

**LIST OF RESEARCH PROJECTS FOR IMPLEMENTATION  
FOR CY 2018**

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
A.	ERDB Main Office											
I.	R and D Program on Forest Ecosystems Resiliency and Ssustainability											
	Project 1. Generation of Conservation Standards and Protocols for Forest Biological Systems											
	Project 1.1. Genetic Improvement of Forest Tree Species for Quality Wood Production											
1.	<i>Study 1. Germplasm collection, seed production and seedbanking of superior forest trees and development and management of database and information system for quality planting materials</i>	Availability of improved seeds  Information on the list of sources and other related data for the production of quality planting materials	One of the major reasons for the failure of many reforestation and greening programs is the use of inferior planting stocks. Most often than not, such programs are pushed through regardless of the quality of planting materials used. As a result, , significant number of mortality, poor growth, and survival affect the overall forestation program of both government and the private tree farming industry.  The establishment of the two additional seed banks which is envisioned in the project is expected to address the planting material needs of the regions in Luzon and the Visayas. Specifically, the tree seed banks will be established in ERDB (Laguna) Luzon and ERDS-R7 (Cebu) for the Visayas. These shall primarily serve as depository banks for seeds from the identified and delineated seed production areas (SPAs). The centers will provide technical assistance in managing seed sources and potential seed production areas, establish orchards, document seed collections in each region, and certify quality of seeds to be distributed to other regions, NGOs, and other clientele. The centers will also serve the various clienteles in testing seed samples.  Using a database in a research institution like ERDB is therefore a must in order to put in order all the information derived from differnt completed studies and projects on forest tree improvement. Putting in place all the data gathered from Banner Program 4 (Development of Strategies for the Production of Quality Planting Materials) particularly on the potential plus trees, location using GIS-based maps, phenological	ERDB	Jan. 2013 Dec. 2018	Kalinga Apayao Ilocos Norte Quirino Bataan Pampanga Cavite Laguna Quezon Oriental Mindoro Palawan Camarines Sur Iloilo Cebu Leyte Zamboanga del Sur Bukidnon Compostela Valley Davao del Norte North Cotabato Surigao del Sur	Tree farmers; Private nursery operators; CBFM/IFMA/ SIFMA holders; LGUs; SUCs	Ongoing	Identification, assessment and documentation of seed sources and phenological observations  Germplasm (seeds) collection of priority species  Development of protocol on seed technology  Supervision and monitoring of regional project activities and consolidation of project accomplishments  Development of techniques for flowering and fruiting of trees  Develop and maintain the data management and information systems for the production of quality planting materials  Preparation of project terminal report	Seed sources identified, assessed and documented (no. of species)  Germplasm collected (no. of species)  Protocol developed (no.)  Project activities supervised and monitored (no.)  Techniques developed to enhance flowering and fruiting of trees (no.)  Database maintained and updated (no.)  Terminal report prepared and submitted (no.)	6  60  5  15  1  1  1	4,925

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			characteristics of each species, and the like, would definitely result in easy access and tracking of this information. In addition to this, the data/information to be generated from Projects 1 to 5 of the Forest Tree Improvement Program of ERDB will be included.									
2.	<i>Study 2. Establishment of provenance trial stands and ex-situ conservation areas</i>	Established provenance trials of 2 tree species in 4 climatic types  Established ex-situ of conservation stands	This aims to establish provenance trials of identified priority reforestation species in four (4) climatic types; and identify and recommend the best provenances for each species by climatic type.  It aims to establish and manage ex-situ conservation areas and monitor the growth performance of the outplanted indigenous forest tree species.	ERDB	Oct. 2012 Dec. 2018	Pampanga Iloilo Bohol Surigao del Sur  Nueva Vizcaya Iloilo South Cotabato	LGU; Academe; Private sector; Tree growers; Nursery Operators; POs	Ongoing	Facilitation of maintenance operations of the trial plantations  Submission of terminal report for molave provenance trials  Submission of finalized terminal report for narra provenance trials  Maintenance and assessment of established ex-situ conservation areas  Data collection and analysis (height, diameter, health, pests and diseases)  Submission of terminal report for ex-situ conservation areas	Provenance trial plantations maintained (no.)  Terminal report submitted (no.)  Finalized terminal report submitted (no.)  Ex-situ conservation areas maintained and assessed (no.)  Datasets collected and analyzed (no.)  Terminal reports submitted (no.)	7  1  1  2  8  3	1,772
3.	<i>Study 3. Progeny tests cum seedling seed orchards and clonal cum clonal seed orchards</i>	Established progeny tests cum seedling/ seed orchard  Established clonal test cum clonal seed orchard	The project aims to establish half-sib progeny tests of selected mother trees of the identified priority forest tree species; determine heritability of phenotypic traits observed from selected parent trees like bole straightness, diameter, height, etc.; identify and recommend a list of the best performing parent trees tested; and convert best families into seedling seed orchards.  It aims to establish breeding populations as seed sources; recommend the best performing mother tree; and determine the heritability of important characteristics of selected mother trees.	ERDB	Jan. 2013 De. 2018	Benguet Ilocos Norte Nueva Vizcaya Palawan Zamboanga del Sur Bukidnon Davao Norte North Cotabato Surigao Del Sur  Benguet Ilocos Norte Nueva Vizcaya Palawan Zamboanga del Sur Bukidnon Davao Norte North Cotabato Surigao Del Sur	LGU; Academe; Private sector; POs; Nursery operators	Ongoing	Monitoring and assessment of the established orchards and maintenance and protection of trial plantations  Data collection  Application of fertilizer  Roguing  Terminal report writing	Established orchard monitored and assessed (no. of regions) - Progeny - CSO  Dataset collected (no.) - Progeny - CSO  Fertilizer applied to the outplanted seedlings (no. of orchards) - Progeny - CSO  Progeny  Report prepared (no.)	7 6  7 24  7 6  1  1	3,713

