

**MATRIX FOR PRESENTATION OF ERDB ONGOING PROGRAMS AND PROJECTS  
IN-HOUSE REVIEW CY 2015**

RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	PROJECT DURATION (YS-YE)	TARGET BENEFICIARIES	DELIVERABLES (BASED ON UWM)	OUTPUT/MILESTONE	IEC MATERIALS PRODUCED	MAJOR PROBLEMS ENCOUNTERED	ACTION TO BE TAKEN
<p><b>I. R and D Program on Forest Ecosystems Resiliency and Sustainability</b></p> <p>Project 1: Forest Vulnerabilities and Risk Assessments</p> <p><i>Study 1: Formulation of environmental flow procedure and criteria allocation</i></p> <p>- Antonio M. Daño</p>	<p>Jan. 2014 Dec. 2015</p>	<p>NWRB, LGUs, riverine communities, stakeholders</p>	<p>Guidelines/manual on environmental flow (no.)</p>	<p>- Identified two (2) rivers as project sites (Vintar and Lipadas) for 2015</p> <p>- Assessed health status of rivers and environmental flows</p> <p>- Performed hydrologic measurements and water quality testing in Anqat and Vintar Rivers</p> <p>Site-specific secondary data gathered</p> <p>- Gathered historical data on flow discharges for two rivers</p>	<p>-none vet-</p>	<p>- Availability of complete historical data</p> <p>- Data gathered needs to be sanitized prior to modeling</p>	<p>- Sanitize gathered data</p> <p>- Consultative workshop with NWRB</p>

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<p><i>Study 2: Vulnerability assessment of selected watersheds in the Philippines to climate change</i></p> <p>- Jose Isidro Michael T. Padin</p>	<p>Jan. 2014 Dec. 2016</p>	<p>LGU, FMB, watershed stakeholders</p>	<p>Revised manual (no.)</p> <p>Biophysical and hydrological assessments conducted</p> <p>Vulnerability assessment reports with maps</p>	<p>Identified new factors and weights for presentation and approval</p> <p>Biophysical and hydrological assessments of Vintar Watershed (R1), Daet Watershed (R5), Aananan Watershed (R6) and Ibajay Watershed (R6) were conducted</p> <p>- Identified potential hazards - Identified factors affecting hazards - Data analysis and map development</p>	<p>-none vet-</p>	<p>Lack of technical manpower to assist in the implementation</p> <p>Not all 142 priority watersheds have characterization reports</p> <p>Issues with peace and order within the watershed areas</p> <p>Characterized watersheds have no shapefiles</p> <p>Some of the shapefiles retrieved were erroneous esp. in boundary delineation</p>	<p>- Writeshop on the refinement of methodology of Vulnerability Assessment for Climate Change scheduled on Oct. 6-9, 2015 - Publication of the Revised VA Manual by 2016 - Requested assistance from other project staff and regular personnel of the division -Simultaneous travels were done to meet the target activities</p> <p>Change in identified/target watersheds</p> <p>Proper coordination with concerned CENROs</p> <p>Retrieved available shapefiles from MPDO and CENRO offices</p>

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<p>Project 2: Genetic Improvement of Forest Tree Species for</p> <p><i>Study 1: Germplasm Collection, Seed Production and Seedbanking of Superior Forest Trees</i></p> <p>- Romana A. Mauricio</p> <p><i>Study 2: Domestication, Breeding, and Conservation of Priority Forest Tree Species</i></p> <p>- Maria Theresa A. Delos Reyes</p> <p>Component 1: Provenance trials for priority forest tree species</p> <p>- Marilyn Q. Landicho</p>	<p>Jan. 2013 Dec. 2018</p> <p>Oct. 2012 Dec. 2018</p>	<p>Tree farmers; Private nursery operators; CBFM/IFMA/ SIFMA</p> <p>LGU; Academe; Private sector; Tree growers; Nursery operators;Pos</p>	<p>Species identified (no.)</p> <p>Species collected (no.)</p> <p>Protocol developed and seed collection, storage, treatment health determination and germination (no. = 1)</p> <p>GIS based map of the best provenances, best seed sources marked, maintained and protected (narra and molave)</p>	<p>55 species identified, assessed and documented out of 60</p> <p>Germplasm/seeds from 45 species collected and processed out of 60</p> <p>1 protocol on Seed Tech to be produced by the end of 4th quarter</p> <p>4 narra and 4 molave provenance trial plantations maintained and protected</p> <p>12th month measurement of molave provenance trial plantations in R6. R7 and R3 conducted</p>	<p>-none yet-</p> <p>-none yet-</p>	<p>Other regions cannot comply with the required no. of species to be identified/collected for the quarter inspite of continuous reminders/ following-up</p> <p>Some seeds identified for collection were aborted/ flowering did not continue</p> <p>Lack of regular personnel to join the team in the monitoring activities (other regular personnel have many commitments in other division's projects)</p> <p>Narra provenance trial plantation in R3 trespassed, portion of the plantation planted with perennial crops</p>	<p>Remind the Focal Person thru Center Head during Mancon</p> <p>Regular personnel should prioritize the division's program/projects</p> <p>Legal complained issued by PSAU administration against the illegal settler</p>

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<p>Component 2: Progeny tests cum seedling Seed Orchards</p> <p>- Maria Theresa A. Delos Reyes</p>	Jan. 2013 Dec. 2018	LGU; Academe; Private sector; POs; Nursery operators	Seedlings seed orchards established and maintained (no.)	<p>18th month measurement of narra provenance trial plantations in R6, R7 and R3 conducted</p> <p>9 progeny trial plantations established and maintained</p> <p>12th month measurement of progeny trials in CARAGA and R9 conducted</p> <p>Initial measurement of progeny trials in R1, R2, R4B, R10, R11, R12 and CAR conducted</p> <p>First year fertilization conducted in all sites, except for R2</p>	-none yet-	High mortality in progeny trial plantations in R2 and 12 due to severe drought and accidental burning in R10 and 11	<p>- Replacement planting conducted (complete for R10, partial in R11 and R12)</p> <p>- Replacement planting in R2 will be conducted in the 4th Q of 2015</p>
<p>Component 3: Clonal tests cum clonal seed orchards of selected parent trees</p> <p>- Romana A. Mauricio</p>	Jan. 2013 Dec. 2018		Clonal seed orchards established and maintained (no.)	<p>12 clonal trial plantations established and maintained</p> <p>12th month measurement of clonal trials in R9, R11 &amp; CARAGA conducted</p> <p>Initial measurement of clonal trials in Regions 1, 2, 4B, 5, 7, 10 and 12 conducted</p> <p>Yearly fertilization conducted in Regions 1,2, 4B, 7,9,11,12 and 13</p>	-none yet-	<p>Grafted seedlings were not able to survive in the nursery stage (R4A) and in the field (R5)</p> <p>High mortality in Regions 1, 2, 6 and 13</p> <p>Stem/trunk borer (grubs and hornworm larvae) noted in some of the molave clonal grafts in Region 11</p>	<p>- For termination (Region 4A)</p> <p>- For re-establishment (Region 5)</p> <p>- Re-grafting of vernal scions conducted in R1</p> <p>- Replacement planting to be conducted in R2,6 and 13 in 4th Quarter</p> <p>Application of insecticide, sanitation cutting and painting of the branches that were cut were conducted: for continuous monitoring</p>

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<p>Component 4: Establishment of Ex-situ gene conservation stands</p> <p>- Alvin F. Olvida</p>	<p>Oct. 2012 Dec. 2018</p>		<p>Ex situ gene conservation areas of indigenous forest tree species maintained (no.)</p>	<p>3 ex situ conservation areas maintained</p> <p>3 maps generated</p>	<p>-none yet-</p>	<p>Wood borer noted on seedlings in Region 6</p>	<p>For continuous monitoring; if pests spread throughout the area, expert's suggestion is needed</p>
<p>Component 5: Assessment of genetic diversity of priority forest species through DNA analysis</p> <p>- Maria Theresa A. Delos Reyes</p>	<p>Jan. 2013 Dec. 2018</p>	<p>Refo/Plantation managers, TI workers, geneticists, breeders, government and private sectors, foresters, conservationists, academe</p>	<p>Genetic diversity determined (no. of protocol)</p>	<p>4 protocols on genetic diversity determined through SSR analysis</p> <p>Genetic diversity of Benquet pine from SPAs/plantations in Benquet, Bukidnon, Nueva Ecija and Ilocos Norte assessed by end of 4th quarter 2015</p> <p>Genetic diversity of Narra (R13), Bagalunga (R9) and Benquet pine (CAR) plus trees marked as seed sources/ parentals of the Progeny Tests cum Seedling Seed Orchards Component determined by 2016</p>		<p>Problem in obtaining PAGE (Polyacrylamide gel electrophoresis) protocol</p>	<p>Continuous optimization on-going</p>
<p><i>Study 3: Development and Validation of Vegetative Propagation Techniques for Priority Forest Tree Species</i></p> <p>- Gregorio E. Santos, Jr.</p>			<p>IEC material produced/ disseminated (no.)</p>	<p>1 IEC material produced</p>	<p>-none yet- By end of 4th quarter</p>		

