promotion Mentorship CommPlan Workshop Technology Pitch Day Conducted re-echo seminar Trained at least 30 CMI staff in re-echo seminars Place: 1 Letter of Commitment from SUC/RDI 1 Commercialization agreement signed Policy:	Davao del Norte State College	Faculty, students, and staff Industry partners Entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	1,572,422	816,211.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1D: Enhancing IP-TBM in DorSU through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to enhance the services of the existing IPTBM office in DSSC. Specific Objective: Specifically, it aims to: Improve the capacity and capability of Davao del Norte State College on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement continued services of IPTBM in Davao del Norte State College; Strengthen/explore partnerships with potential adopters of technologies for joint R&D, promotion, and adoption.	Publication: 10 IECs Patent: Atleast 10 IP Applications Product: At least 10 Prior Art Search Report 1 Inventory of IP assets (Potential IP) 1 product enhanced or co-incubated or market tested 2 Inventory of matured technologies 1 Inventory of knowledge resources 1 technology with pre-commercialization reports (valuation, FS, market study) 1 technology commercialized 2 technologies pitched People: 2 CMI Staff Trained in IP MasterClass TCMS Agribusiness Master Class Technology Promotion Mentorship CommPlan Workshop Technology Pitch Day Conducted re-echo seminar Trained at least 30 CMI staff in re-echo seminars Place: 1 Letter of Commitment from SUC/RDI 1 Commercialization agreement signed Policy:	Davao Oriental State University	Faculty, students, and staff Industry partners Entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	1,572,422	816,211.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1E: Enhancing IP-TBM in Davao del Sur State College (DSSC) through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to enhance the services of the existing IPTBM office in Davao de Oro State College. Specific Objective: Specifically, it aims to: Improve the capacity and capability of Davao del Norte State College on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement continued services of IPTBM in Davao del Norte State College; Strengthen/explore partnerships with potential adopters of technologies for joint R&D, promotion, and adoption.	Publication: 10 IECs Patent: Atleast 10 IP Applications Product: At least 10 Prior Art Search Report; 1 Inventory of IP assets (Potential IP) 1 product enhanced or co-incubated or market tested; 2 Inventory of matured technologies; 1 Inventory of knowledge resources; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 technology commercialized; 2 technologies pitched; People: 2 CMI Staff Trained in; IP MasterClass; TCMS; Agribusiness Master Class Technology Promotion Mentorship; CommPlan Workshop; Technology Pitch Day; Conducted re-echo seminar; Trained at least 30 CMI staff in re-echo seminars; Place: 1 Letter of Commitment from SUC/RDI 1 Commercialization agreement signed Policy: Review and Revision of IP Policy and Technology Transfer Protocol Improved services of UP Mindanao on IP management and technology transfer; Streamlined IPTBM processes and strategies by IP policies and technology transfer protocol; Strengthened partnership to potential adopters of technologies for joint R&D, promotion, and adoption.	DAVAO DEL SUR STATE COLLEGE	Faculty, students, and staff Industry partners Entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	1,572,422	816,211.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1F: Developing IP-TBM in KCAST through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: Establish IPBTM office in BPI-DNCRDPSC Specific Objective: Improve the capacity and capability of BPI-DNCRDPSC on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement new services of IPTBM in BPI-DNCRDPSC; Strengthen/explore a partnership to potential adopters of technologies for joint R&D, promotion, and adoption.	Publication: At least 5 IECs Patent: At least 5 IP applications Product: 1 inventory of IP assets (potential IPs & IPs filed) 4 prior art search reports 1 inventory of matured technologies 1 technology with pre-commercialization reports (valuation, FS, market study) 1 technology pitched 1 inventory of knowledge resources 1 product enhanced or co-incubated or market tested People: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained inTCMS 2 CMI Staff Trained in Agribusiness Master Class 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff attended CommPlan Workshop 2 CMI Staff participated in the technology pitch day Conducted re-echo seminars Trained at least 20 CMI staff in re-echo seminars Place: 1 letter of Commitment from SUC/RDI 1 Commercialization Policy: 1 Institutional IP Policies reviewed/ crafted 1 Technology Transfer Protocols reviewed/ crafted	Kapalong College of Agriculture Sciences and Technology	Technology Generators/Inventors from CMI Technology Users and General Public Technology Investors/VCs/Angels Technology Transfer and RDRU Staff from CMI Tech Commercialization Service Providers Local & International R&D/S&T Partners	01-Jan-22	31-Dec-23	ONGOING	1,829,348	944,674.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1G: Developing IP-TBM in DA-PCA through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: Establish new IPBTM office inKapalong College of Agriculture, Sciences and Technology (KCAST). Specific Objective: Improve the capacity and capability of Kapalong College of Agriculture Sciences and Technology (KCAST) on IP management and technology transfer; Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; Implement new services of IPTBM in KCAST; Explore partnerships to potential adopters of technologies for joint R&D, promotion and adoption.	Publication: At least 5 IECs Patent: At least 5 IP applications Product: 1 inventory of IP assets (potential IPs & IPs filed) 4 prior art search reports 1 inventory of matured technologies 1 technology with pre-commercialization reports (valuation, FS, market study) 1 technology pitched 1 inventory of knowledge resources 1 product enhanced or co-incubated or market tested People: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained in TCMS 2 CMI Staff Trained in Agribusiness Master Class 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff attended CommPlan Workshop 2 CMI Staff participated in the technology pitch day Trained at least 20 CMI staff in re-echo seminars Place: 1 letter of Commitment from SUC/RDI 1 Commercialization Policy: 1 Institutional IP Policies reviewed/ crafted 1 Institutional IP Policies BOR approved 1 Technology Transfer Protocols BOR approved	Philippine Coconut Authority	Technology Generators/Inventors from CMI Technology Users and General Public Technology Investors/VCs/Angels Technology Transfer and RDRU Staff from CMI Tech Commercialization Service Providers Local & International R&D/S&T Partners	01-Jan-22	31-Dec-23	ONGOING	1,829,348	944,674.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 1I: Enhancing IP-TBM in UP Mindanao through RAISE	Rapid, Inclusive and Sustained Economic Growth	General Objective: Enhance the services of the IPTBM of UP Mindanao. Specific Objective: 1. Improve the capacity and capability of UP Mindanao on IP management and technology transfer; 2. Streamline IPTBM processes and strategies by IP policies and technology transfer protocol; 3. Implement continued services of IPTBM in UP Mindanao; 4. Strengthen/explore a partnership to potential adopters of technologies for joint R&D, promotion and adoption.	Publication: 10 IECs Patent: Atleast 10 IP Applications Product: At least 10 Prior Art Search Report; 1 Inventory of IP assets (Potential IP); 1 product enhanced or co-incubated or market tested; 2 Inventory of matured technologies; 1 Inventory of knowledge resources; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 technology commercialized; 2 technologies pitched People: 2 CMI Staff Trained in; IP MasterClass; TCMS; Agribusiness Master Class; Technology Promotion Mentorship; CommPlan Workshop; Technology Pitch Day; Conducted re-echo seminar; Trained at least 30 CMI staff in re-echo seminars Place: 1 letter of Commitment from SUC/RDI; 1 commercialization agreement signed Policy: Review and Revision of IP Policy and Technology Transfer Protocol	University of the Philippines Mindanao	Faculty, students, and staff Industry partners Entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	1,572,422	816,211.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 2. Establishment of a Regional Agribusiness Hub ABH) of SMAARRDEC in Davao Region (Old Title: Establishment of a Regional Agribusiness Hub of SMAARDEC in Davao Region)	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to establish a regional agribusiness hub of SMARRDEC to enhance the socio-economic aspect of technology transfer. Specific Objective: Specifically, it aims to: Provide regional technical assistance to CMIs in capacity development, and monitoring; Improve the capacity and capability of CMIs on pre-commercialization activities; Explore partnership with business organizations. Strengthen agribusiness hub in the region.	Publication: 1 Training Module (Agribusiness MasterClass) Patent: Copyright of training moduleProduct: 1 technology (of the SUC/Implementing Agency) with value proposition report; business plan; FS; market study; 1 product market-tested (of the SUC/Implementing Agency) People: 1 Regional Agribusiness MasterClass; Trained 20 CMI Staff; Assisted 9 CMIs/Mentees in pre-commercialization services (market study, business plan); Place: 2 Partnership agreementsRegional Agribusiness Hub institutionalized with business organization per RegionPolicy: Regional Agribusiness Hub institutionalized	University of Southeastern Philippines - Main	CMIs	01-Jan-22	31-Dec-23	ONGOING	2,181,248	1,195,624.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 3: Establishment of a Regional Agri-Aqua Technology Business Incubation (ATBI) Hub of SMAARDEC in Davao Region	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to establish a regional technology business incubation hub of SMARRDEC to provide an avenue for CMI innovators with potential ideas leading to the formation of start-up/spin-off. Specific Objective: Specifically, it aims to: Provide regional technical assistance to CMIs in capability development, and monitoring; Coordinate incubation services in product business development; Streamline incubation processes through operations manual; Create potential business network; and Explore partnership and synergy with business organizations	Publication: 1 RATBIH operations manual enhanced 1 Training Module (TCMS)Patent: 10 IP ApplicationsProduct: 1 Regional list of mature technologies at least 10 technologies adopted/co-incubated 1 Regional list of RATBIH Curriculum/Services 1 product manufactured for pre-commercialization 1 product enhanced (development, packaging, branding) People: 1 Regional workshop on Inventory of Mature Technologies 1 Regional workshop of RATBIH Curriculum/Services 1 Regional Technology Commercialization Mentorship Series (TCMS) 5-module Trained 20 CMI Staff 1 inventory of IP assets (potential IPs & IPs filed) 1 inventory of knowledge resources At least 2 business pitching event, industry meetup, or networking event conducted or participated in At least 10 incubatees assisted/co-incubationPlace: At least 10 MOAs/MOUs with incubatees forgedFull implementation of IP policy and Technology Transfer ProtocolsPolicy: Full implementation of IP policy and Technology Transfer Protocols RATBIH institutionalized RATBIH-related policies of the University crafted and approved	University of Southeastern Philippines	CMI innovators	01-Jan-22	31-Dec-23	ONGOING	2,990,748	1,550,374.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 3A: USeP's Agri-Aqua Technology Business Incubation (ATBI) Facility and Services for Smart Farming, Pre and Post Harvest and Food Technologies	Rapid, Inclusive and Sustained Economic Growth	General Objective: Establish an agri-technology business incubation in USeP with a niche in Smart Farming, Pre & Post Harvest and Food Technologies Specific Objective: Streamline the ATBI process and strategies by formulation of plans, curriculum, agreements and manual; Increase entrepreneurial competencies among ATBI personnel in handling its operation; Protect and promote the IP-based technologies of the startup/spinoff; Provide incubation services to startup/spinoff through provision of space facility, business & technical mentorship and marketing opportunities; Foster innovation activities including ideation workshops, pitching sessions and networking events; and Intensify partnership with relevant industry adopters in the AANR sector.	Publication: 1 ATBI business plan developed1 ATBI operations manual developedAt least 10 ATBI curricula developedAt least 2 IEC or promotional materials for ATBI developedAt least 1 promotional video for ATBI developedAt least 10 IEC or promotional materials for incubatees developedAt least 2 promotional videos for incubatees developed1 ATBI sustainability plan developed and implemented1 ATBI communication plan developed and implemented Patent: At least 10 trademarks filedAt least 5 copyrights filedProduct: At least 10 technologies adopted by incubateesPeople: At least 10 incubatees assistedAt least 6 trainings for ATBI staff conducted or participated inAt least 10 trainings for incubatees conductedAt least 10 business plans for incubatees developedAt least 3 awareness seminars or promotional activities conductedAt least 3 business pitching events, industry meetups, or networking events conducted or participated inATBI operations fully integrated to PCAARRD's ATBI real-time monitoring systemPlace: At least 10 MOAs/MOUs with incubatees forgedAt least 6 MOAs/MOUs with organizations from public and private sectors forgedPolicy: ATBI institutionalizedATBI-related policies of the University crafted and approved	University of Southeastern Philippines	Start-up Entrepreneurs Faculty Students	01-Jan-22	31-Dec-23	ONGOING	5,045,018	2,827,509.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Mindanao	Project 4: Establishment of a Regional Knowledge Management Hub of SMAARRDEC in Davao Region	Rapid, Inclusive and Sustained Economic Growth	General Objective: The main objective of the project is to enhance the regional knowledge management hub of SMAARRDEC for the promotion and dissemination of technologies. Specific Objective: Specifically, it aims to: Intensify regional technical assistance to CMIs in knowledge management; Coordinate KM activities in a communication plan, promotional materials, and technology briefs; and Explore partnership with business organizations.	Publication: At least 10 IECsPatent: 2 Copyright of IECsProduct: 1 Regional CommPlan and updated 1 Regional inventory of knowledge resources 1 e-library and enhanced 1 RTMS established 1 technology pitch deckPeople: Regional workshop on the communication plan preparation and inventory of knowledge resources Technology Promotions Mentorship (IEC and technology pitch deck) 2-module 2 Regional Technology Pitch Day Trained 20 CMI staff on technology promotionsPlace: 1 Partnership agreement with KM group/consultant per RegionPolicy: N/A	University of Southeastern Philippines	CMIs	01-Jan-22	31-Dec-23	ONGOING	1,897,998	978,999.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1: Establishing and Operationalizing Regional Intellectual Property and Technology Business Managemet (IPTBM) Office at the Southern Tagalog Agriculture, Aquatic and Resources Research, Development (Old Title: Sustaining CvSU IP-TBM Office and Enhancing IP-TBM Offices Among Member Agencies of the Southern Tagalog Agriculture, Aquatic and Resources Research, Development and Extension Consortium (STAARRDEC))	Rapid, Inclusive and Sustained Economic Growth	RAISE hopes for a favorable environment for local inventions, including the shaping of innovative mindsets, enhanced policies to create a more level playing field and shared communication infrastructure such as new networks and linkages between members of the system; new resources, including information; new know-how; a workforce with enhanced skills specific to particular innovation niches. RAISE calls for the commitment of the actors in the innovation ecosystem to collaborate together to build a competitive agri-aqua innovation ecosystem that maximizes the potential of every S&T Innovation. RAISE aims to contribute in the strengthening of the PCAARRD€™s Regional Consortia through Regional Capacity Building and Mentorship; Agri-Technology Business Development; IP Management; Strategic Partnership and Collaboration; and Enhanced Knowledge Management.	Publication: CvSU: At least 4 promotional IECs for SUC/RDI technologies At least 2 consolidated technical reports (with report of income from commercialization agreements) At least 2 activity evaluation and documentation reports 5 training evaluation and documentation reports (Ip Master class Modules 1-5) 1 Training Module Participating CMIs: At least 100 promotional IECs for SUC/RDI technologiesPatent: CvSU: At least 20 IP applications (patent and UM) Participating CMIs: At least 100 IP (patent and UM) applicationsProduct: CvSU: 1 updated inventory of IP Assets & 1 Regional Priority R & D 1 Regional list of potential IPÂ¢‚„¢s 4 PAS reports of R&D proposals and IP applications At least 2 Technologies (products, processes, and systems) Commercialized 1 Regional Sustainability Plans Participating CMIs: 20 updated inventories of IP assets 60 Prior Art Search (PAS) reports 20 technologies pitched 10 technology with pre-commercilization plan 10 product enhanced or co-incubatedPeople: CvSU: At least 2 IP-TBM staff extensively trained under the IP Master Class (modules 1-5) At least 2 exploratory meetings/networking events and technology promotion activities conducted by the SUC At least 2 technology takers/adopters	Cavite State University	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	01-Jan-22	31-Dec-23	ONGOING	8,590,157	8,590,157.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1A. Enhancing the IP-TBM in Cavite State University	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Cavite State University in Cavite State University, Bancod Indang, Cavite with a total PCAARRD-GIA funding of Php 1,402,853€¬. The project aims To sustain the Intellectual Property and Technology Business Management Office at Cavite State University. The project shall deal with the challenges of sustainability of the IP-TBM€™s initial efforts in protecting and managing intellectual properties (IP) and pursuing technology commercialization. The project will implement a mentor-mentee-regional approach to further enhance the innovation ecosystem in the agriculture, aquatic, and natural resources sectors.	Publication:10 IECsPatent:10 IP ApplicationsCopyright of IECsProduct:10 PAS Reports1 IP inventory1 inventory of matured technologies1 inventory of knowledge resources1 communication plan1 technology with pre-comm reports1 product enhanced (prototyping, developed, packaging, branding)1 product pre-comm manufactured 4 technologies pitched1 Technology CommercializedPeople:2 CMI staff attended Prior Art Search & IP Audit Workshop2 CMI staff trained in IP MasterClass2 CMI staff trained in Agribusiness MasterClass2 CMI staff trained in TCMS2 CMI staff trained in TechPromotion Mentorship2 CMI staff attend CommPlan WorkshopConducted 1 re-echo seminarTrained at least 30 CMI staff in re-echo seminarsParticipate to content build up of RTMSPlace:1 Commitment Letter1 partnership agreement w/Business/Trade Institutions1 Commercialization AgreementsPolicy:1 Full implementation of IP policy and technology transfer protocol (with internal memos, AOs)	Cavite State University	Intellectual Property and Technology Business Management (IP-TBM) of CvSUTechnology transfer officers/managersSUC/RDI Researchers/InventorsTechnology takers	01-Jan-22	31-Dec-23	ONGOING	620,803	620,803.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1B. Enhancing the IP-TBM in Southern Luzon State University (SLSU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Southern Luzon State University (SLSU) in QUEZON CITY 2 NCR (Eastern Manila District) NATIONAL CAPITAL REGION (NCR)and BOLINAO 1 PANGASINAN REGION 01 (ILOCOS REGION) PCAARRD-GIA funding of Php 1,601,030.00€¬. SLSU ITSSO, with the support of the administration, seeks to not only enhance its Intellectual Property and Technology Business Management Activities, but also proceed to the next level and conduct Technology Transfer and Commercialization Activities, network with its regional HEI IPTBM counterparts, and establish its own ATBIs. Through RAISE, SLSU hopes to fully commercialize its technologies protected through SUSTAIN IPTBM.	Publication €" At least 5 IECs of SLSU technologies and one (1) Sustainability PlanProduct €" five (5) Prior art search reports, one (1) inventory of potential IPs, one (1) inventory of IP Assets, one (1) inventory of mature technologies, one (1) technology with pre-commercialization reports, one (1) inventory of Knowledge Resources, and one (1) technology commercializedPeople and Services €" At least one (1) trained personnel on Regional Prior Art Search and IP Audit Workshop, at least one (1) personnel trained in the regional IP Master Class, At least one (1) personnel trained in Regional Agribusiness Master Class, At least one (1) personnel trained in Technology Commercialization Mentorship Series, At least one (1) personnel presenting/pitching at the Regional Pitch DayPlace and Partnership €" At least one (1) commercialization agreement signed and one (1) partnership agreement with Business Groups/Trade InstitutionsPolicy €" One (1) University Intellectual Property Policy presented/approved by the BOR and One (1) Technology Transfer Protocol presented/approved by the BOR	Southern Luzon State University	This project will benefit SLSU personnel, students, and its clientele communities.	01-Jan-22	31-Dec-23	ONGOING	876,515	876,515.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1C. Enhancing the IP-TBM in University of Rizal System (URS)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by University of Rizal System (URS) in URS Morong Campus, Sumulong St. Brgy. San Juan Morong, Rizal, Region 4A/ PCAARRD-GIA funding of Php 1,601,030.00€¬. The URS being tapped to implement a project component, titled, €œEnhancing Technology Transfer through Intellectual Property Technology Business Management€• has started doing the tasks in accordance with the targets and memorandum of agreement for the project. While the project has already achieved some of its initial objectives, technology transfer and commercialization remains the most significant challenge for the University. The Regional Agri-Aqua Innovation System Enhancement (RAISE) program hopes to deliver another opportunity to direct the SUCs mission to reflect a more significant role of delivering its function as what has been reflected in their respective vision and mission.	Publication:The Project is expected to publish 10 IECsPatent:10 IPs are expected to be filed at IPOPHILProduct:1 inventory of IP assets (potential IPs & IPs filed)1 inventory of matured technologies1 product enhanced, co-incubated or market tested1 technology commercialized1 inventory of matured technologies2 technologies pitched2 technologies pitched1 inventory of knowledge resources1 technology with pre-commercialization reports (valuation, FS, market study)People:2 URS Staff Trained in IP Master Class2 URS Staff Trained in TCMS Conducted re-echo seminars2 URS Staff Trained in Agribusiness Master Class Trainedat least 30 URS personnel in re-echo seminars2 URS Staff Trained in Technology Promotion Mentorship2 URS Staff attended CommPlan Workshop2 URS Staff participated in the technology pitch dayPlace:2 networking/meetings conducted2 networking/meetings conducted1 partnership established1 commercialization agreement signedPolicy:The Project has to execute the full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)	University of Rizal System -formerly Rizal State College (RiSC)	The proposed project is intended for the URS stakeholders, innovators and technology adopters. It will also involve those individuals who are engaged in Science and Technology- related activities. It is also applies to all personnel engaged in the development of agri-aqua research-based technology that may be made available to investors or technology adopters for potential commercialization partnerships. -Faculty members (teaching and non-teaching); -Researchers (part time/ full time faculty, staff and students); -Visiting faculty; -External researchers; -Other government, private and industry sectors	01-Jan-22	31-Dec-23	ONGOING	876,515	876,515.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1D. Enhancing the IP-TBM in Marinduque State College (MSC)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Marinduque State College (MSC) in Tanza, Boac, Marinduque PCAARRD-GIA funding of Php 1,601,030.00€¬. This project proposal calls for the enhancement of IP-TBM at Marinduque State College that will assist in protecting and managing Intellectual Properties (IP) and pursuing technology commercialization. The college will conduct capacity-building activities to encourage Intellectual Property (IP) Applications, full implementation of IP Policy and Technology Transfer Protocol, and execute licensing agreements for technology commercialization.	