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4.	<i>Study 4. Assessment of genetic diversity of priority forest species through DNA analysis</i>	Analyzed DNA assay	This aims to assess the genetic diversity of designated seed production areas (SPAs) and/ or other existing plantations of indigenous forest tree species including economically important rattan and bamboo species found in various geographical regions using DNA analysis and compare genetic variation within and among the different populations of each species.	ERDB	Jan. 2013 Dec. 2018	Laguna	Refo/Plantation managers, TI workers, foresters geneticists, breeders, academe government and private sectors, conservationists,	Ongoing	Collection of new leaf samples  Laboratory procedures on the assessment of diversity  Laboratory procedures on the transferability of the SSR markers	Species collected (no.)  Species screened for transferability using published molecular markers (no. of species)  Transferred molecular markers to progenies (no.)	4  2  3	2,476
5.	<i>Study 5. Macropropagation techniques of forest tree species</i>	Developed propagation protocols using macro-propagation techniques	This aims to develop macro and micro-propagation protocols of priority forest tree species and make possible the rapid multiplication of CPTs (Candidate Plus Trees) for mass planting under the NGP.I specifically aims to: develop appropriate macro- and micro-propagation techniques for the priority forest tree specie; produce enough clones of the CPTs for planting in clonal hedges or ramet multiplication gardens; and establish, protect and maintain hedge gardens of the cloned CPTs that will serve as sustainable sources of juvenile cuttings and explants in the production of high quality planting materials.	ERDB	Oct. 2012 Dec. 2018	Regions 1, 4A, 4B, 5, 7, 9, 11, 12, 13	LGU; Academe; Private sector; POs; Tree growers; Nursery operators	Ongoing	Identification and sourcing of priority forest tree species  Collection of germplasm/planting materials  Preparation of initial rooting experimental setup and layout  Data gathering and analysis on initial rooting experiment  Preparation of validation experimental setup and layout  Data gathering and analysis on validation experiment  Establishment/management of the corresponding hedge gardens  Pilot-testing of the propagation protocol developed  Terminal report writing	Priority species identified and sourced out (no.)  Germplasm collected (no.)  Initial rooting experimental setup/layout prepared (no.)  Initial rooting percentage determined (no. of species)  Validation experimental setup/layout prepared (no.)  Validation rooting percentage determined (no. of species)  Hedge garden established (no.)  Protocols developed pilot-tested (no.)  Terminal report prepared (no.)	4  6000  4  4  4  4  4  1	1,282
6.	<i>Study 6. Micropropagation techniques of forest tree species</i>	Developed propagation protocols using micro-propagation techniques	The project aims to develop micropropagation protocol for priority forest tree species to support the requirement for tree improvement and specifically to establish hedge garden as source of explants for micropropagation of priority forest tree species; verify/validate an existing micropropagation protocol; develop	ERDB	Jan. 2013 Dec. 2018	Laguna	LGU; Academe; Private sector; POs; Tree growers; Nursery operators	Ongoing	Maintenance of hedge garden  Terminal report writing	Hedge garden maintained (no. of species)  IEC material produced (no.)  Terminal report prepared (no.)	8  1  1	564
7.	<i>Study 7. Evaluation of the effects of biological and organic fertilizers on the growth performance of forest tree species</i>	Generated technologies on best nursery practices such as application of organic matter and vermi-compost which will improve the growth performance of priority	To address the great demands for the production of quality planting materials for the National Greening Program, the employment of economical, sustainable and environment-friendly technologies are called for. Biofertilizers or microbial inoculants are terms given to living microorganisms that enrich the nutrient quality of soil. The main sources of	ERDB	Oct. 2012 Dec. 2018	Laguna	NGP coordinators; nursery growers; farmers; academe; researchers	Ongoing	Production of germinants of four priority tree species  Inoculation/application of treatments biofertilizers  Growth measurement of seedling treatment	Seedlings produced (no. of species)  Forest tree seedlings tested (no. of species)  Datasets on seedlings measured (no.)	4  4  3	162

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		tree species	biofertilizers are bacteria (N-fixing and other beneficial bacteria), actinomycetes, fungi and cyanobacteria (blue-green algae). Besides biofertilizers, application of cultural management in the nursery also affects the growth of seedlings. These are the use of potting mixtures which will promote good drainage which unlike a combination of different materials is coir dust, humus and organic matter, sand and garden soil. The determination of soil potting mixtures fertility thru physical and chemical analysis is also done to know what soil amendment must be added to the mixtures.						Assessment of pests and diseases and application of control measures  Data analysis of the best biofertilizers for priority tree species	Pests and diseases identified (no.)  Protocols developed on biofertilizers (no.)	var  4	
8.	<i>Study 8. Application of propagation protocols developed on the growth and survival of forest tree species</i>	Best propagation protocols pilot tested in the nursery	The continuous exploitation of our forest resources resulted to unabated losses of our indigenous, endemic and premium species. Most of these forest species are nowhere to be found. To counter this dilemma the government came up with a strategy under its priority agenda "Resource Conservation and Productivity Enhancement" to achieve strong positive impact to society and environment. Thus, the National Greening Program was conceived.	ERDB	Oct. 2012 Dec. 2018	Los Baños, Laguna	Tree farmers; Private nursery operators; CBFM/IFMA/SIFMA holders; LGUs; SUCs	Ongoing	Outplanting of seedlings produced under the recommend protocol of Study 6 (Micropropagation) and Study 5 (Macropropagation)  Site preparation and establishment of experimental area  Maintenance of experimental area  Data collection (morphological characteristics, survival of seedlings)	Outplanted species for field trials (no. of species)  Experimental areas established (no.)  Experimental areas maintained (no.)  Datasets collected (no.)	6  2  2  6	474
<b>Project 2. Development of Technologies on Sustainable Resource Management of Forest Ecosystem</b>												
9.	<i>Study 1. Vulnerability assessment of priority watersheds with coastal areas in the Philippines to climate change</i>	Vulnerability maps and information on vulnerable areas of watersheds in the Philippines	This project involves assessment of vulnerability to hazards of selected watersheds and coastal areas in the Philippines and provides recommendations of adaptation measures for inclusion to the watershed management plan and LGUs land use plan. vulnerability assessment aims to provide the policy and decision makers with science-based information on the magnitude and/or degree of vulnerability of a watershed to natural and anthropogenic hazards. It also analyzes and determine as to where and what the strategies and methods to be applied. It is then a very important input to the formulation of integrated watershed management plan.	ERDB	Jan. 2011 Dec. 2018	Pangasinan Ilocos Norte Zambales Batangas Quezon Oriental Mindoro Camarines Norte Aklan Iloilo Davao del Sur	LGU, FMB, watershed stakeholders	Ongoing	Updating and validating of biophysical and hydrological data of the watershed  Secondary and primary data gathering (climatic data, hydrological data, in-situ water parameters)  Production and generation of thematic maps  GIS and spatial analyses; Geohazard maps integration; Ground truthing	Biophysical and hydrological assessments conducted (no.)  Datasets gathered (no.)  Thematic maps produced (no.)  VA maps produced (no.)	4  3  48  4	2,608

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			The goal is to ensure adequate protection from the environmental hazards, thus the process includes identification of hazards, assessment of vulnerability and formulation of interventions to reduce possible damage or enhance the coping capacity of the system.						Conduct of adaptive capacity assessment	Adaptive capacity assessments conducted (no.)	4	
10.	<i>Study 4. Arthropod communities as a tool to assess soil quality and biodiversity in mining and restoration sites</i>	Publication on arthropod communities as assessment tool to assess soil quality and biodiversity in mining and restoration sites	The study seeks to evaluate soil quality of degraded and restoration sites using arthropod communities and to discover the potential of these soil fauna as indicators of ecosystem change in response to contamination and subsequent restoration of mined sites. Specifically, this aims to determine and compare species composition, abundance and diversity of soil arthropods in mine-site and rehabilitation sites; determine level of soil toxicity/pollution of selected mining sites based on heavy metal analysis; determine the soil physico-chemical properties of sites selected in the study; and conduct Landscape Function Analysis (LFA) and relate biological indicators to ecological condition of the area.	ERDB	2017 2018	Palawan	LGUs, Research agencies; Academe, Mining companies	Ongoing	Coordination with concerned agencies  Soil quality assessment  Soil sampling for arthropod extraction  Sorting, identification and analysis of soil arthropod  Landscape Function Analysis (LFA)  Reckoning indices and data analysis  Progress report writing and submission  Terminal report writing and submission	Meetings with concerned agencies coordinated (no.)  Soil physico-chemical parameters analyzed (no.)  Soil samples placed in Berlese funnel extractors (no.)  Soil arthropods identified and analyzed (no.)  Soil surface indices assessed (no.)  Arthropod dataset generated (no.)  Progress report prepared and submitted (no.)  Terminal report prepared and submitted (no.)	3  144  var  36  1  1  1	488
11.	<i>Study 6. Rapid environmental rehabilitation and climate change impact mitigation through bamboo greening sustainable ENR</i>		This project aims to rehabilitate degraded areas using the two (2) kinds of bamboo species, such as Kawayan tinik ( <i>Bambusa blumea</i> ) and Bayog ( <i>Bambusa sp.</i> ) Specifically, it aims to determine the best bamboo species adaptable in the area; to assess the growth performance of the bamboo species planted in the area; and to determine the best treatment that will enhance the growth of bamboo species.	ERDB	Jan. 2014 Dec. 2018	La Union Camarines Sur	Peoples Organization in Balatan, Camarines Sur and Rosario, La Union	Ongoing	Bamboo plantation maintenance  Data collection  Monitoring  Report writing	Bamboo plantation maintained (has.)  Data on growth and surface runoff and sediment yield collected (no.)  Data on sediment weight collected (no.)  Bamboo plantation monitored (no.)  Report submitted (no.)	16  2  1  2  1	602

