

**ENVIRONMENT AND NATURAL RESOURCES ACCOUNTING  
(ENRA II) Project: Institutionalization of the Philippine  
Economic-Environmental and Natural Resource Accounting  
(PEENRA) System  
PHI/97/018/A/01/99  
ANNUAL ACCOMPLISHMENT REPORT  
YEAR 1999**

The Environment and Natural Resources Accounting (ENRA II) Project started middle of the year 1998 and will end on December 2000. The project focuses on the development and enhancement capacities for environmental and natural resource accounting, both for the generation and utilization purposes as a tool to integrate environmental concerns in policy making, planning purposes and decision making. The fundamental objective of the project is to institutionalize the generation and utilization of the Philippine Economic Environmental and Natural Resources Accounting (PEENRA) system that will contribute to the mainstreaming of environmental concerns in policy formulation, planning and decision making at the national level and selected regions and province.

This is an accomplishment report of the project. The report is divided into two parts. The first part discusses the activities accomplished at the national level while the second part focuses on the activities accomplished by the pilot areas of the project at the subnational areas.

## **NATIONAL LEVEL**

The activities at the national level focused on data generation and processing for eight resources and sectors namely: agriculture, forestry and fishery sector; electricity; household; land/soil; mineral/mining; manufacturing; water; and, service sector. Working groups were created to carry out the activities of the resources/sectors. Information, education and communication activities of the project went full throttle with the creation of the advocacy group. Database generation and support is growing with the formulation of the information system and the Survey of Environmental Protection Expenditure and the approval of the guidelines for PEENRA data generation by the steering committee of the project.

### **I. RESOURCES/SECTORS**

#### **1. AGRICULTURE, FORESTRY AND FISHERY RESOURCES/SECTOR**

The group came up with the preliminary physical and monetary estimates for fishery resource depletion covering the years 1995 to 1998. Moreover, the group is currently updating forest resource depletion from 1993 to 1998 with corresponding analysis of results.

Two country papers on the Philippine experience on fishery resource accounting were presented during the UNSD workshop in New York held last June 7 – 16, 1999.

The group agreed to adopt the framework of the operations manual discussed in the New York workshop. The accounts for the freshwater fishery resource being compiled shall be presented in a manner by which the biomass and the depletion will not be shown following the asset accounts framework. To strengthen the resulting estimates, the natural phenomena/catastrophies affecting the resources (i.e. fish kills, damages of typhoons to aquaculture, El Niño, etc.) will be linked to it. Furthermore, the estimated biomass will be further validated.

However, the group is currently updating and revising its previous estimates based on the suggestions made by the technical consultant during their consultation meeting.

The core group of the Project decided to form another technical working group to focus on the forest sector.

## **2. ELECTRICITY/ENERGY SECTOR**

The group has updated the electricity physical accounts covering the years 1996 – 1998. Due to data limitations, only the monetary accounts for coal fired-thermal power plants were estimated. The group is reviewing the preliminary results covering the years 1988 – 1998.

The working group of this sector has decided to focus only on coal fired thermal plants. Coal energy will be covered comprehensively entailing the stock, flow and residual account. Coal is being prioritized in line with the Department of Energy's shift from non-renewable to renewable source of energy generation.

The group disregarded mini-hydro energy because it has little contribution to electricity generation. Furthermore, according to DOE personnel, data requirements for the sector are not available in disaggregated form e.g., gross generation, no. of hours in operation, etc.

In relation to this, the group studied the Australian Energy Accounts to gain insights on the compilation methodology of the accounts particularly on coal fired thermal plants.

Updating and finalization of data are being conducted by the group.

## **3. HOUSEHOLD SECTOR**

The group has drafted the household account framework leading to the identification of parameters/indicators (production consumption activities and the household expenditures for environmental protection) and came up with the proposed estimation methodology for the account. In line with this, the sector had invited speakers from the Presidential Task Force on Solid Waste Management to shed light on municipal solid waste management. Moreover, the group conducted a field visit to the

municipality of Sta. Maria, Bulacan to get a first hand information on municipal solid waste management being undertaken by a local government unit. These activities are necessary in order to come up with a methodology for the estimation accounts for the household sector.

The group started data gathering on solid waste management and other household sub-sectors. Moreover, the group came up with the preliminary list of statistical requirements in the compilation of household accounts.

#### **4. LAND/SOIL RESOURCES**

The major accomplishment of this group was the formation of the working group on Land/Soil. The working group is composed of the following agencies:

- a. Department of Agriculture
  - Bureau of Soils and Water Management
  - National Irrigation Administration
- b. Department of Environment and Natural Resources
  - Parks and Wildlife Bureau
  - Land Management Bureau
- c. Department of Agrarian Reform
  - Presidential Agrarian Reform Commission Secretariat
- d. Housing and Land Use Regulatory Board
- e. Department of Tourism
- f. National Parks Development Corporation (Department of Tourism)
- g. National Statistics Office
- h. National Statistical Coordination Board

The technical working group updated the preliminary physical accounts of agricultural land uses for the year 1995 – 1998. In addition, the group came up with the preliminary physical estimates for forestland uses covering the years 1988-1998. However, after consultation with the technical consultant the group is currently updating and revising their previous estimates based on the suggestions made by the technical consultant.