PublicationsAt least 10 Promotion IEC MaterialsPatentsAt least 10 IP Applications (Patent and UM)ProductsAt least 10 Prior Art Search conducted1 Inventory of IP Assets (potential and IPs & IPs filed)1 inventory of mature technologies1 inventory of knowledge resources2 technologies pitched1 technology with pre-commercialization reports1 product enhanced or co-incubated or market tested1 technology commercialized2 technologies pitchedPeople and ServicesIP MasterClassAtleast 2 SUC Staff trained in TCMSAt least 2 SUC Staff Trained Agribusiness Master ClassAt least 2 SUC Staff trained in Technology Promotion MentorshipAt least 2 SUC Staff trained in CommPlan WorkshopAt least 2 CMI Staff participated in the Technology Pitch DayAt least 30 SUC Staff I trained (short duration/echo seminar) on IP Management and Technology Commercialization with IP-TBM staff as trainer/speakerPlaces and Partnerships1 commitment letter1 commercialization agreementPoliciesFull implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)	Marinduque State College	The target beneficiaries of the project are researchers and innovators from Marinduque State College (MSC) who seek to protect their technologies and innovations for technology commercialization.	01-Jan-22	31-Dec-23	ONGOING	876,515	876,515.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1E. Enhancing the IP-TBM in Batangas State University (BatStateU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Batangas State University (BatStateU) in Batangas State University, Rizal Avenue Batangas City PCAARRD-GIA funding of Php 1,601,030.00€¬. The IP-TBM program aims to strengthen the capacities of selected SUCs and RDIs on IP and technology business management to enhance their technology commercialization activities. IP-TBMs are technology transfer offices that are envisioned to mirror the initiatives of the DPITC, which serves as a one-stop hub for technology owners and generators, investors, end-users, and other stakeholders within the AANR innovation system.	Product: 1 Regional inventory of IP Assets; 1 Regional list of potential; IP's 2 Prior Art Search (PAS) reports (R&D proposals and IP applications) At least 1 Technology (products, processes, and systems) Commercialized People and Services: At least 2 IP-TBM staff extensively trained under the IP Master Class (modules 1-5) At least 1 exploratory meetings/networking events and technology promotion activities conducted At least 1 technology takers/adopters 1 Regional workshop on IP audit/inventory 1 regional workshop on prior art search 1 Regional IP Masterclass (5 module) 1 Policy Webinar/workshop (new CMI's) 1 commercialization agreement Publication: At least 2 promotional IECs for SUC/RDI technologies At least 1 consolidated technical reports At least 1 activity evaluation and documentation reports 5 training evaluation and documentation reports (Modules 1-5 of IP Masterclass) Patent: At least 10 IP applications (patent and UM) Places and Partnerships: 1 Letters of Commitment from SUC/RDI 1 Memoranda of Agreement signed At least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 1 commercialization agreements executed Policies: Full implemetation of IP policy and technology	Batangas State University	The target beneficiaries of this project include the following individuals, groups, and organizations:Existing ATBI in Region IV and its personnelOther consortium member institutionsAANR stakeholders from the academe, public, and private sectors, non-government organizations (NGOs) and international partnersPotential entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	876,515	876,515.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1F. Enhancing the IP-TBM in Rizal Technological University (RTU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Rizal Technological University (RTU) in Cavite State University - Main ; Bancod, Indang, Cavite / 046 482 201 / PCAARRD-GIA funding of Php 1,601,030.00€¬. The IP-TBM program aims to strengthen the capacities of selected SUCs/RDIs on IP and technology business management to enhance their technology commercialization activities. RTU€™s IP-TBM is now on its second year of implementing its mandate of increasing IP awareness among members of the RTU community and at the same time capacitating them with knowledge about IP protection, technology transfer, and commercialization potential of their IPs.	Publication: 5 IECsS IECsPatent:2 IP applications3 IP applications2 IP applications3 IP applicationsProduct: 1 inventory of potential IPs1 inventory of knowledge resources3 prior art search reports1 inventory of IP assets (filed)1 technology pitched1 technology with pre-commercialization reports (valuation, FS, market study)2 prior art search reports1 product enhanced or co-incubated or market tested3 prior art search reports1 technology commercialized1 inventory of mature technologies1 technology pitchedPeople:2 staff trained in IP Master Class2 staff trained in TCMS2 staff trained participated in the technology pitch dayConducted re-echo seminars Trained at least 30 staff in re-echo seminarsPlace:1 commitment letter1 commercialization agreementPolicy:Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)	Rizal Technological University	The target beneficiaries of this project will be the SUC, student, faculty and staff researchers and innovators, the technology takers.	01-Jan-22	31-Dec-23	ONGOING	876,515	876,515.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1G. Enhancing the IP-TBM in Laguna State Polytechnic University (LSPU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Laguna State Polytechnic University (LSPU) in Cavite State University - Main ; Bancod, Indang, Cavite / 046 482 201 / PCAARRD-GIA funding of Php 1,601,030.00€¬. At present, LSPU has already established and set the operation of the IP-TBM. It works hand on hand with Innovation Technology Support Office (ITSO) and the Technology Business Incubation (TBI) Office.	Publication: 10 IECsPatent:10 IP ApplicationsCopyright of IECsProduct:10 PAS Reports1 IP inventory1 inventory of matured technologies1 inventory of knowledge resources1 communication plan1 technology with pre-comm reports1 product enhanced (prototyping, developed, packaging, branding) 1 product pre-comm manufactured4 technologies pitched1 Technology CommercializedPeople:2 CMI staff attended Prior Art Search & IP Audit Workshop 2 CMI staff trained in IP MasterClass2 CMI staff trained in Agribusiness MasterClass2 CMI staff trained in TCMS2 CMI staff trained in TechPromotion Mentorship2 CMI staff attend CommPlan WorkshopConducted 1 re-echo seminarTrained at least 30 CMI staff in re-echo seminars Participate to content build up of RTMSPlace:1 Commitment Letter1 partnership agreement w/Business/Trade Institutions 1 Commercialization AgreementsPolicy:Full implementation of IP policy and technology transfer protocol (with internal memos, AOs)	Laguna State Polytechnic University	The proposed project is intended for the LSPU stakeholders, innovators and technology adopters. It will also involve those individuals who are engaged in Science and Technology- related activities. It is also applies to all personnel engaged in the development of Agri-aqua research-based technology that may be made available to investors or technology adopters for potential commercialization partnerships.€c Faculty members (teaching and non-teaching);€c Researchers (part time/ full time faculty, staff and students);€c Visiting faculty;€c External researchers and;€c Other government, private and industry sectors	01-Jan-22	31-Dec-23	ONGOING	488,950	488,950.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1H. Enhancing the IP-TBM in Forest Products Research Development Institute (FPRDI)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Forest Products Research Development Institute (FPRDI) in Narra Rd., Forestry Campus, College, Los BaÃ±os, Laguna PCAARRD-GIA funding of Php 1,194,465.00€¬. This project primarily aims to enhance and strengthen FPRDI€™s capacity for a more effective and efficient IP management and commercialization system by providing its women and men engaged in technology transfer activities opportunities to hone their knowledge and skills thru high-level trainings and mentorship programs.	Publication1 ATBI business plan revised as needed1 ATBI operations manual revised as neededAt least 10 ATBI basic incubation curricula revised as neededAt least 6 ATBI advanced incubation curricula developedAt least 2 IEC or promotional materials for ATBI developedAt least 1 promotional video for ATBI developed and updatedAt least 16 IEC or promotional materials for incubatees developedAt least 2 promotional videos for incubatees developed1 ATBI sustainability plan revised as needed1 ATBI communication plan developed and implementedPatentsAt least 10 trademarks filedAt least 10 copyrights filedProductsAt least 10 technologies adopted by new incubateesAt least 6 technologies adopted by continuing incubateesAt least 3 technologies commercialized with issued Fairness Opinion Report and signed Technology Licensing AgreementPeople and ServicesAt least 10 new incubatees enrolled at basic incubation programAt least 6 continuing incubatees enrolled at advanced incubation programAt least 6 continuing incubatees graduated from advanced incubation programAt least 6 startups or spinoffs registered and launchedAt least 6 trainings for ATBI staff conducted or participated inAt least 10 trainings for incubatees conductedAt least 10 business plans for new incubatees developedAt least 6 business plans for continuing incubatees improvedAt least 4 awareness seminars or promotional activities conductedAt least 4 business pitching events, industry meetups, or networking events conducted or participated inATBI operations fully integrated to PCAARRD's ATBI real-time monitoring systemAt least 2 consortium member-agencies mentored on ATBI operationsPlaces and PartnershipsAt least 10 MOAs/MOUs with new incubatees forgedAt least 6 MOAs/MOUs with continuing incubatees renewedAt least 10 MOAs/MOUs with organizations from public and private sectors forged/renewedPoliciesATBI institutionalized with approved Board ResolutionATBI-related policies of University revised as neededSocial ImpactBaseline metrics to assess the	Forest Products Research and Development Institute	Existing IPTBM in Region IV and its personnelOther consortium member institutionsAANR stakeholders from the academe, public, and private sectors, non-government organizations (NGOs) and international partnersPotential entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	488,950	488,950.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 1I. Establishing and Operationalizing the IP-TBM in Romblon State University (RSU)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Romblon State University (RSU) in Romblon State University, Odiongan, Romblon PCAARRD-GIA funding of Php 1,800,955.00€¬. This project specifically proposes to capacitate the RSU KMTTO and establish the IP-TBM in order to strengthen IP management and promote techno transfer activities in the University by updating its IP Policy and crafting the University€™s Techno Transfer protocol for the approval of the RSU Board of Regents.	People and Services2 CMI Staff Trained in IP Master Class2 CMI Staff Trained in TCMS2 CMI Staff Trained in Agribusiness Master Class2 CMI Staff Trained in Technology Promotion Mentorship2 CMI Staff attended CommPlan Workshop2 CMI Staff participated in the technology pitch dayConducted re-echo seminarsTrained at least 20 CMI staff in re-echo seminarsProducts1 inventory of IP assets (potential IPs & IPs filed)1 inventory of matured technologies 1 inventory of knowledge resources4 prior art search reports1 technology with pre-commercialization reports (valuation, FS, market study)1 technology pitched1 product enhanced or co-incubated or market testedat least 1 technology commercializedPublicationsS IECsPatentAt least 5 IP applicationsPolicy1 Institutional IP Policies reviewed1 Technology Transfer Protocols crafted1 Institutional IP Policies BOR approved1 Technology Transfer Protocols BOR approved	Romblon State University - formerly Romblon State College (RSC)	The target beneficiaries of this project will be the SUC, student, faculty and staff researchers and innovators, the technology takers.	01-Jan-22	31-Dec-23	ONGOING	987,940	987,940.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 2. Regional Agri-business Hub in Southern Tagalog Agriculture and Resources Research and Development Consortium	Rapid, Inclusive and Sustained Economic Growth	To establish Regional Intellectual Property and Technology Business Management (IP-TBM) in the Southern Tagalog Agriculture, Aquatic and Resources Research, Development and Extension Consortium (STAARRDEC) thru Regional Agri-Aqua Innovation System Enhancement (RAISE) Program	Publication: 1 Training Curriculum/Module (Agribusiness MasterClass) Patent: NoneProduct: 1 technology (of the SUC/Implementing Agency) with value proposition report; business plan; FS; market study 1 product market tested (of the SUC/Implementing Agency) People: 1 Regional Agribusiness MasterClass 20 CMI staff trained 20 CMIs/mentees assisted in pre-commercialization services (market study, business plan) Place: 1 Partnership agreement with business organization Policy: Regional Agribusiness Hub institutionalized	Cavite State University - Main	The project direct beneficiaries are the selected staff of the member institutions of the STAARRDEC. Indirect beneficiaries of the project include prospective agri-entrepreneurs, business investors, faculty members and students as well as consumers of agricultural products.	01-Jan-22	31-Dec-23	ONGOING	1,182,493	1,182,493.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 3: Regional Agri-Aqua Technology Business Incubation (ATBI) Program in Southern Tagalog Agriculture, Aquatic and Resources Research, Development and Extension Consortium (STAARRDEC)	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Cavite State University (CvSU) in Cavite State University, Bancod Indang, Cavite PCAARRD-GIA funding of Php 5,217,824.00. The ATBI program plays a significant role in expediting the development in the region by nurturing creativity, innovation, and technopreneurship. Hence, it is imperative for the Consortium to strengthen and expand the operationalization of ATBI in the region through properly managing AANR technologies and intellectual properties, upgrading capacity of existing incubators and mentoring potential incubators, and fostering partnership with other agencies.	Publication: 1 ATBI operations manual enhanced; At least 4 ATBI basic incubation curricula revised as needed; 1 ATBI business plan or operations manual enhanced; At least 1 IEC or promotional materials for ATBI developed; 1 ATBI business plan revised as needed; 1 Training Module (TCMS); At least 3 ATBI advanced incubation curricula developed; At least 2 IEC materials produced; At least 1 promotional video for ATBI developed and updated; 1 ATBI operations manual revised as needed; At least 10 ATBI basic incubation curricula revised as needed; At least 6 ATBI advanced incubation curricula developed; At least 2 IEC or promotional materials for ATBI developed; At least 1 promotional video for ATBI developed and updated; At least 16 IEC or promotional materials for incubatees developed; At least 2 promotional videos for incubatees developed; 1 ATBI sustainability plan revised as needed; Patent: 10 IP applications; At least 4 trademarks filed; At least 2 IP applications (Trademarks); At least 1 IP filed; At least 10 trademarks filed; At least 4 copyrights filed;A t least 10 copyrights filed; Product: 1 Regional list of mature technologies; At least 2 technologies adopted by new incubatees; At least 2 technologies adopted by new incubatees; At least 1 product development process for green mussel; At least 10 technologies adopted by new incubatees; 1 Regional list of ATBI Curriculum/Services; At least 4 technologies adopted by continuing incubatees; At least 2 technologies adopted by continuing incubatees; At least 6 technologies adopted by continuing incubatees; At least 10 technologies adopted/co-incubated At least 1 technology commercialized with issued Fairness Opinion Report and signed Technology Licensing Agreement; 1 product enhanced (development, packaging, branding); At least 3 technologies	Cavite State University - Main	The target beneficiaries of this project include the following individuals, groups, and organizations: Existing ATBI in Region IV and its personnel Other consortium member institutions AANR stakeholders from the academe, public, and private sectors, non-government organizations (NGOs) and international partners Potential entrepreneurs	01-Jan-22	31-Dec-23	ONGOING	1,526,536	1,526,536.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 3A: Enhancing the DOST-PCAARRD ATBI of the Laguna State Polytechnic University (LSPU) through STAARRDEC-RAISE Program	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Laguna State Polytechnic University (LSPU) in Laguna State Polytechnic University - Main; L. De Leon St, Siniloan / Philippines PCAARRD-GIA funding of Php 1,702,735€¬. LSPU-ATBI aims to set up a dynamic and active entrepreneurial ecosystem as key support to promote entrepreneurship and innovation by dedicating a space for ideation and business modeling; providing opportunities for learning and a venue to inspire and encourage engagement from the community and to promote the following thrust areas which have potential for faster growth namely: (1) Agriculture, (2) Fisheries and (3) Natural Food Products.	Publication:1 ATBI business plan or operations manual enhancedAt least 2 IEC materials producedPatent:At least 2 IP applications(Trademarks)Product:At least 2 technologies adopted by new incubateesAt least 2 technologies adopted by continuing incubatees1 product enhanced (development, packaging, branding)People:At least 2 new incubatees enrolled at basic incubation programAt least 2 continuing incubatees enrolled at advanced incubation programAt least 3 trainings for ATBI staff conducted or participated inAt least 4 trainings for incubatees conductedAt least 3 incubatees assisted and/or co-incubationt least 2 business plans for continuing incubatees improvedAt least 5 LSPU-ATBI Staff to participate in the Regional Technology Commercialization Mentorship Series (TCMS) 5-moduleAt least 2 business pitching events, industry meetups, or networking events conducted or participated int least 1 consortium member-agency mentored on ATBI operationsAt least 4 MOAs/MOUs with incubatees forgedPlace:At least 2 MOAs/MOUs with incubatees forgedAt least 2 MOAs/MOUs with continuing incubatees renewedAt least 2 MOAs/MOUs with organizations from public andPolicy:Adopt the full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)Enhanced ATBI Business Plan/Operations Manual	Laguna State Polytechnic University	The target beneficiaries of this project include the following individuals, groups, and organizations:DOST-PCAARRD-LSPU-ATBI Project Team and potential incubateesOther consortium member institutionsAANR stakeholders from the academe, public, and private sectors, non-government organizations (NGOs), and international partnersPotential industry adopters and networks	01-Jan-22	31-Dec-23	ONGOING	265,600	265,600.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 3B: Enhancing the DOST-PCAARRD ATBI of the FPRDI through STAARRDEC-RAISE	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 €" December 30, 2022) by Forest Products Research and Development Institute (FPRDI) in Narra Rd., Forestry Campus, College, Los BaÃ±os, Laguna PCAARRD-GIA funding of Php 4,944,835.00.	Product: 1 Regional inventory of IP Assets; 1 Regional list of potential; IP's 2 Prior Art Search (PAS) reports (R&D proposals and IP applications) At least 1 Technology (products, processes, and systems) Commercialized People and Services: At least 2 IP-TBM staff extensively trained under the IP Master Class (modules 1-5) At least 1 exploratory meetings/networking events and technology promotion activities conducted At least 1 technology takers/adopters 1 Regional workshop on IP audit/inventory 1 regional workshop on prior art search 1 Regional IP Masterclass (5 module) 1 Policy Webinar/workshop (new CMI's) 1 commercialization agreement Publication: At least 2 promotional IECs for SUC/RDI technologies At least 1 consolidated technical reports At least 1 activity evaluation and documentation reports 5 training evaluation and documentation reports (Modules 1-5 of IP Masterclass) Patent: At least 10 IP applications (patent and UM) Places and Partnerships: 1 Letters of Commitment from SUC/RDI 1 Memoranda of Agreement signed At least 1 partnership agreements with the Philippine Chamber of Commerce Inc./Business Groups/Marketing or Trade Institutions At least 1 commercialization agreements executed Policies: Full implemetation of IP policy and technology	Forest Products Research and Development Institute	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	01-Jan-22	31-Dec-23	ONGOING	2,656,418	2,656,418.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Southern Tagalog	Project 4: Enriching Knowledge Management Among Member Agencies of the Southern Tagalog Agriculture and Aquatic Resources Research, Development and Extension Consortium (STAARRDEC)	Rapid, Inclusive and Sustained Economic Growth	Regional KM Management in Southern Tagalog	Publication: 9 brochures; 9 posters; Patent: 9 videos; Product: 1 inventory of knowledge resources of CMIs;1 database with real-time monitoring system People: 1 workshop on communication planning; 1 workshop on IEC production 1 workshop on digital marketing; Place: 1 networking event Policy: 1 protocol on the use of database	Cavite State University - Main	The target beneficiaries of this project include the following individuals, groups, and organizations: Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Knowledge Management Staff of CMIs Interested Investors General Public	01-Jan-22	31-Dec-23	ONGOING	1,024,004	1,024,004.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1. Regional Intellectual Property and Technology Business Management (IP-TBM)	Rapid, Inclusive and Sustained Economic Growth	General Objective: To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in selected CMIs in Region VI to intensify technology commercialization activities. Specific Objective: Specifically, the project aims to: Establish/enhance and operationalize the IP-TBMs of the participating CMIs; Enhance and harmonize the IP policies of participating CMIs to synchronize IP management and technology transfer activities; Conduct Regional IP assessment for partner CMIs to create regional list of IP Assets; Mentor and capacitate the technology transfer officers of the participating CMIs; Intensify the technology promotion and commercialization activities of participating CMIs; Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization; and Coordinate, monitor, and oversee the project implementation of the CMIs involved.	Publication: 1 Training Module (IP MasterClass)Patent: 20 IP ApplicationsProduct: 1 Regional list of potential IPs and IP Assets 2 Technology Commercialized 1 Regional priority R&D areas 2 Prior Art Search of R&D Proposal 1 Regional Sustainability PlanPeople: 1 Regional workshop on IP Audit/Inventory 1 Regional workshop on Prior art search 1 Regional IP Masterclass (5-module) 1 Policy Webinar/Workshop (new CMIs) Trained 20 CMI Staff 1 Regional workshop on patent analytics/patent mining Regional Sustainability Planning Workshop 1 Policy Webinar/Workshop (new CMIs)Place: 1 Commitment Letter Coordinated/managed business network of 10 CMIs 2 Commercialization Agreement Signed Coordinated/managed business network of 10 CMIsPolicy: Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs) AO to adopt prior art search report for R&D proposals	Capiz State University	The target beneficiaries of this project are the IP offices of each partner CMI; in particular, the technology generators involved in IP management and technology commercialization activities.	01-Jan-22	31-Dec-23	ONGOING	4,632,795	2,079,427.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-A: Enhancing Technology Transfer through RAISE in Capiz State University	Rapid, Inclusive and Sustained Economic Growth	To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in Capiz State University to intensify technology commercialization activities. Specific: Version 1 Establish/enhance and operationalize the IP-TBMs of Capiz State University; Enhance and harmonize the IP policies of Capiz State University to synchronize IP management and technology transfer activities; Intensify the technology promotion and commercialization activities; and Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization.	Publication: 10 IECs Patent: 10 IP Applications Product: 10 PAS Reports; 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 technologies pitched; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 product enhanced or co-incubated or market tested; 1 technology commercialized; People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 30 CMI staff in re-echo seminars Place: 1 commitment letter; 1 commercialization agreement signed; Policy: Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)	Capiz State University	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,300,000	700,549.