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	<b>Project 3. Application of Sociocultural and Economic Tools in Improving Forest Governance</b>											
12.	<i>Study 2. Establishment of bamboo community for small and medium-scale enterprise</i>		This project aims to establish bamboo small livelihood of local communities. Specifically, it aims to structure a bamboo organization in the communities; establish nursery and plantation; determine the cost and return on handicraft; identify marketing linkages for bamboo and bamboo-based products; and determine the impact of the project to the beneficiaries.	ERDB	Jan. 2014 Dec. 2018	La Union Camarines Sur	People's Organization	Ongoing	Handicraft finishing production  Marketing linkages  Capacity building  IEC  Survey on the impact of the project  FGD with project beneficiaries  Monitoring and evaluation	Project beneficiaries attended (no. of PO)  Marketing institutions linked (no.)  PO capacitated (no.)  IEC materials prepared  PO surveyed (no.)  Project beneficiaries participated (no. of PO)  Monitoring and evaluation conducted (no.)	1  2  1  1  1  1	538
II.	<b>Action R&amp;D Program on Ecosystems Dynamics and Sustainable Management of Coastal and Freshwater Ecosystems</b>											
	<b>Project 1. Climate Change Mitigation and Adaptation in Coastal and Marine Ecosystems</b>											
13.	<i>Study 4. Productivity assessment of seagrass meadows with and without mangrove plantation</i>	Technical information on productivity of seagrass with and without mangrove plantation	The study aims to determine the variation of productivity (primary and secondary) of seagrass meadows in areas with and without mangrove plantation. Specifically, this will determine the productivity of seagrass meadows in terms of zonation in areas with and without mangrove plantation; determine the seasonal variation of productivity of seagrass meadows in areas with and without mangrove plantation; and characterize environmental parameters in seagrass with and without mangrove plantation	ERDB	Jan. 2017 Dec. 2018	Batangas; Quezon	LGUs, Research agencies; Academe, etc.	Ongoing	Coordination and reconnaissance survey  Quantitative survey  Data management and analysis	Site identified (no.)  Quantitative survey conducted (no.)  Data analyzed (no.)	2  5  4	867
	<b>Project 2. Bioecological Profiling of Mangroves in Relation to Climate Change</b>											
14.	<i>Study 1. Sediment accretion under varying ages of mangrove plantations in Quezon Province</i>		The project general objective is to increase the effectiveness of mangrove conservation with the Philippines by identifying mangrove that maybe more resilient to the impacts of global climate change. Specifically, it aims to quantify sediment accretion rates across four different mangrove sites using naturally occurring radionuclides	ERDB	Jan. 2015 Dec. 2019	Quezon Province	LGUs, SUCs, Research agencies; Academe, etc.	Ongoing	Data collection and measurement of sediment accretion  Vegetation survey and assessment / carbon stock accumulation field work  Secondary data collection	Dataset on sediment accretion gathered and analyzed (no. of study sites)  Dataset on vegetation assessment and carbon stock gathered and analyzed (no. of study sites)  Dataset on climatic data	4  4  4	725

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										gathered and analyzed (no. of study sites)		
15.	<i>Study 3. Arthropod biodiversity in selected plantation and natural mangrove forests</i>	Research information on arthropods associated with plantation and natural mangrove stands will be in place	The study seeks to determine if natural stands of mixed mangrove tree species favor greater number, abundance and diversity of arthropod species in comparison with single-species, even-aged mangrove plantation.	ERDB	2017 2018	Pagbilao, Quezon; Catanauan, Quezon	LGUs, SUCs, Research agencies; Academe, etc.	Ongoing	Assessment of above and below-ground arthropods  Laboratory sample processing  Sorting, identification and analysis of soil arthropods	Dry and wet season sampling conducted (no. of sites)  Dataset on soil physico-chemical properties and soil biological quality index (no. of sites)  Dataset on soil arthropods (no. of sites)	2  2  2	600
16.	<i>Study 4. Growth variation in selected mangrove plantations as affected by different habitat conditions in the Philippines (new study)</i>	Database on the three-year survival and growth rate of selected mangrove plantations	The project aims to determine the changes in growth and survival of selected mangrove plantations as affected by habitat conditions in mining, fishpond, and seagrass areas and identify the best management practices, lessons learned and other impacts of the project.	ERDB	2018 2020	Carrascal, Surigao del Sur; Capalonga, Camarines Norte; Getafe, Bohol; Caramoan, Camarines Sur	LGUs; POs; Stakeholders	New	Floristic survey of plantation sites: - Mining areas - Abandoned fishponds - Seagrass areas - Protected coves  Key informant interview/focus group discussion on lessons learned and best practices  Data processing and analysis	Growth performance and survival rate measured per site (no.)  Soil and water quality measured (no. of sites)  Lessons learned and best practices documented (no. of sites)  Dataset (growth performance, survival rate, soil and water quality) analyzed/processed (no.)	16  4  4  1	815
<b>Project 3. Improving Sustainability of Freshwater Ecosystems</b>												
17.	<i>Study 4. Development of biomonitoring tool for water quality assessment of river systems</i>	Bio-monitoring tool to assess the water quality of polluted freshwater ecosystems	The study aims to develop a bio-monitoring tool to assess the water quality of polluted freshwater ecosystems; determine the plankton and macro-benthic invertebrate species present, abundance and diversity in relation with the physico-chemical properties of selected freshwater ecosystems; assess the impact of organic pollution on the biodiversity of plankton and macro-benthic invertebrate communities present in different freshwater ecosystems; and review the existing policies in classification of freshwater bodies.	ERDB	2017 2018	Banban River, Bangui, Ilocos Norte; Babuyan River, Puerto Princesa, Palawan	LGUs, Research agencies; Academe, etc.	Ongoing	Water quality assessment  Biological assessment  Focus Group Discussion (FGD)	Water quality assessment report prepared (no. of sites)  Benthos diversity assessment report prepared (no. of sites)  Report on the perception of the community on importance of freshwater ecosystems and bio prepared (no.)	2  2  1	457