#### **5. MINERAL RESOURCES AND MINING SECTOR**

The group completed updating the physical and monetary estimates for metallic minerals covering the years 1995 to 1996, (data for 1997 will not be available until the last quarter of this year).

Field visits to Antique and Bislig, Surigao del Sur were conducted to familiarize the group with the operations involved in open pit and underground type of coal mining activities, respectively. The objectives of the visits were to gather data for asset and economic accounts of the sector and to have an on-site assessment of environmental protection measures used by coal mining companies.

After a meeting with the technical consultant, Ms. Alessandra Alfieri, the group is currently updating and revising their previous physical and monetary estimates based on her suggestions/comments.

## **6. MANUFACTURING SECTOR**

The group focused their work in updating the estimates and on data gathering regarding the production processes and air emission factors of the following sectors:

- a tobacco and cigarette;
- b carbonated beverages;
- c semiconductors;
- d vegetable and animal oils and fats; and,
- e iron and steel.

The group later dropped iron and steel, and vegetable/animal oil and fats industries due to difficulty in data gathering.

To augment their knowledge on the sectors, experts from the Industrial Technology Development Institute were invited to lecture on microcircuits and vegetable/animal oil and fats. Another expert from the Environmental Management Bureau was invited to talk about cigarette manufacturing, carbonated beverages, and iron and steel.

On-site visits were also conducted in a coconut oil company (*Co Say Coco Product, Phil.*) in Legazpi city and a semi-conductor firm (*Texas Instrument, Inc.*) in Baguio City to have a concrete knowledge of the production processes and air emissions factors of the said industries.

## **7. WATER RESOURCES**

The work of the group was divided into two: surface water and groundwater estimation.

To enhance knowledge on the water resource sector, the group conducted a familiarization visit in Palawan to learn more about the operations and processes involved in monitoring and treatment of surface water being done in the province.

An initial agreement on the processing of 1994-98 data on water discharge flow was concluded with the parties concerned. The National Water Resource Board and Bureau of Research and Standards agreed to work hand in hand. The NWRB will provide the hardware as well as their software while the BRS will provide the raw data. The two offices agreed to discuss between themselves further details of their working arrangements. The NSCB-ENRA II project on the other hand, agreed to provide a computer to BRS to facilitate data processing.

Processing of stream flow data for all water regions was done by the TWG on water. The processed data will be used to come up with the revised and updated accounts. An orientation and review of the estimation methodology was conducted for the new technical assistant of the group.

The group also discussed with Ms. Alfieri the problems encountered during the compilation of the asset account for water. The group is in the process of incorporating the suggestions made by Ms. Alfieri.

## **8. SERVICE SECTOR**

While waiting for data requested from DOH, the group conducted an on-site visit to Rizal Provincial Hospital to gather data and be acquainted with operations involved in hospital waste management.

Transport sector and government services are being updated covering the years 1995 to 1998 based on the initial methodology done for 1988-1994. For the government services, the group looked into the use the trial balance submitted by government agencies to the Commission of Audit (COA) to capture the actual expenditure but these report does not have the necessary details, so the General Appropriations Act of the Department of Budget was used.

Research work on hospital waste management including discussion meetings with the Department of Health is on going.

A summary of the estimates undertaken per resource/activity is provided in attachment A.

## **II. ON ADVOCACY WORK**

An advocacy group was formed during the first quarter of the year to address the information, education and communication campaign of the ENRA-II Project. The advocacy group came up with a program proposal which was approved by the PEENRA Management Committee and the Inter-Agency Committee on the third quarter of the year.

PEENRA participated in the three-day exhibit of the Philippine Institute of Development Studies Research Fair. A multi-media presentation in power point (laymanized – Filipino) was presented, also exhibited were the technical papers of the special studies on Estimation of Fish Biomass in Laguna de Bay Based on Primary Productivity, Small-scale Gold Mining Activity, Peter Bartelmus' Green Accounting for a Sustainable Economy, and the Philippine Asset Accounts. Some photos were also exhibited. The said materials were also presented during the launching activities of the National Statistics Month.

The PEENRA pamphlet (Filipino version) entitled "*Ang Kalikasan, Ang Ekonomiya at Ang Likas Kayang Kaunlaran*", and the brochure of ENRA II were published and is currently being disseminated. The English version of the pamphlet is on the editing stage. An article on environmental accounting entitled, *The Environment, The Economy and Sustainable Development*, was also published in the supplement of a major daily newspaper.

The PEENRA homepage was revised and carried an article on forest resource while draft articles on water and mineral resources are on the pipeline. These articles are in line with the effort of continuously updating the PEENRA WebPage.