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<p>Component 1: Macropropagation Techniques</p> <p>- Gregorio E. Santos, Jr.</p>	Oct. 2012 Dec. 2018	LGU; Academe; Private sector; POs; Tree growers; Nursery operators	Macropropagation protocols developed (no. of species)	<p>3 macro- propagation protocols as basic guidelines in mass producing target priority forest tree species developed by end of 4th quarter</p> <p>3 target priority forest tree species established and maintained in the hedge garden</p>	A brochure titled " <i>Non-mist Propagation Technique for Philippine Dipterocarps</i> "	Roof of clonal nursery damaged by "Typhoon Glenda", resulted to high mortality of cuttings due to uncontrolled temperature, light intensity and relative humidity inside the clonal nursery.	On-going rehabilitation of the clonal nursery are being undertaken
<p>Component 2: Micropropagation techniques</p> <p>- Romana A. Mauricio</p>	Jan. 2013 Dec. 2018	LGU; Academe; Private sector; POs; Tree growers; Nursery operators	Micropropagation protocols developed (no. of species)	<p>1 micropropagation protocol developed</p> <p>1 micropropagation protocol validated (bagras) -from laboratory to nursery stage</p> <p>1 micropropagation protocol developed (Philippine Teak) -laboratory stage-shoot and root formation</p>	-none yet- (to be produced by 4th Quarter 2015)	No response on Batikuling explants for almost 3 years	Change of species - Mamalis ( <i>Pittosporum pentandrum</i> )
<p><i>Study 4: Determination of the Effects of Biological and Organic Fertilizers on the Growth performance of Priority Forest Species</i></p> <p>- Marcelina V. Pacho</p>							
<p>Component 1: Evaluating the effects of biological and organic fertilizers on the growth performance of priority species</p> <p>- Carmelita M. Mojica</p>	Oct. 2012 Dec. 2018	NGP coordinators; nursery growers; farmers; academe; researchers	Protocols developed on biofertilizers/ vermicompost/ organic matter (no. of species)	<p>4 protocols developed</p> <p>Produced seedlings of laqong tulis, malapapaya, iqyo and bitaog applied with biofertilizers</p>	-none yet-	None	None

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<p>Component 2: Application of rhizobia for vigor improved leguminous tree seedlings</p> <p>- Marcelina V. Pacho</p> <p><i>Study 5: Application of propagation protocols developed on the Growth and Survival of superior Indigenous Forest Tree Species</i></p> <p>- Anelito B. Exconde/ Diano Garcia</p>	Oct. 2012 Dec. 2016	Tree farmers; Private nursery operators; CBFM/IFMA/SIFMA holders; LGUs; SUCs	Nursery protocol for rhizobia inoculant produced/species (no.)	7 Rhizobial isolates	-	-	Requested for termination
<p><i>Study 6: Development and management of database and information System for the production of quality Planting Materials</i></p> <p>- Marilyn Q. Landicho</p>	Oct. 2012 Dec. 2018	Tree farmers; Private nursery operators; CBFM/IFMA/SIFMA holders; LGUs; SUCs	Database upgraded and maintained (no.)	1 database upgraded and maintained  224 seed sources identified, assessed & documented	-none yet-	None	None

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<p>Project 3: Restoration and Rehabilitation of Degraded Areas</p> <p><i>Study 1: Phytoremediation measures for the rehabilitation of small scale gold mining areas</i></p> <p>- Florita E. Siapno</p>	<p>Jan. 2015 Dec. 2017</p>	<p>LGU; communities; small scale miners; DENR; academe</p>	<p>IEC on potential endemic plant species for restoration of SGM areas (no.)</p>	<p>Literature review on the phytoremediation potential, propagation and nursery establishment of six (6) identified endemic plant species</p> <p>Six (6) potential endemic plant species were collected from SGM site in Brgy. Tawig, Paracale, Camarines Norte.</p> <p>Preliminary preparations for plant samples ongoing for heavy metal analysis: 4 - fern species, 1 - shrub species and 1 - tree species</p>	<p>-none yet- (to be produced by 4th Quarter 2015)</p>	<p>Low budget utilization and target accomplishment due to delay in heavy metal analysis of collected samples</p> <p>Unavailability of Mercury (Hg) plant tissue analysis in government laboratories</p>	<p>Coordination with BIOTECH-UPLB for Cadmium (Cd) and Lead (Pb) plant tissue analysis ongoing</p> <p>Coordination with non-government agencies with available Hg analysis facility is being worked out</p>
<p><i>Study 2: Development of biodiversity monitoring tool for mining areas under progressive rehabilitation</i></p> <p>- Maria Lourdes Q. Moreno</p>	<p>Jan. 2015 Dec. 2017</p>	<p>DENR; Mining companies</p>	<p>Biodiversity assessment report (no.)</p>	<p>Drafted contents of biodiversity monitoring tool</p> <p>Focus Group Discussion conducted in Brgy. Lucapon South, Sta. Cruz and Brgy. Uacon, Candelaria, Zambales</p> <p>Gathered secondary data on mining and biodiversity</p>	<p>-none yet-</p>	<p>Reconnaissance and biodiversity assessment in Mindanao site was postponed as the ETRB recommended to focus on formulating the biodiversity monitoring tool first and concentrate on the Zambales area.</p> <p>Only the FGD with the impact communities in Zambales has been conducted as the Mining Company is not</p>	<p>Reconnaissance and Biodiversity Assessment of the Mindanao site is scheduled for the 4th quarter of the year to be able to catch up with the targeted accomplishment for the year.</p>



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						operating since July of 2014. Kill with the Environmental Officer was thus impossible as yet.  Changes and lull with the hiring of a project staff. This causes some funds for such to be left unutilized.	Hiring of a new project staff.
<p>Project 4: Environmental Services of Upland Farms in the Philippines</p> <p><i>Study 1: Valuation of ecosystem services of a community-based Forest Management (CBFM) Area</i></p> <p>- Ma. Lourdes DC. Reyes/ Myline O. Aparente</p> <p>Establishment of Bamboo Community for Small and Medium-Scale Enterprise</p> <p>- Lynlei L. Pintor</p> <p>Co-Project Leader: Rowena C. Payuan</p> <p>Member of the Research Team: Myline O. Aparente</p>	<p>Jan. 2015 Dec. 2017</p> <p>Jan. 2014 Dec. 2018</p>	<p>CBFM, DENR and policy makers</p> <p>People's Organization</p>	<p>Physical accounts developed in CBFM area (no.)</p> <p>Monetary account (no.)</p> <p>Signed MOA (no.)</p> <p>Leadership Training Conducted (no.)</p>	<p>Reconnaissance survey in CBFM areas in Regions 5, 7 and 11 for the selection of the project site.</p> <p>Collection of secondary data of the CBFM areas visited.</p> <p>Conducted MOA signing in La Union (Dec. 29, 2014 -ERDB &amp; DMMMSU); and Camarines Sur with LGU and POs</p> <p>Enhanced knowledge and leadership skills of the officers and core group leaders through leadership trainings in Cam Sur and La Union</p>	<p>-none yet-</p> <p>-none yet- (to be delivered in the fourth quarter)</p>	<p>None</p> <p>None</p>	<p>None</p> <p>None</p>

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			Lecture on bamboo (no.)	Conducted IEC on the status of bamboo industry in the country and the economic and environmental importance of bamboo in Camarines Sur which served as an avenue for participatory planning with the community on the development of bamboo enterprise			
Rapid Environmental Rehabilitation and Climate Change Impact Mitigation through Bamboo Greening  - Digno C. Garcia  Co-Project Leader: Florentina D. Oliva	Jan. 2014 Dec. 2018	Peoples Organization in Balatan, Camarines Sur and Rosario, La Union	Seedlings produced (no.)  Established bamboo plantation (ha)  Data collected	Produced 2,480 bamboo seedlings  Three (3) hectares bamboo plantation established  Data collected on growth (height and diameter) and soil carbon	-none yet-	Difficulty in the identification/ selection of plantation sites since most of the forest area were already utilized for the National Greening Program	Exerted extra effort in the coordination with concerned agencies and organization like government offices, LGU and peoples organization.
An Integrated Science-Based Approach in the Rehabilitation of Mined-Out and Waste Dump Areas in Bagacay, Hinabangan, Samar (Phase II)  - Gregorio E. Santos, Jr.	Jan. 2014 Dec. 2016		Phytoremediation blocks maintained  60 hectares revegetated  Bioengineering measures established  IEC materials developed  Socio-economic condition analyzed	3 blocks maintained; 60 hectares revegetated	Rehabilitation strategies and ecotourism development for mined-out and waste dump areas in Bagacay, Hinabangan, Western Samar (Exconde, et al.)		

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<p><b>II. Ecosystems Dynamics and Sustainable Management of Coastal and Freshwater Ecosystems</b></p> <p>Project 1: Climate Change Mitigation and adaptation in Coastal and Marine Ecosystems</p> <p><i>Study 1: Climate change vulnerability of coastal and marine areas in priority watersheds</i></p> <p>- Jose Isidro Michael T. Padin</p> <p>Project Staff: Annieraj G. Antong</p>	<p>Jan. 2015 Dec. 2017</p>	<p>DENR, LGUs, NGOs, Government Agencies, Academe, Researchers and Private Sectors</p>	<p>Baseline data and assessment tools to enhance CC adaptation and mitigation in coastal and marine ecosystems</p> <p>Vulnerability assessment tool for coastal and marine ecosystem (no.)</p> <p>Coastal vulnerability assessment report with maps (no.)</p>	<p>Conducted training-workshop for the development and revision of assessment tool (July 14-17, 2015)</p> <p>Aquired shape files for storm surge and coasal erosion form DOST Project NOAH and Mines and Geosciences Bureau.</p> <p>Generated and revised major categories and sub criteria of the assessment tool. Conducted weighing of indicators according to importance and formulated the appropriate overall VA equation.</p>	<p align="center">-none yet-</p>	<p>Lack of manpower complement due to the on-going rationa- lization and implemen- tation of equally important intervening project.</p>	<p>Tap the services of available job contracts from other technical divisions/Request for hiring of additional project staff.</p>