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-B. Enhancing Technology Transfer through RAISE in Aklan State University	Rapid, Inclusive and Sustained Economic Growth	General: Version 1 To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in Aklan State University to intensify technology commercialization activities. Specific: Version 1 Establish/enhance and operationalize the IP-TBMs of Aklan State University; Enhance and harmonize the IP policies of Aklan State University to synchronize IP management and technology transfer activities; Intensify the technology promotion and commercialization activities; and Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization.	Publication: 10 IECs; Patent: 10 IP Applications; Product: 10 PAS Reports; 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 technologies pitched; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 product enhanced or co-incubated or market tested; 1 technology commercialized; People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 30 CMI staff in re-echo seminars; Place: 1 commitment letter; 1 commercialization agreement signed; Policy: Full implementation of IP Policy and Technology Transfer Protocol (with	Aklan State University	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,600,000	833,774.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-C. Enhancing Technology Transfer through RAISE in Central Philippines State University	Rapid, Inclusive and Sustained Economic Growth	General: Version 1 To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in Central Philippines State University to intensify technology commercialization activities. Specific: Version 1 Establish/enhance and operationalize the IP-TBMs of Central Philippines State University; Enhance and harmonize the IP policies of Central Philippines State University to synchronize IP management and technology transfer activities; Intensify the technology promotion and commercialization activities; and Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization.	Publication: 10 IECs; Patent: 10 IP Applications; Product: 10 prior art search reports; 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 technologies pitched; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 product enhanced or co-incubated or market tested; 1 technology commercialized People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 30 CMI staff in re-echo seminars; Place: 1 commitment letter; 1 commercialization agreement signed; Policy: Full implementation of IP Policy and Technology Transfer Protocol (with	Central Philippine State University	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,600,000	833,774.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-D. Enhancing Technology Transfer through RAISE in Guimaras State College	Rapid, Inclusive and Sustained Economic Growth	To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in Guimaras State College to intensify technology commercialization activities. Specific: Version 1 Establish/enhance and operationalize the IP-TBMs of Guimaras State College; Enhance and harmonize the IP policies of Guimaras State College to synchronize IP management and technology transfer activities; Intensify the technology promotion and commercialization activities; and Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization.	Publication: 10 IECs Patent: 10 IP Applications Product: 10 PAS Reports; 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 technologies pitched; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 product enhanced or co-incubated or market tested; 1 technology commercialized; People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 30 CMI staff in re-echo seminars; Place: 1 commitment letter; 1 commercialization agreement signed; Policy: Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)	Guimaras State College	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,600,000	833,774.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-E. Enhancing Technology Transfer through RAISE in Northern Iloilo Polytechnic State College	Rapid, Inclusive and Sustained Economic Growth	General: Version 1 To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in Northern Iloilo Polytechnic State College to intensify technology commercialization activities. Specific: Version 1 Establish/enhance and operationalize the IP-TBMs of Northern Iloilo Polytechnic State College; Enhance and harmonize the IP policies of Northern Iloilo Polytechnic State College to synchronize IP management and technology transfer activities; Intensify the technology promotion and commercialization activities; and Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization.	Publication: 10 IECs; Patent: 10 IP Applications; Product: 10 PAS Reports; 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 technologies pitched; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 product enhanced or co-incubated or market tested; 1 technology commercialized; People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 30 CMI staff in re-echo seminars Place: 1 commitment letter; 1 commercialization agreement signed; Policy: Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs)	Northern Iloilo State University	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,600,000	833,774.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-F. Enhancing Technology Transfer through RAISE in University of Antique	Rapid, Inclusive and Sustained Economic Growth	General: Version 1 To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in the University of Antique to intensify technology commercialization activities. Specific: Version 1 Establish/enhance and operationalize the IP-TBMs of University of Antique; Enhance and harmonize the IP policies of University of Antique to synchronize IP management and technology transfer activities; Intensify the technology promotion and commercialization activities; and Identify and intensify linkages with various agencies to enhance activities on intellectual property protection and management and technology transfer & commercialization.	Publication: 10 IECs Patent: 10 IP Applications Product: 10 PAS Reports; 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 technologies pitched; 1 technology with pre-commercialization reports (valuation, FS, market study); 1 product enhanced or co-incubated or market tested; 1 technology commercialized; People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 30 CMI staff in re-echo seminars; Place: 1 commitment letter; 1 commercialization agreement signed; Policy: Full implementation of IP Policy and Technology Transfer Protocol (with	University of Antique	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,600,000	833,774.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-G. Developing Technology Transfer through RAISE in Carlos Hilado Memorial State College	Rapid, Inclusive and Sustained Economic Growth	General: Version 1 To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) Office in Carlos Hilado Memorial State College to enhance technology commercialization. Specific: Version 1 1. To capacitate the technology transfer personnel of Carlos Hilado Memorial State College; 2. To enhance the technology promotion and commercialization activities of Carlos Hilado Memorial State College; 3. To intensify linkages and partnerships with various agencies to enhance activities on IP management and technology commercialization.	Publication: 5 IECs; Patent: 5 IP Applications; Product: 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 prior art search reports; 1 technology with pre-commercialization reports (valaution, FS, market study); 1 technology pitched; 1 product enhanced or co-incubated or market tested; At least 1 Technology Commercialized; People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 20 CMI staff in re-echo seminars Place: 1 commitment letter; 1 commercialization agreement signed; Policy: 1 Institutional IP Policies reviewed/ crafted; 1 Technology Transfer Protocols reviewed/ crafted; 1 Institutional IP Policies BOR approved; 1 Technology Transfer Protocols BOR approved	Carlos C. Hilado Memorial State College	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,800,000	1,017,549.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1-H. Developing Technology Transfer through RAISE in Iloilo Science and Technology University	Rapid, Inclusive and Sustained Economic Growth	General: Version 1 To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) Office in Iloilo Science and Technology University to enhance technology commercialization. Specific: Version 1 To capacitate the technology transfer personnel of Iloilo Science and Technology University; To enhance the technology promotion and commercialization activities of Iloilo Science and Technology University; To intensify linkages and partnerships with various agencies to enhance activities on IP management and technology commercialization.	Publication: 5 IECs Patent: 5 IP Applications Product: 1 inventory of IP assets (potential IPs & IPs filed); 1 inventory of matured technologies; 1 inventory of knowledge resources; 4 PAS Reports; 1 technology with pre-commercialization reports (valaution, FS, market study); 1 technology pitched; 1 product enhanced or co-incubated or market tested; At least 1 Technology Commercialized; People: 2 CMI Staff Trained in IP MasterClass; 2 CMI Staff Trained inTCMS; 2 CMI Staff Trained in Agribusiness Master Class; 2 CMI Staff Trained in Technology Promotion Mentorship; 2 CMI Staff attended CommPlan Workshop; 2 CMI Staff participated in the technology pitch day; Conducted re-echo seminars; Trained at least 20 CMI staff in re-echo seminars; Place: 1 commitment letter; 1 commercialization agreement signed; Policy: 1 Institutional IP Policies reviewed/ crafted; 1 Institutional IP Policies BOR approved; 1 Technology Transfer Protocols reviewed/ crafted; 1 Technology Transfer Protocols BOR approved	Iloilo Science and Technology University	Consortium Member Institutions	01-Jan-22	31-Dec-23	ONGOING	1,800,000	1,017,549.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1I. Developing Technology Transfer through RAISE in West Visayas State University	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2022 – December 30, 2022) by West Visayas State University (WVSU) Luna St, La Paz, Iloilo City, 5000 Iloilo/ Philippines / PCAARRD-GIA funding of Php 1,800,000.00.	Publication: 5 IECs Patent: 5 IP Applications Product: 1 inventory of IP assets (potential IPs & IPs filed) 1 inventory of matured technologies 1 inventory of knowledge resources 4 prior art search reports 1 technology with pre-commercialization reports (valaution, FS, market study) 1 technology pitched 1 product enhanced or co-incubated or market tested At least 1 Technology Commercialized People: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained inTCMS 2 CMI Staff Trained in Agribusiness Master Class 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff attended CommPlan Workshop 2 CMI Staff participated in the technology pitch day Conducted re-echo seminars Trained at least 20 CMI staff in re-echo seminars Place: 1 commitment letter 1 commercialization agreement signed Policy: 1 Institutional IP Policies reviewed/ crafted Techology Transfer Protocols reviewed/ crafted	Western Visayas State University	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs/RDIs Technology transfer officers/managers SUC/RDI Researchers/Inventors Technology takers	01-Jan-22	31-Dec-23	ONGOING	1,800,000	1,017,549.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 1J. Developing Technology Transfer through RAISE in Iloilo State College of Fisheries	Rapid, Inclusive and Sustained Economic Growth	The Iloilo State College of Fisheries is committed to provide advanced education, higher technological, professional instruction and training in Fisheries Technology, Arts and Sciences, Education, Industrial Technology, Engineering Aquaculture, Seaweed Farming and other related fields of study and as may be relevant to national development. It also undertake research, extension services and production activities in support of Iloilo and provide progressive leadership to promote research and advanced studies in agriculture, food security, management, forestry, ecology, industry and technology, education, integrated fisheries, maritime and allied sciences, local governance and rural development and other related fields that undertakes research extension and IP services. The college wants to establish its capacity in terms of IP protection and commercialization which mainly focuses on agriculture and aquaculture research. ISCOF also wants to capacitate its faculty and researchers to IP management and commercialization to become active in engaging in the IP protection of the institutions generated technology and assisting creators in the community in protecting their IPs. Through the IP-TBM project, the institution aims to enhance its technology transfer and commercialization capability both for the institution's benefit in its institution-generated technologies and those of its external clients' and partners. It is envisioned that the program will enable the college to reach out and provide assistance to more beneficiaries, such as technology owners, creators, investors, and other stakeholders who will benefit from technology transfer and commercialization. Through the IP-TBM project, the campus further aims at realizing the commercialization of its developed technologies.	Publication: 5 IECs Patent: 5 IP Applications Product: 1 inventory of IP assets (potential IPs & IPs filed) 1 inventory of matured technologies 1 inventory of knowledge resources 4 prior art search reports 1 technology with pre-commercialization reports (valaution, FS, market study) 1 technology pitched 1 product enhanced or co-incubated or market tested At least 1 Technology Commercialized People: 2 CMI Staff Trained in IP MasterClass 2 CMI Staff Trained inTCMS 2 CMI Staff Trained in Agribusiness Master Class 2 CMI Staff Trained in Technology Promotion Mentorship 2 CMI Staff attended CommPlan Workshop 2 CMI Staff participated in the technology pitch day Conducted re-echo seminars Trained at least 20 CMI staff in re-echo seminars Place: 1 commitment letter; 1 commercialization agreement signed Policy: 1 Institutional IP Policies reviewed/ crafted 1 Technology Transfer Protocols reviewed/ crafted 1 Institutional IP Policies BOR approved	Iloilo State College of Fisheries	The target beneficiaries of this project are the IP offices of each campus of the university; in particular, the technology generators involved in IP management and technology commercialization activities.	01-Jan-22	31-Dec-23	ONGOING	1,800,000	1,017,549.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 2. IP-centric Agribusiness Hub: Bridging Innovation and Entrepreneurship in the AANR Sector	Rapid, Inclusive and Sustained Economic Growth	General Objective: To establish a hub for assessing, advancing, and supporting pre-commercialization capacity of AANR R&D outputs in Western Visayas Specific Objective: Specific: To develop modules for that will serve as a guide for pre-commercialization requirements: Technology Assessment, Technology Valuation, Market Study, Business Plan, Freedom-to-Operate, and Fairness Opinion Report To conduct training/workshops with partner CMIs in doing technology assessment and technology valuation, preparing the market study, business plan, and Freedom-to-Operate report, and requesting for Fairness Opinion Report To capacitate partner CMIs in establishing academe, public, industry, private sectors, NGOs, and international partnerships To provide a venue for convergence of technology generators and investors for AANR technologies	Publication: Modules for pre-commercialization activitiesPatent: 13 Copyright 4 Trademark 13 UM/PatentProduct: 1 Inventory of AANR Technologies 20 Technology Valuation Report 20 Market Study 20 Business Plan 20 Freedom-to-Operate Report 20 1-Pager Technology 20 Pitch deck 2 set of entries to support the content build-up of the Knowledge Management databasePeople: 40 People Trained under the Agribusiness Masterclass Mentoring and monitoring CMIs Echo TrainingPlace: 2 Secure Agreement (CRA, License Agreement)Policy: Implementation of IP Policy Transfer Protocol Implementation of Technology Transfer Protocol	UPV	The target beneficiaries of this project are the technology generators or researchers engaged in AANR research and the AANR sectors.	01-Jan-22	31-Dec-23	ONGOING	3,664,063	2,407,537.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 3. Regional Agri-Aqua Technology Business Incubator (ATBI)	Rapid, Inclusive and Sustained Economic Growth	To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in selected CMIs in Region VI to intensify technology commercialization activities.	Publication: 1 ATBI operations manual enhanced 1 Training Module (TCMS)Patent: 10 IP ApplicationsProduct: 1 Regional list of mature technologies 10 Technologies adopted/co-incubated 1 Regional list of ATBI Curriculum/Services 1 Product enhanced (development, packaging, branding) 1 Product manufactured for pre-commercializationPeople: 1 Regional workshop on Inventory of Mature Technologies 1 Regional workshop of ATBI Curriculum/Services 1 Inventory of IP assets (potential IPs & IPs filed) 1 Inventory of knowledge resources 10 Incubatees assisted/co-incubation 1 Business pitching event, industry meetup, or networking event conducted or participated in 1 Regional Technology Commercialization Mentorship Series (TCMS) 5-modulePlace: 6 Regional Technology Commercialization Mentorship Series (TCMS) 5-modulePolicy: 1 Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs) 1 ATBI-related policies of the University crafted and approved 1 ATBI institutionalized	Capiz State University	The target beneficiaries of this project are the technology adopters, technology generators, MSMEs, cooperatives, associations and other professionals who are willing to embrace innovation in the AANR sector.	01-Jan-22	31-Dec-23	ONGOING	3,100,000	1,822,149.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 3B. Development of S&T based Agri-Aqua Enterprises in the AANR sector and Technopreneurial Ecosystem in Western Visayas Region as Collaborator and Co-incubator of the Regional ATBI-CAPSULE	Rapid, Inclusive and Sustained Economic Growth	To strengthen the capacities of Intellectual Property and Technology Business Management (IP-TBM) operations in selected CMIs in Region VI to intensify technology commercialization activities.	Publication: 1 ATBI operations manual enhanced 1 Training Module (TCMS)Patent: 10 IP ApplicationsProduct: 1 Regional list of mature technologies 10 Technologies adopted/co-incubated 1 Regional list of ATBI Curriculum/Services 1 Product enhanced (development, packaging, branding) 1 Product manufactured for pre-commercializationPeople: 1 Regional workshop on Inventory of Mature Technologies 1 Regional workshop of ATBI Curriculum/Services 1 Inventory of IP assets (potential IPs & IPs filed) 1 Inventory of knowledge resources 10 Incubatees assisted/co-incubation 1 Business pitching event, industry meetup, or networking event conducted or participated in 1 Regional Technology Commercialization Mentorship Series (TCMS) 5-modulePlace: 6 Regional Technology Commercialization Mentorship Series (TCMS) 5-modulePolicy: 1 Full implementation of IP Policy and Technology Transfer Protocol (with internal memos, AOs) 1 ATBI-related policies of the University crafted and approved 1 ATBI institutionalized	UPV	The target beneficiaries of this project are the technology adopters, technology generators, MSMEs, cooperatives, associations and other professionals who are willing to embrace innovation in the AANR sector.	01-Jan-22	31-Dec-23	ONGOING	5,053,788	2,604,394.00
Regional Agri-Aqua Innovation System Enhancement (RAISE) Program in Western Visayas	Project 4. Making Knowledge That Benefit Society Accessible to Everyone	Rapid, Inclusive and Sustained Economic Growth	General Objective: The general objective of this research is to create a knowledge factory for IP and commercialization materials wherein members of the consortium can access the knowledge database (i.e. external and internal depository of data) through a portal. Specific Objective: Specifically, this research aims: to conduct an inventory of IP and commercialization data (i.e. IEC, modules, technology briefer) from consortia members; to create a Knowledge Management System for the collaborative knowledge-sharing culture among academic institutions; and to assess the effectiveness of gathering data and transformation into knowledge through	Publication: 1 KM System Manual/User Guide Patent: 1 Patent/UM for the KM System 1 Copyright for KM System Manual 1 Copyright for the KM System softwareProduct: 1 KM System 1 Updated/Optimized KM SystemPeople: 20 People trained on the use of KM SystemPlace: 10 Agreement with CMIs on the use of KM systemPolicy: 1 KM Policy	UPV	The output of this project is beneficial to all individual involve in agriculture, aquatic and natural resources (AANR) commodities. Specifically, the KMS will be useful for researchers, innovators, entrepreneurs, LGUs, research institutions, and venture capitalists.	01-Jan-22	31-Dec-23	ONGOING	3,630,298	2,180,149.00
Support to the University's Strategies in Technology Acceleration Initiatives by Nurturing (SUSTAIN) the Intellectual Property and Technology Business Management (IP-TBM) Offices of the Consortia Member Agencies (Phase II)	Project 4B: Enhancing Technology Transfer through IP-TBM in Camarines Sur Polytechnic College (CSPC)	Rapid, Inclusive and Sustained Economic Growth	By virtue of RA 10055 DOST-PCAARRD has effectively acquired an additional mandate for technology transfer. As a Government Funding Agency (GFA), PCAARRD is mandated to provide assistance to various Research and Development Institutes (RDIs) and State Universities and Colleges (SUCs) in protecting and managing intellectual properties, including commercialization. As part of this initiative, PCAARRD launched the DOST-PCAARRD Innovation and Technology Center (DPITC) last March 2016. This IP-TBM Program aims to strengthen the capacities of Intellectual Property and Technology Business Management of selected SUCs and RDIs to enhance their technology commercialization activities. IP-TBMs are technology transfer offices in the target agencies that mirror the initiatives	Products - 1 inventory of IP assets - At 1 Technology (products, processes, and systems) commercialized - 5 PAS reports	CSPC	Intellectual Property and Technology Business Management (IP-TBM) of selected SUCs Technology transfer officers/managers SUC Researchers/Inventors	01-Jan-20	30-Jun-22	COMPLETED	1,631,716	26,263.30
	Adoption of Improved Commercial-Scale Mangrove Crab Hatchery-Nursery System in Parang, Maguindanao	Rapid, Inclusive and Sustained Economic Growth	Among the coastal municipalities of Maguindanao, Parang is the only municipality with an established municipal fisheries code. Parang also offers a strategic site for the project which is only 30-minute away from Cotabato City. The site in Parang also satisfied the site selection criteria for the project. The political will and commitment of the current administration in the LGU of Parang also favor the establishment and sustainability of this project. The establishment of a model hatchery will enable LGU Parang to produce mangrove crab seedstock in commercial quantities to augment the supply of crablets in the province without depleting the natural stocks. At present, there is no reliable source of seedstock in Maguindanao. This hatchery is expected to supply 3-5% of the total demand for crablets in the province which will eventually result in an estimated 14% volume increase in mangrove crab production from 97.67 MT to 102.9 MT valued at P35.2 million. The hatchery will also supply crablets for farming in Cotabato City, other provinces in BARMM like Lanao del Sur and Basilan, and nearby provinces like Lanao del Norte and Zamboanga del Sur.	€c 1,500 pcs IEC materials €c 2 infomercial videos €c 480,000 hatchery-reared mangrove crablets €c 5 MSU-Maguindanao/LGU personnel trained in mangrove crab hatchery-nursery operation €c 50 PO members trained in nursery operation €c 1 commercial-scale mangrove crab hatchery-nursery facility €c 1 MOA forged with LGU Parang €c 1 MOA forged with MAFAR-BARMM €c Policy inputs to municipal ordinances €c 3 copyrights from IEC materials €c 2 copyrights from infomercial videos	MSU-Maguindanao	Mangrove crab hatchery-nursery operators in Parang, Maguindanao	01-Apr-21	31-Mar-23	ONGOING	9,900,016	5,110,504.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Adoption of Improved Hatchery-Nursery Culture System for Commercial Production of Mangrove Crab Seedstock in Infanta, Quezon	Rapid, Inclusive and Sustained Economic Growth	One of the major factors that limit the expansion of mangrove crab enterprise is the inadequate supply of seedstock to support the grow-out operations. The establishment of hatcheries and nurseries for the production of seedstock and crablets, respectively, coupled with better management of the wild stock resources are, in essence, long-term solutions that will potentially support the sustainability of the mangrove crab industry in the Philippines. The availability of the hatchery-bred crab seedstocks seemingly offer practical solutions to problems linked to local availability of the seeds for grow-out production, seasonality of the seedstock supply sourced from the wild, and even conservation of the wild population (Gaillard, 2010). The consistent efforts of the Philippine government (and the other ASEAN countries) to develop/improve the hatchery-nursery technologies for mangrove crab, are good indications for its potential to positively contribute as an industry, in the economic progress of these nations. The optimizations of the mangrove crab farming technologies have been recently attained under several S&T programs for enhanced culture systems for improved hatchery (Program A) and nursery (Program B) culture production systems. The proactive and sustained support from the DOST-PCAARRD, paved the implementation of S&T programs that covered five component projects: Program A €" R&D for Improvement of the Hatchery System €C Component 1 €" Development of Techniques for the Mass Production of Marine Annelids as Live Feeds for the Mangrove Crab (Scylla serrata) Broodstock €C Component 2 €" Improvement of the Larval Rearing Hatchery €C Program B €" R&D for Improvement of the Nursery System €C Component 1 €" Refinement of Efficient Diets for Nursery Culture €C Component 2 €" Application of Strategies for the Reduction of Cannibalism in the Mangrove Crab Nursery €C Component 3 €" Development of Protocols for the Production of Hatchery-Reared Mangrove Crab Juveniles for Soft Shell Crab Farming	Publications1,500 pcs IEC Materials produced2 informercial videosProducts480,000 pcs crabletsPeople and Services5 personnel from LSPU and LGU-Infanta trained in crab-hatchery-nursery operations50 PO members trained in crab nursery operations1 commercial crab hatchery-nursery system facility establishedPlaces and Partnerships1 MOAs forged with LGU-InfantaPolicies1 policy briefs draftedPatents5 copyrights filed	LSPU	Mangrove crab hatchery-nursery operators in Infanta, Quezon	16-May-21	15-May-23	ONGOING	10,384,775	1,393,644.70