A number of lectures/seminars were also conducted by the PEENRA project on environmental accounting. First on the list is the Seminar on Environment and the economy: Focus on the PEENRA System that was attended by various audiences and conducted at the Mirriam College. A number of symposia were also conducted for the benefit of graduate students of different academic institutions namely: Mirriam College, Institute of Development Management and Governance of CPAF-UPLB, and School of Urban and Regional Planning (SURP) of UP Diliman.

Finally, the group conducted a lecture on Policy Uses of Environmental Accounting with Dr. Glenn Marie Lange from the New York University, as the speaker. The audience of the forum came from the different agencies concerned with environmental accounting and some non-government organizations representatives.

### **III. DATABASE DEVELOPMENT/SUPPORT**

#### **1. SURVEY ON ENVIRONMENTAL PROTECTION EXPENDITURE (SEPE)**

The working group focused their work on the development and implementation of the questionnaire for the Survey on Environmental Protection Expenditures (SEPE) by the different industries. The objective of the said survey is to collect information on expenditures incurred by industries to prevent and abate pollution, and the practices and techniques used for the purpose. The respondent of the SEPE was limited to selected industries (agriculture, manufacturing, mining and quarrying, electricity, gas and water, hotels and restaurants, transport, hospitals and sanitation services) and regions [Cordillera Autonomous Region (CAR), Region III, Region IV and the National Capital Region (NCR)]. The field operation and processing of the SEPE will be between December 1999 and April 2000.

The questionnaire was initially presented to the core group members last April, where unresolved issues came out. It was then agreed upon by the core group to solicit comments from Statistics Canada to settle the issues concerned.

After rehashing the questionnaire, it was pre-tested to 20 selected companies. A consultative meeting with the representatives of the selected firms (respondents of the pre-test) was then held before finalizing the questionnaire for the actual survey. The major objective of the consultation was to check the appropriateness of the questionnaire, and elicit comments and suggestions for its improvement. The questionnaire was again revised to incorporate some of the suggestions and comments raised during the consultation.

With regards to the actual conduct of the SEPE, the group had a series of meetings with the National Statistics Office to discuss the details for the survey. The budgetary requirements, timetable of activities and the responsibilities of each agency were agreed upon and documented through the memorandum of agreement signed by

the heads of NSCB and NSO. It was also agreed upon that the SEPE will be a rider of the Annual Survey of Establishment.

The TWG also developed the Field Operations and Processing Manual which serves as a guide for the conduct of the Survey. The said manual was also utilized during the orientation meeting with the different levels of NSO field personnel.

## **2. Data Processing**

As of date, the following data have been processed for the Land/Soil and Minerals/Mining resources:

### **a. Land / Soil Resources – Zonal/Land valuation**

Tables:

- a.1. Average municipal and provincial zonal value per square meter of hectare, for each land use (residential, agricultural, commercial, industrial, forest lands and other land uses as specified in the BIR data on zonal valuation).
- a.2. Summary tables of average provincial and regional zonal value per square meter or per hectare, for each land use (agricultural, residential, commercial, industrial, forestlands and other land uses as specified in the BIR data on zonal valuation).

### **b. Minerals/Mining – Special tabulation on coal**

Tables:

- b.1 Special tabulation of Philippine coal reserves, by coal mine, by region, expressed in In-Situ quality and at 10,000 Btu / lb.
- b.2 Special tabulation of coal production in the Philippines, by coal mine, by region, expressed in run-off mine quality and at 10,000 BTU / Lb.

## **3. PEENRA Information System**

A database information system and a homepage for PEENRA was developed by a computer expert contracted by the project. The said information system is available to all NSCB staff involve in the project and to other data compilers.

As stipulated in the contract between the computer expert and NSCB, training on how to use the system was conducted for all NSCB staff involved in the project.

#### **IV. MANILA GROUP**

As a catalyst to develop environmental accounting in Asia Pacific, the project will initiate the organization of a group which will provide the venue to inform, share, discuss and improve the generation, compilation and utilization of environmental accounting. Since the Philippines will initiate the formation of the group, it will be called the Manila Group. This group will serve as the counterpart of the London Group in the Asia-Pacific region.

A group was formed to oversee the creation of the Manila Group. A program proposal for the Manila Group has been drafted. The said proposal was presented by NSCB officers to the London Group meeting held last November. Moreover, with the participation of Ms. Alessandra Alfieri, the technical consultant of the project, the proposal was also discussed to the UNDP by NSCB officers.

The proposal is now undergoing revisions after Ms. Alfieri discussed important aspects of the proposed Manila Group meeting. Ms. Alfieri, having extensive background on international conferences, provided several helpful insights regarding the pre-conference preparations, the conduct of the meeting and protocols to follow.

#### **V. ON THE ORGANIZATIONAL MACHINERY OF THE ENRA PROJECT**

Based on a special order from the Office of the Secretary General, the Director of ESSO issued a memorandum regarding specific areas of responsibility for the ENRA project II staff.

To be able to monitor the activities of the Project, the Inter-Agency Committee (IAC) will also function as the Project Advisory Group (PAG). Primarily, PAG shall monitor and evaluate the progress of the project's activities vis-a vis its quarterly work program.