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<p><i>Study 2: Dynamics of human settlements and migration patterns in coastal areas in relation to climate change</i></p> <p>- Carmela G. Taguiam</p> <p>Co-workers: Lorlina A. Calderon Ma. Marcia M. Santillan</p> <p>Project Staff: Cecille B. Quiambao</p>	Jan. 2015 June 2017	Local government units (bgy. & mun. level) coastal households	<p>Technical information of dynamics of settlements in and migration patterns (no.)</p> <p>Social parameters (demographic &amp; settlements profile, economic/ livelihood activities, psycho-sociological)</p>	Documented demographic and settlement profiles, economic livelihood activities and and psychological of coastal communities vis-à-vis the resilience of the populace to natural coastal hazards of coastal hazards and perturbations of coastal households in Bgys. Kalakhan, Olongapo, Zambales, Binahaan, Pagbilao, Quezon and Proper Taguisan and Proper Bansud, Bansud, Oreintal Mindoro	<p>None yet; data gathering are still being done.</p> <p>Presentation of research outputs the LGUs and preparation and submission of poster or technical paper for publication will be done in the fourth quarter.</p>	Availability of household heads to be interviewed as they were out of other house doing their livelihood activities, hence majority of the respondents were females.	
<p>Project 2: Bioecological Profiling of Mangroves in Relation to Climate Change</p> <p><i>Study 1: Sediment accretion, carbon stock accumulation and greenhouse gas fluxes in Philippine mangroves</i></p> <p>- Liza C. Ranés</p> <p>Project Staff: Benjo S. Salvatierra Rommel Mercado</p>	Jan. 2015 Dec. 2016	LGUs, SUCs, Research agencies; Academe, etc.	Technical report on the sediment accretion, carbon stock and GHG fluxes in mangrove soil (carbon dioxide, methane and nitrous oxide)	<p>A total of 14 RSETs were installed in four (4) study sites (intact, 5, 10 and 25 year old mangrove plantations in Pagbilao and Catanuaun, Quezon.</p> <p>Initial measurement for sediment accretion, vegetation assessment, soil and water quality were undertaken.</p> <p>Likewise, data collection for GHG (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) emission was also done.</p>	<p>Presentation during the MTSS at ERDB Audi. re: information about the newly implemented project study (Feb. 2015)</p> <p>IEC materials: Flyer and brochure</p> <p>Technical paper will be done on the 4th quarter</p>	None	

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<p><i>Study 2: Biodiversity and monitoring of natural and mangrove plantations in Region 4A</i></p> <p>- Ma. Lourdes Q. Moreno</p>	Jan. 2015 June 2016	Stakeholders of PMEF (students, researchers, community, LGUs, DENR, etc.)	<p>Datasets gathered/analyzed (no.)</p> <p>- Flora and fauna, biodiversity component (height, diameter, benthos, soil property, fauna) gathered and monitored (no.)</p> <p>Annual report (no.)</p>	<p>Biodiversity profile/baseline information of mangrove flora in selected sites of Pagbilao and Catanauan, Quezon</p> <p>Information on present level of mangrove resources utilization in the area</p>	-none vet-	<p>Disapproval of hiring an external fauna expert in the Project Management Procurement Plan, re-assignment of first project staff and resignation of the project staff to pursue MS study all contributed to delay in field work and being not able to deliver a sound faunal assessment which requires high level of expertise to be able to deliver a reliable baseline data.</p> <p>Since the budget allotted for hiring of job contract were not utilized, there is low fund utilization</p>	<p>- Fauna assessment to be scheduled on the last quarter of this year</p> <p>- Hiring of an experienced faunal expert</p>
<p>Project 3: Improving sustainability of Freshwater Ecosystems</p> <p><i>Study 1: Assessment of the environmental Impacts of invasive alien species on Freshwater Ecosystems</i></p> <p>- Carmelita I. Villamor</p> <p>Co-workers: Cynthia C. Marquez Jose Isidro Michael T. Padin</p> <p>Project Staff: Jenneza S. Castro</p>	Jan. 2014 Dec. 2015	LGUs; research agencies; academe; communities; marginal fishermen	<p>Technical information on bioinvasion in freshwater lakes (no.)</p> <p>Policy recommendations to reduce impacts of IAS (no.)</p>	<p>Datasets on physico characteristics (i.e. temperature, pH, conductivity, turbidity, DO, TDS and salinity) of the three selected lakes. Initial findings show that the classification of the lakes are still within set by the DENR-EMB (AO No. 34, 1990) which is as follows:</p> <p>- Lake Buhi (Class B) - Taal Lake (Class B) - Lake Sebu (Class C)</p>	-none vet-	<p>Lack of manpower and postponement of sampling schedule due due to the on-going rationalization and prioritization of MBFDP.</p> <p>Limited mesh size of gill nets used by hired fishermen (the use of fine mesh nets is prohibited) could result to limited number of fish species caught.</p>	<p>Additional field-works/sampling for the succeeding quarter</p> <p>A sampling will be done using fine mesh net (if permitted) for all sampling stations for fish catch, including the fish sanctuary. Actual fish catch of each fishermen present will be obtained to supplement the data.</p>

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				<p>Profile of introduced species of fauna and flora vis-à-vis indigenous species present in the 'selected lakes.</p> <p>A total of 150 households were interviewed to assess their level of awareness on fresh- water IAS and its impact in the environment and community. Processing of data is still on going.</p>			
<p><i>Study 2: Identification of biological indicators for water quality</i></p> <p>- Cynthia C. Marquez</p> <p>Project Staff: Yves Christian L. Cabillon</p>	<p>Jan. 2014 Dec. 2015</p>	<p>LGU's, Academe, Other Environmental Agencies (eg. EMB, LLDA, etc)</p>	<p>Information on Biological indicators.</p> <p>Policy recommendations to river systems classification scheme/ guidelines based on biological indicators.</p>	<p>Biological indicators in aquatic ecosystems such as plankton and benthos were integrated with the water quality index to describe the overall health of Imus and Parañaque River.</p> <p>Paranaque River classified as Class C (waters which are intended to support the growth and propagation of fish and other aquatic resources) has poor water quality based on WQI and biotic indices such as SDI and PPI; Further, it did not pass the class C standards based on physico-chemical parameters.</p>	<p>-none yet-</p>	<p>The major problem we encountered was the scheduling of field works. We have to consider both the availability of ERDB vehicles and the schedule of the DOST 4a for ex-situ water quality analysis.</p>	

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				<p>Nonetheless, the river is considered as Class C waters by EMB based on water usage (DAO 34-1990).</p> <p>Imus River, another class C water, passed the requirements for class C based on physico-chemical parameters; nonetheless, the river is in critical to bad state based on WQI, &amp; very polluted and has high organic organic pollution based on biological</p>			
				<p>assessment (e.g. phytoplankton) measured using SDI and PPI, respectively.</p> <p>The presence of pollution tolerant forms of of phytoplankton like <i>Navicula</i> , <i>Flagilaria</i> , <i>Nitzchia</i> , <i>Scenedesmus</i> and <i>Oscillatoria</i> in both river systems is an indication of high organic pollution</p> <p>Conclusion/Recommendation: Current classification of the water bodies based on usage does not reflect the true condition of the rivers. We</p>			

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				recommend to improve/revise the current system of classifying rivers (DAO 34-1990) by integrating the Water Quality Index and the biological indicators to be able to come up with a comprehensive picture of the water quality and health of a particular river system.			
<p><i>Study 3: Development of management strategies of confirmed peatland</i></p> <p>- Simplicia A. Pasicolan</p> <p>Project Staff: Jamella M. de Castro Wencelito P. Hintural Girlie H. Rueda</p>	<p>Jan. 2014 Dec. 2016</p>		<p>Information materials in support to the protection of peatlands for sustainability of freshwater ecosystem (no.)</p>	<p>4 confirmed peatland sites</p> <ul style="list-style-type: none"> <li>a. Lopez, Quezon               <ul style="list-style-type: none"> <li>- Brgy. Lalaguna</li> <li>- Brgy. Rizal</li> </ul> </li> <li>b. Bambanin, Victoria Oriental Mindoro</li> <li>c. Talacogon &amp; La Paz, Agusan del Sur</li> <li>d. Mt. Pulag               <ul style="list-style-type: none"> <li>- Ambulalakaw Lake</li> <li>- Lake Incolos</li> <li>- Lattep-ngapos Lake</li> </ul> </li> </ul> <p>Biodiversity assessment where indicator species were observed, such as:</p> <ul style="list-style-type: none"> <li>- Putat (<i>Barringtonia racemosa</i>)</li> <li>- Lumbia (<i>Metroxylon sagu</i>)</li> <li>- Bangkal (<i>Nauclea orientalis</i>)</li> </ul> <p>Results of soil and water quality analysis</p> <p>Establishment of gauging area for hydrology</p>	<p align="center">-none yet-</p>	<p>Peatland forest fires</p> <p>Political issue concerning data collection in Mt. Pulag sites. Conducting continuing research needs several requirements from the village officials which is quite intricate. They allowed only site inspection/visitation but not research and gathering of data. PASU cannot guarantee the Team's safety.</p> <p>Soil samples collected from Talacogon and La Paz, Agusan del Sur peatland sites were washed away by strong typhoon Glenda in July 2014.</p>	<p>Collection of another batch of soil samples from the said sites which was done this quarter. Soil samples are now being air dried and will be brought to Soil Science Department</p>



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<b>III. Promoting Ecosystems Health and Sustainability of Urban Areas through Research and Development</b>							
Project 1: Research and Development for the Management and Improvement of Commercial and Industrial Zones at highly urbanized areas in the Philippines							
<i>Study 1: Ecosystems perspective in zoning and land-use planning in highly urbanized areas</i>  - Fe T. Ociones	Jan. 2015 Dec. 2016	DENR, LGUs, Communities and other stakeholders	Terrain analysis / spatial information on critical landform developed  Technical assessment report on the status of urban areas (no of sites)	Primary and secondary data gathering on socio-economic profiles water pollution in 2 sites  Landuse data gathering and verification in 2 sites		TO's not approved for planned activities itemized in the approved travel plan of WFP in the first 2 quarters  Late accomplishment of activities due to the very late start of implementation (June)  Non-hiring of contractual assistant replacement	- Reprogramming - Catch-up plan
<i>Study 2: Bioremediation Schemes for polluted waterways and waste water reservoir at industrial and commercial areas</i>  - Marcelina V. Pacho  Project Staff: Julius F. Bañega	Jan. 2015 Dec. 2016	DENR, LGUs, Communities and other stakeholders	Bioremediation schemes for polluted waterways developed	A total of 8 water quality parameters were for Dagupan City and Cagayan de Oro City rivers.	-none yet-	Both the project leader and the project staff were tasked to provide assistance in MBFDP baselining thus halting the activities for the Bioremediation Schemes Project.	Project activities are currently being worked on double time to compensate some backlogs.