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18.	<i>Study 5. Greenhouse gas (GHG) flux measurements and microbial diversity assessment in disturbed and managed peatlands (new study)</i>	Emission rate of carbon dioxide, methane, and nitrous oxide to the atmosphere within the confirmed peatland during dry and wet seasons;  Biodiversity profile of confirmed peatlands including maps	This research study aims to increase our knowledge on the estimated carbon storage and the extent of GHG emissions of peatlands and determine how agriculture, anthropogenic activities and other peatland disturbances result in the imbalance of these greenhouse gases contributing greatly to climate change.	ERDB	2018 2019	Agusan Marsh, Agusan del Sur; Victoria, Oriental Mindoro	Research agencies; Academe, etc.	New	Gathering and review of secondary data  Reconnaissance survey  Biodiversity assessment  Physico-chemical assessment  GHG flux measurements  Carbon stock assessment  Focus Group Discussion	Secondary data and reports on bio-physical assessment of peatlands collected and reviewed (no. of sites)  Survey report and sampling points identified (no. of sites)  Biodiversity assessment report prepared (no. of sites)  Report on soil and water quality prepared (no. of sites)  GHG flux measurements measured (no. of sites)  Report on carbon stock prepared (no. of sites)  Report on the perception of the community on importance of peatlands (no. of sites)	2  2  2  2  2  2	975
	<i>Study 6. Development of predictive tool for freshwater fish kill using plankton community structure and dynamics (new study)</i>	Predictive tool for freshwater fish kills using plankton community structure and dynamics	The study aims to develop a predictive tool for freshwater fish kills using plankton community structure and dynamics. Specifically, this will determine the plankton species present, abundance and diversity in relation with the physico-chemical properties of selected freshwater systems; determine the plankton species most vulnerable to changes of the water quality in the advent and aftermath of fish kill; and review existing policies and regulations in freshwater systems that are most susceptible to fish kills.	ERDB	2018 2019	Lake Buhi, Camarines Sur	Research agencies; Academe, etc.	New	Establishment of permanent sampling sites and substations  Water quality assessment and plankton collection  Report writing	Sampling stations established (no.)  Plankton samples collected (no.)  Plankton samples analyzed (no.)  Report on water quality and plankton community and dynamics prepared (no.)	9  324  324  1	1,024
III.	<b>Promoting Ecosystems Health and Sustainability of Urban Areas through Research and Development</b>											
	<b>Project 1. R&amp;D for the Management and Improvement of Commercial and Industrial Zones at Highly Urbanized Areas in the Philippines</b>											
18.	<i>Study 1. Ecosystems perspective in zoning and land-use planning in highly urbanized areas</i>		This project aims to review and assess the soundness of existing land use zoning of two highly urbanized areas (CDO and La Union); to determine the dynamics of urban development at the selected sites and	ERDB	Jan. 2015 Dec. 2017 for extension until 2018	Pangasinan; Misamis Oriental	DENR, LGUs, Communities and other stakeholders	Ongoing	Field validation of identified critical areas and socio-economic analysis; biodiversity assessment	Coordination and secondary data gathering conducted (no.)	2	860



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			develop appropriate planning interventions; to develop a sustainable management strategy for commercial and industrial zone; to come up with recommendations for policy amendments on existing policy instruments; and to develop harmonized guidelines for land use and management of the environment.						Monitoring of terrain analysis and vulnerability assessments to hazards and water pollution  Landslide modelling and land use studies  Identification of sensitive habitats and valuing physical resources  Presentation of outputs to respective LGUs and concerned sectors  Generation of manual	Info on geo-morpho and hydro aspects gathered (no.)  Flood models generated (no.)  Spatial information on sensitive habitats generated (no.)  Spatial information on pollution loading; Capacitated on land-use planning (no.)  Guidelines formulated (no.)	4  2  2  2  1	
19.	<i>Study 2. Bioremediation schemes for polluted waterways and waste water reservoir at industrial and commercial areas</i>	Protocol for bioremediation based on indigenous organisms for pollution control of waterways	Generally, this project was implemented to develop a bioremediation strategies to address polluted waterways and toxic and hazardous wastes; to determine point sources of pollution; and to develop protocol for bioremediation based on indigenous organisms for pollution control of waterways.	ERDB	Jan. 2015 Dec. 2017  for extension until 2018	Pangasinan; Misamis Oriental	DENR, LGUs, Communities and other stakeholders	Ongoing	Field testing of bioremediation capacities of bacteria  Presentation of final results to LGU/Exit Conference	Sites tested (no.)  Report delivered (no.)	1  1	263
<b>Project 2. R&amp;D for Improving and Enhancing Healthy Ecosystem for Communities and Settlement Areas</b>												
20.	<i>Study 2. Resilience of communities to disasters and natural hazard in urban areas</i>		The study aims to identify the types of disasters and natural hazards experience by urban settlers; determine the coping mechanisms of urban settlers to disasters and natural hazards; and assess the level of resilience of urban settlers to disaster and natural hazards.	ERDB	Oct. 2016 Mar. 2018	CAR, Regions 5, 6, and 8	DENR, LGUs, Communities and other stakeholders	Ongoing	Conduct of focus group discussion (FGDs) and interview with key informants  Data processing (coding design, encoding and decoding)  Library research  Validation of data  Presentation of results to LGUs  Preparation and submission of terminal report with key informants	FGDs conducted in urban communities (no.)  Coding design prepared, data encoded and decoded (no.)  References gathered (no.)  Dataset gathered and analyzed (no.)  Results presented to LGUs (no.)  Technical report on the urban communities resilience to disasters and natural hazards prepared and submitted (no.)	1  1  1  1  1	312

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21.	<i>Study 3. Adaptation strategies of urban communities on health hazards of industrialization and commercialization</i>	Adaptation strategies of urban communities and its effectiveness	The study seeks to document and assess the effects of industrialization and commercialization on the health of settlers in CALABARZON and the corresponding adaptation strategies applied.	ERDB	2017 2018	Region 4A	DENR, LGUs, Communities and other stakeholders	Ongoing	Primary data gathering (survey, KII, FGD) which includes photo documentation and GPS readings  Secondary data gathering  Data management (encoding, cleaning, and analysis - sociodemographic and economic attributes - environmental health awareness - related illnesses - adaptation strategies  Preparation of terminal report	Survey/KII/FGD conducted (no.)  Dataset gathered (no.)  Dataset encoded and analyzed per site (no.)  Terminal report prepared (no.)	7  6  1	147
<b>IV. Program on Emerging Issues</b>												
22.	<b>National Survey and Integrated Pest Management of Important Forest Pests</b>	IPM of important forest pests	The project seeks to provide update on the survey of pests in natural and plantation forests in the Philippines and to develop an Integrated Pest Management (IPM) for each pest. Specifically, it aims to determine the pests/diseases of priority/important forest tree species and environmental factors that lead to the occurrences and severity; develop IPM/mitigating measures in the light of climate change per important pest of the above priority and other species; and come up with policy recommendation on IPM.	ERDB	2017 2019	Nationwide	LGUs; POs; Research agencies; Academe	Ongoing				
<b>V. Natural Resources Accounting and Valuation Program</b>												
23.	<b>Natural Resources Accounting and Valuation Program</b>	Manual on ecosystems services valuation	The program aims to account the present and past trend in natural resources management in some priority areas of the country and put value on the services it provides to ensure a healthy resource based that can sustain the provision of ecosystem services and meet both the present and future demands. Provision of this accounting and valuation information will ensure that they are taken into account in planning, policy development and decision making in the DENR system who has the responsibility for the conservation, management, development, and proper use of the country's environment and natural resources.	ERDB	2018 2023		LGUs; Research agencies; Academe; Stakeholders	New	Coordination with concerned agencies  Identification of completed and on-going studies on valuation  Capacity building and pilot project on ecosystem service accounting and valuation  Scoping and identification of environmental policy issues - identification of data requirements and secondary data gathering	Initial meeting about valuation project coordinated (no.)  Database of all on-going studies on valuation developed (no.)  Trainings and workshops conducted (no.)  Site and environmental policy issues identified (no.)  Datasets gathered (no.)	8  1  3  1  1	