#### **VI. ON THE IMPLEMENTATION OF THE EXECUTIVE ORDER (EO) NUMBER 406**

The NSCB together with the National Economic and Development Authority (NEDA) and the Department of Environment and Natural Resources (DENR) conducted a presentation to the Department of Budget and Management (DBM) with the following objectives: to strengthen and enhance the knowledge on the importance and significance of the PEENRA system; to stress the directions and status of the implementation of the EO No. 406; and, to articulate the requirements of the PEENRA agencies to ensure the institutionalization of the PEENRA system within the organizational structure of each agency.

In general, the presentation concluded that institutionalization of PEENRA can be undertaken even without the creation of new positions but instead, through the utilization of the present manpower available in the agency. This is in consonance with the "no creation of position" policy of the Civil Service Commission (CSC). It was also pointed out by the DBM staff that the functions of the positions for PEENRA should be distinct and in coherence to the mandate of the agency.



A brief presentation of the concepts, methodologies and operationalization activities of environmental accounting in the Philippines were presented to three Bhutanese. The three Bhutanese were trainees on the System of National Accounts sent to the Philippines through the support of the Asian Development Bank (ADB).

A paper on the institutionalization of the PEENRA system in the Philippines was likewise presented during the **“Workshop on Integrated Economic and Environmental Accounting”** held in New York from June 11 to 16. The United Nations Statistics Division (UNSD) sponsored the said workshop.

During the second and last meeting of the Steering Committee for the year, the Department of Environment and Natural Resources reported that it has already incorporated PEENRA system in the MTPDP. The department has also incorporated the PEENRA budget distinct from the department’s regular budget. Likewise, strengthening of data management system through the implementation of an integrated GIS based data management is being undertaken of the said department.

The creation of a technical working groups (TWG) for the compilation of Fishery, Land/Soil and Water Resources asset accounts which includes the Land Management Bureau was approved by the Steering Committee on the said meeting. Moreover, the Steering Committee approved the guidelines for PEENRA data generation with emphasis on the importance for defining the procedure in the generation of statistics required for the compilation of environmental accounts.

## **VII. CAPABILITY BUILDING**

Several seminars/workshop/conferences and other fora, both local and foreign, were attended by the PEENRA staff to enhance capability in dealing with the institutionalization of the project. In the international arena, NSCB sent its officer/staff to the following:

1. Consultation with Statistics Canada in the field of Environmental Survey. Attended by three NSCB staff.
2. Workshop on United Nations Statistics Division on integrated Environmental and economic accounting and UNSD-FAO on integrated environmental and economic accounting for fisheries. Conducted in New York last June 7 to 16, 1999. Attended by two NSCB staff.
3. Training Course on “Planning for Environmentally Sustainable Development in the Asia–Pacific Region. Held September 20 to October 8, 1999 in Bangkok, Thailand and attended by two NSCB staff.
4. Two NSCB officers, Director Estrella V. Domingo and Ms. Sylvia M. De Perio, attended the sixth meeting of the London Group in Canberra, Australia last November 14-19, 1999, the former as a participant and the latter as an observer.

In the local arena, PEENRA personnel attended the following:

1. Training on How to Develop and Create Web Pages, " A Crash Course in Webmastering. Attended by one NSCB staff and held last March 18, 1999;
2. "Client/Server Programming Course", a high level, non-conventional applications development course. A one-month training course attended by one NSCB staff and held last May 3 to June 3, 1999; and,
3. The Eco-Tourism Congress held in Tagbilaran City, Bohol last October 27 to 29.

Moreover, NSCB also initiated the following training and fora to enhance capability of its staff and other PEENRA players:

1. Training on PEENRA Asset Accounts Framework: Presentation of the Land and Soil, Water, and, Fishery Concepts and Estimation Methodology. This training was participated in by DA and DENR staff and was held at the Island Cove Resort, Cavite last January 1999;
2. Data Assessment Workshop with Data Producing Agencies with 50 participants from data producing agencies held at the Mandarin Hotel, Makati City last February 1999;
3. Training/Workshop on the PEEENRA Asset Accounts: Framework and Estimation Methodologies for the Mineral and Forest Asset Accounts. Conducted for the benefit of the staff of the Forest Management Bureau and Mines and Geosciences Bureau of the Department of Environment and Natural Resources held at Villa Cristina Resort, Antipolo City last July 1999; and,
4. Lecture/ discussions with Ms. Glenn-Marie Lange from the New York University regarding the policy uses of environmental accounting. The lecture provided the PEENRA staff with a different set of knowledge on environmental accounting, this time focusing on the selling points of environmental accounts, particularly for policy makers held at the Intecon Hotel, Makati City last November 1999.

Besides the above mentioned fora, the assistant project manager initiated a lecture focusing on the SNA, SEEA Framework and the PEENRA System for the benefit of the new set of NSCB-PEENRA personnel.

A summary of the training/workshop and other fora initiated and attended by NSCB is exhibited by attachment B.