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<p>Project 2: Improving and Enhancing Healthy Ecosystem for Communities and Settlement Areas</p> <p><i>Study 1: Development of incentive mechanisms for the management of solid waste in San Fernando, La Union</i></p> <p>- Carmela G. Taguam</p> <p>Co-worker: Lorlina Calderon</p> <p>Project Staff: Cecille Quiambao</p>	<p>Jan. 2015 Dec. 2015</p>	<p>DENR, LGUs (barangay and municipal level), urban settlers, and other stakeholders</p>	<p>Incentive mechanism developed on solid waste management practices</p>	<p>Collected and coded primary data (demography, economic, political-organizational-and-institutional structure; and psycho-sociological understanding of solid waste management act, solid waste practices of households, and identification of acceptable mechanism) in Dagupan and Cagayan de Oro.</p>	<p>None yet; data gathering are still being done.</p> <p>Presentation of research outputs in the LGUs and preparation and submission of poster of technical paper for publication will be done in the fourth quarter.</p>	<p>Availability of household heads to be interviewed, as they were out of their house doing their livelihood activities, hence majority of the respondents were females.</p> <p>Delayed implementation of the project activities due to series of revisions in the proposal.</p>	
<p><i>Study 2: Application of green technologies to brace communities against impacts of urbanization</i></p> <p>- Aurora S. Jose</p> <p>Technical Staff: Vienna O. Austria Marla V. Cambay</p> <p>Support Staff: Marciana T. Orobia Fe Cortiguerra</p>	<p>July. 2015 June. 2017</p>	<p>DENR, LGUs, Household &amp; other stakeholders</p>	<p>Technical information on green technology at the household level</p>	<p>The study started in July 2015 in Dagupan City. Coordination with the mayor, barangay captains PENRO and GENRO Dagupan were made.</p> <p>Fifty-nine (59) respondents of 51 female and 8 male were interviewed on the water harvesting in five urban barangays. Survey interview revealed that no harvesting technology was practiced at the household level. These findings were supported by the key informant</p>	<p>One significant deliverable of the study before its implementation is a popular article on "ENR GT to embrace Communities" published in Canopy International Vol. 40, No. 2 (July-Dec. 2014)</p>		<p>In the implementation of the study as catch plan, it is suggested that water harvesting (Rain Water and Small Water Impounding) will be gathered in Barangay Apugan, CAR and e-energy in Ilocos (R1).</p>

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				<p>interview with General Manager of Dagupan Water District that no water harvesting technology is being done in the communities. Almost all of the residents were highly dependent on the supply of water district which was ground water sourced.</p> <p>With regard on solid waste management, 25 respondents from our barangays were interviewed. Survey results revealed that they practiced solid waste segregation. Their waste materials were collected by eco-aide of the barangay which they were paying 30 pesos/week.</p> <p>1 Material Recovery Facility (MRF) was established in Brgy, Mayambo.</p>			

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<p>Project 3. Improving Green Parks and Recreational Areas in Highly Urbanized Areas in the Philippines</p> <p><i>Study 1: Ecological assessment in parks, green spaces and school campuses in urban areas</i></p> <p>- Simplicia A. Pasicolan</p> <p>Project Staff: Wencelito Hintural</p>	<p>Jan. 2015 Dec. 2017</p>	<p>DENR, LGUs, Communities and other stakeholders</p>	<p>Rapid assessment procedure as inputs to urban planning, management and green growth developed</p>	<p>Identified green spaces, parks, and campus mini-forests through City Environment and Natural Resources Office and Municipal Planning and Development Office (MPDO)</p> <p>Biodiversity assessment of selected urban green spaces, parks, and campus mini-forests</p>	<p align="center">-none yet-</p>	<p>Limited studies on ecological assessment on highly urbanized areas (secondary data)</p> <p>Standards for green spaces are needed but there is insufficient evidence to underpin them.</p> <p>Low level of public participation in urban green space development process</p>	<p>Acquired Comprehensive Land-use Plan (CLUP) of all sites (Dagupan and Cagayan de Oro City) as basic reference of the project</p> <p>There is a need to develop more evidence on minimum standards for green spaces. To come up with the guideline in sustainable management of green spaces in highly urbanized areas by developing Philippine Biodiversity Index.</p> <p>The project will provide massive public awareness campaign and participatory activities in sustainable management of urban green spaces.</p>

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<p><b>IV. Impact Program/Project</b></p> <p>Removing Barriers to Invasive Species Management in the Production and Protection in Southeast Asia (Component 4. National Pilots on the prevention, control and management of priority forest IAS)</p> <p>Component 4. National pilots on the prevention, control and management of forest IAS</p> <p>- Carmelita I. Villamor</p> <p>Project Staff: Yrah Joy C. Panizales</p>	<p>March 2013 Dec. 2015</p>	<p>LGUs, PO, community, research agencies, academe and other stakeholders</p>	<p>Control measures employed and documented (no.)</p> <p>Community mobilization enforced (no.)</p> <p>Biological indicators monitored (no.)</p>	<p>Results of pilot IAS management implementation (map distribution of target species, testing of control/management strategies, habitat rehabilitation) disseminated</p> <p>MP finalized and integrated with PA Management Plan of the Allah Valley Watershed Forest Reserve (AVWFR)</p>	<p>One display board/bill-board placed at the pilot site</p>	<p>Identification of biological indicators</p>	<p>Thorough observation (notes/ remarks) are being applied to each where <i>P. aduncum</i> stand</p>

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<p><b>V. Sustainability of Laboratory and Experimental/ Demonstration Services in Support to RDE Programs, Activities, and Projects (PAPs) of ERDB Proper and Research Centers</b></p> <p>Project 1: Quality Development and Management Program for Laboratory Services in Support to RDE Programs, Activities and Projects of ERDB Proper and Research Centers</p> <p>Operation and Maintenance of the following laboratories:            - Botany Laboratory cum Herbarium / Rattan Genebank            - Seed Laboratory            - Analytical Laboratory            - Entomology Laboratory            - Tissue Culture Laboratory            - Microbiology / Pathology Laboratory            - Zoology Laboratory</p> <p>Maintenance and Improvement of the Forest Molecular Laboratory</p>	<p>April 2015 March 2020</p>		<p>Research laboratories maintained (no.)</p> <p>Guidelines on the use of laboratory reviewed/ assessed (no.)</p>	<p>8 research laboratories maintained</p> <p>A manual on the proper operation and maintenance (e.g. proper attire, procedures, handling of equipment, etc.) has been drafted.</p>		<p>Faulty delivery of bristol boards hampered the flow of activities.</p>	<p>Coordinate with Property Section regarding the proper specifications of the item.</p>
<p>Project 2: Science-based Management of Experimental Sites and Demonstration Areas in Support to RDE Programs, Activities and Projects of ERDB Proper and Research Centers</p>	<p>April 2015 March 2020</p>		<p>Demonstration areas maintained (no.)</p>	<p>8 demo areas maintained</p>			

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Maintenance and Operation of LBES Facilities			Experimental station maintained (no.)	One (1) research assistant and two (2) laborers have been hired to reinforce the operation and maintenance of the various facilities and areas in LBES.			
Establishment of Butterfly Sanctuary and Garden as Showcases for Conservation Education	Jan. 2012 June 2016		IEC material promoting LBES (no.)	Brochures are currently being revised.		Clearing of the forested area in the vicinities of the CFNR near the butterfly garden reduced the number of butterfly species present.	In order to compensate for the loss of vegetation, more nectar plants should be placed in the garden in order to attract more butterflies.
			Information material (brochure) on the life cycle of various species of butterflies (no.)	Brochures are currently being revised.			
			Information material (brochure) on the establishment of a butterfly sanctuary and garden (no.)	Brochures are currently being revised.			
Conservation Breeding of <i>Sus philippensis</i> , <i>Phloeomys cumingi</i> and <i>Ryssota otaheitana</i>	Jan. 2012 June 2016		Information material (brochure) on conservation breeding of <i>Sus philippensis</i> (no.)	Brochures are currently being drafted.			
			Information material (brochure) on the propagation of food plants for <i>Phloeomys</i> <i>cumingi</i> and <i>Ryssota</i> <i>otaheitana</i> (no.)	Brochures are currently being drafted.			
Maintenance of the Existing Rattan Genebank and Conservation of Other Rattan Species in LBES			Rattan genebank maintained and enhanced (no.)	The rattan genebank in LBES is currently being maintained and continuously monitored by a project staff.		Some species of rattan in the genebank are gone.	Replanting must be done as soon as planting materials are available.