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
									- data assessment workshop - gathering of data based on data gaps	Datasets analyzed (no.)	1	
									Training workshop on physical and monetary accounts development (Land, Carbon, Terrestrial, Coastal, Ecosystem Service)	Listing of data gaps identified (no.)	1	
									Training workshop on policy analysis and scenario building			
B.	Research Centers											
	Watershed and Water Resources Research Center (WWRRC) (CAR, Regions 1, 2, and 3)											
VI.	Program for Addressing Hazards in the Watersheds for Water Supply Sufficiency and Resources Availability											
	Project 1. Watershed Resources Assessment and Management											
24.	Study 2. Vulnerability assessment of critical watersheds in Northern and Central Luzon	Vulnerability maps and information on vulnerable areas of critical watersheds in Northern and Central Luzon	To determine the water discharge and characterize the flow regime (low, high and frequency) in terms of water yield; To determine the different land-use/activities within the watersheds;	ERDB	Jan. 2016- Dec. 2018	CAR, Regions 1, 2, & 3	LGU, FMB, Watershed stakeholders	Ongoing	Secondary data gathering and Reconnaissance survey	Datasets organized (no.)	4	550
									Updating/validating of biophysical and hydrological data of the watershed	Biophysical and hydrological assessment conducted (no.)	4	
									Conduct of adaptive capacity assessment	Adaptive capacity assessments conducted (no.)	2	
									Identify hazards occurring in the watersheds	Hazards identified (no.)	4	
									Prioritization of identified hazards	Hazards prioritized (no.)	4	
									Conduct of Focus Group Discussion (FGD)	FGDs conducted (no.)	4	
									Analyses of vulnerabilities of watersheds to various hazards	Watershed vulnerabilities analyzed (no.)	2	

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
	<b>Project 2. Management and Protection of Water Bodies</b>											
25.	<i>Study 2. Phytoremediation of Polluted Rivers within Priority Watersheds in Northern and Central Luzon</i>	Green technology or phytoremediation protocol of polluted water systems	Generally, the study aims to determine/screen plants that could be used to clean up contaminated rivers and other water bodies. To identify reeds/water plants that thrive along or floats in river systems; To assess the performance (growth, survival and amount of pollutants absorbed) of different water plant species in contaminated (organic, inorganic, etc.) river systems.	ERDB	Jan. 2015 - Dec. 2018	Sta.Barbara, Pangasinan (Sinocalan River); La Trinidad, Benguet (Balili River); Sta. Cruz, Zambales (Nayom River); Santiago City, Isabela (Ganano River)	LGUs, EMB, Watershed stakeholders	Ongoing	In-situ water quality assessment (pH, conductivity, temperature, salinity, turbidity, TDS, DO)  Collection and rearing of test plants  Establishment of in-situ experimental setups through floating bed  Maintenance and monitoring of floating bed and experimental sites  Water sampling and laboratory analysis (Hg, Ni, Pb, NO3, PO4, BOD)  Data analyses  Preparation of technical paper	Parameters measured (no.)  Species reared per site (no.)  Experimental setups established (no.)  Experimental sites managed/maintained (no.)  Datasets gathered (no.)  Data analyzed (no.)  Technical paper prepared (no.)	7  3  4  4  4  1	1,184
	<b>Project 3. Watershed Rehabilitation, Protection, and Conservation</b>											
26.	<i>Study 2. Integrated pest management development of economically important forest pests (insects and diseases)</i>	Integrated pests management guidelines on Benguet pine nurseries and plantations	The project generally aims to enhance management of pests of Pine forest plantation/nuresry Specifically aims to enhance capability of project staff in the implementation of the study; Identify/ assess Benguet Pine plantations with suspected pest/diseases infestation; Identify destructive and economically important pests and diseases/pathogens and environmental factors affecting its occurrence in Benguet and Nueva Vizcaya Provinces; Formulate and apply mitigating measures/Integrated Pest Management (IPM) strategies against Ips calligraphus on Benguet Pine and other major pests of forest plantations.	ERDB	Feb. 2016 Feb. 2018	CAR, Region 2	LGUs; Policy makers	Ongoing	Monitoring of B. pine trees within identified infested stands  Establishment of experimental layout  Application of IPM strategies  Gathering and analysis of secondary and primary data (rainfall data and temperature)  Preparation of article/ IEC materials on bark beetle infestation of B. pine	Infested sites monitored (no.)  Experimental layouts established (no. of sites)  IPM strategies applied (no.)  Datasets gathered/analyzed (no.)  IEC material prepared (no.)	2  2  2  1	837

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
	<b>Project 6. Livelihood Development within Watersheds</b>											
27.	<i>Study 1. Comparison on the production, growth and survival of Benguet pine trees using FORI and Chinese Oleoresin tapping technologies</i>	Guide on the best practices of oleoresin tapping technology in Benguet pine tree	The study aims to determine the appropriate oleoresin tapping technologies of Benguet pine trees. Specifically, it aims to determine the effects of Benguet pine tapping technologies like conventional (FORI) and modern (Chinese); compare the production and yield of two technologies in Benguet pine as well as financial analysis; determine costs and benefits involved in tapping Benguet pine trees; identify activities of women in the conduct of tapping oleoresin; and prepare a guide on the best practices of oleoresin tapping technology in Benguet pine.	ERDB		CAR	LGUs; Policy makers	Ongoing	Application of tapping technologies  Data collection on yield, cost, survival and tree growth including pest and diseases occurrence  Data analyses  Monitoring and evaluation and application of necessary treatment against pests and diseases	Tapping technologies applied (no.)  Datasets collected (no.)  Datasets analyzed (no.)  Activity documented (no.)	2  4  4  1	911
	<b>Land Management, Agroforestry and Upland Farming Technology Research Center (LAUFTeRC) (Regions 4A, 4B, and 5)</b>											
VII.	<b>RDE Action Program on Land Management and Sustainability of Agroforestry Systems and Upland Farming Systems</b>											
	<b>Project 3. Sustainability of Existing Agroforestry and Upland Farming Practices</b>											
28.	<i>Study 3. Macro-somatic propagation of sambulauan (Syzygium albayense Merr.) using stem cuttings in different concentration of indole-3 butyric acid (new study)</i>	Protocol for sambulauan clones under mist system	The study aims to develop the best protocol for cloned seedlings of sambulauan ( <i>Syzygium albayense</i> Merr.). Specifically, its goals are to determine locations or sources of sambulauan with good phenotypic characteristics; identify appropriate protocols using shoot tip cuttings with different concentrations of Indole-3-Butyric Acid (IBA); compare survival rate of sambulauan cuttings collected from 3 different areas (hedge garden and identified plus trees in Albay and Sorsogon) with different concentrations of Indole-3-Butyric Acid (IBA) and; produce IEC material with the best protocol developed in cloned sambulauan.	ERDB	Jan. 2018 Dec. 2018	Region 5: Legazpi City	LGUs; Farmers; POs	New	Identification of potential identified plus trees  Collection and preparation of cuttings  Preparation of rooting beds  Preparation of rooting hormone  Planting of cuttings  Documentations  Production of IEC materials  Production of rooted clones	Potential PTs identified (no.)  Cuttings collected and prepared (no.)  Rooting beds prepared (no.)  Rooting hormone concentration prepared (no.)  Cuttings planted (no.)  Reports prepared (no.)  Area documented (no.)  Brochures produced (no.)  Rooted clones produced (no.)	20  7200  2  3  7200  6  2  1/300  400	619