## **VIII. DOCUMENTATION, PUBLICATION AND DISSEMINATION OF PEENRA RESULTS**

The ENRA-II project has published the following:

1. Estimation of Fish Biomass based on Primary Productivity of Laguna de bay;

2. Green Accounting for Sustainable Development by Peter Bartelmus; and,
3. Special Study on Small Scale Gold Mining Activity.

Papers on the *Environmental Degradation due to Economic Activities* and the *Possible Policy Uses of Environmental Accounting* are on the pipeline for publication.

## **REGIONAL/PROVINCIAL LEVELS**

The project has three pilot areas: Cordillera Administrative Region (CAR), Region 7, and the Province of Palawan. The regional office of NSCB is carrying out project implementation in CAR. While the regional DENR office in region 7 is assisting NSCB in the implementation of the project in the region. In Palawan, NSCB is being ably assisted by the Palawan Council for Sustainable Development System in the implementation of the project.

### **CORDILLERA ADMINISTRATIVE REGION (CAR)**

Project activities in the Region started early 1999. The activities in the region focused on data generation and processing for six resources and sectors namely: agriculture particularly on cabbage farming, forestry and; land/soil; mineral/mining; manufacturing, particularly in semi-conductors; and, water.

#### **I. RESOURCES/SECTORS**

##### **1. AGRICULTURE ACTIVITY**

The group agreed to cover the following commodities:

- Vegetable-cabbage
- Root crop-white potato
- Citrus fruits-oranges

However, due to data limitations, the group agreed that the final scope of the study would be limited to the environmental degradation of land and water caused by cabbage farming.

The group was able to compile the preliminary estimates of Environmental Degradation due to Cabbage farming for the year 1988 to 1997. The group produced also the following tables:

- a. Total Cabbage Area Subjected to Soil Erosion;
- b. Distribution of Total Eroded Area by Type of Erosion, 1990 (in Percent);
- c. Erosion Rates, 1990;
- d. Soil Erosion by Types;
- e. Total Soil Erosion;
- f. Estimates of off-site Erosion (in metric tons);
- g. Estimated Nutrient Loss from Soil Erosion due to Cabbage Farming (in metric tons);
- h. Estimated Nutrient loss from Off-site (Metric Tons), and
- i. Estimated Nutrient loss from On-site (Metric Tons).

## **2. LAND AND SOIL RESOURCE**

The group compiled the physical and monetary estimates for Agricultural Land Uses for the year 1988 to 1998. The group is currently undertaking physical and monetary estimates for forestland uses for the year 1988 to 1998.

## **3. MINERALS AND MINING**

The group was able to compile the following:

- a. Copper ore reserves, 1989-1998
- b. Gold Physical Asset Account (ore form) 1990 –1996
- c. Gold Physical Asset Account (metal form) 1990 –1996
- d. Primary Gold Reserve CAR, in ore and Metal Form 1989 –1998
- e. Primary Gold Volume of Extraction in Ore and Metal Form 1989-1998
- f. Mined ore 1989-1998
- g. Summary of CAR Limestone Non-metallic Reserves, 1989-1998
- h. Volume of extraction of Limestone, Non-metallic Minerals in Car, 1989-1998
- i. Gold, Copper and Limestone Asset Accounts for 1990 –1998 (draft) and,
- j. Project proposal Environment degradation caused by the mining industry in CAR.

With these, the group was able to compile the physical and monetary estimates for Gold, Copper and Limestone covering the period 1990 to 1998. In addition, the group has finalized the Project Study for Mining as an economic activity. The said project will cover the large-scale mines in Benguet Province.

The group conducted on-site visits to the different mining companies in the region:

1. Philex Mines located at Padcal, Tuba, Benguet;
2. Benguet Corporation-Benguet Gold Operation (BC-BGO) located at Virac, Itogon, Benguet;
3. BC-Benguet Antamok Gold Operation located at Antamok, Benguet;
4. Lepanto Consolidated Mining Company located at Mankayan, Benguet, and,
5. Limestone Kiln Project located at Ortirisan, Baguio City.

The objectives of the on-site visits were the following:

1. To familiarize the group with the different underground mining operations for copper and gold;
2. To validate reported data on mined ore and ore reserves from CY 1989-1998; and,
3. To gather data on the volume of tailings impounded, total project costs and maintenance costs of the tailings dams from CY 1989 – 1998.

#### **4. MANUFACTURING ACTIVITY**

The group revised the needed statistics with the inclusion of ambient air parameter such as Total Suspended Particulate (TSP). For air quality, the parameters that will be measured are TSP, sulfur oxide (SO<sub>x</sub>) and nitrogen oxide (NO<sub>x</sub>).

The Manufacturing group conducted an on-site visit in Texas Instruments Phils., Inc. (TI) to familiarize themselves with the production process of semi-conductor; and an on-site assessment of environmental protection measures used by TI.

#### **5. WATER RESOURCE**

Initial data on the following were collected by the group:

1. Prices of Water;
2. Monthly Water Discharge of Lamut River;
3. Monthly Water Discharge of Ibulao River;
4. Water Discharge to the Different Tributaries of the Upper Magat Watershed; and,
5. Total Rainfall in CAR by Months, 1989 – 1998.