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<p>Maintenance of the Bamboo and Rattan Gallery</p> <p>Maintenance of the Research and Development Demonstration Zone (RDZ)</p>			<p>IEC materials (brochures) prepared for printing by TTD (no.)</p> <p>Bamboo and rattan gallery maintained (no.)</p> <p>Experimental station maintained (no.)</p>	<p>Drafted brochures are being revised.</p> <p>The cleaning and maintenance operations being conducted in the gallery are continuous. Additional bamboo and rattan products are being added in the collection.</p> <p>Five (5) facilities in the RDZ are operational:            1. clonal / macropropagation facility            2. seedling production/ nursery of forest tree seedlings propagated from identified seed sources            3. acclimitization area for tissue cultured plants            4. bambusetum            5. nursery for ornamental plants            These facilities are being utilized in support to the PAPs of ERDB.</p>		<p>The bamboo gallery is starting to get too crowded with products / handicrafts, making touring and/or showcasing quite difficult.</p>	<p>An extension or annex must be added so that touring will be easier and to allow for even more products / handicrafts to be showcased.</p>



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<p align="center">Bamboo Nursery and Garden</p> <p align="center">Charcoal Briquetting and Materials Recovery Facilities as Showcases for ENR Education</p> <p align="center">Maintenance of the Science - based Regional Demonstration Areas</p>			<p>IEC material promoting RDZ (no.)</p> <p>Bamboo nursery and garden maintained (no.)</p> <p>Charcoal briquetting and materials recovery facilities maintained (no.)</p> <p>Manual on the establishment and management of experimental and demonstration areas (no.)</p> <p>Guidelines on the establishment and management of experimental and demonstration areas nationwide</p>	<p>IEC materials are being drafted.</p> <p>The ERDB Bambusetum is operational with 22 species present. Some bamboos planted in LBES this year are sourced from the ERDB Bambusetum.</p> <p>The charcoal briquetting and materials recovery facilities are still undergoing repair and renovation.</p> <p>As of September 18, 2015 a total of thirteen (13) demonstration areas were visited in five (5) regions, R1, CAR, R11, R12, and R13. Most notable are: <b>CAR</b> a) Tiger Grass Plantation b) Learning Ecopark for Advocating Resources and Nature (LEARN) <b>REGION 1</b> a) Bamboo Plantation (with processing facility)</p> <p>An initial guidelines has already been formulated, reviewed and approved by the Acting Director.</p>		<p>The bambusetum is starting to get crowded with the addition of more bamboo species.</p> <p>The facility is not yet operational along with its equipment.</p> <p>The late implementation of the new ERDB set-up caused a lot of delay in the implementation of the project's activities.</p>	<p>An area near the existing bambusetum must be cleared in order to prevent further crowding.</p> <p>Repair of facilities and equipment must be carried out immediately. Upgrading of some equipment will be done as well.</p> <p>A catch-up plan has been formulated in order to finish the field visits throughout the country within the year.</p>

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<p><i>A.03.f Technology Transfer and Extension Services</i></p> <p><b>Client-Based Technology Transfer and Extension Services for ENR Management</b></p> <p>Project 1: Packaging of ENR Technologies for Extension and Production of IEC Materials</p> <p><i>Activity 1: Stakeholders Analysis and Identification of Technology-based Client Needs</i></p>	<p>2015-2020 (continuing)</p>	<p>LGUs, POs, NGOs, Upland Farmers</p>	<p>Stakeholder Analysis cum Training Needs Assessment (TNA) for identified Technologies conducted (no. of technology)</p> <p>7 technologies (2 ERDB; 5 RCs)</p>	<p><b>ERDB</b></p> <p>12 Technology Needs Survey were conducted:</p> <ul style="list-style-type: none"> <li>- LGU Tanay, Rizal (Feb. 6, 2015)</li> <li>- LGU Tiaong, Quezon (Feb. 20, 2015)</li> <li>- LGU Liliw, Laguna (Feb. 27, 2015)</li> <li>- LGU Dolores, Quezon (Mar. 5, 2015)</li> <li>- LGU Lucban, Quezon (Mar. 12, 2015)</li> <li>- LGU Luisiana, Quezon (Mar. 20, 2015)</li> <li>- LGU Cavinti, Laguna (Mar. 27, 2015)</li> <li>- LGU Brgy. Tumana, Marikina City (Apr. 15, 2015)</li> <li>- LGU Gen. Nakar, Quezon (Apr. 24, 2015)</li> <li>- Laguna 4H Club (Magdalena, San Pablo, Sta. Maria, Pangil, Nagcarlan, Calamba) (May 8, 2015)</li> <li>- LGU San Juan, Batangas (May 8, 2015)</li> <li>- LGU Lian, Batangas (June 18, 2015)</li> </ul>			

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				<p><b>Regional Centers</b>  <b>UTCHWRC (NCR)</b>                      - LGU Manila and                      Barangay Personnel                      (May 19, 2015)  <b>BCWERC (R6)</b>                      - Coordination with                      PENRO Capiz and                      Concerned PO of                      Barangay Agustin                      Navarra  <b>FTRRC (R10)</b>                      - TNS conducted in Sitio                      Mainaga, Barangay                      Iba, Cabanglasan,                      Bukidnon residents  <b>LMAUFRC (R5)</b>                      -TNA in San Lorenzo                      Ruiz, Cam. Norte and                      TNA in Ligao, Albay  <b>MDARRC (R11)</b>                      Three focus group                      discussions were                      conducted to assess                      the technology needs of                      proposed CBFM                      beneficiaries and LGU                      adopters                      - FGD in collaboration                      with DENR-PENRO                      Davao del Sur (Apr.                      14-17, 2015)                      - FGD with DENR                      PENRO Compostela                      Valley (April 21-24,                      2015)                      - FGD with PENRO LGU                      of Davao Oriental (April                      27-May 1, 2015)</p>			

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<p align="center"><i>Activity 2: Assessment of ENR technologies</i></p>	<p align="center">2015-2020 (continuing)</p>	<p align="center">ERDB &amp; RCs</p>	<p align="center">New technologies assessed / undergone test criteria (STEEP) (no. of technology)</p>	<p><b>WWRRC (Region 1)</b> - POs in upland areas of Region 1 - LGU Sto. Domingo, Ilocos Sur <b>(Region 2)</b> - CELYO Kooperatiba ng Pangmaramihan Serbisyo <b>(Region 3)</b> - PO-Kabarangay Tunqo sa Isang Gabay of Brqy. Alangan, Limay, Bataan</p> <p><b>ERDB</b> Technologies from the past assessment of the ERDB TAT were the ones considered for transfer and dissemination</p> <p><b>Research Centers</b> <b>WWRRC (Region 3)</b> Study on %Survey of Bamboo Stands and Establishment of a Regional Database of Economically Important Bamboo Resources in Region 3+ was assessed by RTAT last June 8, 2015. <b>(Region 2)</b> GIS Technology using GPS instrument <b>FTRRC (Region 10)</b> RTAT assessed the information type technology on Dipterocarp Species in</p>		<p>Lack of new technologies to be assessed</p> <p>Write-ups were not vet</p> <p>Write-ups were not vet</p>	<p>Follow-up of documents</p> <p>Follow-up of documents</p>

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<p align="center"><i>Activity 3: Processing of Assessed Technologies for Specific End-Users</i></p>	<p align="center">2015-2020</p>	<p>LGUs, POs, NGOs, Private citizen, Policy makers, Academe, Researches, Students, Upland Farmers, etc</p>	<p>Technology types (Information, process, product, service packaged (no.)</p>	<p>ERDB 10 Demonstration Area and Experimental Forest <b>MDARRC (Region 11)</b> Technology on Coco coir mats and vetiver grass for erosion control and slope stabilization control was assessed in collaboration PENRO-LGU Davao del Norte. <b>BCWERC(Region 7)</b> Gathering of data on Mangrove Cluster plantation technology in Barile, Cebu</p> <p><b>ERDB</b> Technologies that were assessed and packaged on 2013 as information, process product, service were the ones used and employed as options in the TNS</p> <p><b>Research Centers</b> <b>WWRRC (Region 2)</b> - Technology using GPS instrument was disseminated to CELYO Kooperatiba ng Pangmaramihan Serbisyo <b>UTCHWRC (NCR)</b> - Charcoal Briquetting Technology was identified for promotion and dissemination at NCR</p>		<p>Write-ups were not yet</p> <p>Data/results were not yet forwarded to ERDB</p>	<p>Follow-up of documents</p> <p>Follow-up of documents</p>

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<p align="center"><i>Activity 4: Production of IEC materials</i></p> <p align="center">- Liberty E. Asis</p>	<p align="center">Jan. 2015 Dec. 2020</p>	<p align="center">General public DENR researchers and other interested individuals</p>	<p align="center">2 brochures produced  1 2016 calendar produced</p>	<p><b>LMAUFRC (Region 5)</b> - Partnership with LGU Ligao and HOR of 3rd Dist. Of Albay for Maintenance of bambusetum and one-hectare plantation of K. tinik in Kawa-kawa, Ligao City <b>FTRRC (Region 10)</b> -Technology on Dipterocarp Species in ERDB -10 Demonstration Area and Experimental Forest is being packaged into brochure <b>MDARRC (Region 11)</b> - Technology on coco coir and vetiver grass was assessed for use of PENRO-LGU Davao del Norte and the Provincial Engineering Office of Davao del Norte - Distributed four (4) sets (3 Alternative Livelihood Options) tarpaulins to four (4) partner barangays of PARTNER-BOND Project - Distributed fifty (50) brochures re: SALT Farming to Lakbay Aral participants</p> <p align="center">Produced 2 brochures</p>	<p align="center">ERDB brochure/leaflet was produced and distributed to different stakeholders.</p>		

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			2 fact sheets produced 2 ENR fans produced 2 technology manuals published	Prepared 1 fact sheets Produced 1 ENR fan Published one (1) technology manual	Brochure on Tree Rehabilitation: a Step-by-Step Guide in Tree Surgery, Proper Pruning, and Sanitation Cutting is already under the final stage of proofing.  Fact sheet on bamboo sequestration was prepared and already for production  ENR fan on bamboo was prepared and already for production  Manual on Computing Carrying Capacity of Ecotourism Sites in Protected Areas by Dr. Lope A. Calanog was published and distributed to constituents.	Major revisions in content    Major content revisions  Limited time of senior author to edit content caused delay of the production of the 2nd manual targeted for this year  Lack of authors/ researchers who are willing to take time in writing technology manuals	Consistent follow-up on the updates of the editing    Consistent follow-up on the updates of the editing  Consistent follow-up on the updates of the editing  Continuous encouragement of researchers to publish their work