	Adoption of Mangrove Crab Hatchery Seed Production and Nursery Facility in Pilar, Capiz	Rapid, Inclusive and Sustained Economic Growth	The hatchery is expected to supply 4.35-6.53% of the total demand for crablets in the province which will eventually contribute an estimated 4%-6% volume in mangrove crab production of about 102 MT valued at P51 million.	Publication: 1,000 pcs IEC materials 2 infomercial videos Patent: 3 copyrights from IEC materials 2 copyrights from infomercial videos Product: 1,000,000 hatchery-reared mangrove crabletsPeople: 5 CAPSU-Pontevedra /LGU personnel trained in mangrove crab hatchery-nursery operation 50 PO members trained in nursery operation Place: 1 commercial-scale mangrove crab hatchery-nursery facility established 1 MOA forged with LGU Pilar Policy: Hatchery Operations Policy established. Marketing and Promotion Policy established. Training and Extension Services policy established in cooperation with the mangrove crab growers.	Capiz State University	Mangrove crab hatchery-nursery-grower operators and other stakeholders in the Province of Capiz.	01-Jul-22	30-Jun-24	ONGOING	12,872,561	9,024,847.00
	Advancing Science for the Convergence of Agriculture and Tourism (SciCAT) in MKATF Phase II	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by the Department of Science and Technology Region X in Malaybalay City, Bukidnon, with a total PCAARRD-GIA funding of Php 4,986,806.24. It generally aims to sustain the gains from Phase I and further hone SciCAT-MKATF, Sinaburan, Imbayao, Malaybalay City, Bukidnon as a full agritourism site in Region 10 under the new normal. Specifically, the project will focus on the value-adding of the existing crops of MKATF to generate more revenue by removing middlemen from the supply chain, taking advantage of the demand for fresh and processed local products, marketing small quantities of products, or offering experiences on the farm.	PEOPLE AND SERVICES: 500 Trained farm owners/farming enthusiasts 8 Conducted webinars; 40 Package of Technology adopters 50 monthly average No. of engagements on social media sites (i.e. likes, shares, comments, inquiries); 2 Jobs generated; 1 Lab test for organic concoctions PRODUCTS: 8 POTs downloaded; 100 packs 100g powdered coffee; 100 packs 100g dehydrated bell pepper; 100 packs 100g chilli powder PUBLICATIONS: 10 IEC Materials prepared; 10 Training modules prepared 2 Promotional AVP prepared; 2 Concoction Modules prepared PATENTS: 10 Copyrights generated for IEC materials; PLACES AND PARTNERSHIPS: 8 Signed and notarized MOA/MOUs; 4 Signed and notarized MOA/MOUs for MLGU and DOT partnerships POLICY: 1 Resolution signed prioritizing a percentage of coffee produce for value-adding processing; 1 Environmental Compliance Certificate acquired Social Impact: Developed metrics to assess the social impact of the SciCAT project to the farm owners, adopters and surrounding community Assessed the social impact of the SciCAT project to the farm owners, adopters and surrounding community Transferred technologies utilized by the local community Technology adopters assessed in terms of engagement in profitable enterprises using the adopted technologies Forged active linkages/partnerships with other organizations Innovation ecosystem improved by incorporating agricultural S&T interventions while providing recreational activities for the farm visitors; Economic Impacts: Developed metrics to assess the economic impact of the SciCAT project to the farm owners, adopters and surrounding community Assessed the economic impact of the SciCAT project to the farm owners, adopters and surrounding community Volume of production intensified Determined gross and net income generated by the SciCAT farm	DOST-X	Farmers, farm entrepreneurs, private and government agencies/organizations, LGUs, SUCs, students, farming enthusiast and farm visitors	01-Jan-21	31-Dec-22	COMPLETED	4,986,806	1,833,123.27
	Assessing the Utilization of Technologies with DOST Granted Patent and Utility Model Registration (GPUM) Award	Rapid, Inclusive and Sustained Economic Growth	The series of the World Economic Forum-Global Competitiveness Report (WEF-GCR) since 1979 ranked countries on pillars and indicators which go beyond economic growth for policy makers, business, and the public to take transformative actions. In line with sustainable development, the recent series combined productivity with people and planet. Under the pillar on Innovation System are business dynamism and innovation capability, which included patents granted and PCT applications as indicators. A generated technology may be suitable in one environment but not in another. A technology is inherently context-specific thus requiring the participation of the clientele in the adoption process considering their available resources (World Bank, n.d.). Patents and utility models reach clients through the government's technology transfer programs (Carlos and Cabagay, 2016). How a government does a technology transfer is rather complex because technology is inherently heterogeneous and the transfer process takes place through various modalities at different contexts i.e. geographical, economic, social, cultural and institutional (Gottwald et al. 2013). It is imperative for policy and decision making as well as in resource allocation that documentation on the application and utilization of the technologies in the production and consumption sectors of the market.	Publication: The proposed project will produce a book of technology cases, series of monographs, and policy brief. (1 book, at most 5 monographs, and 1 policy brief)Patent: Indirectly, the proposed project will assess the awarded IPs (patent and utility model) by NAST PHL.Product: Not applicable with the proposed project since it is focused on policy formulation and support to technology transfer and promotion.People: Writeshops will be conducted for the narratives of the technology using the life-cycle analysis and IP valuation to be participated by different technology developers from DOST, and webinar(s) will be convened for results validation and policy formulation.Place: The proposed project will be a collaboration of multiple agencies such as UPLB, UPOU, IPOPHIL and DOST-TAPI.Policy: The results will be for policy re-formulation of the GPUM awarding for 2022 and onwards, recommendation for enhancing monitoring and evaluation of generated technologies, IP valuation system/ framework, among others.	NAST	Policy and decision makers at DOST and other agencies developing technologies DOST R&D agencies' technology developers Technology users (entrepreneurs, industry)	01-Oct-22	31-Mar-24	ONGOING	4,787,280	3,779,070.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	ATBI Networking and Capacity Building Phase 2	Rapid, Inclusive and Sustained Economic Growth	Spurred on by various laws for the improvement of the mechanism for the diffusion and utilization of technologies and enabling the effective support to technology transfer, DOST-PCAARRD instituted the establishment of agri-aqua technology business incubators in the country. From June to August 2017, the PCAARRD Directors Council, the PCAARRD Governing Council and the DOST Executive Committee had approved the implementation and funding of six TBI projects implemented by Benguet State University (BSU), Isabela State University (ISU), Central Luzon State University (CLSU), Cavite State University (CvSU), University of the Philippines €" Visayas (UPV) and Visayas State University (VSU). To support the activities of these six TBIs and ensure the successful and harmonized implementation of the TBI activities and monitor the milestones and accomplishments of the TBI ecosystem in the country, a coordination and management component was established as part of the program.	Publication At least 6 Training modules prepared/ enhanced At least 6 training modules prepared/ enhanced 1 Compendium of ATBI experts prepared 1 Compendium of ATBI technologies prepared 1 Compendium of start-up/spin-off incubatees prepared 1 Coffee table book on ATBI in the Philippines developed 1 Annual Report and 2 Semi-annual Reports prepared and submitted 1 Annual Report and 2 Semi-annual Reports prepared and submitted 1 Terminal Report prepared and submitted Patent/ Copyright At least 3 publications for copyright filed 6 People and Services 1 ATBI master class conducted (with at least 6 modules) and attended by ATBI management and staff 1 ATBI master class conducted (with at least 6 modules) and attended by ATBI management and staff At least 50 ATBI personnel trained on TBI management At least 50 ATBI personnel trained on TBI management 1 National Conference on TBI conducted; attended by all TBIs in the agri-aqua sector, stakeholders, and partners 1 National Conference on TBI conducted; attended by all TBIs in the agri-aqua sector, stakeholders, and partners 1 Incubatee Summit (with pitching activity) conducted; attended by incubatees/ acceleratees from all ATBIs, stakeholders, and partners 1 Incubatee Summit (with pitching activity) conducted; attended by incubatees/ acceleratees from all ATBIs, stakeholders, and partners At least 1 national training for ATBI graduates from all ATBIs conducted At least 1 national training for ATBI graduates from all ATBIs conducted	BSU	At least 16 ATBIs o 6 from Batch I + 8 from Batch II + 2 from Batch III TBIs + new ATBIs in 2021 and 2022 (2-9 new ATBIs + 11 ATBIs in Advanced Incubation + 3 ATBIs in Acceleration) New ATBIs: 1. Mariano Marcos State University, Batac, Ilocos Norte 2. University of Southern Mindanao (USM), Kabacan, North Cotabato 3. At least 9 new ATBIs within 2021-2022 ATBIs in Advanced Incubation: 4. Cavite State University (CVSU), Indang, Cavite 5. Capiz State University (CapSU), Roxas City, Capiz; 6. Central MIndanao University (CMU), Maramag, Bukidnon 7. Don Mariano Marcos Memorial State University (DMMMSU), La Union 8. Forest Products Research and Development Institute (FPRDI), Los BaÃ±os, Laguna 9. Isabela State University, Echague, Isabela 10. Laguna State Polytechnic University (LSPU), San Pablo, Laguna 11. Sultan Kudarat State University (SKSU), Tacurong City, Sultan Kudarat 12. Western Mindanao State University (WMSU), Zamboanga del Sur 13. University of the Philippines in the Visayas, Iloilo City 14. Western Philippines University (WPU), Puerto Prinsesa, Palawan ATBIs in Acceleration:	01-Jul-21	30-Jun-23	ONGOING	5,000,000	1,506,322.00
	Commercialization of Philippine-made Rapid Test Kits for Transboundary Animal Diseases	Rapid, Inclusive and Sustained Economic Growth	General Objective: To commercialize Philippine-made novel rapid test kits for transboundary animal diseases. Specific Objective: Specific Objectives: Commercialize test kits from any of the Andali product line. Conduct test or diagnostic services within 6 months. Promote the test kits to livestock and poultry stakeholders through social media. Recruit distributors from different provinces Develop a 3-minute infomercial video about the company and its products.	Publication: EXPECTED OUTPUTS (6Ps) More than 500 test kits are sold within 6 months More than 100 samples are tested at the center using any of the test kits. Existing website is updated. Forged 2 MOAs with, at least, 2 potential test kit distributors from 2 different provinces within 6 months. A 3-minute informercial video of the company and its products is developed. Patent: Annex 9 (link) Annex 10 (link) Annex 11 (link)Product: ANNEX 12_Rapid Test Kits (link)People: People Service or clients (link)Place: Partnership 1 (link) - UNAHCO thru the Public Private Partnership, donated kits to Kabacan & Davao in collabation with USM Vet College to do surveillance Partnership 2 (link) - National Livestock Program and the ITCPH sponsored virtual training workshops and seminar to orient LGUs on the test kit Partnership 3 (link) - DA Regional Field Office in Bicol bought kits for surveillance Partnership 4 (link) - ADM and Neovia Philippines donated kits to Iligan, CAR, Misamis Oriental and Quezon Province tru the PPP programPolicy: Policy (link)	Blitzkrieg Animal Diagnostic Center	Blitzkrieg Animal Diagnostic Center commercializes the kits. Market is reached using the different platforms and the potential customers would be the local government units, registered hog farms, registered vet biologics, registered lab. animal facilities, registered poultry farms, farm cooperatives, animal health scientists and researchers, test kit distributors and laboratory equipment suppliers.	01-Jun-22	31-May-23	ONGOING	4,899,208	566,000.00
	Community-based Roll-out of Tilanggit Production Technology: A Resilience Livelihood Program for Vulnerable Lakeshore Families of Los Baños, Province of Laguna (Community-based Rollout of Tilanggit for Resilience Livelihood: Social Enterprise for Vulnerable Lakeshore Families of Laguna Province)	Rapid, Inclusive and Sustained Economic Growth	This project aims to deploy the community-based rollout of tilanggit production technology to establish a social enterprise in target lake communities in Laguna. The project will adopt the Sustainable Livelihoods Framework (SLF) to build/increase the resilience of vulnerable resource-poor families as the target project beneficiaries. Capacity-building of unemployed mothers will be conducted to develop their technical and entrepreneurial skills on tilanggit production and marketing. The use of Multi-Commodity Solar Tunnel Dryers (MCSTD) developed by PhilMec will be adopted to produce high-quality tilanggit in commercial scale. The socioeconomic impact of the tilanggit social enterprise will also be evaluated following the Propensity Score Matching (PSM) technique in predictive simulation. The success of this targeted livelihood intervention project will serve as a model approach for rural development which can be replicated in other lakeshore areas in the Philippines. The outcomes of this project are directed towards building resiliency and adaptation among the rural poor against recent and imminent threats and stresses €" an expected impact of this project that is central to the Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction, and the Paris Climate Agreement.	PUBLICATIONS20 digital copies €" infomercial video distributed150 hardcopies €" infographic poster distributed500 hardcopies €" culinary brochure distributed2 manuscripts €" original scientific article2 business plans €" small-sized tilapia farming and tilanggit productionPRODUCTS113,940 kg €" small-sized tilapia, fresh basis259,200 packs (100g/pack) €" tilanggit produced64,800 packs (100g/pack) €" dried fish bone produced1 digital mock-up €" brand & logo design developed1 digital mock-up €" product packaging developedPLACES & PARTNERSHIPS324 modular hapa culture set-ups (25 sq.m.)3 post-harvest facilities €" tilanggit production4 agencies €" inter-agency collaborationsPEOPLE AND SERVICES9 fisherfolk-livelihood beneficiaries60 households €" livelihood beneficiaries90 women €" capacity-building/trainees5 project assistants €" job opportunities2 consultants €" expert services6 resource persons for trainings/workshops7 short trainings on tilanggit production7 seminar-workshops on entrepreneurship2 short trainings on small-sized tilapia productionPATENTS2 trademarks €" brand & logo design and product packaging5 copyrights €" business plans (2) , culinary brochure (1), infographic poster (1), infomercial video (1)POLICY1 policy brief €" SLF on rural fisheries developmentSOCIAL IMPACTnine (9) fisherfolk trained/empowered as additional skilled workers in intensive small-sized tilapia culture productionsixty (60) unemployed women from lakeshore communities trained/empowered as additional skilled workers in tilanggit productiontilanggit as a high-quality yet affordable and safe source of animal-derived protein made more accesible to the public consumers ECONOMIC IMPACTadditonal income estimated at ,±75,316.90/year is made available to vulnerable lakeshore families as project beneficiaries	LSPU	60 resource-poor lakeshore families: 20 each from the three (3) coastal barangays	01-Jan-22	31-Dec-23	ONGOING	9,879,465	7,308,482.40

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	DOST-PCAARRD-BPSU Agri-Aqua Technology Business Incubator	Rapid, Inclusive and Sustained Economic Growth	Undeniably, science, technology, and innovation (STI) play a crucial role in the achievement of 2030 Sustainable Development Goals. The process of creative disruption initiated by technological progress can help to transform economies and improve living standards, by increasing productivity, reducing production costs and prices, and helping to raise real wages. Harnessing frontier technologies €" combined with action to address persistent gaps among developed and developing countries in access and use of existing technologies, and to develop innovations (including non-technological and new forms of social innovation) €" could be transformative in achieving the Sustainable Development Goals and producing more prosperous, sustainable, healthy and inclusive societies.	Publication: ATBI business plan developed; ATBI operations manual developed; A least 10 ATBI curricula developed; At least 10 IEC for ATBI developed; At least 3 promotional video for incubatees developed; ATBI sustainability plan developed; ATBI communication plan developed; Patent: At least 10 trademarks filed; At least 5 copyrights filed Product: At least 10 technologies adopted by incubatees People: At least 10 incubatees assisted; At least 6 trainings for ATBI staff conducted or participated in; At least 10 trainings for incubatees conducted; At least 10 business plans for incubatees developed; At least 4 awareness seminars or promotional activities conducted; At least 2 business pitching event / networking conducted or participated in; ATBI operations fully integrated to PCAARRDÃ¢,¬„¢s ATBI real-time monitoring system Place: At least 10 MOAs/MOUs with incubatees forged At least 10 MOAs/MOUs with organizations from public and private sectors forged Policy: ATBI institutionalized ATBI-related policies of the University crafted and approved	BPSU	University-based faculty and student researchers Local start-ups and MSMEs in Bataan Agri-aqua sector in the communities in Bataan Local cooperatives in Bataan Women in informal economy sector in Bataan Other marginalized sectors in Bataan	01-Nov-21	31-Oct-23	ONGOING	5,000,000	938,304.00
	DOST-PCAARRD-BSU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Benguet State University (BSU), with a total PCAARRD-GIA funding of Php 10,715,363.20. Thus, institutionalization, organizational and human capacity enhancement of both ATBI management and incubatees, physical resource establishment, long term and strategic planning, establishment and piloting of ATBI services, linkaging and innovation ecosystem enhancement were started and given emphasis in Phase 1. Strengthening these should be a continuing process. With these lessons on ATBI development and management, the challenges in technology transfer and technology commercialization also came to fore. We observed that there is a need to inventory, evaluate, and market these technologies to potential adopters with the end-goal of making a business out of it. In many cases, research outputs did not come up with commercialization-ready products or services. There were research-industry mismatches wherein the adopters needed more research done before they can use these technologies. Intellectual property protection is weak and this may be attributed to the researchers themselves, but importantly also to a less developed intellectual property management system. Managing the target clients of the ATBI also continues to become more complex because they are of varying levels (pre-incubatees, incubatees), interests, financial Page 2 of 7 capacity, knowledge and skills, ambition and grit. However, some of them have the potential for acceleration, to be encouraged to go further and expand their business	3 training modules prepared/developed; At least 2 IEC materials/publications on TBI best practices developed semi-annual, annual, terminal reports prepared and submitted At least 3 applications for copyright filed; 3 local (national) trainings attended by TBI project leaders and staff members; 1 international training attended by project leaders/managers; 2 Program reviews conducted; 1 technology business accelerator program developed 6 TBIs provided with assistance; 1 national association of Agri-Aqua TBIs formed and registered at SEC and applied as member to 2 international TBI associations; At least 1 foreign start-up/company endorsed for potential incubation at a local agri-aqua TBI; 1 TBI Business Plan enhanced 1 Operations Manual enhanced; 2 TBI Curricula developed/ enhanced 6 technopreneurship manuals developed; At least 2 journal articles prepared; At least 2 presentations to scientific conferences conducted At least 2 applications for trademark filed; At least 6 applications for copyright filed; 6 technologies commercialized; 30 pre-incubatees applied for potential incubation; 18 incubatees accepted, trained and mentored in farming/ production; 5 incubatees graduated/new enterprises created TBI impact to at least 18 incubatees/ enterprises assessed; At least 26 persons trained in farming/ production technologies; At least 60 persons trained on food processing technology; At least 60 students capacitated in entrepreneurship; At least 10 faculty and staff members involved in training/mentoring; 10 private entity involved in training/mentoring 8 trainings attended by TBI team members; 1 international training/benchmarking activity attended by TBI staff; 1 TBI facility/Food Innovation Center (FIC) enhanced; At least 2 farming associations/communities involved in incubation; At least 2 private sector partnership forged; At least 1 public sector partnership forged At least 3 partnership MOAs/MOUs executed; 2 policies developed in	BSU	smallholder farmers, food processors, allied agribusinesses, 16 ATBIs	01-Jan-21	31-Dec-22	COMPLETED	10,715,363	5,272,911.24