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
29.	<i>Study 4. Integration of high premium tree species with high yielding pili varieties (new study)</i>	Scientific way of integrating high premium trees with high yielding pili variety	The study aims to identify factors of productivity when high premium tree species are grown closer to high yielding pili varieties; determine the tree volume, yield and economic rotation of high premium tree species; examine the interactions caused by integrating high premium tree species with high yielding pili variety; establish the yield prediction models for high premium tree species with the high yielding pili varieties; and determine the roles, issues and participations of men and women in establishing agroforestry development.	ERDB	Jan. 2018 Dec. 2023	Region 5: Maramba, Oas, Albay	LGUs; Farmers; POs	New	Site selection, survey and mapping, geotagged of experimental plots  Propagation of high premium tree species (HPTS) of kamagong, tindalo, dao and white lauan and procurement of high yielding pili variety (HYPV)  Lay-out of the experiment and establishment of experimental plots and temporary nursery  Maintenance and protection of experimental plots and nursery seedlings for replacement  Data collection  Analysis of data and interpretation	Site coordinated and selected (no.)  HPTS propagated (no.) HYPV procured (no.)  Experimental plots/ temporary nursery established (no.)  Experimental plots/nursery maintained and protected (no.)  Primary/secondary data collected (no.)  Data analyzed and interpreted (no.)	1  1 1 1 4 1	817
30.	<i>Study 5. Growth performance of cloned sambulauan (Syzygium albayense, Merr.) intercropped with high value crop</i>	IEC material on growth performance of cloned sambulauan	The general objective of the study is to determine the growth performance and survival rate of cloned sambulauan seedlings. Specifically, it aims to evaluate the growth performance of cloned sambulauan seedlings in relation to the pest and disease; and compare the effect of growth and survival rate of cloned sambulauan seedling with the use of vermicompost and mycorrhiza.	ERDB	Jan. 2018 Dec. 2020	Region 5: Albay	LGUs; CBFM POs; Farmers	New	Coordinations/consultation meetings/stakeholders forum/ FGD  Site identification/selection  Gathering of baseline data  Delineation/mapping of the site  Procurement of planting materials  Hauling of planting materials  Site preparation, field lay out, and establishment of experimental site	Meetings conducted (no.) Activity report prepared (no.) Selection criteria prepared (no.) Site identified and selected (no.) Site profiled (no.) Map produced (no.) Quality planting materials procured (no.) - camote cuttings - lemon grass cuttings - fertilizer (vermicompost)  Planting materials delivered (no.) - cloned seedlings - camote cuttings - lemon grass cutting  Experimental site established (no.)  Experimental site area (has.)	2 2 1 1 1 1  20000 1500 6  440 20000 1500  1 1	564
									Protection and maintenance	Experimental site	1	

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										maintained (no.)		
									Data gathering	Experimental site area (has.)	1	
									Monitoring and evaluation	Datasets gathered (no.)	3	
									Documentation	Site monitored (no.)	1	
										Reports submitted (no.)	4	
	<b>Project 4. Adaptation Strategies Towards Resiliency of Community Based Forest Management Systems to Climate Change</b>											
31.	<i>Study 1. Enhanced design and planning for climate-smart agroforestry development in CBFM areas (new study)</i>	Draft Guidelines on the Development of Climate-Smart Agroforestry (CSAF) Techno Farms	The general objective of the study is to upscale existing AF practices into climate-smart agroforestry development. Specifically it aims to characterize the area profile of communities and the existing farming systems; determine and delineate land capability classes in the CBFM area for agroforestry development; enhance farmers' capacity to plan and design sustainable AF farms; develop guidelines in the development of climate-smart agroforestry techno farms; and develop a GIS-based Agroforestry Land Capability Mapping Scheme (ALCAMS).	ERDB	Jan. 2018 Dec. 2019	Region 5: Camarines Sur	LGUs; CBFM POs; Farmers	New	Coordinations/consultation meetings	Activity report of coordination/ meetings conducted (no.)	1	584
									Site selection	Site selected (no.)	1	
									Secondary data gathering/ review	Compilation of reviewed secondary data (no.)	1	
									Conduct of stakeholders forum	Activity report of stakeholders forum conducted (no.)	1	
									Reconnaissance, site delineation and mapping	Study site established (no.)	1	
										Location map produced (no.)	1	
									Biophysical assessment	Dataset on biophysical characteristics gathered (no.)	1	
									Socio-economic survey	SES report prepared (no.)	1	
									Development of scaling factors for ALCAMS Application	Land capability indices for slope, land use/vegetation and soil fertility	1	

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
	Biodiversity, Coastal, Wetlands and Ecotourism Research Center (BCWERC) (Regions 6, 7, and 8)											
VIII.	Enhancing Resilience of Wetlands and Coastal Areas to Support Biodiversity Conservation and Ecotourism Development in the Visayas Region											
32.	<b>Project 1. Result-Based Assessment of Rehabilitated Disaster-Affected Mangrove and Beach Forest Areas</b>		This project aims to establish a biological physical, spatial and social benchmarking of mangrove and beach forest ecosystems in disaster affected areas in Visayas regions; to assess and determine the extent of impacts from disaster on affected mangrove and beach forest ecosystems; and to establish database on the information of identified sites	ERDB	Jan. 2015 Dec. 2019	Region 6 Aklan; Iloilo  Region 7 Buenavista and Tubigon, Bohol  Region 8 Tanauan and Palo, Leyte Tacloban City; Giporlos; Guiuan; and Lawaan, Eastern Samar	Small island fisherfolks; tourists; LGUs: local communities; policy makers	Ongoing	Organization and capacitation of BCWERC assessment team whom will conduct the assessment activities of the selected benchmarked areas  Conduct of area re-assessment and data gathering and presentation of results to direct and major stakeholders - Biophysical - Socio-economic - Water Samples - Soil Samples - % survival - Survival Rate - Surviving Species  Information and education campaign on environmentalism, mangrove conservation and biodiversity preservation on selected public schools (elementary and high school) and colleges in the Visayas Region	Team organized and capacitated (no.)  Areas re-assessed (no.)  Schools capacitated (no.)	1  6  3	424
33.	<b>Project 3. Development of Mangrovetum for Biodiversity Conservation Towards Ecotourism</b>	Mangrovetum areas for biodiversity conservation and nature-based tourism destinations	The study aims to develop mangrovetum areas for biodiversity conservation and nature-based tourism destinations in partnership with coastal communities. Specifically, it aims to determine the growth performance of mangrove species and their provenances suitable in certain site conditions; develop allometric equations for calculating biomass yield of individual mangrove species and provenances; and assess gender roles and sensitivity in the conservation and management of mangrovetum projects.	ERDB	2017 2020	Region 6: Agustin Navarra, Ivisan, Capiz  Region 7: San Vicente, Olango Is., Lapu-lapu City  Region 8: Tinago, Calbiga, Samar	LGUs; local communities; policy makers		Maintenance and protection of established mangrovetum  Data gathering - biophysical (substrate type, tidal inundation, wave exposure, monsoon exposure, barnacle, water clarity, algal bloom, other information) - growth parameters (total height, basal diameter, no. of leaves, survival count)  Data tabulation/collation and partial analysis	Mangrovetum maintained and protected (no.)  Datasets gathered (no.)  Data partially analyzed (no.)	3  3  3	689