With these, the group was able to compile the preliminary physical estimate for surface water for the year 1989 to 1998. Monetary estimates are currently being conducted for the said account.

To familiarize the group with rivers and its characteristics, the group conducted an on site visit to Magat River located in Ifugao. The visit served also as the opportune time to gather information regarding variables relative to the Magat River and its tributaries.

The group was able to compile Physical Account of Water Resource for 1996 (draft).

#### **6. FORESTRY RESOURCE**

The group was able to come up with a preliminary physical and monetary account for old and secondary growth dipterocarp and pine forests for the year 1990 to 1998. The following are the specific tables produced by the group:

1. Area Accounts of Old Growth Dipterocarp Forests (1990- 1998);
2. Volume Accounts of Old Growth Dipterocarp Forests (1990 –1998);
3. Volume Accounts of Second Growth Dipterocarp Forests (1990 –1998);
4. Economic Accounts of Old Growth Dipterocarp Forests, at current Prices (1990-1998), Cordillera Administrative Region;
5. Economic Accounts of Old Growth Dipterocarp Forests, at constant Prices (1990-1998), Cordillera Administrative Region;
6. Economic Accounts of Second Growth Dipterocarp Forests, at current Prices (1990-1998), Cordillera Administrative Region;

7. Economic Accounts of Second Growth Dipterocarp Forests, at constant Prices (1990-1998), Cordillera Administrative Region;
8. Volume Accounts of Pine Forest 1990 –1998;
9. Area Accounts of Pine Forest 1990 –1998;
10. Economic Accounts of Pine Forests, at constant Prices (1990-1998), Cordillera Administrative Region;
11. Economic Accounts of Pine Forests, at current Prices (1990-1998), Cordillera Administrative Region; and,
12. Draft Write-up for Forestry as a Resource.

The team conducted on-site visits to the provinces of Kalinga and Apayao to validate reported data on tree cutting, reforestation, fire occurrence and area of jurisdiction of Kalinga and Apayao, and to gather data on the volume of existing forest resources.

## **II. CAPABILITY BUILDING**

Training/workshops on compilation and utilization of PEENRA and related topics were conducted to enhance capability of the staff and other local government agencies in the region involved in environmental accounting. These are:

1. Pilot Regional ENRA workshop on Data Assessment and Financial Plan Administrative Arrangement (finalization of scope and coverage of the Regional ENRA. Held last February 1999;
2. Pilot Regional Training on SEEA Framework and Regional Accounts (SEEA, GRDP and GRDE);
3. Echo Seminar/Training on the Environmental Economics particularly on the following concepts:
  - a. Environmental Capital
  - b. Environmental Investments and Depreciation,
  - c. Special proxies for Environmental Capital and Cost; and
  - d. Environmental Policy
4. Intensive Training Workshop on the PEENRA Compilation Methodologies; and,
5. Orientation on the Conceptual and Operational Framework of PSNA and PEENRA

## REGION SEVEN (7)

Project activities in Region 7 started in the middle of 1998 with the Department of Environment and Natural Resources as the implementing arm. For the past one and a half-year, the region focused their activities in the estimation of four resources and four economic activities/sector. Fine tuning and the publication of the results are the only activities left for the region for the year 2000. Below is the summary of what the region has done for the year 1999.

Data collection on almost all sectors: Forestry, Land and Soil, Mineral, Transportation, Energy, and, Manufacturing has been completed. To familiarize the regional ENRA staff with the processes involved and to gather data, on-site visits were conducted in the Transport Field Office of Bohol, selected piggery farms in Negros Oriental and Bohol, power barge facility (power Barge 101) in Cebu City and the National Power Corporation plant of Toledo City. With these the region have come up with the following preliminary estimates plus some expansion in the year of coverage:

| Resources/Activity   | Preliminary Estimates | Expansion |
|--|-----------------------|-----------|
| 1. Physical and Monetary for Fishery Resources                 | 1979-1996             | 1996-1998 |
| 2. Physical and Monetary Estimates for Forest Resources        | 1988-1994             | 1995-1998 |
| 3. Physical and Monetary Estimates for Non-metallic Minerals   | 1992-1996             | 1997-1998 |
| 4. Physical and Monetary Estimates for land and Soil Resources | 1988-1994             | 1995-1998 |
| 5. Physical and Monetary Estimates for Piggery                 | 1991-1996             | 1997-1998 |
| 6. Physical and Monetary Estimates for Carageenan              | 1994-1997             | 1998      |
| 7. Physical and Monetary Estimates for Cement                  | 1994-1996             | 1997-1998 |
| 8. Physical and Monetary Estimates for Electricity             | 1992-1996             | 1997-1998 |
| 9. Estimates for Transport Sector                              | -                     | 1994-1998 |
| 10. Government Environmental Protection Expenditure            | -                     | 1994-1998 |



As for the water resource account, a consultant from the water Resource Council (WRC) of the University of San Carlos (USC) was hired to help in the estimation of water resource account for the region.