	DOST-PCAARRD-CapSU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The DOST-PCAARRD-CAPSU Agri-Aqua Technology Business Incubator is a technology transfer and commercialization support facility of the University that aims to translate or develop products of research into a feasible technology-based enterprise. The incubator will also serve as an avenue and convergence hub that will provide services for prospect technology adopters, investors, and technology users in the fields of agriculture and aquaculture in the province of Capiz.	ATBI business plan revised as needed 1 ATBI operations manual revised as needed €" 1 ATBI operations manual revised as needed At least 5 ATBI basic incubation curricula revised as needed At least 5 ATBI basic incubation curricula revised as needed At least 10 ATBI basic incubation curricula revised as needed At least 6 ATBI advanced incubation curricula developed €" At least 6 ATBI advanced incubation curricula developed At least 1 IEC or promotional material for ATBI developed At least 1 IEC or promotional material for ATBI developed At least 2 IEC or promotional materials for ATBI developed At least 1 promotional video for ATBI developed At least 1 promotional video for ATBI updated At least 1 promotional video for ATBI developed and updated At least 11 IEC or promotional materials for incubatees developed At least 5 IEC or promotional materials for incubatees developed At least 16 IEC or promotional materials for incubatees developed At least 1 promotional video for incubatees developed At least 1 promotional video for incubatees developed At least 2 promotional videos for incubatees developed 1 ATBI sustainability plan revised as needed €" 1 ATBI sustainability plan revised as needed 1 ATBI communication plan developed and implemented 1 ATBI communication plan implemented 1 ATBI communication plan developed and implemented Patents €"	CapSU	The beneficiaries of this project are the Incubatees (MSMEs, farmers, researcher, faculty, youths), consortia member agencies who will establish ATBI, Capiz State University, and other stakeholders.	01-Jul-21	30-Jun-23	ONGOING	5,000,000	1,466,872.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	DOST-PCAARRD-CLSU Agriculture and Food Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The Central Luzon State University Agriculture and Food Technology Business Incubator (CLSU-AFTBI) is a facility that assists in educating/training budding entrepreneurs, thus increasing the survival rate of innovative start-up businesses. These core mandates can be achieved by offering packages of specialized services on production and processing technologies of rice, tilapia, goat, mango, mushroom, vegetables, and dairy carabao which are relevant to country€™s economic development. The implementation of the DOST-PCAARRD-CLSU Agriculture and Food Technology Business Incubator Phase 2 is a continuation of the project funded by PCAARRD from 2017 to 2019. In Phase 2, the project aims to enhance the business performance of start-up incubatees through an acceleration program that are integrated, sustainable, and innovative, thereby improving the CLSU-AFTBI incubation ecosystem.	A. Publications 1. 1 TBI business plan revised as needed; 2. 1 TBI operations manual revised as needed; 3. At least 1 acceleration program curriculum/syllabus developed; 4. At least 4 training modules developed; 5. At least 3 IEC materials developed/revised and disseminated; 6. 1 operations manual on TBI web-based management information system developed; 7. 3 semi-annual reports prepared and submitted; 8. 3 annual reports prepared and submitted; 9. 1 terminal report prepared and submitted; B. Products 1. At least 10 technologies commercialized/adopted for incubation/acceleration; 2. 1 TBI web-based management information system developed; C. People and Services 1. At least 15 incubatees enrolled to the incubation program and launched as startup/spinoff; 2. At least 10 acceleratees enrolled to the acceleration program; 3. At least 25 business plans of the incubatees/acceleratees developed/improved; 4. At least 15 incubatees graduated from the incubation program; 5. At least 10 acceleratees graduated from the acceleration program; 6. At least 6 trainings for the incubatees/acceleratees conducted; 7. At least 1 master class for the acceleratees conducted; 8. At least 3 business pitching events/trade fairs/industry meetups conducted/participated in; 9. At least 9 promotional activities/awareness seminars conducted; 10. At least 1 website or social media page created/updated;	CLSU	The beneficiaries of this project are the following: €c AFNR students and graduates €c Micro, small, and medium enterprises (MSMEs) €c Established companies €c Start-up and spin-off companies €c Farmer-entrepreneurs €c CLSU faculty and staff €c Business organizations and cooperatives €c Local government units (LGUs)	01-Dec-19	30-Nov-22	COMPLETED	14,162,397	1,027,600.69
	DOST-PCAARRD-CMU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The CMU-ATBI will be the center for technology transfer, and business incubation of technologies generated in the university. Specifically, it will provide support services to incubatees for the commercialization of technologies. The CMU-ATBI has a business name called Musuan PEAK Incubator. The name was coined from the famous landmark of CMU, the Musuan Peak and incubator meaning business service provider for start-ups as the main purpose of the center. The PEAK is the acronym that stands for the services provided by the center namely: Product commercialization, Enterprise development, Access to networks, and Knowledge transfer. Product Commercialization is the process of bringing new products or services to market. This service includes sales and marketing tools and training and assistance in the pilot production of a product or process.	ATBI business plan revised as needed ī¸ 1 ATBI operations manual revised as needed ī¸ At least 10 ATBI basic incubation curricula revised as needed ī¸ At least 6 ATBI advanced incubation curricula developed At least 2 IEC or promotional materials for ATBI developed ī¸ At least 1 promotional video for ATBI developed and updated ī¸ At least 16 IEC or promotional materials for incubatees developed ī¸ At least 2 promotional videos for incubatees developed ī¸ 1 ATBI sustainability plan revised as needed ī¸ 1 ATBI communication plan developed and implemented At least 10 trademarks filed ī¸ At least 10 copyrights filed At least 5 technologies adopted by new incubatees ī¸ At least 6 technologies adopted by continuing incubatees ī¸ At least 3 technologies commercialized with issued Fairness Opinion Report and signed Technology Licensing Agreemen At least 10 new incubatees enrolled at basic incubation program ī¸ At least 6 continuing incubatees enrolled at advanced incubation program ī¸ At least 6 continuing incubatees graduated from advanced incubation program ī¸ At least 6 startups or spinoffs registered and launched ī¸ At least 6 trainings for ATBI staff conducted or participated in ī¸ At least 10 trainings for incubatees conducte At least 10 business plans for new incubatees developed ī¸ At least 6 business plans for continuing incubatees improved ī¸ At least 4 awareness seminars or promotional activities conducted ī¸ At least 4 business pitching events, industry meetups, or networking events conducted or participated in ī¸ ATBI operations fully integrated to PCAARRD's ATBI real-time	CMU	Start-ups/Spin-off Would-be Entrepreneurs Incubatees	01-Jul-21	30-Jun-23	ONGOING	5,000,000	1,097,298.00
	DOST-PCAARRD-CvSU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Cavite State University in Indang, Cavite, with a total PCAARRD-GIA funding of Php 4,999,700.80. The CvSU Agriculture and Food Technology Business Incubation (AFTBI) will be part of the Philippine government€™s program in bringing scientific information and technologies closer to the community particularly Calabarzon region for agricultural development. The CvSU Agriculture and Food Technology Business Incubator aims to accelerate the successful development of entrepreneurs in the area through an array of business support resources and services. The CvSU-AFTBI focuses on three areas of business such as high value crop production, coffee production and food processing. AFTBI will assist the incubatees by providing them with farm lot, facilities, equipment and technical knowledge. Also, AFTBI will provide trainings and seminars about entrepreneurship, marketing and accounting to teach the incubatees how to operate a business.	1 ATBI business plan revised as needed 1 ATBI operations manual revised as needed At least 10 basic incubation curricula revised as needed At least 6 advanced incubation curricula developed At least 2 IEC or promotional materials for the ATBI developed At least 1 promotional video for the ATBI developed At least 16 IEC or promotional materials for the incubatees developed At least 2 promotional videos for the incubatees developed At least 10 trademarks filed At least 10 copyrights filed At least 10 technologies adopted by new incubatees At least 6 technologies adopted by continuing incubatees At least 3 technologies commercialized with issued Fairness Opinion Report At least 10 new incubatees enrolled to the basic incubation program At least 6 continuing incubatees enrolled to the advanced incubation program At least 6 continuing incubatees graduated from the advanced incubation program At least 6 startups or spinoffs registered and launched At least 6 trainings for the ATBI staff conducted or participated in At least 10 trainings for the incubatees conducted At least 10 business plans for the new incubatees developed At least 6 business plans for the continuing incubatees improved At least 4 awareness seminars or promotional activities conducted At least 4 business pitching events, industry meetups, or networking events conducted or participated in ATBI operations fully integrated to PCAARRD's ATBI real-time monitoring system At least 2 consortium member-agencies mentored on ATBI operations	CvSU	Smallholder farmers, Food processors, aspiring entrepreneur with no agricultural background, Faculty and Students, Employees or Businessman that was adversely affected by the pandemic	01-Feb-21	31-Jan-23	ONGOING	4,999,701	1,445,490.40

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	DOST-PCAARRD-DMMMSU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The DOST-PCAARRD-DMMMSU Agri-Aqua TBI Phase 2 project will be established in DMMMSU, Bacnotan, La Union as main office with three satellite stations at the College of Agriculture (Bacnotan, La Union), College of Fisheries (Sto.Tomas, La Union), and College of Agriculture (Rosario, La Union). The ATBI service offerings include basic/technical services such as lecture rooms, training rooms, conference rooms, product processing rooms, laboratory equipment, production farm, market space and technology support facilities. Moreover, this platform also offers business development such as access to professional services, networking for financial support, business planning, accounting and bookkeeping marketing, food testing and sensory evaluation, and trademark development and application.	1 ATBI business plan revised as needed 1 ATBI operations manual revised as needed - 1 ATBI operations manual revised as needed At least 5 ATBI basic incubation curricula revised as needed At least 5 ATBI basic incubation curricula revised as needed At least 10 ATBI basic incubation curricula revised as needed At least 6 ATBI advanced incubation curricula developed - At least 6 ATBI advanced incubation curricula developed At least 1 IEC or promotional material for ATBI developed At least 1 IEC or promotional material for ATBI developed At least 2 IEC or promotional materials for ATBI developed At least 1 promotional video for ATBI developed At least 1 promotional video for ATBI updated At least 1 promotional video for ATBI developed and updated At least 11 IEC or promotional materials for incubatees developed At least 5 IEC or promotional materials for incubatees developed At least 16 IEC or promotional materials for incubatees developed At least 1 promotional video for incubatees developed At least 1 promotional video for incubatees developed At least 2 promotional videos for incubatees developed 1 ATBI sustainability plan revised as needed - 1 ATBI sustainability plan revised as needed 1 ATBI communication plan developed and implemented 1 ATBI communication plan implemented 1 ATBI communication plan developed and implemented Patents -	DMMMSU	Private Individuals, Farmers, Fisherfolks, Students, Peoples Organization, Cooperatives, Technology generators from DMMMSU, and SME€™s	01-Jul-21	30-Jun-23	ONGOING	5,000,000	1,244,055.20
	DOST-PCAARRD-IFSU Agri-Aqua Technology Business Incubator	Rapid, Inclusive and Sustained Economic Growth	The IFSU-ATBI is composed of programs and process in-order to ensure the success of technologies in the market. The first two years of operations will be allotted for the development of programs and manuals of the IFSU-ATBI. In addition, building strong partnership with potential incubatees and linkages with industry partners is one of the objectives of this unit. The programs of the IFSU-ATBI will provide Technical assistance through a series of Agri-Aqua Technology Business Incubation processes to its potential incubatees to ensure the success of the technology and the entrepreneur in the market.	Publication: - 1 ATBI business plan developed - 1 ATBI operations manual developed - At least 10 ATBI curricula developed - At least 2 IEC or promotional materials for ATBI developed - At least 1 promotional video for ATBI developed - At least 10 IEC or promotional materials for incubatees developed - At least 2 promotional videos for incubatees developed - 1 ATBI sustainability plan developed and implemented - 1 ATBI communication plan developed and implementedPatent: - At least 10 Trademark filed - At least 5 Copyrights filedProduct: - At least 10 technologies adopted by incubateesPeople: Ã¢‚¬¢ At least 10 incubatees assistedÃ¢‚¬¢ At least 6 trainings for ATBI staff conducted or participated inÃ¢‚¬¢ At least 10 trainings for incubatees conductedÃ¢‚¬¢ At least 10 business plans for incubatees developedÃ¢‚¬¢ At least 3 awareness seminars or promotional activities conductedÃ¢‚¬¢ At least 3 business pitching events, industry meetups, or networking events conducted or participated inÃ¢‚¬¢ ATBI operations fully integrated to PCAARRD's ATBI real-time monitoring system Place: Ã¢‚¬¢ At least 10 MOAs/MOUs with incubatees forgedÃ¢‚¬¢ At least 6 MOAs/MOUs with organizations from public and private sectors forgedPolicy: Ã¢‚¬¢ 1 ATBI institutionalizedÃ¢‚¬¢ 1 ATBI-related policies of the University crafted and approved	IFSU	Technology and Business Incubator Office of IFSUTechnology Business Incubator personnel and managerIFSU Researchers/ InventorsTechnology adaptersEntrepreneurs	01-Nov-21	31-Oct-23	ONGOING	5,000,000	1,091,697.10
	DOST-PCAARRD-ISU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Isabela State University, with a total PCAARRD-GIA funding of Php 4,595,284.44. The present proposal was submitted to sustain the efforts of the incubator to transfer and commercialize agriculture-related technologies among MSMEs. Under this initiative, the established incubator will continuously provide basic incubation program focusing on nurturing and counselling to the new incubatees. The program will be enhanced by providing advanced incubation program focusing on business growth for the continuing incubatees to get the enterprise/ start-up ready to scale-up.	1 ATBI business plan revised as needed 1 ATBI operations manual revised as needed At least 10 basic incubation curricula revised as needed At least 6 advanced incubation curricula developed At least 2 IEC or promotional material for the ATBI developed At least 1 promotional video for the ATBI developed At least 16 IEC or promotional materials for the incubatees developed At least 2 promotional video for the incubatees developed At least 10 trademarks filed At least 10 copyright filed At least 10 technologies adopted by new incubatees At least 6 technologies adopted by continuing incubatees At least 1 technology commercialized with issued Fairness Opinion Report At least 10 new incubatees enrolled to the basic incubation program At least 6 continuing incubatees enrolled to the advanced incubation program At least 6 continuing incubatees enrolled to the advanced incubation program At least 6 start-ups or spin-offs registered and launched At least 6 trainings for the ATBI staff conducted or participated in At least 10 trainings for the incubatees conducted At least 10 business plans for the new incubatees developed At least 6 business plans for the continuing incubatees improved At least 4 awareness seminars or promotional activities conducted At least 4 business pitching events, industry meetups, or networking events conducted or participated ATBI operations fully integrated to PCAARRD€™s ATBI real-monitoring system At least 2 consortium member-agency mentored on ATBI operations At least 10 MOAs/MOUs with the new incubatees forged	ISU	Startups, spinoffs, farmers, fisherfolk, industry, general public, researchers/students, NGAs/NGOs	01-Jan-21	31-Dec-22	COMPLETED	4,595,284	2,202,329.51

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	DOST-PCAARRD-LSPU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The DOST-PCAARRD-LSPU Agri-Aqua Technology Business Incubator (ATBI) is envisioned to be a center for development and advancement of sustainable agri-fishery and natural products industries in Laguna and nearby provinces through technology transfer, innovation, and technopreneurship. To achieve its vision, it hopes to provide an enabling environment to potential business start-ups in order to increase entrepreneurial and economic growth. This project has established an ATBI Base Hub in LSPU Siniloan Campus, with the aim of providing specialized services to technology developers/researchers, students, community people, and micro, small, and medium enterprises (MSMEs) by championing technology-based enterprises and foster the innovative and technopreneurial spirit. During its Phase 1, the Project has been funded by the DOST-PCAARRD-LSPU Fund of PhP 8,110,313.28.	Publications 1 Business Plan revised as needed; 1 ATBI operations manual revised as needed; 10 ATBI basic incubation revised curricula; 6 ATBI advanced incubation curricula developed; 10 IEC or promotional materials for ATBI developed; 1 promotional video for ATBI developed and updated 10 IEC or promotional materials for incubatees developed; 2 promotional videos for incubatees developed; 1 ATBI sustainability plan revised 1 ATBI communication plan developed and implemented Patents 10 trademarks filed; 10 copyrights filed Products 10 technologies adopted by new incubatees; 6 technologies adopted by continuing incubatees; 3 technologies commercialized with issued Fairness Opinion Report and signed Technology Licensing Agreement People and Services; 10 new incubatees enrolled at basic incubation program; 6 continuing incubatees enrolled at advanced incubation program; 6 continuing incubatees graduated from advanced incubation program; 6 startups or spinoffs registered and launched 6 trainings for ATBI staff conducted or participated; 10 trainings for incubatees conducted; 10 business plans for new incubatees developed 6 business plans for continuing incubatees improved; 10 awareness seminars or promotional activities conducted; 4 business pitching events, industry meetups, or networking events conducted or participated in 2 consortium member-agencies mentored on ATBI operations; ATBI operations fully integrated to PCAARRD's ATBI real-time monitoring system Places and Partnerships 10 MOAs/MOUs with new incubatees forged; 6 MOAs/MOUs with continuing incubatees renewed; 10 MOAs/MOUs with organizations from public and private sectors forged/renewed	LSPU	Filipino consumers, Incubatees, Partner Farms, Partner RDIs, other SUCs, LSPU faculty, support staff, students, and the ATBI Management Team	01-Jul-21	30-Jun-23	ONGOING	5,000,000	1,358,036.40
	DOST-PCAARRD-MMSU Agri-Aqua Technology Business Incubator	Rapid, Inclusive and Sustained Economic Growth	In response to the challenge of establishing and enhancing agribusiness TBIs to create jobs, promote public-private partnerships, and develop entrepreneurs for regional economic development, MMSU is taking the leap to improve its technology promotion and transfer programs to enhance client service and reach. As such, there is a seeming need to establish MMSU-TBI to promote entrepreneurship and produce successful and viable firms by providing business development services. This endeavor is envisioned to support the launch and growth of promising ventures in the Ilocos Region. Moreover, MMSU-TBI will also assist MSMEs in the region in improving their business operations and productivity specifically in providing assistance in regulatory requirements, intellectual property protection and other services. The establishment of MMSU-TBI will provide a more conducive ecosystem for entrepreneurs to promote and nurture technology-based enterprises and at the same time complement the existing MSMEs in the locality. Hopefully, through the MMSU-TBI, the University will be able to commercialize R&D outputs, transfer technologies to intended users, create employment, and accelerate the creation of new enterprises in the region for economic development.	Publications - TBI business plan enhanced - TBI operations manual developed - At least 4 TBI curricula developed - At least 8 IEC and promotional materials developed - At least 2 promotional videos developed - 2 semi-annual reports prepared and submitted - 2 annual reports prepared and submitted - Terminal report prepared and submitted - List of technologies for incubation/commercialization prepared and promoted - List of TBI service offerings prepared and promoted - List of TBI service facilities prepared and promoted Patents - At least 2 trademarks filed Products - At least 4 technologies incubated/commercialized People and Services - At least 8 incubatees enrolled - At least 8 business plans for the incubatees developed - At least 4 trainings for the incubatees conducted - At least 5 startups or spinoffs registered and launched - At least 3 benchmarking activities conducted - At least 5 trainings for the project team conducted and participated in - At least 4 awareness seminars and promotional activities conducted - At least 4 business pitching events, industry meetups, and networking events conducted and participated in	MMSU	Startups, spinoffs, farmers, fisherfolk, industry, general public, researchers/students, NGAs/NGOs	01-Jan-21	31-Dec-22	COMPLETED	4,999,757	1,413,071.34
	DOST-PCAARRD-PSAU Agri-Aqua Technology Business Incubator	Rapid, Inclusive and Sustained Economic Growth	The project primarily aims to serve as an avenue where technologies developed in the University and other partner SUCs/RDIs are adopted and/or commercialized by enabling start-up business enterprises in the province. The role of the PSAU €" Agri-Aqua Technology Business Incubation (ATBI) Office is to establish synergistic multi-sectoral relationship with the business and start-up communities, especially the micro-, small and medium enterprises (MSMEs) in order to accelerate the commercialization of university-made technologies. This project does so through the provision of various services to interested agricultural and aquaculture enterprises who are interested to be incubated.	1 ATBI business plan developedATBI operations manual developedAt least 10 ATBI curricula developedAt least 2 IEC or promotional materials for ATBI developed and disseminatedAt least 1 promotional video for ATBI developed and disseminatedAt least 10 IEC or promotional materials for incubatees developed and disseminatedAt least 2 promotional videos for incubatees developed1 ATBI sustainability plan developed and implemented1 ATBI communication plan developed and implemented1 semi-annual report prepared and submitted1 annual report prepared and submitted1 terminal report prepared and submitted1 list of technologies for incubation/ commercialization prepared/ published1 list of ATBI service offerings printed/publishedAt least 10 trademarks filedAt least 5 copyrights filedAt least 5 technologies commercialized with FOR and 5 extended/adoptedAt least 1-2 benchmarking activities conductedAt least 6 trainings/capacity building activities for ATBI staff conducted or participated inAt least 3 awareness seminars or promotional activities conductedAt least 10 incubatees assistedAt least 10 trainings for incubatees conductedAt least 10 business plans for incubatees developedAt least 3 business pitching event, industry meetup, or networking event conducted or participated inAt least 1 PSAU-ATBI Advisory Board formedATBI operations fully integrated to PCAARRDâ€™s ATBI real-time monitoring systemAt least 10 MOAs/MOUs with the incubatees forgedAt least 4 MOAs/MOUs with organizations from public and private sectors forgedATBI-related policies of the University crafted and approved1 ATBI organizational structure with terms of reference developedBaseline metrics to assess the social impact of ATBI to incubatees formulatedSocial impact of ATBI to each incubatee assessedInnovation ecosystem improvedContributed to the leveling of the UniversityBaseline metrics to assess the economic impact of ATBI to incubatees formulatedEconomic impact of ATBI to each incubatee assessedGross and net income generated by incubatees determinedJobs	PSAU	PSAU ATBI PersonnelPSAU Researchers/InventorsAgri-aqua Incubatees (Entrepreneurs, Agripreneurs, Farm Owners, Farmers)	01-Nov-21	31-Oct-23	ONGOING	5,000,000	1,166,047.90

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	DOST-PCAARRD-SKSU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The SKSU Agri-Aqua Technology Business Incubator as the center for technology transfer, commercialization, and business incubation in the University is constantly providing technical services to the incubatees in adopting the developed technologies. However, aside from the focused technologies for adoption in Phase I, there is still a need to enhance the incubator services by advancing the technologies and services provided to the existing incubatees and new start-ups/incubatees, spin-offs, and micro and small entrepreneurs.	ATBI business plan revised as needed ï¿· 1 ATBI operations manual revised as needed ï¿· At least 10 ATBI basic incubation curricula revised as needed ï¿· At least 6 ATBI advanced incubation curricula developed ï¿· At least 2 IEC or promotional materials for ATBI developed ï¿· At least 1 promotional video for ATBI developed and updated ï¿· At least 16 IEC or promotional materials for incubatees developed ï¿· At least 2 promotional videos for incubatees developed ï¿· 1 ATBI sustainability plan revised as needed ï¿· 1 ATBI communication plan developed and implemented At least 10 trademarks filed ï¿· At least 10 copyrights filed ï¿· At least 5 technologies adopted by new incubatees ï¿· At least 6 technologies adopted by continuing incubatees ï¿· At least 3 technologies commercialized with issued Fairness Opinion Report and signed Technology Licensing Agreement At least 10 new incubatees enrolled at basic incubation program ï¿· At least 6 continuing incubatees enrolled at advanced incubation program ï¿· At least 6 continuing incubatees graduated from advanced incubation program ï¿· At least 6 startups or spinoffs registered and launched ï¿· At least 6 trainings for ATBI staff conducted or participated in ï¿· At least 10 trainings for incubatees conducted ï¿· At least 10 business plans for new incubatees developed ï¿· At least 6 business plans for continuing incubatees improved ï¿· At least 4 awareness seminars or promotional activities conducted ï¿· At least 4 business pitching events, industry meetups, or networking events conducted or participated in ï¿· ATBI operations fully integrated to PCAARRD's ATBI real-time	SKSU	Start-ups, mirco and small enterprises	01-Jul-21	30-Jun-23	ONGOING	5,000,000	1,289,072.08