	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
	Forest and Timber Resources Research Center (FTRRC) (Regions 9, 10, and 13)											
IX.	Conservation and Sustainable Management of Natural and Plantation Forests in Mindanao											
	Project 1. Conservation Strategy on Valuable and Threatened Indigenous Forest Tree Species in Mindanao		Conservation of species is shifting towards a more holistic approach, whereby the ecosystem as a whole is conserved, ensuring protection of the desired species. Both in-situ and ex-situ approaches are used in conservation, through the technique adopted is systematic with the species needs. Besides providing material for planting and breeding programs, the accessibility of plants in cultivation presents research opportunities not possible with remote and dispersed wild populations as well as opportunities for education and increasing public awareness that indigenous species in the future through in-situ and ex-situ conservation and tree domestication; and to expand the range of options available for ITP species of economic importance to boost the local wood industries.	ERDB	Jan. 2015 Dec. 2018	Regions 9, 10, & 13	Tree growers; LGUs; Academe Environmental advocates	Ongoing	Ex-situ strategy - maintenance and protection of established ex-situ - reconnaissance and identification of ex-situ site - propagation and production of genetic materials for the ex-situ establishment - establishment of additional ex-situ - maintenance and protection of newly established ex-situ  In-situ strategy - identification and establishment of additional in-situ area (reconnaissance, identification, grading and marking of identified spp.) - monitoring and maintenance of established in-situ area (protection, brushing, fertilizing, re-tagging and detection of pest and diseases/surgical treatment) - assessment and evaluation of established in-situ (data gathering, annual phenological observation and seed collection) - seed storage and production of planting materials (seed storage, germination testing, viability testing, grading, seedling disposal)  Packaging of IEC materials	Established site maintained and protected (no.) Site identified and delineated (no.) Progenies propagated per species (no.) Sites established (no.) Sites maintained and protected (no.) Site identified and established (no.) Site monitored and maintained (no.) Species assessed and evaluated (no.) Species tested and produced (no.) IEC materials packaged (no.)	2 3 3000 3 2 1 2 3 3 1	1,604
34.	Study 1. In-situ and ex-situ conservation of <i>Igem</i> ( <i>Dacrycarpus imbricatus</i> Blume) and <i>almaciga</i> ( <i>Agathis philippinensis</i> Arb) species in Mindanao											

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
35.	<i>Study 2. Domestication of some native tree species</i>			ERDB					Growth assessment/data collection  Project site maintenance and protection  Packaging of information materials	Datasets gathered/collected (no.)  Site maintained and protected (no.)  Pamphlets packaged (no.)	2  1  50	340
	<b>Project 2. Tree Improvement and Development of High Quality Planting Materials of Indigenous Tree Species and Industrial Tree Plantations (ITP) Species</b>		The study aims to maintain seed sources and ensure supply of quality germplasm for planting stock production of priority tree species. It also aims to establish a new and next generation progeny field trials of ITP species.									
36.	<i>Study 1. Second generation of progeny field trial development of mangium (Acacia mangium) in Northern Mindanao</i>		The National Greening Program (NGP) is one of the strategies identified under Executive Order 23, Series of 2011 to address the governments' goal of poverty reduction, food security and climate change adaptation and mitigation. The NGP aims to plant 1.5 B trees over a period of 6 years starting 2011. The government has set very high target to reforest about 250,000 hectares of forest lands every year in an attempt to establish an additional 1.5 million hectares of forest cover by 2016.  With the existing policy to use only seeds from identified seed sources, selection of mother "plus "trees (PT) from the identified seed stands (natural or plantation stands) and conversion establishment to a Seed Production Areas has become an ongoing	ERDB	Jan. 2015 Dec. 2019		Tree growers; LGUs; Academe Environmental advocates		Exploration and reconnaissance survey of potential plus trees  Phenological observation of identified plus trees of ITP species  Germplasm collection, processing and testing of identified ITP species  Site identification/selection of new PFT  Production and maintenance of seedlings for the trial  Establishment of new progeny field trial	Potential plus trees identified (no.)  Potential plus trees observed (no.)  Families collected, processed and tested (no.)  Sites selected/identified (no.)  Seedlings produced from quality seeds (no.)  New progeny field trial established (no.)	200  200  150  3  9000  3	2,206
37.	<i>Study 1.1. Second generation of progeny field trial development of bagras (Eucalyptus deglupta Blume) in Northern Mindanao</i>		activity of the DENR specifically its research arm both the ERDB main and the regional research counterpart.  It is expected that the establishment of regional SPAs will ensure reliable sources of high quality forest tree seeds to supply the needs of their respective areas for the NGP	ERDB	Jan. 2015 Dec. 2019		Tree growers; LGUs; Academe Environmental advocates		Maintenance and protection of established progeny field trial    Assessment and evaluation of established progeny field trial	Sites maintained and protected (no.)  Hectares maintained (no.)  Datasets gathered per site (no.)	3  9  3	1,007
38.	<i>Study 2.1. Growth and genetic variation of first generation progenies of some industrial tree plantation species in Northern Mindanao</i>		and for other future forest ecosystems rehabilitation and restoration programs.  The study aims to identify and select potential stands of indigenous and ITP species as seed source and establish and maintain seed sources.	ERDB	Jan. 2015 Dec. 2019		Tree growers; LGUs; Academe Environmental advocates		Maintenance of progeny field trials    Assessment of seedling seed orchard  Operation and maintenance of seed laboratory and storage facilities	Hectares maintained and protected (no.)  SSO maintained and protected (no.)  SSO assessed (no.)  Seed storage operated and maintained (no.)	8.5  5  5  1	780

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
39.	Study 2.2. Growth and genetic variation of first generation progenies of some industrial tree plantation (ITP) species in Eastern Mindanao			ERDB	Jan. 2015 Dec. 2019		Tree growers; LGUs; Academe Environmental advocates		Maintenance of progeny field trials  Assessment of seedling seed orchard/data collection  Operation and maintenance of seed laboratory and storage facilities	Hectares maintained and protected (no.)  SSO/SS maintained and protected (no.)  Datasets gathered (no.)  PFT rouging conducted (no.)  Seed storage operated and maintained (no.)	12.3  8  4  1  1	1,321
40.	Study 2.3. Genetic variation of falcata ( <i>Falcataria mollucana</i> (L) Nielsen) resistant to gall rust and pink canker			ERDB	Jan. 2015 Dec. 2019		Tree growers; LGUs; Academe Environmental advocates		Maintenance of progeny field trials  Assessment of seedling seed orchard  Operation and maintenance of seed laboratory and storage facilities	Hectares maintained and protected (no.)  SSO maintained and protected (no.)  Datasets gathered and analyzed (no.)  Seed storage operated and maintained (no.)	1.2  1  2  1	122
41.	<b>Project 3. Development of Integrated Pest Management for Industrial Tree Plantation (ITP) in Mindanao</b>			ERDB			Tree farmers; Pos; investors; nursery; academe; researchers	Ongoing	Survey and monitoring of P/D in the forest nurseries and ITPs/other forest plantations/ NGP/CBFM areas under Climatic types II, III and IV  Evaluation/verification of P/D control strategies used by the nursery operators and ITPs/other forest plantations/ NGP/CBFM areas  Establishment and monitoring of experimental plots for the determination of control measures of key pests in ITPs  Updating of P/D database for forest nurseries and ITPs/other forest plantations  Generation of GIS map on the geographic distribution of P/D under the AOR of FTRRC	Sites surveyed and monitored (3 sites per climatic type: II,III and IV/region) (no.)  Control strategies used by the nursery operators/forest plantation owners evaluated/verified (no.)  Experimental plots established/monitored (no.)  P/D database updated (1 per region) (no.)  GIS map generated (1 per region) (no.)	9  2  6  3  3	<b>606</b>