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<p>Project 2: Promotion and Dissemination of Technologies for Sustainable ENR Management</p> <p><i>Activity 1: IEC Campaign for promotion of ENR technologies</i></p>	<p>Jan. 2015 Dec. 2020</p>	<p>General public, academe, different agencies, LGUs, homeowners' association</p>	<p>2 media linkage/news releases</p>	<p>9 news releases and 11 radio/tv interviews</p> <p><b>Titles of news releases:</b> Biofertilizer successfully developed as tool in mining bio-remediation; Manual on Visitors Carrying Capacity; DENR manual seeks to limit visitors in ecotourism sites; Phil scientists to use microorganisms to help reforestation projects; DENR scores breakthrough in plant growth technology; DENR pins hope on mycorrhiza to boost NGP trees survival rate; Helping trees survive hostile soil conditions; Organism to help in preserving PH trees; Microorganism offers hope of raising tree survival in reforestation</p> <p><b>Technologies featured in radio/tv interviews:</b> bamboo propagation, Hi-Q Vam production, vulnerability assessment of watersheds, tree</p>	<p>News articles and recorded radio and TV interviews</p>	<p>Lack of experts for an identified technology There are some project leaders that are not yet confident to appear in tv/radio guestings</p> <p>Lack of new topics or breakthroughs that can be published in a national dailies</p>	<p>ERDB, thru its HRD, should capacitate its researchers on how to communicate their research findings to the general public. They should also be trained on how to be an effective resource person during a tv/radio interview</p> <p>For the 3rd atr to 4th atr of 2015, TTD will feature ERDB as a research institution and its efforts on how to communicate with its target clientele. Other technologies that</p>



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			8 exhibits	<p>surgery, computation of carrying capacity, and National Greening Program</p> <p>8 exhibits were set-up</p> <ol style="list-style-type: none"> <li>1. ERDB Lobby - Migratory birds and their habitats</li> <li>2. February 24, UP Open University - Bamboo products and publications produced by ERDB</li> <li>3. March, ERDB Lobby - Women leaders of DENR and ERDB</li> <li>4. April 20-24, UPLB-CFNR - On-going researches and new organizational structure of ERDB</li> <li>5. April-June, ERDB Lobby - Selected mangrove areas in the Philippines</li> <li>6. June 11-12, Luneta Park, Manila - On-going researches and new organizational structure of ERDB</li> <li>7. July 22-28, NSTW, SMX MOA - Bamboo for carbon sequestration</li> <li>8. August 27-28, Meycauayan, Bulacan - Bamboo for carbon sequestration</li> </ol>		Posters and exhibit materials	Lack of spacious vehicle especially when transporting exhibit materials	are news release worthy will still be prepared (if available).
			2 technology forums	<p>Conducted 2 forums</p> <ol style="list-style-type: none"> <li>1. June 8, El Cielito Hotel, Sta. Rosa,</li> </ol>			Conflict of forum schedule with the	Better coordination with prospect participants to

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<i>Activity 2: Capacitation of stakeholders as special extension service providers</i>	Jan. 2015 Dec. 2020	ERDB and Research Centers	Participation to 2 technology expo	Laguna - Forum on Hi-QVAM 1; participants were representatives from different locators of the Laguna Technopark, Inc. (LTI) 2. August 27, Meycauayan, Bulacan - Forum on Bamboo Propagation; participants were LGUs and members of homeowners' associations in Meycauayan, Bulacan		schedule of participants	ensure their availability and attendance
			2 trainings conducted  2 coaching/mentoring conducted  2 demo area visits	1 training encompassing coaching/mentoring and demo area visit conducted	Capacity Building on Bamboo Production was conducted on June 15-19, 2015 at BP International, Los Baños, Laguna. Participants were composed of 16 employees of ERDB and research centers.	Coordination with the co-organizer and distribution of tasks Grand Kawayan Foundation)  Invitation for techno expo that require expensive reg fees  Food served not according to the contract  Conflicts in vehicle arrangement  Stay-out participants	Personal meetings with future co-organizers should be done  Look for expo which does not require fees in joining  Better coordination with hotel personnel/ manager
<i>Activity 3: Participatory Extension of ENR Technologies through PARTNER BOND Strategy</i>	2015-2020 (continuing)	LGUs or POs in barangays of 4th and 5th class municipalities (Quezon and Laguna)	ENR technologies disseminated involving primary stakeholders (no.)  Stakeholders partnered with (e.g LGUs, POs, etc.)  9 ( 4 ERDB, 6 RCs)	<b>ERDB</b> Conducted training cum hands-on demo on DENR Charcoal Briquetting and Bamboo Production on June 16-17, 2015 at Agriculture Demo Farm in Gen. Nakar, Quezon  Implemented	News article/ Infojournal/ Website  News article/ Infojournal/		

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				<p>Capacity-Building on Forest Tree and Bamboo Propagation on September 3, 2015 at Municipal Session Hall in Dolores, Quezon</p> <p><b>Other Accomplishments:</b>                      - Cross-visit was conducted with partnered LGU of Gen. Nakar on April 23-24, 2015 at ERDB's experiment and demonstration areas.                      - A bamboo planting activity was conducted last August 27-28, 2015 in Gen. Nakar, Quezon for the rehabilitation of Abaca creek and stabilization of soil erosion.                      - Cross-visit of 4H Club members of Sta. Cruz Laguna on May 08, 2015 composed of in-school and out-of-school youth</p> <p><b>Research Centers</b>  <b>UTCHWRC (NCR)</b>                      - Done monitoring of the progress of CBT in Bray. Addition Hills, Mandaluyong                      - Partnership with Brqy. Batis was explored</p> <p><b>WWRRC (Region 2)</b>                      - Accomplished 1 clonal technology</p>	<p>Website</p> <p>Total of 7 articles</p>		

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				<p>- Partnered with the following: Celyo Kooperatiba ng Pangmaramihan Serbisyo, Univ. of Cagayan Valley and LGU of Tuao, Cagayan</p> <p><b>(Region 3)</b></p> <p>- Training cum hands-on demo on nipa propagation and plantation establishment was conducted on June 30, 2015 in Brgy. Alangan, Limay, Bataan.</p> <p><b>LMAUFRFC (Region 5)</b></p> <p>- Partnership established with LGU of Ligao City and House Representatives - 3rd District of Albay - bambusetum and k. tinik maintenance in Ligao City</p> <p><b>BCWERC (Region 7)</b></p> <p>- Signing of MOA between DENR and LGU</p> <p>- Finalization of no. of participants, venue and schedule of training for Solid Waste Management and Livelihood</p> <p><b>(Region 8)</b></p> <p>- Sorted out survived bamboo cuttings in Brgy. Gapas Central Nursery</p> <p>- Relocation of nursery in Brgy. Badiangay</p>			

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<p align="center"><i>Activity 5: Establishment and Maintenance of Demonstration Areas</i></p>	<p align="center">2015-2020 (continuing)</p>	<p>Farmers, LGUs, Students, Academe</p>	<p>Demonstration areas established or maintained (no.)</p>	<p><b>FTRRC (Region 10)</b> - ERDB distributed 2000 quality cuttings/ propagules of giant bamboo in Sitio. Mainaga, Bray, Iba Cabanglasan, Bukidnon. Residents learned how to properly plant the giant bamboo cuttings <b>(Region 13)</b> - Coordinated with PLGU of Agusan del Sur and PLGU of Surigao del Sur for possible partnership of ENR technologies <b>MDARRC (Region 12)</b> - Technical assistance was provided to selected residents of four partner barangays: Maibo, Tinongcop, Bukay, Pait and Dumadaliq</p> <p>Maintenance of Demonstration Areas (ERDB): A. 48-hectare experiment station in Mudspring - composed of bambusetum, palmetum, rattan plantation, agroforestry area, medicinal genebank, forest nursery, ornamental area, and butterfly garden</p>			

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			Promotion Strategy applied (no.) - distribution of IEC materials - study tour	B. 5 Hectare Clonal Facility Complex in Jamboree Site  C. Special Project Area at ERDB compound  "Lakbay Aral" conducted: - LGU Tiaong, Quezon (Feb 20, 2015) - LGU Liliw, Laguna (Feb 27, 2015) - LGU Dolores, Quezon (Mar 5, 2015) - LGU Lucban, Quezon (Mar 12, 2015) - LGU Luisiana, Laguna (Mar 20, 2015) - LGU Cavinti, Laguna (Mar 27, 2015) - LGU Brgy. Tumana, Marikina (pr. 15, 2015) - LGU Gen. Nakar, Quezon (Apr 23-24, 2015) - 4H Club, Sta. Cruz, Laguna (May 8, 2015) - LGU Lian, Batangas (Aug 6, 2015)			

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Application and Piloting of ENR Technology in Rehabilitation of Typhoon Affected Areas	Jan. 2013 Dec. 2015	Typhoon affected communities in Brgy. in Brgy. Burgos, Rodriguez, Rizal; District 1, Silago and Brgy. Upper Nulatula ,Tacloban City, Leyte Leyte; and Brgy. Pagatpat, Cagayan de Oro City	Demo areas maintained (no.) (Agroforestry, Bamboo and Forest tree plantation)  Adoptors of ENR technologies (no.)	ENR Technologies showcased for adoption  Maintained 3 demonstration areas in Reg. 4A- Rizal (Bamboo), Region 8- Leyte (Bamboo and Forest Plantation) and Region 10 - Cagayan de Oro (Agroforestry and Bamboo)  Cross-Visit as IEC activity was conducted in Reg. 10 for the promotion of the ENR technology  Two (2) PO members are the initial adopters of Agroforestry in Reg. 10 with 4,000sq. m. each in the CBFM area  Establishment of Barangay Bamboo Nursery in Burgos, Rodriguez, Rizal	-none yet-	None	None

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Project 3: Post Monitoring and Evaluation of Disseminated ENR Technologies	Jan. 2015 Dec. 2015	Pos, ERDB MO, and RCs	Monitoring module developed (no.)  Transferred technologies monitored/evaluated  Symposium conducted	Feedbacks and pointers for enhancing technology transfer  - CBT Tumana, Marikina - Bamboo Propagation Talim Island - NGP Seedling Production and Clonal Propagation in Brgy. Buntun, Tuguegarao  - Mass Propagation of Pagatpat Technology in Brgy. Tambo, Island Garden City of Samal, Davao del Norte - Propagation of Medicinal Plants Boljoon, Cebu - Production of Tikog in Brgy. Serum Basey, Western Samar	-none yet- Only M & E module	Implementation delays Limited time span for periodic monitoring	To propose for extension of the project for 2016