	DOST-PCAARRD-USM Agri-Aqua Technology Business Incubator	Rapid, Inclusive and Sustained Economic Growth	The DOST-PCAARRD-USM Agri-Aqua Technology Business Incubator or the USM SeedLink will serve as intermediary in transferring USM agri-aqua based technologies to farmers and fish-farm operators and in turn, secure market channels for produced products. Thus, the USM SeedLink will not only help improve the farmerâ€™s production but also ensuring their income. In this manner, technology transfer operations in the University can be sustainable. The USM SeedLink will operationalize commercialization of research-based technologies to potential adaptors and target clients. The incubatees for agri-aqua startups will have the advantage because the USM SeedLink will provide assistance via training, business plan services, and business consultations in order to maximize income and manage enterprise effectively. This undertaking will provide incubatees the grounds for building their business thus very beneficial for potential entrepreneurs in the locality.	Publications - TBI business plan enhanced - TBI operations manual developed - At least 4 TBI curricula developed - At least 8 IEC and promotional materials developed - At least 2 promotional videos developed - 2 semi-annual reports prepared and submitted - 2 annual reports prepared and submitted - Terminal report prepared and submitted - List of technologies for incubation/commercialization prepared and promoted - List of TBI service offerings prepared and promoted - List of TBI service facilities prepared and promoted Patents - At least 2 trademarks filed - At least 10 copyrights filed Products - At least 4 technologies incubated/commercialized People and Services - At least 8 incubatees enrolled - At least 8 business plans for the incubatees developed - At least 4 trainings for the incubatees conducted - At least 5 startups or spinoffs registered and launched - At least 3 benchmarking activities conducted - At least 3 trainings for the project team conducted and participated in - At least 2 awareness seminars and promotional activities conducted - At least 2 business pitching events, industry meetups, and networking	USM	Startups, spinoffs, farmers, fisherfolk, industry, general public, researchers/students, NGAs/NGOs	01-Mar-20	31-Dec-22	COMPLETED	4,997,800	800,468.40
	DOST-PCAARRD-VSU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Visayas State University, Visca, Baybay City, Leyte, 6521, with a total PCAARRD-GIA funding of Php 4,950,000.00. The proposal is in line with effort of intensifying technology transfer by improving the present technology incubation program of the Visayas State University. The main feature of the proposal is the establishment and implementation of a Technology Business Acceleration Program at VSU side by side with the VSU Technology Business Incubation Program. Efforts will be exerted to expand the types of technology that will be enrolled to include not only those of food and agriculture, but also of engineering and ICT.	One (1) Manual of Operation of VSU TBA Two (2) Utility Model Six (6) revised business plans Seed money for startups selected for acceleration. 160 hrs equivalent mentoring sessions Six (6) business development plans Six (6) on-line marketing platform Six (6) applications/proposals for NGAs€™ assistance programs Two (2) promotional AVP for acceleratees Pool of mentors Six (6) trained/mentored startup entrepreneurs Two (2) pitching event conducted or participated One (1) Innovation and technology-based business acceleration hub Organizational structure Resolution by the VSU TBI/TBA Advisory Board on metrics to be used to assess the social and economic impact of the ATBI/TBA 1 ATBI revised business plan 1 ATBI revised operations manual Investment portfolio of Ten (10) technologies Six (6) trademarks filed Six (6) packaging designs 6 new incubates Two (2) boot camp At least 4 trainings for the ATBI staff conducted or participated At least 10 trainings for the incubates conducted Two (2) MOA with new partner forged Two (2) members of the consortia mentored on TBI operation Mentoring of two (2) members of the consortia on TBI operation	VSU	Start-up businesses (services or products) that had high potential to succeed and selected TBI phase I start-ups will be the target beneficiaries of the acceleration program	01-Apr-21	31-Mar-23	ONGOING	4,950,000	2,342,596.85

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	DOST-PCAARRD-WMSU Agri-Aqua Technology Business Incubator Phase 2	Rapid, Inclusive and Sustained Economic Growth	The advanced incubation of the WMSU ATBI shall continue to support and nurture startups who are willing to put up their chosen agriculture and food technology business. This phase will focus on the improved services, increase incubatee capabilities and volume capacities, network generation-specific for the need of the clients, and mentoring consortia members in technology transfer and commercialization through the establishment of their own ATBIs.To improve services offered by WMSU ATBI, the approved manual shall be reviewed and validated. The basis of the review shall be the documented activities and experiences from the conduct of its operations in the previous years of implementation as captured in social and economic impacts studies. This may result in policy recommendations revising the content of the manual to suit a more effective and efficient flow of operations.	Publications €c 1 ATBI business plan revised as needed €c 1 ATBI operations manual revised as needed €c At least 10 ATBI basic incubation curricula revised as needed €c At least 6 ATBI advanced incubation curricula developed €c At least 2 IEC or promotional materials for ATBI developed €c At least 1 promotional video for ATBI developed and updated €c At least 16 IEC or promotional materials for incubatees developed €c At least 2 promotional videos for incubatees developed €c 1 ATBI sustainability plan revised as needed €c 1 ATBI communication plan developed and implemented Patents €c At least 10 trademarks filed €c At least 10 copyrights filed Products €c At least 10 technologies adopted by new incubatees €c At least 6 technologies adopted by continuing incubatees €c At least 3 technologies commercialized with issued Fairness Opinion Report and signed Technology Licensing Agreement People and Services €c At least 10 new incubatees enrolled at basic incubation program €c At least 6 continuing incubatees enrolled at advanced incubation program €c At least 6 continuing incubatees graduated from advanced incubation program €c At least 6 startups or spinoffs registered and launched €c At least 6 trainings for ATBI staff conducted or participated in	WMSU	Startups, spinoffs, farmers, fisherfolk, industry, general public, researchers/students, NGAs/NGOs	01-May-21	30-Apr-23	ONGOING	4,998,355	2,445,151.60
	Establishment of a Pilot Plant for Acticon – A Biocontrol Solution Against Fusarium oxysporum TR4	Rapid, Inclusive and Sustained Economic Growth	General Objective: The general objective of the project is to establish a commercial-scale manufacturing facility to produce ACTICON €" a biocontrol solution against Fusarium oxysporum TR4. Specific Objective: Specifically, the proposal covers: Completion of the production facility in Bangyas, Calauan, Laguna Acquisition of large equipment necessary for the production Setup of power and water system in the facility Commercial testing and registration of ACTICON under regulatory bodies	Publication: N/APatent: Patents already applied by UPLBProduct: Commercial ACTICon product in market and commercial facility The pilot plant is designed to have an annual operating capacity of 36,000L or 3,000L per month. Based on this, the cost to produce 1L of ACTICon including the Royalty to be given to UPLB amounts to P164.34. To breakeven, the pilot plant must produce around 774.04L of ACTICon per month or about 9,288.45L per year.People: 4 staff employed by Y1, Q11 fieldPlace: 1 field trial and 1 distribution partner by Y1,Q1 and Y1,Q4Policy: N/A	ElbiTech Inc.	ACTICon will greatly impact the banana industry. Currently, measures against the Panama Disease compose of cultural management practices and chemical control Ã¢,–Œ which are expensive and not environmentally sound. With ACTICon, there is also no need to abandon the land, saving up to 1.2 million pesos per hectare in export revenue and up to 500,000 pesos per hectare in new farm development cost. The product will be beneficial to all players in the banana industry, from small farmers to large plantations, in inhibiting the infection and spread of the disease.	01-Mar-22	28-Feb-23	ONGOING	4,940,018	747,508.81
	Implementation of S&T-based Climate-Smart Soil and Water Management in the Highlands of Maguindanao	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for two (2) years by Mindanao State University - Maguindanao. The project site is located at Datu Odin, Maguindanao with a total PCAARRD-GIA funding of PhP 5,776,057.60. It generally aims to build and strengthen the resiliency of upland farming systems to adapt to climate change thereby decreasing the vulnerability to the negative effects of decreasing water resources and increasing soil degradation. Specifically, the project will focus on:Promoting climate-adaptive soil and water management options in highland agriculture;Building the capacity of Mindanao highland farmers in adopting climate-smart technologies;Establishing S&T community-based climate-smart highland farm;Recommending climate adaptation measures to address water scarcity; andDeveloping knowledge products on climate-smart soil and water management in highlands.	People and Services 5 farmer organizations trained5 trainings conducted for highland farmers2 consultation meetings conducted2 experts€™ pool maintainedPublications 2 papers submitted to a peer-reviewed Journal1 Technical Report 1 brochure on climate-adaptive soil and water management for highlands1 Guidance Manual on climate-smart highland agriculture2 IEC materials on soil and water management for highlands Patents/IP5 Copyrights filedPlaces and Partnerships 4 linkages and partnerships with DENR, DA, DOST, and private sectorsPolicies 1 policy brief for input to relevant agenciesProducts2 KP developed1 demonstration farm	MSU-Maguindanao	Highland farmersMSU-Maguindanao and the scientific communityLocal government unitsNational government agencies	01-Sep-21	31-Aug-23	ONGOING	4,996,058	1,928,028.80
	Intellectual Property Rights Management of SARAi Phase 2 Technologies and Research Outputs and Related Maintenance Activities	Rapid, Inclusive and Sustained Economic Growth	Project SARAI (Smarter Approaches to Reinvigorate Agriculture as an Industry in the Philippines) is an action research program, funded by the Department of Science and Technology €" Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD), working towards reducing climate risks by providing agricultural stakeholders with site-specific crop advisories.This project proposal will bridge the end of the project and allow protection of Intellectual Property Rights. The transition from a program to the capacitated partner stakeholders€™ entails some preparation which was further exacerbated by the pandemic when travel was restricted. In this transition phase, the SARAI program needs the partnership of the UPLB Technology Transfer and Business Development Office (TTBDO) to determine what is already developed by SARAI researchers, and what can be done in order to effectively utilize these research outputs and/or further develop them to come up with a novel and innovative technology. As SARAi technologies develop from laboratory scale to bench or pilot scale, their technology transfer plans as well as final IP protection and management plan are prepared to streamline deployment of technologies to interested industry partners. In line with the deployment of technologies, technology valuation reports shall also be created.	The expected outputs of the project are the following:Products:-Œ centralized database of SARAi project outputs with its categories, technology readiness level and monitoring prepared-Œ initial valuation and costing in terms of potential royalty fees to be received from the commercialization of SARAI technologies/outputs prepared-Œ plan for generating resources from the transfer/commercialization of copyrighted SARAi outputs prepared-Œperational AWS/SSS sensors maintained-Œ least 8 Technology Transfer Plans preparedPeople and Services:-Œ Capacity building activity on IP protection and technology transfer conducted-Œ20 researchers and technology transfer personnel trained-Œ technology audit conducted-Œontinuous operation and uptime of website with updated informationPlaces and Partnerships: -Œransferred responsibilities of maintaining and operation of AWS/SSS units to partner sites -Œ least 8 Negotiation Activities conducted for the execution of the Technology Transfer Plans-Œ least 8 Partnerships initiated in support to the execution of the Technology Transfer PlansPatents:-Œ least 17 Invention Disclosures prepared-Œ least 15 Prior Art Search Reports prepared-Œ Applications filed, At least: 10 Patent/UM 3 Trademarks (TM) 10 Copyrights	UPLB	Farmers, Students, Private Companies/Enterprises, Researchers, LGUs, SUCs	01-Apr-22	31-Mar-23	ONGOING	3,046,645	3,046,644.52

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Mainstreaming of Bamboost App as an Online Marketing Platform of Bamboo Farmers in Select Science &Technology Community-Based Farms (STCBF)	Rapid, Inclusive and Sustained Economic Growth	There is a renewed interest now on bamboo in the Philippines. Recently declared as a high-value crop, the ubiquitous bamboo has significant potential to create employment and thereby reduce poverty particularly in the countryside. However, bamboo supply chains are plagued with various challenges. According to the bamboo supply chain analysis conducted by Aquino et al. (2015), the absence of market information is the essential problem confronting the industry. Consequently, this resulted to weak integration of operational relationships among economic actors in the bamboo supply chain. The report also revealed that bamboo farmers lack adequate information on the location of suppliers and what specific requirements like in terms of pole characteristics, volume and species of bamboo they need. On the other hand, farmers are unaware of the bamboo pole characteristics and quality needs of customers, forcing them to depend on the pole agents who dictate price and get much of the market margin.In order to address these gaps, this project aims to mainstream Bamboost Mobile App as an online marketing platform in selected STCBF sites and bamboo farming communities in the country. Bamboost App was purposely developed for the thesis study of Ms. Analiza C. Diaz during her MS in AIT. The beta version of Bamboost App was demonstrated and presented to the bamboo growers and processors of Maasin, Iloilo, and the factors affecting their willingness to adopt it in marketing their bamboo products were analysed. With the positive outcome from the willingness to adopt thesis/research, this project is as a second phase.The project will be jointly implemented by the University of Science and Technology of Southern Philippines and TTPD-CPAARRD, in collaboration with the Asian Institute of Technology, for 1/5 years (September 2021 to February 2023 with a	People and Services 200 farm enterprises supported; 5 bamboo processors supported; 200 farmers trained; 30 processors trained; 200 bamboo MSMEs supported; 4 trainings conducted for farm enterprises; 6 consultation meetings conducted; 2 benchmarking activities conducted; 2 experts€™ pool maintained Publications 2 promotional videos developed; 2 IEC materials produced Patents 1 patent for Bamboost App filed; 1 Trademark filed; 2 copyrights filed Places and Partnerships 8 linkages forged Policies 1 policy developed/policy inputs provided Products Mobile App; 2 trademarks	USTP-Cagayan de Oro	Bamboo farmers/processors, community-based farms on bamboo, industry (traders, retailers), bamboos MSMEs, general public/consumers. LGUS, NGOs	01-Dec-21	31-May-23	ONGOING	4,996,013	1,587,004.00
	Mobilizing and Advancing Science-based Social Enterprises through Innovation and Guided Learning Towards Organizational Agility (MAScilGLA)	Rapid, Inclusive and Sustained Economic Growth	The MAScIGLA project intends to measure the readiness of AANR-based enterprises and develop them into sustainable social enterprises (SEs) which imbibes the characterization of social mission, social business, social innovation, and social ownership. The planned intervention program will accelerate the development of the enterprise beneficiaries through capability-building programs and systematic handholding (mentorship) guided by the designed SE Readiness Level assessment. Overall, MAScIGLA aims to grow these AANR-based enterprises into full time SEs with high level characterization of social mission, social business, social innovation, and social ownership.	Publication: 15 Marketing collaterals (Brochures, Flyers, Primers); 15 Assessment Reports and; 15 Social Enterprise Plans; 15 Documented STBCFs/ 3 Successful AANR SEs; 8 Improved Social Enterprise Plans; 1 Compendium containing 15 documented STBCF and 3 successful AANR-SEs; 15 Marketing collaterals (Brochures, Flyers, Primers); 15 Assessment Reports and; 15 Social Enterprise Plans; 8 Improved Social Enterprise Plans; 1 Compendium book; Patent: 1 Trademark filed PCAARRD MAScilGLA Logo; 1 Trademark registered PCAARRD MAScilGLA Logo; 1 Trademark registered PCAARRD MAScilGLA Logo; Product: 8 AANR-based and STCBF SEsÃ¢,¬„¢ products (mango, coffee, cacao, rubber, fish, bamboo, buffalo, and vegetable) supported and promoted; 8 AANR-based and STCBF SEsÃ¢,¬„¢ products (mango, coffee, cacao, rubber, fish, bamboo, buffalo, and vegetable) supported and promoted; 3 successful AANR SEs (crops, livestock, fisheries, forestry); 8 AANR-based and STCBF SEsÃ¢,¬„¢ products(mango, coffee, cacao, rubber, fish, bamboo, buffalo, and vegetable) supported and promoted; 8 accelerated AANR STCBFs; 3 successful AANR SEs (crops, livestock, fisheries, forestry) People: 15 STCBF/ST4iD SEs trained (at least 25 officers and members/STCBF); 15 STCBF SEs mentored;15 Social Enterprise Plans prepared; 8 accelerated STCBF/ST4iD SEs trained (at least 25 members/STCBF); 8 accelerated STCBF SEs mentored; 8 improved Social Enterprise Plans prepared and monitored; 8 STCBF SEs mentored; 15 STCBF SEs trained (at least 25 officers & members/STCBF); 8 accelerated STCBF/ST4iD SEs trained (at least 25 members/STCBF); 8 Improved Social Enterprise Plans	UP-ISSI	Fifteen (15) AANR-STBCF/ST4iD social enterprises.	01-Oct-22	30-Sep-23	ONGOING	499,882	2,674,104.00
	Pre-Commercialization of FertiGroe® N, P and K Nanofertilizers	Rapid, Inclusive and Sustained Economic Growth	Nanofertilizers were found to be promising alternatives to conventional fertilizers in banana production. Field experiments in €˜Cavendish€™ and €˜Saba€™ banana showed nanofertilizers, specifically FertiGroe® nanofertilizer, significantly improved nutrient-use efficiency of banana. It significantly decreased fertilizer requirement of banana by 25% and can further increase economic yield by 27.5%. Cost-Return Analysis showed that shifting from conventional fertilizer to nanofertilizer entails higher production cost because of higher input price and additional labor. However, the benefit of using nanofertilizer (decreased fertilizer use and increase marketable yield) is sufficient to increase farm net profit as compared to using conventional fertilizer (Aguilar et al., 2020). On its second phase of technology commercialization, application protocol for FertiGroe® N, P and K nanofertilizers for corn was developed. After multiple optimization and field validation experiments using FertiGroe® , fertilizer input in planting corn significantly decreased by 50%, thus reducing cost of inputs. Higher and better yield were also obtained in using FertiGroe® nanofertilizers. A Cost-Return Analysis for the use of FertiGroe® nanofertilizers shows an increase in net profit as compared to use of conventional fertilizers (Sanchez et al., 2019). Similar to other crops that have shown positive yield and profit responses, implementation of FertiGroe® N, P and K in rice brings potential of increasing fertilizer use efficiency, consequently increasing yield and profit (Sanchez et al., 2019). FertiGroe® N, P and K nanofertilizers was observed to increase yield of vegetable crops during initial optimization and field validation experiments. Higher efficiency leads to lower fertilizer recommendation and higher yield, thus higher profit (Sanchez et al., 2019). This project aims to conduct scale-up production, establishment of pilot plant facility and pre-commercialization of FertiGroe® N, P and K Nanofertilizers.	Publication: Two (2) published research articles in refereed journals.Patent: At least one (1) patent for the scale-up production of FertiGroe®.Product: Three (3) FertiGroe® Nanofertilizers.People: Two (2) students.Place: AllTrade Marketing and Manufacturing (ATMM) TAGCHEM Dragon Distribution Inc.Policy: (None)	UPLB	Sugarcane growers and farmers, farmerÃ¢,¬„¢s association, local government units, agricultural extension workers, students, and spin-off companies who will manufacture FertiGroe® N, P and K nanofertilizers.	01-Oct-22	30-Sep-24	ONGOING	18,629,651	9,489,825.50

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Pre-Commercialization of Pili Post-Harvest Processing Machines	Rapid, Inclusive and Sustained Economic Growth	To connect with the intended users of the technology, commercialization of the five (5) pili post harvest machines that are being developed will be done through this project. The project aims to develop a commercialization method of the pili postharvest processing technology in the region for resource generation and sustainability. The project targets to close licensing agreemeent/s of the technologies with Socio-Economic Development Program Multi-Purpose Cooperative (SEDP MPC) and Department of Agriculture Regional Field Office V (as identified potential adopters) and other pili processors associations in the locality. This project will be aligned with the target outcome of the Harmonized National R&D Agenda (HNRDA) for Agriculture, Aquatic and Natural Resources Sector (2017-2022). Specifically, the project covers crop production systems research on postharvest and processing of pili. Also, the ongoing Improvement and Upgrading of the Postharvest facility of the Agricultural and Biosystems Engineering Department of BUCAF will be timely for the implementation of the pili techno commercialization of the pili post-harvest machineries. Furthermore, it can contribute in the long run to the targets of the pili roadmap on enhanced and commercialization of pilinut postharvest processing equipment technologies.	Publication: 5 IEC Materials 5 OperatorÃ¢,¬,,¢s Manual Prepared (Technology) 5 Market Research Reports 1 Feasibility StudyPatent: 5 Patent/Utility Model Applications 1 Trademark Application (logo of start-up company)Product: 5 Business Plans 5 Business Model Crafted 5 Market Acceptability Survey conducted 5 IP Valuation Reports 5 Fairness Opinion ReportsPeople: 1 Technology Pitching Activity 1 Technology Demonstration Event 5 technologies commercialized 1 Start-up Company registered in SEC/DTIPlace: 2 Partnership agreements with Business Groups/Trade Institutions 1 Licensing Agreement signedPolicy: None	BU	The completion of the project through the Bicol University College of Agriculture and Forestry in their continuous efforts to bringing the knowledge and technologies closer to the industries through technology development and commercialization in the realization of their goals to be a conduit of connection and collaboration between the Department of Agriculture Region V, Department of Science and Technology Region V, Department of Trade in Industry Region V, City LGU and Municipal LGU in the six Provinces of Bicol Region, private sector and MSMEs within the region. For the the industries, private sectors and MSMEs, the realization of this project will be able to address their needs in increasing their efficiency and effectiveness without compromising their product quality while increasing their productivity and. building valuable partnerships with the other industry players. For the faculty and students, this project will help combat the status quo that is the Ã¢,¬Ã"Publish and PerishÃ¢,¬Â¶mentality by making their researchers realize its societal impact anchored in the mind-to-market concept through technopreneurship and technology business incubation. For the Alumni this project will be of help by strengthening their network and recognizing their roles as key partners in establishing the university incubator and building a solid platform for helping ideas shape into commercial ventures through the right kind of support system and mentorship in addition to commercializing research technologies.	01-Nov-22	30-Apr-24	ONGOING	5,000,000	4,151,086.00