To enhance capability of the PEENRA unit in the region, a lecture on the technical concepts of Water Resources compilation in the national and the data compilation technique being used by the Water Resources Center (WRC) of the University of San Carlos in Cebu was conducted last May 1999.

## **PALAWAN**

The implementation of the project in the province started in 1998 with the Palawan Council for Sustainable Development System as the implementing agency. The activities in the province focused on data generation and processing for five asset accounts namely: fishery; forest; land/soil; mineral/mining; and, water.

### **I. RESOURCES**

#### **1. FISHERY RESOURCE**

The group has completed the compilation of data on catch per year. Collection of raw data in Brooke's Point and Coron is on going. Meanwhile, updating of data from the coast guard base in Puerto Princesa City was undertaken to complete the necessary data for estimation. In addition to the previously consolidated data, the TWG collected data on all fishing vessels registered from June 1 to August 29, 1999 including information on the name of the owner, name of vessel, gross tonnage, horsepower and area of operation.

The group has then revised the initial estimate considering the suggestion made by NSCB. Furthermore, in consideration to the suggestions made by NSCB, the group agreed to conduct the following activities:

- Verify sources for possible duplication in registration.
- Conduct a purposive study on the average number of years of economic activity/seaworthiness of a fishing vessel
- Refine the preliminary output on data processing to determine the reasons for data gaps. The group likewise agreed to use a computed average horsepower (Hp) in case of data gaps on the records of concerned agencies.

Several meetings were conducted to facilitate the processing of data for the compilation of fishery resource accounts (1988 – 1994). Preliminary estimates have been compiled and are currently being revised based on the lecture on estimation methodology provided by NSCB-National and the meeting with Ms. Alfieri.

#### **2. FOREST RESOURCE**

As of date, the estimates of the physical asset accounts of old growth forest, (area, 1988 - 1994 and volume, 1988 – 1992), were partially computed. These are currently being expanded to cover the year 1995 to 1998 for area and 1993 to 1998 for volume.

The working group also compiled the following:

- a) second growth dipterocarp forest; covering the period 1985 - 1998
- b) mangrove forest 1988 - 1998;
- c) rattan, 1988 - 1998.

Data on reforestation, however, will have to be verified before using them in the computation of the second growth forest accounts. Only plantation within public lands was considered in compilation.

The estimates were forwarded to NSCB for comment particularly on the filling up of the data gaps.

The TWG has started the documentation of the sources and methodologies. Among the assumptions and sources that would be incorporated in the technical report are Agro-forestry project areas particularly those areas covered by the Integrated Forestry Management Plantation and Integrated Social Forestry (ISF). Industrial Tree Plantation (ITF) were added into the total area of second growth forest, and further classified into forest conversion.

The PTWG met with Ms. Alfieri on December to discuss problems/issues regarding the group's estimation. A subsequent meeting was conducted to discuss the recommendations made by Ms. Alfieri. Preparations for the generation of estimates and an upcoming lecture were likewise discussed.

### **3. LAND/SOIL**

The crops considered in the estimation of agriculture land use include land devoted to temporary crops (palay, corn, root crops, vegetables, etc.), and permanent crops (cashew, coconut, mango, citrus, coffee, banana, etc). Livestock grazing was also included in the estimation. Accounts estimation for agriculture land use, covering the years 1988 to 1997, has been compiled and is ready for processing upon approval of the contract. The accounts are being expanded to cover the year 1998.

As for the built-up land use, the group focused on the collection of data on the identified data gaps particularly on built-up areas, land conversion to subdivisions and land reclamation.

The group prepared the estimates of the physical asset accounts for forestland use covering the years 1988 to 1997.

As suggested by NSCB, appropriate notations on the estimated accounts for lands devoted to forest uses such as definition of scope and coverage of assumptions and sources of parameters will be incorporated in the documentation.

Meanwhile, the scope and coverage for the industrial and government uses will be verified at the Provincial Assessor's office.

The PTWG discussed with the technical consultant, Ms. Alfieri, certain estimation issues, foremost of which is the physical account of the resources by municipality.

### **4. MINERAL RESOURCE**

Estimates for the metallic resources that include nickel (metal and beneficiated ore), manganese, copper, and chromite (metallurgic and refractory) covering the period

1987 to 1995 has been prepared. The group is currently undertaking estimates of the said metals for the year 1996 to 1998.

The group initially estimated the accounts for the following non-metallic minerals:

- a. Silica 1988 to 1997. Being expanded to cover the year 1998.
- b. Pebbles 1988 to 1997. Being expanded to cover the year 1998.
- c. Limestone 1991 to 1994. Being expanded to cover the years 1995 –98.
- d. Sand and Gravel 1990- 1997. Being expanded to cover the year 1998.
- e. Natural Gas and Oil 1990 to 1997. Being expanded to cover the year 1998.

Because of problems on availability of data on reserves, extraction, other accumulation and closing stock, the group came up with an estimate using certain assumptions.

The conduct of a special study on sand and gravel reserve estimation was not pushed through due to problems on the processing of the contract. The study was re-scheduled in December 1999 in time for the dry season.