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<b>R &amp; D Program on Climate Change</b> - Antonio M. Daño/Jose Isidro Michael Padin								
<b>Sub-Program 1: Climate Change Adaptation</b> - Carmela G. Taguiam								
1. Adaptation strategies to climate change impacts to main island coastlines and small island foreshore areas - Carmela G. Taguiam vice Honorato G. Palis	ERDB	Jan. 2011 Dec.2014	LGUs, SUCs, Research agencies, Academe, etc.	Information on adaptive capacity of biophysical attributes of main island coastlines and small foreshore areas Integrated regional adaptive capacity of biophysical attributes coping mechanisms of maintained coastlines and small island foreshore areas	<p>A total of eleven (11) study sites were monitored for vegetation, benthic population and soil loss.</p> <p>Results of the study revealed <i>Rhizophora</i>, <i>Sonneratia</i> and <i>Avicennia</i> species to be most prevalent mangrove community within the study area and resilient to the impacts of climate perturbations.</p> <p>For macro invertebrate organisms, there were variations noted on the number of species and individuals from the three mangrove zones (seaward, middleward and landward). It was indicated that the landward zone has the most diverse macro invertebrate species as compared to the middle and seaward zone.</p> <p>Among the eleven (11) study sites, Region 4a exhibited high soil erosion rates within the three mangrove zone. This could be attributed to the impact of typhoon Glenda in which sedimentation affect the intensity of the storm impact.</p> <p>Region 7 was observed with high soil loss. This could be attributed to the soil deposition in upland areas (landward) and movement of sediments from offshore areas (seaward).</p>		Proceedings of Regional Symposium on Mangrove Ecosystem Management in Southeast Asia, 2013	Submitted Terminal Report

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2. Wildlife vulnerability and adaptation to climate change in Caramoan National Park (Reg. 5) and Tabunan Protected Area (Reg. 7) - Carmelita I. Villamor  (Terminated)	ERDB	Jan. 2013 Dec. 2014		Baseline population data affected by climate change  Climate change impacts on characteristics				
Sub-Program 2: Climate Change Mitigation/ Disaster Risk Reduction - Antonio M. Daño/Jose Isidro Michael T. Padin								
3. Biomass and carbon sequestration of four economically important bamboo species in the Philippines - Fe. T. Ociones vice Paulino A. Umali, Jr.	ERDB	Jan. 2013 Dec. 2014		Information on the biomass and carbon contents of 2 bamboo species packaged  Datasets gathered and analyzed				
4. Greenhouse gas (GHG) determination on mangrove soil - Liza C. Ranés vice Alan Castillo	ERDB	Jan. 2013 Dec. 2014	LGUs, SUCs, Research agencies, Academe, etc.	Baseline information on fluxes/ emissions of CO <sub>2</sub> , N <sub>2</sub> O and CH <sub>4</sub> in Mangrove soil  Datasets gathered and analyzed	Results of the study showed the total mean estimates of GHG fluxes of CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O of mangrove soils at the two study sites:  - The study site in Botolan, Zambales exhibited high in all GHG fluxes with a total mean for CO <sub>2</sub> (480.4600mg/m <sup>2</sup> /hour); CH <sub>4</sub> (19.4536 mg/m <sup>2</sup> /hour) and N <sub>2</sub> O (-0.027205mg/m <sup>2</sup> /hour).  - While in subic site, CO <sub>2</sub> with 299.4821mg/m <sup>2</sup> / hour); CH <sub>4</sub> (0.5248mg/m <sup>2</sup> /hour and N <sub>2</sub> O with (-0.048799mg/m <sup>2</sup> /hour), respectively.		Article for Pub: Soil GHG emission of a remnant <i>Sonneratia alba</i> (L.) Smith dominated mangrove patch in North-western Philippines  Seasonal variation of CO <sub>2</sub> , CH <sub>4</sub> and N <sub>2</sub> O fluxes in the mangrove soil at Subic, Zambales, Philippines	Submitted Terminal Report

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<p><b>R &amp; D Program on Sustainable Development, Management and Conservation of Natural Resources</b> - Carmelita I. Villamor</p> <p><i>Sub-Program 1: Forest Resources and Watersheds</i> - Florita E. Siapno</p> <p>1. Trial plantation of non-commercial species of bamboo, rattan and medicinal plants (Old Title: Establishment of pilot plantation of bamboo, rattan, and medicinal/economically important tree species) - Digno C. Garcia <i>vice</i> Maura D. Dimayuga</p>	ERDB	Jan. 2011 Dec. 2013 extended until Dec. 2014		<p>Trial plantations maintained</p> <p>Manual on economically important species developed</p>	<p>24 hectares trial plantations established and maintained (8 medicinal, 6 bamboo, and 8 rattan species) medicinal - banaba, bignai, dita, igyo, kamachile, lipote, batino, and sambulauan bamboo - buho, bolo, anos, puser, bayog, and laak rattan - pin-pin, sik-sik, ditaan, bugtong, palasan, tagiktik, calamus siphonosphatus, and tumalim</p> <p>Sites: - Brgy. Mamala 1, Sariaya, Quezon - Brgy. Mahipon, Cavinti, Laguna - Brgy. Malicboy, Pagbilao, Quezon - Brgy. Sta. Catalina, Atimonan, Quezon - Brgy. Balite, Gloria, Or. Mindoro - Brgy. Manguyang, Gloria, Or. Mindoro - Brgy. Bagumbayan, Puerto Princesa, Palawan - Brgy. Dumanguenia, Narra, Palawan - Brgy. Sooc, Lupi, Camarines Sur</p> <p>Draft 1 Production manual of economically important forest species (bamboo, rattan, and medicinal tree species)</p>	<p>Soil admendments for improved growth performance of bamboo, rattan, and medicinal species planted on different site conditions - soil amendments used: 1. Animal manure 2. Bio-charcoal 3. Vermi-cast 4. Inorganic fertilizer 5. Mycorrhiza</p> <p>Site conditions: 1. Fertile flat and marginal grassland for medicinal and bamboo species 2. Natural forest and reforestation/tree plantations for rattan species</p>	<p>1 Draft Production Manual on Economically Important Forest Species</p>	<p>To be proposed as demo areas under LESD</p> <p>To be endorsed to TTD for editing</p>

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<p>2. Pilot testing of alternative species for community-based fuelwood production (Phase II) - Ma. Lourdes DC. Reyes</p>	ERDB	Oct 2012 Dec. 2014	Upland dwellers and DENR	<p>Information on gender roles/ contribution in fuelwood maintenace and productions generated</p> <p>Pilot fuelwood plantation established and monitored</p> <p>Datasets gathered and analyzed</p>	<p>Gender participation in all activities of plantation establishment and maintenance was noted, observed, and analyzed.</p> <p>Fuelwood plantations were established in Regions 1, 6, and 7</p> <p>Fuelwood seedlings planted in Region 1 had very low survival rate due to extreme climate condition and poor soil property in the plantation site.</p> <p>Plantations in Regions 6 and 7 were maintained. Dead seedlings were replanted.</p> <p>Survival rate, diameter, and height of seedlings were gathered from the fuelwood plantations established.</p> <p>Anchoan Dilau and Kakawate were identified as the best alternative fuelwood species in Region 6 and 7, respectively.</p>	None	None	None

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RESEARCH TITLE COMPONENT ACTIVITIES OR STUDIES	SOURCE OF FUNDING	PROJECT DURATION (YS-YE)	TARGET BENEFICIARIES	DELIVERABLES (Based on UWM)	MAJOR FINAL OUTPUT/ MILESTONE*	TECHNOLOGIES GENERATED	PUBLICATION/S	ACTION TO BE TAKEN
3. Profitability analysis of sustainable agroforestry practices within the selected CBFM sites in the Philippines - Myline O. Aparente <i>vice</i> Aleli M. Luna	ERDB	Jan 2013 Dec. 2014	Policy makers, Farmers, Entrepreneurs	Information package on profitability analysis of agroforestry practices in CBFM areas	Information to serve as a guide, reference, and menu for technology promotion, dissemination and transfer of the most beneficial agroforestry practices in each region.	information on the cost and benefit of establishing and managing different agroforestry practices in selected CBFM sites in Region 5, 7, 8, and 11	None	Finalization of drafted IEC materials drafted for dissemination
4. Gender-based analysis on the rehabilitation of degraded areas using bamboo, conservation of the resources and its livelihood impacts in Regions 3 and 6 - Aurora S. Jose	ERDB-GAD Fund	July 2013 June 2014		TR submitted - Dec. 29, 2014 with provided for P-File as of 9/10/2015	Technical publication	Information on Gender-based Bamboo Livelihood	1 article and 1 flyer	On-progress preparation of technical publication & flyer
5. Application of mycorrhiza and other soil amelioration in improving reforestation and agroforestry in the uplands - Maria Theresa Delos Reyes	ERDB	Jan. 2011 Dec. 2014	-Reforestation and agroforestry field implementers -Farmers -NGOs -Researchers -GOs	Integrated soil amelioration technologies for reforestation and agroforestry areas prepared per region  Demo areas on the application of mycorrhiza in reforestation and agroforestry established  IEC materials (brochures) for dissemination prepared  Regional reports reviewed	Soil amelioration technologies in 6 reforestation and 2 agroforestry areas  6 Demo areas established in Regions 1, 5, 7,8 and 11	Mycorrhiza and other soil amelioration technologies on reforestation and agroforestry areas	Draft IEC material (brochure) for final layout and printing (included in the terminal report-evaluation in progress	
6. Rehabilitation technology in limestone area using direct seeding approach - Paul J. Cuadra  (Terminated)	ERDB	Jan 2013 Sept. 2014		Direct seeding trial plots established  Information on appropriate species for direct seeding generated				