	Pre-commercialization of Probiotics and Prebiotics from Onion Wastes for Tilapia Culture	Rapid, Inclusive and Sustained Economic Growth	Agricultural wastes continue to accumulate as more agricultural crops are produced, with about 40% of agricultural wastes generated after harvesting from the farm alone. These Ã¢â‚¬Å“wastesÃ¢â‚¬Â• are untapped resources that can be converted into valuable products such as probiotics and prebiotics. The previous pilot testing conducted by Central Luzon State University in cooperating farms in Nueva Ecija, Pampanga and La Union on the use of probiotics and prebiotics from onion wastes as feed additives have proven potentials for increasing tilapia productivity. The use of these feed additives improved the survival rate by 44.4 percent as well as the feed conversion ratio (below 1.5) and growth performance of tilapia. The use of these probiotics and prebiotics could also increase the income of farmers. For instance, an investment cost of PhP100.00 for the probiotics and prebiotics will result to an added income of PhP150.24. Likewise, the net income ratio of untreated tilapia in comparison to those treated with the feed additives was 1:2.9, which means that the income of farmers was almost tripled when probiotics and prebiotics were used. The developed probiotics and prebiotics can also be prepared even by household members, thereby providing extra source of income for poor families and creating employment for the youth and women. These positive results generated in the said pilot testing should be extended to tilapia stakeholders in a greater scale towards commercialization. In addition, considering the similar effects of other agricultural wastes on the growth and immunity of tilapia which were observed during the research phase, there is also a need to conduct pilot testing of probiotics and prebiotics from other agriculture wastes.	Publication: Year 1 IEC materials: 1 videographic on probiotics and prebiotics produced2 infographics/posters on probiotics and prebiotics produced Year 2 1 paper submitted to a peer-reviewed journal Patent: Year 1 3 trademarks Year 2 1 UM/patent Product: Year 1 Probiotics: 3,000 L probiotics produced Prebiotics: 840kg prebiotics producedStarter culture: 1000 L starter culture produced FS/BP/MS: 1 FS/1MS/1BP prepared People: Trained manpower 6 farm cooperators trained on the preparation of probiotics and prebiotics 1 GREAT scholar trained on research project planning, conduct and presentationPlace: MOU/MOA 3 MOU/MOA established with partner agencies and LGUsPolicy: Year 2 1 policy brief submitted to the Solid Waste Management Board of LGUs and Department of Agriculture	CLSU	Tilapia farmers, other farmers (source of agricultural wastes) and their household members, feed dealers, agricultural suppliers, agricultural extension workers, local government units, spin-off or start up companies who will manufacture the probiotics and prebiotics from agricultural wastes	01-Jul-22	31-Dec-23	ONGOING	4,999,866	3,862,440.00
	S&S Plaza Goes SciCAT Phase 2: Promotion of Ecologically Viable Farming Practices and Generated Technologies Through Blended eAgri-tourism Under the New Normal	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by the Bureau of Plant Industry â€" Los BaÃ±os National Crop Research and Production Support Center (BPI-LBNCRDPSC) in Los Banos, Laguna, with a total PCAARRD-GIA funding of Php 4,999,924.80. It generally aims to promote ecologically viable farming practices and generated technologies through a blended eAgri-tourism approach under the new normal. Specifically, the project will focus on showcasing farming practices and technologies not only for technology promotion but also to capacitate other BPI-LBNCRDPSCâ€™s personnel, Local Government Unit (LGU) partners, and technology adopters who can function as an extension of the S&S Plaza in disseminating the different farming practices and technologies promoted by the Plaza.	People and Services: 500 Trained farm owners/farming enthusiasts 8 Conducted webinars; 40 POT adopters; 50 monthly average No. of engagements on social media sites (i.e. likes, shares, comments, inquiries) Products: 8 New POTs downloaded; 2 Value-adding/processing of existing farm produce; Produced 200kg leafy vegetables; Production of 5,850 pcs quality planting materials; Publications: 10 IEC materials (brochures, leaflets or posters & videos for social media); 10 Training modules prepared; Patents: 10 Copyrights (from IEC materials); Places and partnerships: 8 MOA forged; 4 MLGU and DOT partnerships Social Impact: Developed metrics to assess the social impact of the SciCAT project to the farm owners, adopters and surrounding community Assessed the social impact of the SciCAT project to the farm owners, adopters and surrounding community; Transferred technologies utilized by the local community; Technology adopters assessed in terms of engagement in profitable enterprises using the adopted technologies Forged active linkages/partnerships with other organizations Innovation ecosystem improved by incorporating agricultural S&T interventions while providing recreational activities for the farm visitors Economic Impact: Developed metrics to assess the economic impact of the SciCAT project to the farm owners, adopters and surrounding community Assessed the economic impact of the SciCAT project to the farm owners, adopters and surrounding community; Volume of production intensified; Determined gross and net income generated by the SciCAT farm; Jobs generated by the SciCAT project determined; Economic condition of the region improved	BPI-LBNCRDPSC	Farmers, farm entrepreneurs, private and government agencies/organizations, LGUs, SUCs, students, farming enthusiast and farm visitors	01-Jan-21	31-Dec-22	COMPLETED	4,999,925	2,220,159.76

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	S&T Action Frontline Emergencies (SAFE) for Forest Fire Hazard in the Watersheds in Bokod and Tublay, Benguet Province using Maguey (Agave cantala) as Greenbelt (S&T Action Frontline Emergencies (SAFE) for Forest Fire Hazard in the Watersheds using Maguey as Greenbelt in the Province of Benguet and Mountain Province, CAR)	Integrity of the Environment and Climate Change Mitigation and Adaption	The establishment of greenbelt is one of the promising technologies feasible to minimize or control forest fire in watersheds in CAR specifically in the Province of Benguet which is prone to fire hazards due to the forest fires. Penafiel (1990) identified and tested species for greenbelt establishment. Maguey (Agave cantala) is one of the species suitable in Benguet Province. This has thick evergreen plants which cannot be easily burned. This crop has evolved traits including crassulacean acid metabolism (CAM) that allows them to survive environmental stress even under extreme heat and drought. It can be grown in a range of tropical climates, with an annual rainfall up to 2500 mm, but it grows best in a semi-arid tropical climate. The plant can be propagated vegetatively by means of suckers or bulbils. This was brought by the Spanish from Mexico to the Philippines, Indonesia and Malaysia, where it later evolved into a fiber crop. Maguey was planted initially in some areas as a hedge to control soil erosion and fence plant. Cantala fiber is made into baskets, hammocks, bags, sandals, carpets, rugs, doormats, sacks and cordage, of which binder twine is the most important.	YEAR 1; Products: €€Two (2) maguey nurseries established; €€11,264 suckers/bulbils produced and planted; €€2.56 km greenbelts established People and Services: €€Twenty (20) farmers empowered on climate change and greenbelt establishment using maguey for forest fire; €€Fourteen (14) LGU officials trained; Places and Partnerships: €€Two (2) MOAs forged for forest fire hazard protection and greenbelt sustainability; €€Two (2) barangay partners in greenbelt establishment; €€Two (2) SPAs protected from forest fires; Publication: €€One (1) manual produced (How to Establish Greenbelt Using Maguey); €€One (1) poster produced (Greenbelt Establishment); €€One (1) flyer produced (Greenbelt Establishment) YEAR 2: Products: €€11,264 suckers/bulbils produced and planted; €€2.56 km greenbelts established; People and Services: €€Twenty (20) farmers empowered on climate change and greenbelt establishment using maguey; Policies: €€Two (2) barangay ordinances/resolutions drafted for the protection and adoption of greenbelt establishment; Publication: €€One (1) comic produced (Establishing Greenbelts) with; €€100 copies €€One (1) video clip produced; €€One (1) semi- technical article submitted for publication (Greenbelt Establishment); YEAR 3: People and Services: €€Twenty (20) farmers empowered on climate change and greenbelt establishment using maguey; Policies: €€Two (2) barangay ordinances/resolutions drafted for the protection and adoption of greenbelt establishment; Publications: €€One (1) manual produced (How to Produce Fibers from Maguey); €€One (1) poster produced (Fibercraft Production); €€One (1) flyer produced (Fibercraft Livelihood Project) €€One (1) semi- technical article submitted for publication (Fibercraft Production)	ERDB	Municipal and Barangay Local Government Units (BLGU) of Bobok, Bokod and Daclan in Tublay, Benguet	01-Apr-21	31-Mar-24	ONGOING	4,999,618	1,604,984.75
	S&T Community-based Bamboo Nursery and Plantation for Pole Production in Iligan City (Old Title: Establishment of a Smart Community Based Bamboo Nursery and Plantation for Pole Production in Iligan City)	Rapid, Inclusive and Sustained Economic Growth	For the past 10 years, the Bamboo Technology Resource Center of MSU €" Iligan Institute of Technology has been extending technical assistance and has provided skills trainings in handicraft making, housewares products, finishing techniques, bamboo charcoal production to these aforementioned barangays, the CARAGA region and some municipalities of the Autonomous Region of Muslim Mindanao (ARMM). The LGU of Iligan is one of the cities in the Philippines that has created its own local bamboo council and has strived to strengthen the industry by giving a seed fund (20% City Development Plan). The city in partnership with the Department of Trade and Industry has conducted a value chain mapping activity to determine gaps in the local bamboo industry in Iligan City. One major constraint identified is the lack of bamboo pole supply and no established bamboo nursery and plantation. Moreover, Region 10 where Iligan City belongs has the highest number of Shared Service Facility (SSF) totaling 21 bamboo hubs and nodes. Of these, Iligan City has 3 engineered bamboo producers and 2 bamboo slats processors. A single producer has a production capacity of 25 square meter monthly. The project on bamboo nursery and plantation is to fill in the gaps identified in the bamboo value chain specifically, the lack/inadequate supply of bamboo poles and the absence of bamboo nurseries and plantation through the STCBF modality. One of the goals stipulated in the Philippines Bamboo Industry Roadmap 2016-2040 and PCAARRDs bamboo ISP is to increase hectares of bamboo plantation to increase pole production in order to meet the demands and growing utilization of bamboo and the bamboo based industry. The community-based project on bamboo nursery and plantation for pole production will employ smart or precision farming approach with five major components: 1) organization and capability building of farmer clusters; 2) rehabilitation of bamboo clumps of Kawayan tinik (Bambusa blumeana), Bontong (Gigantochloa levis) and Giant Bamboo (Dendrocalamus asper); 3) bamboo nursery establishment; 4) bamboo plantation establishment; and 5) harvesting and post€"harvest treatment.	Products30,000 bamboo propagules produced4,000 bamboo propagules planted and grown350 clumps of kawayang tinik, 350 clumps of bontong and 350 clumps of Giant bamboo rehabilitatedPeople and Servicesproduced business plan and sustainability plan70 farmer cooperators per barangay trained1 farmer field day conductedPublicationTechno guides on kawayang tinik and bontong production producedPlaces and Partnershipsforged 3 MOA/MOUsPoliciesat least 1 policy recommendation developed	MSU-IIT	Bamboo farmers, engineered bamboo and GDH manufacturers and producers, bamboo entrepreneurs	01-Aug-19	31-Oct-22	COMPLETED	4,990,000	518,685.00
	S&T Community-Based Farm (STCBF) on Enhancing Coffee Production in Sultan Kudarat	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented in the three major coffee producing municipalities of Sultan Kudarat namely Sen. Ninoy Aquino, Kalamansig & Lebak. The project has a goal to increase coffee productivity of the farmer-participants in the project sites from 0.5-ton green beans to 1.5 tons green beans per hectare through STCBF technology transfer modality within the project duration. This involves the introduction of key technologies in the whole coffee production chain (such as selection and use of high yielding clone, rejuvenation of old unproductive trees then proper fertilization of coffee farms and provision of all-weather dryer) that will ensure high productivity of coffee farms and improved quality of coffee beans. These technologies should fill up the critical S & T gaps in the production operations of coffee farmers in Sultan Kudarat Province as well as in most coffee growing areas in the country.	Products40,000 rooted coffee seedlings (Arabica and Robusta) producedPeople and Services1 clonal garden and nursery established3 groups of farmer cooperators (w/20 farmers per group) organized and trained27 trainings (3 trainings per site, 3 batches) conductedPlaces and Partnerships7 MOAs (Between SKSU and 4 farmer cooperators and 3 LGUs) signedLinkages with 1 PLGUs and 3 MLGUs, Peoples Organization, DTI, DOST R12, and NESTLE sustainedPublications2 IEC materials produced, distributed and reprinted2 training modules1 video clip1 coffee manualPoliciesProposed/draft a policy on intensive promotion of GAP in coffee (ie. Coffee Festival) and local land usePatentsApplied 5 copyrights	SKSU	Coffee farmers	01-Jun-20	31-May-23	ONGOING	9,143,527	1,372,021.80
	S&T Community-based Farm for Sustainable Lowland Vegetable Production in Cagayan Province	Rapid, Inclusive and Sustained Economic Growth	Lowland pinakbet vegetables including okra, eggplant, tomato, ampalaya, sitao, squash, and pepper are usually grown in region 2, particularly in Cagayan province, due to climatic and environmental suitability as well as the availability of other resource factors required for their favorable growth and development. Hence, the high demand for the said group of vegetables.Good Agricultural Practices (GAP) and S&T-based technologies generated by DOST-PCAARRD and Cagayan State University will be utilized in the implementation of the project. It intends to involve three (3) vegetable-growing municipalities in the province, wherein five (5) barangays in each municipality will be selected for the establishment of S&T community-based farms.	Publication: 3 Publication Articles Patent: 1 Copyrighted Video Documentation Product: 15,365.84 kg harvested and marketed lowland pinakbet vegetables per farmerÃ¢,¬„¢s production area (3,200 sqm) within the project duration. The breakdown of harvest/commodity/cropping for every 400 sqm production area is as follows: Ampaya Ã¢,¬€œ 483.8 kg; Bush Sitao Ã¢,¬€œ 418 kg; Pole Sitao Ã¢,¬€œ 492.8 kg; Okra Ã¢,¬€œ 380.76 kg; Eggplant Ã¢,¬€œ 335.56 kg; Tomato Ã¢,¬€œ 431.6 kg; Pepper Ã¢,¬€œ 499.52 kg; Squash Ã¢,¬€œ 563.32 kg. *note that all harvested vegetables will be sold/ marketed 1 GAP Certification 3 developed IEC materials on POTs generated 24 hectares of land area planted with lowland pinakbet vegetables (75 farmers with 3,200 sqm per farmer production area) People: 150 Profiled men and women vegetable growers 10 Capacity building on social preparation, simple bookkeeping and accounting and GAP on vegetable production conducted with at least 150 participants 150 copies of IEC materials on POTs generated by CSU and DOST-PCAARRD reproduced and distributed 75 assisted men and women vegetable grower cooperators 3 organized and assisted men and women vegetable growers association Place: 75 Forged Memorandum of Understanding with men and women vegetable grower cooperators 3 Forged Memorandum of Agreement with partner LGUs Policy: 1 policy (Municipal ordinance on Vegetable Production following GAP)	CSU	Vegetable growers in the target municipalities Consumers	01-Aug-22	31-Jul-24	ONGOING	5,000,000	3,841,540.00

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	S&T Community-Based for Inclusive Development (STC4iD) on Livelihood Improvement of Mangyan Communities in Mindoro through Science and Technology (S&T) Interventions	Rapid, Inclusive and Sustained Economic Growth	Anchored on STC4iD Program that emphasizes inclusive development, this project focuses on IPs, contributing to the broadening of the inclusivity spectrum of the program. Particularly, this is in addition to the two different sectors assisted by the program which include conflict and conflict-vulnerable areas and geographically isolated and disadvantaged areas. This project focusing on IPs aims to apply extension modalities in their communities to establish sustainable AANR livelihoods. What sets this initiative apart from the STC4iD and LIFE-PULL is the inclusion of literacy component involving provision of basic literacy and numeracy activities to children and adults but also provision of scholarships to deserving students. This aims to provide lasting and stronger impact to the communities. Specifically, it aims to improve food access and availability, increase household incomes, and to empower the IPs through education. These interventions also aim to prepare the IP communities to other possible assistance they can avail from other organizations.	Publication: 5 Traditional Cooking Recipe; 3 Basic Numeracy, Reading and Writing 5 Traditional/Indigenous Medication; Patent: Copyright of IEC MaterialsProduct:; 1-hectare sustainable farm with two or more specific commodities; Fresh produce of root crops, vegetables, calamansi, corn and condiments; Processed products of calamansi, rootcrops, soursop and vegetables Handicrafts People: 200 Mangyans trained for the following: Package of Technology (POT) for root crops production;POT for Banana, Coconut and Corn; POT for Calamansi, Soursop, Vegetable Crops; Food Processing and Value Adding Handicrafts Making; Agricultural Marketing and Strategies; 100 Mangyans were taught the basic literacy and leadership skills; Produced at least 5 Mangyan Leaders which would lead their community in progress; 10 Mangyans completed the Certificate in Entrepreneurship from the University Place: MOA between collaborating agencies Provincial Agriculture, LGU, Department of Agriculture, DOST, PCAARRD, NCIP, PMUI and DTIPolicy: 1 Policy draft for support to Mangyans for their livelihood and literacy program recommended to LGUs involved in the project Policy to strengthen the utilization of trading center for Mangyan	MinSU	Selected Mangyan communities from Oriental Mindoro	01-Oct-22	30-Sept-2025	ONGOING	14,570,984	6,399,328.00
	S&T Community-based Gmelina Farms in the Province of Isabela	Rapid, Inclusive and Sustained Economic Growth	The establishment of the STCBF will serve as a model for the establishment of ITP in Region 2 with Yemane (Gmelina arborea) as main commodity. It aims to increase the income of farmers as sources of Gmelina raw materials for the furniture industry in the region.	Products10,000 seedlings of quality planting materials from genetically superior Gmelina produced People ad Services30 tree farmers in Isabela Identified and capacitated 8 trainings conductedPlaces and Partnerships5 MOAs with partner agencies signed PublicationsS IEC materials produced1 publishable article on the profitability of Gmelina-based agroforestry systemsPoliciesProvided policy inputs/recommendations on the use of genetically superior seeds of	ISU	Tree farmers in Cabagan and Mallig, Isabela	01-Aug-19	31-Jul-22	COMPLETED	4,998,834	1,040,894.45
	S&T Community-based Nursery, Plantation and Seedling-Seed Orchard (SSO) Establishment and Management of Falcata (Falcataria moluccana) in Tagbalili, Esperanza, Agusan Del Sur	Rapid, Inclusive and Sustained Economic Growth	Caraga Region has a total land area of 1,913,842 hectares, with a total forestland area of 1,331,491 hectares of which 999,705 or about 75% are classified as production forest. With this, tree farming has been a way of life of the Caraganons. The Philippine Forestry Statistics shows that majority of the log requirement of the country are being supplied by Caraga Region, hence dubbed as the Timber Corridor in the southern Philippines. Owed to its vast area of land, favorable climatic condition, social and economic appreciation and acceptance of tree farming and available wood-based industries and market, it is projected that more falcata plantations will be established and demand for planting materials is expected to rise. Carandang (2011) mentioned that tree farming provides plenty of livelihood opportunities for local people, from seedling production to planting, maintenance, harvesting, and marketing activities that entail hiring of local labor. Even the communities dependent on traditional forestry benefit from employment in these tree farms as part time labor during peak labor seasons of maintenance and harvesting. He further cited that tree farming and high value forest plantations seem to offer the best prospects of generating real livelihoods for people from forestry (Brown, 2011, comments). It is important, however, for the government to address many constraints in this respect (e.g., policy, social, environmental, etc.). The operationalization of the Mindanao Tree Seed Center of DENR with funding support from DOST-PCAARD already established system in the selection, collection, processing and recording of tree seeds from quality sources especially Falcata which is the major tree species planted by farmers in the region. Through the Forest and Wetland Research, Development and Extension Center (FWRDEC), improved seeds have been disposed to tree farmers as a strategy to improve productivity and profitability of established plantations. There is a great need to support farmers using community-based approach. The Community-based S&T-based Farms as a technotransfer modality will assist the nursery growers and tree farmers in building strong and unified alliance towards supporting the wood-based needs. With the existence of the MTSC facility and the availability of information, technologies and good quality seeds, improved productivity and profitability ensuring stable supply of raw materials for wood production can be made realized through convergence of potential partner agencies and other entities.	Products30,000 Seedlings produced from selected sourcesPeople and Services1 S&T community-based farm with expansion1 SSO established1 farmer group with 30 farmer cooperators organized30 farmer cooperators capabilities enhanced1 farmers' field day conductedPublication1 Techno guide packaged1 documentary video producedPlaces and Partnerships1 MOA forgedPolicies1 provided policy inputs	ERDB	Tree farmers in Tagbalili, Esperanza, Agusan del	01-Jul-19	30-Jun-22	COMPLETED	4,998,854	805,048.76
	S&T Community-based Nursery, Plantation Establishment and Management of Giant Bamboo (Dendrocalamus asper, Schult Backer) in Dalwangan, Malaybalay City, Bukidnon	Rapid, Inclusive and Sustained Economic Growth	Bamboo is one of the fastest-growing and highest yielding renewables and at the same time is a highly versatile natural resource. In the Philippines, bamboos are intertwined with our environment, economy, and culture. They are used in construction, furniture, and handicraft manufacture. The Philippines ranks 5th in the world as the largest exporter of bamboo products and because of its many uses, bamboos have been popularly used by many communities. Investors are coming to the country with a very promising livelihood opportunity for the people. Although bamboo is abundant in the country, the existing resource cannot cope up with the demands of these investors both in the quality and quantity of the resources. The Philippine Bamboo Foundation reported that up to 52,000 hectares of land in the country are planted with bamboo but this could not meet the increasing market demand. As of 2010, the market needs 575,000 handicraft poles and 3.5 million furniture poles. Giant bamboo (Dendrocalamus asper) is among the ten commercially-important bamboo species identified by the Philippine Bamboo Industry. It is a very large, dense-clumping, evergreen species native to Southeast Asia. It grows up to 20 m tall and 12 cm in diameter. Younger plants are covered with fine velvety brown hairs. It is widely cultivated for its highly valued culms that are used as a building material and its shoots that are used as a vegetable. Upper internodes of the culm are used as containers for water or to collect juice being tapped from palm inflorescence. In Bukidnon, these are used as tomato stakes, poultry floors, and in making engineered bamboo products. Moreover, PCAARRD has identified improved nursery, plantation, and post-harvest management practices for bamboo as one of the important technologies in their Industry Strategic Science and Technology Plans (ISPs). Also, the Farm and Industry Encounter through the Science and Technology Agenda (FIESTA) conducted last 2018 highlighted bamboo production as one of the technologies for extension/adoption. This has increased the interest of the farmers because of the promising benefits they will gain from this commodity. Thus, there is a need to focus on S & T activities to support the development of the Philippine Bamboo Industry through a community-based approach. The S & T Community-based Nursery and Plantations as a techno-transfer modality will assist the bamboo nursery growers and plantation farmers in building a strong and	Products€€25,000 planting materials from selected bamboo stands in the established S&T community-based bamboo nursery produced €€ 80 bamboo shoots from 10 established demonstration plots produced People and Services€€ 1 S&T community-based bamboo nursery established€€ 3-ha S&TCB bamboo demo plantation established€€ 15 1-ha S&T community-based bamboo expansion plantation establish€€ value added products for bamboo shoots(food processed bamboo shoots) €€ 1 farmer group with at least 15 cooperators organized€€2 capacity building and capacitated 45 bamboo farmers conducted €€ 1 Farmer's Forum on Bamboo-Industry Development to be attended by 70 participants conducted Publications€€1 technology guide on Bamboo Planting, Harvesting, and Processing and produced 100 copies for distribution packaged €€ produced 1 documentary video material highlighting the STCBF modalityPlaces and Partnerships€€ 1 MOA with project partners forged Policies€€ 1 policy recommendation to the LGU to intensify the support to bamboo related activities drafted Patent€€ Copyright of the technology guide filed/registered	ERDB	Bamboo growers in Dalwangan, Malaybalay City, Bukidnon	01-Aug-21	31-Jul-24	ONGOING	4,999,998	782,955.53