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
	Mining and Degraded Areas Rehabilitation Research Center (MDARRC) Regions 11 and 12)											
X.	Action RDE Program to Stabilize Mined-out and Degraded Areas through Rehabilitation Technologies											
	Project 1. Generation and Transfer of Technologies for the Rehabilitation of Degraded Ancestral Domain Areas, Community-Based Management Areas and Multiple-Use Zone Protected Areas											
42.	<i>Study 1. Establishment of demonstration area for the rapid diffusion of technologies to rehabilitate degraded multiple use zone protected and upland areas</i>	Benchmark data of multiple use zone protected area  Database of rehabilitation technologies/ practices  Technology manual and policy recommendation	The project aims to generate/develop sustainable technologies to rehabilitate degraded terrestrial protected areas. These site will serve as learning site in showcasing rehabilitation technologies for such areas. At the end of the implementation period, the project shall come up with a policy recommendation to be disseminated and adopted by concerned sectors/stakeholders.	ERDB	Jan. 2015 Dec. 2018	Brgy. Lamalahak, Lake Sebu, South Cotabato	GAs, LGUs NGOs	Ongoing	Development of demonstration area  Benchmarking of the study site  Delineation of the study site  Capacity building  IEC materials	Demonstration area developed (no.)  Site benchmarked (no.)  Site delineated (no.)  Capacity building conducted (no.)  IEC materials produced (no. of copies)	1  1  1  2  200	932
43.	<i>Study 2. Generation and transfer of technologies to rehabilitate degraded community-based forest management (CBFM) areas</i>	Policy recommendation and IEC materials	This project shall study the various rehabilitation strategies to restore soil nutrients and increase crop productivity of cogon lands and other degraded areas to help uplift the economic condition of farmers in the uplands. Rehabilitation strategies shall include planting of trees and cover crops treated without and with fungi such as mycorrhiza to help source out nutrients and enhance plant growth and development. Mycorrhiza is known to enhance growth of plants in degraded and nutrient deficient soil.	ERDB	2015 2020	New Corella, Davao del Norte	GAs, LGUs NGOs	Ongoing	Monitoring and maintenance of the study site  Data collection (assessment of the health status of test plants; rainfall data; growth and survival assessment; ground cover assessment; soil analysis)  Capability building	Site monitored/maintained (no.)  Datasets gathered (no.)  Capability building/training conducted (no.)	1  4  1	436
44.	<i>Study 3. Phytological control of cogon (Imperata cylindrica (L.) Beau) using tree seedlings applied with biofertilizer and combination of NPK and vermicast in degraded ancestral domain area, Talaingod, Davao del Norte (new study)</i>	Technology for rehabilitating degraded grassland area using biofertilizer and organic/inorganic fertilizers; Policy recommendation; and IEC materials	The study aims to generate technologies for the stabilization of degraded areas under Certificate on Ancestral Domain Title (CADT) in Davao del Norte.	ERDB	2018 2020	Talaingod, Davao del Norte	GAs, LGUs NGOs	New	Identification of experimental site  Capability Building  Development of database	Experimental site identified (no.)  Experimental plots established (no.)  Trainings conducted (no.)  Datasets collected(no.)  Database developed (no.)	1  18  2  5  1	550

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
	<b>Project 2. Generation and Transfer of Technologies for Rehabilitation of Mine Waste Areas</b>											
45.	<i>Study 1. Phytoremediation for mine waste area in Naboc, Monkayo, Compostela Valley</i>	Phytoremediation strategies for mine waste area	The study aims to improve/stabilize the soil condition of mine waste areas affected by mining activities. The project shall develop phytoremediation strategies by assessing plant species with ability to thrive in mercury contaminated waste areas. Level of mercury in existing plants shall be test to determine such ability. The result of this study will cater the technology needs of the government agencies and private organizations with mandates of promoting a clean and healthy environment for the well-being of the people in the mining communities.	ERDB	2015 2019	Monkayo, Compostela Valley, Region 11	GAs, LGUs NGOs		<p>Site monitoring and maintenance of the study site; assessment of any infestation; documentation</p> <p>Growth and survival assessment / gathering of growth data of the experimental plants; collection of herbarium for different plant species growing in the mine waste area documentation</p> <p>Conduct of maintenance activities (Brushing, fertilizer application, restoration of destroyed block boundary markers and plant markers, etc.)</p> <p>Collection of soil samples and plant tissues for laboratory determination of mercury contamination; collection of herbarium for different plant species growing in the mine waste area ; documentation</p> <p>Submission of soil and plant samples to &amp; collecting the result from the analytical laboratory</p>	<p>Existing database updated (no.)</p> <p>Experimental site maintained (no.)</p> <p>Capability building/training conducted (no.)</p> <p>Terminal report prepared &amp; submitted (no.)</p> <p>Handbook on rehabilitation of mine waste area (no.)</p>	1 1 1 1 1	453
46.	<i>Study 2. Performance of different cloned climax species interplanted in existing tree plantation within mined-out areas of CCC</i>	Drafted policy brief	The study aims to rehabilitate degraded mined-out areas using clone climax species for sustainable production and development of degraded mined-out areas.	ERDB	2017 2021	CCC, Toledo City, Cebu	GAs, LGUs NGOs	Ongoing	<p>Biodiversity assessment/survey</p> <p>Raising of planting stock</p> <p>Establishment of experimental plots</p> <p>Maintenance and protection</p> <p>Collection of soil samples</p>	<p>Flora and faunal survey conducted (no.)</p> <p>Cloned seedlings propagated (no.)</p> <p>Experimental plots established and outplanted (no.)</p> <p>Experimental plots maintained and protected (no.)</p> <p>Soil samples collected (no.)</p>	2 630 21 21 2	1,202

	RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	EFT TO BE GENERATED	PROJECT DESCRIPTION	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	PROJECT LOCATION	TARGET CLIENTELE	PROJECT STATUS	ACTIVITY	OUTPUT SPECIFICATION	TARGET	BUDGET (Php'000)
									Gathering of growth performance data (survival, height and diameter)  Gathering of environmental data (rainfall, soil temperature, atmospheric temperature, light intensity and relative humidity of the experimental area)  Report writing	Datasets collected (no.)  Database updated (no.) Project staff capacitated (no.)  IEC material submitted (no.) Annual report submitted (no.)	5  1 1  1 1	
	<b>Urban, Toxic Substances and Hazardous Hazardous Waste Research Center (UTHRC) (NCR)</b>											
XI.	<b>Urban Ecosystem and Best Practices for the Ebatement of Pollution through Networking and Management of Toxic Substances and Hazardous Wastes</b>											
	<b>Project 3. R&amp;D on Remediation Technologies for Reduction of Toxic Substances and Hazardous Wastes</b>											
47.	<i>Study 1. Degradation of polyethylene, polypropylene, and polystyrene plastics using indigenous bacteria</i>	Technology in enhancing polyethylene (PE), polypropylene (PP), and polystyrene (PS) degradation using selected bacteria	The study seeks to develop a technology in enhancing polyethylene (PE), polypropylene (PP), and polystyrene (PS) degradation using selected bacteria.	ERDB	Jan. 2017 Dec. 2019	Quezon City; Parañaque; Manila	LGUs; Research agencies; Academe	On-going	Determination of polypropylene and polystyrene degradation capacity of bacterial isolates  Determination of polyethylene degradation of selected isolate added with photocatalysts  Data analysis and report writing	Rate of decay measured per plastic type: - polypropylene (no.) - polystyrene (no.)  Rate of decay measured (average): - control (no.) - bacteria only (no.) - photocatalyst only (no.) - bacteria + photocatalyst (no.)  Report prepared and submitted (no.)	1 1  1 1 1 1  1	792

Prepared by:

Recommending Approval:

**MARIE ABBIE GAIL L. DELA CUEVA**  
Planning Officer III

**HENRY A. ADORNADO, Ph.D**  
Director