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<p>7. Improved rehabilitation strategies, schemes and technologies for areas adversely affected by mining activities and highly vulnerable and severely eroded areas in watersheds</p> <ul style="list-style-type: none"> <li>- Florita E. Siapno</li> </ul>	ERDB	Jan. 2011 Dec. 2014		<p>Two (2) site specific integrated rehabilitation technologies for degraded watershed areas and one (1) site specific integrated rehabilitation technology for mined-out area</p> <ul style="list-style-type: none"> <li>- In Region 6 (watershed area), Kawayan tinik was found the most effective material in different vengineering structures and measures together with reinforcement of Narra (<i>Pterocarpus indicus</i>) and Auri (<i>Acacia auriculiformis</i>) planting has a very great impact and could be used in rehabilitating degraded and eroded watershed areas.</li> <li>- In Region 11 (watershed area), the combination of fascine technoly and falcata attained the highest final height increment and highest final diameter increment with 10.20m and 9.22cm, respectively.</li> <li>- In region 6 (mining area), It was found out that both Mangium (height - 128.84cm; diameter - 19.61cm) and Auri (height- 210.64cm; diameter - 19.86cm) had better performance as compared to Hambabalud (height - 4.28cm; diameter - 1.83cm). In heavy metal analysis, Mangium and Auri were able to absorb the heavy metals such as Cd, Cu, Zn and Pb.</li> </ul>	None	<p>Article on CANOPY International Volume 40 No. 1 / Jan. - June 2014 titled "Strategies for Degraded Mining Area Rehabilitation" ISSN 0115-0960</p> <p>Draft brochure on appropriate technologies to rehabilitate damaged mined and critical watersheds based on field verification/ validation of technologies for public use was prepared</p>		

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<p><i>Sub-Program 2: Protected Areas and Biodiversity</i> - Carmelita I. Villamor</p> <p>8. Formulation of ecotourism tracking tool in the Philippines - Ma. Lourdes DC. Reyes vice Lope A. Calanog</p>	ERDB	Jan 2013 July 2014		<p>Ecotourism tracking tools validated in four (4) remaining sites</p> <p>Ecotourism forum</p> <p>Final ecotourism tracking tool developed</p>	<p>The draft Ecotourism Tracking Tool was pre-tested and validated in potential ecotourism sites in all regions except in Region 8. Due to lack of time and occurrence of Typhoon Yolanda in Region 8, the team was not able to conduct pre-testing and validation activities in potential ecotourism destinations in the said region. Instead, the team decided to conduct pre-testing in other potential ecotourism destinations in Region 4A. However, due to conflicting schedules with other projects, the team was not able to push through with the activities in Region 4A.</p> <p>A National Forum on the Formulation of Ecotourism Tracking Tool was held on May 19-20, 2014 at Villa Escudero Plantations and Resort, Tiaong, Quezon.</p> <p>A follow-up activity, the Consultation Forum was also held on September 12, 2014 at the ERDB Auditorium, College, Laguna.</p> <p>The draft Ecotourism Tracking Tool was revised and finalized according to the comments and suggestions made during the National Forum and Consultation Forum. It was submitted to the DENR Policy and Technical Working Group (PTWG)</p>	None	None	None

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<p><i>Sub-Program 3: Coastal, Marine and Mangrove Resources</i></p> <p>- Jose Isidro Michael T. Padin</p> <p>9 Development of site classification systems for abandoned fishponds under Fishpond Lease Agreements (FLA)</p> <p>- Liza C. Ranes <i>vice</i> Emiliano B. Ramoran</p>	ERDB	Jan 2013 June 2014	LGUs, SUCs, NGOs, Research Institution, Academe, GOs	<p>Information on the criteria and indicators based from classification systems for abandoned fishponds</p> <p>Policy input drafted</p> <p>Datasets gathered and analyzed</p>	<p>A Joint Memorandum Circular (JMC) by DENR and DOT titled <b>Adoption of the Ecotourism Tracking Tool in Monitoring and Evaluation of Ecotourism Sites</b> or Projects in the Philippines was prepared, presented during the said Consultation Forum, and improved accordingly. The draft JMC was also submitted to the DENR PTWG.</p> <p>Drafted the Memorandum Circular for the Adoption of manual on Biophysical and Socio Economic Indicators for the Reversion of Abandoned, Underutilized and Undeveloped (AUU) Fishpond under Fishpond Lease Agreement to Mangrove Ecosystem Underutilized and Undeveloped (AUU) Fishpond under Fishpond Lease Agreement to Mangrove Ecosystem</p>		Submitted article for Canopy titled: "Abandoned fish-pond is it really abandoned?"	Submitted Terminal Report



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10 Social impacts of sea level rise in costal communities (New) - Carmela G. Taguiam	ERDB	Jan 2013 Dec 2014	LGUs (barangay and mun. level)	Information on impacts of sea level rise to coastal communities  Datasets gathered and analyzed	Results showed that the level of sea water has risen for quite sometime as affirmed by households. Their perception of sea level rise in three dimentions: - affects the social wellbeing of coastal settlers - responsible for the change in the seascape of the coastal environment, and - displacement of households  Focus group discussions were done and research outputs were presented in site selected coastal municipalities and were attended by its officials from Palauig, Masinloc, Candelaria and Sta. Cruz, Zamables.	maps	Climate change damang-dama sa Zamables. 3rd issue ng Kaunlaran Magazine	Submitted Terminal Report

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<b>R &amp; D Program on Environmental Management and Pollution Control</b>								
- Simplicia A. Pasicolan								
1. Project 1: Development of bioremediation water pollution control in selected rivers - Marcelina V. Pacho vice Carmelita I. Villamor  Phase 2: Field testing and protocol development of bacteria-biocontrol agent for bioremediation of Marilao, Lapad and Paracale rivers	ERDB	Feb. 2011 Feb. 2013 extended until Dec. 2014		Bacterial isolate selected  Protocol for bioremediation developed  Rivers assessed and characterized  Indegenous microorganisms tested for bioremediation of polluted rivers	Isolated and tested (laboratory and field-tested) <i>Serratia marcescens</i>  Protocol for bioremediation screening of bacteria under laboratory condition  3 rivers assessed  3 bacterial species ( 2 <i>Pseudomonas</i> species and <i>Serratia marcescens</i> )	Small scale water treatment system for heavy metal-contaminated water	Canopy Publication titled "Encounter with the Wonder Germs: a Case for Bioremediation" (Vol.40 Jan-Dec 2014, no. 1, page 8)	It took a number of trials before the small-scale treatment system was developed/perfected hence controlled field trial was not conducted for protocol development.
2. Project 5: Assessment of the effluents/ discharges of the fast food restaurants in compliance to the provisions of the Clean Air Act within the municipalities and cities surrounding the Laguna Lake Basin - Gregorio E. Santos, Jr.	ERDB	July 2013 June 2015		Information on wastewater treatment facilities documented  Policy recommendaton on effluents				
3. Project 4: Assessment of solid waste schemes in subdivisions and condominiums for environmental protection and conservation - Salvacion T. Orobias vice Monette S. Santos	ERDB-GAD Fund	Apr. 2013 Dec. 2015		Determine the SWM schemes of selected high end subdivisions	- The SWM schemes practiced were analyzed and results show the following practices: - Segregation at source (bio & non-bio bins) - Recycling of plastics, boxes & other recyclable materials. - Use of Bayong, tote bags, etc. to regulate the use of plastic bags/materials. - Backyard composting of bio wastes - Waste collection and transfer station in place	None	None	None

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				<p>Determine extent of compliance to SWM Schemes of High End Subdivisions</p> <p>Determine participation of households (men, women &amp; youth) on SWM practices</p> <p>Plan of Action of homeowners association as to how they will enhance their compliance to RA 9003.</p> <p>Draft MC rregarding enhancement of the implementation of the Ecological Solid Waste Management Act (ESWM)</p>	<p>The factors on the extent of compliance to ESWM Act were determined based on the 3 major factors: socio-psycho factors, economic factors and environmental factors.</p> <p>- Women performed highly in managing their solid wastes than men. But men also have participated in SWM. - Gender disaggregated date show that out of 1,232 respondents, 452 were males and 789 were females.</p> <p>Plan of Action of homeowners association were obtained from the subdivisions under study and these were presented in the terminal report</p> <p>- The draft MC was formulated based on the results of the consolidated regional project implementations. This was presented to the ETRB and was submitted to the DENR PTWG in November 2014. - In February 2015 this was presented before the panel of DENR PTWG for further comments/suggestions for improvement.</p>			

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<b>Bagacay Mine Rehabilitation Project</b> Rehabilitation Strategies and Ecotourism Development for Mine Tailing Areas in Bagacay, Hinabangan, Western Samar (Phase I)	MGB	Jan. 2009 Dec. 2013		Phytoremediation blocks established and maintained; Plant tissues analyzed; Ecotourism plan developed; Rehabilitation cost analyzed; IEC materials developed	3 blocks established and maintained	Forest soil + lime with inorganic fertilizer (best treatment for all species); Forest soil with organic fertilizer (second best)	Phytoremediation potential of selected species in acid mine drainage affected Taft River Watershed (Exconde, et al.);  Field performance of selected reforestation species planted in pyrite waste dump area in Bagacay, Hinabangan, Western Samar (Exconde, et al.)	
An Integrated Science-Based Approach in the Rehabilitation of Mined-Out and Waste Dump Areas in Bagacay, Hinabangan, Samar (Phase II)	MGB	Jan. 2014 Dec. 2016		Phytoremediation blocks maintained; 60 hectares revegetated; bioengineering measures established; IEC materials developed; Socio-economic condition analyzed	3 blocks maintained; 60 hectares revegetated		Rehabilitation strategies and ecotourism development for mined-out and waste dump areas in Bagacay, Hinabangan, Western Samar (Exconde, et al.)	

\* Policy, policy input, information, IEC materials, etc.

not reported