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	SAFE: S&T Interventions to Improve Quick Response to Calamities and Natural Disasters in CALABARZON, MIMAROPA and Bicol Region	Integrity of the Environment and Climate Change Mitigation and Adaption	SAFE: S&T Interventions to Improve Quick Response to Calamities and Natural Disasters project will cover the production of fresh vegetables for quick and free distribution as relief goods to calamity-stricken regions in Luzon. Since production of fresh vegetables is all-year-round, the vulnerable and underprivileged communities in Laguna during normal situations will be the beneficiaries. Moreover, continuous vegetable seed production and other plant materials support sustainable backyard gardening in households in different regions.	Publication: 2 Video documentation of events and distributions in calamity-stricken areas; 5 Documentation reports and lessons learned; 3 IEC materials developed and distributedPatent: N/AProduct: 5 POTs demonstrated; >19,200kg assorted vegetables produced for distribution to identified beneficiaries People: at least 20 barangays assisted; at least 10 families assisted Place: 3 Institutional collaborations	BPI- LBNCRDPSC	Disaster prone/stricken communities Households/ families Students Farmers Senior citizens Children/minors	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,889,999.50
	SciCAT AGRI-VIDA: A project on the Advancement and Generation of Reliable source of Income through Value-added Innovations and continual Dissemination of Agri-technologies towards sustainable Farm Tourism	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by the University of Southeastern Philippines (USeP) in Banay-banay, Davao Oriental, with a total PCAARRD-GIA funding of Php 4,985,048.00. It generally aims to provide more sustainable opportunities to Dimpas Farm and other farm tourism sites and farming enthusiasts towards the advancement and generation of robust sources of income through value-added innovations and continued dissemination of science-based farm technologies including post-harvest handling and processing. Specifically, the project will focus on generating a strong and sustainable source of income thru value-adding so that more farming enthusiasts will replicate this modality and adopt POTs being introduced on the farm. Collaboration and linkages for the MS farm to various farm tourism sites, food processors, entrepreneurs, and agencies from public and private entities will also be facilitated to ensure inclusive and holistic growth.	People and Services: 500 Trained farm owners/farming enthusiasts 8 Conducted series of webinars; 5 No. of actual/ face-to- face trainings conducted; 400 No. of farm visitors/ viewers per virtual tour (100/virtual tour); 40 POT adopters; 50 monthly average No. of engagements on social media sites (i.e. likes, shares, comments, inquiries); 5 Jobs generated Products: 6 New POTs downloaded; 4 Value-adding/processing of existing farm produce; 5 No. of products promoted through online digital platform 9,840 packs of value-added products produced out from farm commodities Publications: 10 IEC materials (brochures, leaflets or posters & videos for social media); 4 videos for virtual tour; 5 Training modules prepared Patents: 5 Copyrights (from IEC materials); Places and partnerships: 3 MOA/MOU forged; Social Impact: Developed metrics to assess the social impact of the SciCAT project to the farm owners, adopters and surrounding community Assessed the social impact of the SciCAT project to the farm owners, adopters and surrounding community; Transferred technologies utilized by the local community; Technology adopters assessed in terms of engagement in profitable enterprises using the adopted technologies Forged active linkages/partnerships with other organizations Innovation ecosystem improved by incorporating agricultural S&T interventions while providing recreational activities for the farm visitors Economic Impacts: Developed metrics to assess the economic impact of the SciCAT project to the farm owners, adopters and surrounding community; Assessed the economic impact of the SciCAT project to the farm owners, adopters and surrounding community; Volume of production intensified; Determined gross and net income generated by the SciCAT farm Jobs generated by the SciCAT project determined; Economic condition of the region improved	USeP	Farmers, farm entrepreneurs, private and government agencies/organizations, LGUs, SUCs, students, farming enthusiast and farm visitors	01-Jan-21	31-Dec-22	COMPLETED	4,985,048	1,785,401.66
	SciCAT AVENUES: Access to Value-adding and Engaging iNnovations towards sUstainability of agri-Education and agri-touriSm	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 2 years (January 1, 2021 - December 31, 2022) by Cavite State University in Indang, Cavite, with a total PCAARRD-GIA funding of Php 4,999,507.20. It generally aims to provide more avenues in imparting science-based technologies through farm development and technology application in a sustainable way through the Science for the Convergence of Agriculture and Tourism (SciCAT) site - Silan AgriFarm. Specifically, the project will focus on expanding training for more groups of farm enthusiasts as the project assists technology adoption among trainees. It also targets an increase in job opportunities that will be made available to other community members. More packages of technologies are also expected to be disseminated to increase the value of agricultural products that could lead to an increase in income not only of farm owners but also of resellers and food processors.	People and Services: 500 Trained farm owners/farming enthusiasts; 8 conducted webinars; 40 POT adopters; 50 monthly average No. of engagements on social media sites (i.e. likes, shares, comments, inquiries) 10 Jobs generated; Products: 10 New POTs downloaded; 2 Value-adding/processing of existing farm produce; Produced the following fresh farm produce and processed goods: a. 2,800 kg of dragon fruit under drip irrigation technology; b. 1,200 kg of banana; c. 200 bottles of pickled papaya d. 200 bottles of pickled bitter gourd; e. 200 bottles of pickled eggplant Publications: 10 IEC materials (brochures, leaflets or posters & videos for social media); 10 Training modules prepared; Patents: 10 Copyrights (from IEC materials); Places and partnerships: 8 MOA forged; 4 Partnerships with public and private sectors (DOT and DOST); Social Impact: Developed metrics to assess the social impact of the SciCAT project to the farm owners, adopters and surrounding community; Assessed the social impact of the SciCAT project to the farm owners, adopters and surrounding community; Transferred technologies utilized by the local community; Technology adopters assessed in terms of engagement in profitable enterprises using the adopted technologies Forged active linkages/partnerships with other organizations Innovation ecosystem improved by incorporating agricultural S&T interventions while providing recreational activities for the farm visitors Contributed to the leveling of the University; Economic Impact: Developed metrics to assess the economic impact of the SciCAT project to the farm owners, adopters and surrounding community Assessed the economic impact of the SciCAT project to the farm owners, adopters and surrounding community; Volume of production intensified Determined gross and net income generated by the SciCAT farm	CavSU	Farmers, farm entrepreneurs, private and government agencies/organizations, LGUs, SUCs, students, farming enthusiast and farm visitors	01-Jan-21	31-Dec-22	COMPLETED	4,969,507	2,185,826.60
	Science and Technology Action Frontline for Emergencies and Hazards (SAFE) - LIGTAS: S&T Interventions to Improve Quick Response to Calamities and Natural Disasters in Regions 1, 2, and CAR	Integrity of the Environment and Climate Change Mitigation and Adaption	The project intends to provide its share to the government initiatives and other organizations to develop an immediate S&T intervention that improve calamities and other natural disasters quick response. Likewise, this project will establish and intensify the implementation of the poultry (native chicken and duck), rice, tilapia grow-out, and mungbean production. Some of the project components are part of the recently completed joint project of DOST-PCAARRD started by Cagayan State University which were a component of the previous DOST-PCAARRD funded project. Such is a potential to produce agricultural products that will support disaster-prone communities in reducing vulnerability to the impacts of natural hazards and climate-related disaster. This project will be implemented through the 2 agricultural campuses of the university.	Publication: One (1) video documentation for the project; One (1) documentation report and lessons learned; Three (3) publication article; Patent: 1 copyright registration of one (1) video documentation; Product: At least 2,000 packs of Agricultural products prepared and distributed to calamity-stricken areas; At least 8 POTs generated; At least 420 chicken pullets raised; At least 31,075 chicken eggs produced; At least 1,000-day-old chicks raised; At least 500 hardened chicks raised; At least 525 chickens raised for slaughter; At least 380 culled chickens; At least 440 duck pullets raised; At least 400 culled ducks; At least 60,433 duck eggs produced; At least 15,000 balut; At least 15,000 salted eggs; At least 2,750 kg tilapia produced; 3 hectares of peanut production to generate yield of 9,000 kilograms in a year; 3 hectares of mungbean production to generate yield of 4,000 kilograms in a year; 1.5 hectares of corn production to generate yield of 90,000 ear of corn in a year; 3 hectares of rice production to generate yield of 30,000 kilograms of paddy rice in a year 0.75 hectares of sweet potato production to generate 7,500 kilograms in a year; 20,400 kilograms of milled rice produced in a year; People: At least 2,000 families assisted through distributed relief packages Place: At least 2 institutional collaborations established/strengthened with MOA Policy: 1 policy (GAP on crop, poultry, and aquaculture production)	CSU	Chicken growers in the target municipalities Duck growers Tilapia growers in pond Rice, corn, sweet potato, mungbean, and peanut growers Consumers/Buyers Calamity/Disaster victims Processors	01-Oct-22	30-Sep-24	ONGOING	5,000,000	2,837,140.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Science and Technology Community Based Farm (STCBF) on The Production of Sweetpotato Flour as Substitute for Wheat Flour	Rapid, Inclusive and Sustained Economic Growth	The project focused on the production of sweetpotato for processing into sweetpotato flour.	Publication: Year 1: One (1) Flyer; One (1) research publication; Year 2: One (1) Video of success stories; One (1) Magazine; Patent: Year 1: Filed Utility Models for 2 Products Year 2: Filed Utility Models for 3 Products Product: Year 1: 99,000 planting materials produced 6 tons of SP harvested/hectare 24,000kg of SP tubers harvested for processing (2 ha with 2 croppings) 3,600 kg of SP flour produced (30%) Two (2) processed bread and pastries products with 10-15% SP flour content as substitute to wheat flour Year 2: 200,000 planting materials produced 8 tons of SP harvested/hectare 32,000 kg of SP tubers harvested for processing (2 ha with 2 croppings) 9,600 kg of SP flour produced (30%) Three (3) processed bread and pastries products with 10-15% SP flour content as substitute to wheat flour prepared by the selected bakeries People: Year 1: 16 farmer cooperators were assisted 13 women SP processers Year 2: 3 trainings conducted for technology management, processing and financial management Place: Year 1: One (1) MOA signed for DOST & SSU; One (1) MOA signed for SSU and LGU Year 2: One (1) MOA signed for DTI Samar Policy: Year 1: Guidelines for the AssociationÃ¢,¬„¢s organizational and operational mechanism; Year 2: Institutionalized operations for SP production and SP processing; Provided inputs or recommendations to policy for municipal ordinance on making SP as banner commodity of Basey	Samar State University	Sweet Potato Farmers and WomenÃ¢,¬„¢s Associations in Basey, Samar	01-Oct-22	30-Sep-24	ONGOING	5,000,000	3,157,692.00
	Spin-off Commercialization of Nutrio for Improved Production of Sugarcane (Saccharum officinarum) and other Agricultural crops in the Philippines	Rapid, Inclusive and Sustained Economic Growth	General Objective: To improve the production and commercialization of Nutrio for sugarcane and other agricultural crops. Specific Objective: 1.To be able to purchase equipment and materials needed for large volume production of Nutrio Foliar Biofertilizer for agricultural use. 2.To be able to develop and improved Nutrio product label and design 3.To be able to develop videos/brochures for promotional purposes and effective strategy for marketing and promotion of Nutrio. 4.To do commercial production of Nutrio	Publication: 1. Video recorded testimonies of farmers who use Nutrio in their crops 2. Developed a video presentation and documentation 3. New and improved Nutrio label and designPatent: Brand or Trade Name : Nutrio with Certificate of Registration No.: 4/2014/00013730 Notice of Patent Approval dated February 26, 2021 Title of Invention - "Microbial-Based Foliar Fertilizer" * Waiting for the Patent Certificate from IPOPhil.Product: Product : "Microbial-Based Foliar Fertilizer" Brand or Trade Name: NutrioPeople: Training for distributorship of Nutrio Training of target personnel for the commercial production of NutrioPlace: Licensed by the University of the Philippines to manufacture and distribute Nutrio for sugarcane in Partnership with Fullmight Agricultural Corp. (FAC)- Spin-Off Company at our Extension Address: 1856 Hillside Village, Tuntungin-Putho, Los Banos, Laguna Policy: N/A	Fullmight Agricultural Corporation	Individual farmers (annual crops and sugarcane growers), small and large plantation of sugarcane areas of Luzon, Visayas and Mindanao.	01-Mar-22	28-Feb-23	ONGOING	2,577,998	238,600.00
	TECHNOLOGY COMMERCIALIZATION OF BETEL NUT ANTHELMINTIC FOR CHICKEN	Rapid, Inclusive and Sustained Economic Growth	General Objective: General: The general objective is the commercialization of betel nut anthelmintic for chicken in Panay Island/whole Philippines. Specific Objective: To promote the technology on betel nut anthelmintic for chickens. To conduct trainings/seminars on the utilization of betel nut anthelmintic for free-range native chickens in the provinces of Iloilo and Capiz. To provide veterinary services to the native chicken flocks in the provinces of Iloilo and Capiz.	Publication: IEC Materials on Betel Nut DewormerPatent: The Utility model on Betel Nut (Areca catechu) deworming composition for chickens (IPO:2-2015-000500).Product: Commercialization of botanical dewormer for free range native chickens Sustainable supply of locally produced betel nut dewormer for free range Philippine Native Chicken (10,000 kilograms of betel nut dewormer) People: Trained poultry raisers on the use of betel nut dewormer for free range native chickens. Place: Promoted the technology on botanical dewormer as input to Ã¢,¬Å"naturalÃ¢,¬• free-range native chicken production. Policy: System for providing necessary veterinary services to native chicken raisers in Panay Island	BDOZ Veterinary Products Trading	Target Market and Beneficiaries Primary Target Market: Small to medium scale native chicken raisers: Male or female chicken raisers in Region 6/Philippines, age 25-65, raising a minimum of 30 chickens. Secondary Target Market: LGUs with chicken dispersal projects Native chicken breederÃ¢,¬„¢s associations Agrivet Supplies	01-Mar-22	28-Feb-23	ONGOING	3,822,679	716,389.60
	Technology Innovation Leaping up Aquaculture Resources through Upscale Production and Commercialization of Daerrys Tilapia Ice Cream (TILAPIA)	Rapid, Inclusive and Sustained Economic Growth	General Objective: The ultimate objective of this project is to fully commercialize the Daerrys Tilapia Ice cream and Tilapia Cookies to increase its market share. Specific Objective: To collaborate with backyard Tilapia and Carabao farmers in the upscale production and commercialization of Tilapia ice cream downstream products to be part of the Daerrys supply chain; 2. To acquire Certificate of Product Registration (CPR) from Food and Drug Administration (FDA) to make the Tilapia Ice Cream downstream products available in the supermarkets nationwide 3.To conduct R&D to improve shelf life and to upscale existing variants and downstream products for market sustainability and expansion; 4. To increase quarterly production capacity by 35% through the upgraded facility and equipment to cater to market demand brought by partnerships with businesses and agencies; 5. To provide job opportunities by hiring two additional employees and increase the existing wages and benefits of current production staff.	Publication: Developed and distributed at least 2 IEC Materials. Publish one article in Refereed journal.Patent: Submitted Application for Patent/Utility Model for different existing Tilapia Ice Cream products. Product: Commercialize and make the Tilapia Ice Cream products available in the malls and other distribution channel Obtain License to Operate from Food and Drug Administration and applied for Certification of Product Registration (CPR) for at least 3 to 4 ice cream variants. People: Conducted training for backyard fish farmers and carabaoÃ¢,¬„¢s farmers on Tilapia Grow Out management, Food Safety, Good Manufacturing Practices (GMP) and 5s, Packaging and Business Management. Provide job opportunities and increase wages of current production staff. Place: Established linkages/partnership with backyard farmers for the sustainability of raw materials for the upscale production of Daerrys Tilapia Ice cream and downstream products. Signed Memorandum of Agreement or Joint Venture Agreement with the private sector /backyard farmers for the commercialization of the Daerrys Tilapia Ice cream products. Signed memorandum Agreement with the Nueva Ecija Disability Affairs Office/ LGU for the partnership with the companyÃ¢,¬„¢s CSR program Ã¢,¬Å"SCOOP TogetherÃ¢,¬• Policy: Developed guidelines in Leaping up Aquaculture Resources through value adding and technology commercialization of Daerrys Tilapia Ice Cream and downstream products Developed policies in elevating malnutrition in Nueva Ecija in partnership with LGU.	Vera Bella Enterprises Limited Company	The target Beneficiaries of the project are: 1. Carabao backyard farmers- supplier of carabaoÃ¢,¬„¢s milk for the production of Daerrys products. 2. MABUNGA Cooperatives for tilapia grow out management and tilapia processing 3. PWDÃ¢,¬„¢s and their families 4. Women out of the workforce due to pandemic 5. Distributors : Hotels, souvenir shops, supermarkets, malls and specialty restaurants ; on line shoppers (Shopee and Lazada)	01-Mar-22	28-Feb-23	ONGOING	3,999,861	1,187,780.00

Program Title	Project Title	Key Result Areas (KRA)	Description of Program/Project/Objectives	Expected Output/Target	Implementing Agency	Beneficiaries	Start	End	Status 'As of December 31, 2022	Total Project Cost	2022 PCAARRD GIA
	Testing and Evaluation of Machinery Generated from PCAARRD-funded Projects Phase 2	Rapid, Inclusive and Sustained Economic Growth	For years, the Department of Science and Technology€™s (DOST) Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (PCAARRD) has funded various projects that developed agricultural machines that would later be commercialized locally. In 2017, PCAARRD-DOST also funded the project titled €œTesting and Evaluation of Machinery Generated from PCAARRD-funded Projects€• in which 11 machines were AMTEC-tested; and eight Philippine National Standards (PNS), Specifications and Methods of Test, were developed. The project is the continuing phase of the aforementioned project. It aims to conduct the testing and evaluation of new machineries generated from PCAARRD-funded projects that are ready for commercialization, as well as develop the standards for such. The project also aims to conduct the retesting of machineries included in the previous phase of the project to obtain unmeasured performance parameters and determine machine performance after certain improvements and further modifications of the technology generators.	People and Services 1. At least 20 machine testing conducted; 2. Eight (8) consultations conducted; Policies 1. Eight (8) PNS/PABES, Specifications and Methods of Test, for the following machines without the aforementioned standards are developed: a. Dehydrator; b. Green Coffee Sorter; c. Peanut Stripper/Thresher; d. Sea Cucumber Dryer; Publications 1. At least 20 test reports of AMTEC-tested machines are finalized and released; 2. Eight (8) PNS/PABES, Specifications and Methods of Test, are	UPLB	AANR Stakeholders	01-Sep-20	31-Dec-22	COMPLETED	4,350,755	1,011,163.80
	Toxicity Testing, Product Registration, and Packaging and Labelling of Locally-Developed Bioinsecticide for Eggplant	Rapid, Inclusive and Sustained Economic Growth	The project will be implemented for 1 Year and 6months November 16, 2021 €" May 15, 2023 (18 months) by Nueva Vizcaya State University in Quezon Street, Bayombong, 3700 Nueva Vizcaya with a total PCAARRD-GIA funding of Php 3,093,077.60. The project aims to be more readily utilizable by the farmers, improve the formulation process into a larger scale as mass production and commercialization, the use of chemical insecticides will be lessened	Publication: 1 IEC Material produced and distributed; Products: produced 100 kgs bioinsecticide; Toxicity test conducted;OCCP certificate acquired; Field Testing result generated; BAFS certificate issued Places and Partnerships : 2 cooperators (Collaboration with LGU-Bayombong and LGU Solano for pilot testing); Contract with BAFS Certified Researcher, Dr. Marilyn G. Patricio; Contract with UPLB Foundation, Inc.; Fairness Opinion report	NVSU	The target beneficiaries are the eggplant farmers in Nueva Vizcaya and the whole Cagayan Valley region.The target beneficiaries are the eggplant farmers in Nueva Vizcaya and the whole Cagayan Valley region.	01-May-22	31-Oct-23	ONGOING	3,049,136	2,522,718.40
	Up-Scaling Production of Juan Algae Paste for Aquaculture Application	Rapid, Inclusive and Sustained Economic Growth	General Objective: Enhance, improve and scale-up production yield of microalgae paste in order to supply the growing need of the industry for a sustainable and responsive aquaculture practices. Specific Objective: Upgrade the laboratory facility to optimize culture conditions for suitable large-scale production Increase the production and harvest capacity of algal paste to 300kgs Produce additional microalgae species Fabricate additional Algal Concentrator Market penetration & validation of algal paste application	Publication: > Publication of a manuscript/extension manual/ IEC materials.Patent: > Fabrication/Modification of Utility Model for increase product yield > Scientific process that can be applied for Intellectual PropertyProduct: > Additional Microalgae species as paste product > Improved product quality, enhanced shelf-lifePeople: > Training-Demo and lectures to industry practitioners pertaining to Algal Paste utilizationPlace: > Strengthened partnerships and collaborations with aquaculture industryPolicy: > Come up with a Policy Brief on the use of algae paste for aquaculture > Strict Implementation of Good Manufacturing Practices (GMP)	Algacon Aquafeeds Manufacturing	The intended primary markets are milkfish, shrimp, crab hatcheries, nurseries and other high-valued species. Secondary market includes growers of other aquaculture species and aquarium fish operators & traders.	01-Mar-22	28-Feb-23	ONGOING	2,790,544	902,862.40