After the discussion meeting with Ms. Alfieri, a subsequent discussion was conducted by the PTWG to review the estimates and discuss the suggestions made by the technical consultant. The group's work and financial plan for the year 2000 was also discussed. The group is currently undertaking data gathering to fill in data gaps as well as data processing. Revisions on the oil and natural gas estimates are also being planned.

## **5. WATER**

The group has prepared the physical asset accounts for both surface and groundwater covering a nine-year period from 1988-96. Initial monetary estimates are being compiled.

The group reviewed the suggestions made by Ms. Alfieri. Subsequent refinements on the estimates are being undertaken. Sub-contracting of data processing for groundwater recharge is being planned as well as other activities for the year 2000.

## **II. DATA PROCESSING**

As of date, the following data have been processed for the Land/Soil and Fishery resources:

### **1. Land/Soil**

Tables:

- a. Agricultural area by type of farm in hectares, mainland Palawan by available year (1987-1997)
- b. Agricultural lands converted to other use I hectares, mainland Palawan, by available year (1987-1997)

- c. Area of reforestation including mangroves in hectares, mainland Palawan, by available year (1987-1997)
- d. Mangrove areas converted to fishpond in hectares, mainland Palawan, by available year (1987–1997)
- e. Forest destruction by cause by year in hectares. mainland Palawan, by available year (1987–1997)
- f. Estimated zonal values of lands by type of land use., by municipality 1995
- g. Assessed area by land use in hectares, by municipality, by available year. (1990 -1998)

## 2. Fishery Resource

Data on fishing vessel, name of operator, business address, gross tonnage, horsepower, gear used, number of crew/fishermen (for commercial fishing only and year built will be encoded by year.

Tables:

- a. Number of fishing boats registered at MARINA, total horsepower and gross tonnage for municipal fishing industry by year and municipality (1988 – 1998)
- b. Number of fishing boats registered at MARINA, total horsepower, gross tonnage and number of crews/fishermen for commercial fishing industry by year by municipality (1988-1998).
- c. Number of fishing boats registered at coastguard, total horsepower, and gross tonnage for municipal fishing industry, by year and by municipality (1988-1998).
- d. Number of fishing boats registered at coastguard, total horsepower, gross tonnage and number of crew/fishermen for commercial fishing industry by year by municipality (1988-1998).
- e. Number of fishing boat registered at BFAR, total horsepower, gross tonnage and number crew/fishermen for commercial fishing industry by year by municipality (1988-1998).

## III. CAPABILITY BUILDING

A three-day lecture/meeting was held on November 15-17, 1999, facilitated by representatives of four Technical working groups from the national office. Discussed during the lecture were monetary valuation of Fishery, Land/Soil, Forestry and Mining/Mineral asset accounts.

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**ATTACHMENT A**

**PEENRA PHYSICAL AND MONETARY ESTIMATES  
(National)**

| <b>NATIONAL</b>   | <b>Preliminary Estimates</b> | <b>Updates</b> | <b>Expansion</b>   |
|---|------------------------------|----------------|--|
| 1. Physical and Monetary Estimates for Metallic Minerals              | 1988-1994                    | 1995-1996      | -  |
| 2. Physical and Monetary Estimates for Non-Metallic Minerals (Coal)   | 1988-1998                    | -              | -  |
| 3. Physical and Monetary Estimates for Land/Soil (Agricultural lands) | 1988-1994                    | 1995-1998      | -  |
| 4. Physical Estimates for Land/Soil (Forest lands)                    | 1988-1997                    | -              | -  |
| 5. Monetary Estimates for Land/Soil (Forest lands)                    | -                            | -              | 1988-1998  |
| 6. Physical and Monetary Estimates (Built-up Lands)                   | -                            | -              | 1988-1998  |
| 7. Physical and Monetary Estimates for Water                          | 1988-1994                    | -              | -  |
| 8. Physical Estimates for Fishery                                     | 1988-1994                    | 1995-1998      | -  |
| 9. Monetary Estimates for Fishery                                     | 1988-1994                    | -              | -  |
| 10. Physical and Monetary Estimates for Forest                        | 1988-1994                    | -              | -  |
| 11. Physical and Monetary Estimates for Selected Economic Activities  | 1988-1994                    | -              | Semi-Conductors, Vegetable & Animal Oils & fat, Iron & Steel, and Carbonated Drinks, 1988-1998 |
| a. Upland Palay farming   |                              |                |  |
| b. Intensive Shrimp Aquaculture                                       |                              |                |  |
| c. Hog Raising  |                              |                |  |
| d. Logging of Dipterocarp and Pine Forest                             |                              |                |  |
| e. Tuna Canning Industry  |                              |                |  |
| f. Textile Industry   |                              |                |  |
| g. Leather Tanning  |                              |                |  |
| h. Paint Manufacturing  |                              |                |  |
| i. Sugar Milling  |                              |                |  |
| j. Cement Manufacturing   |                              |                |  |
| k. Petroleum Refining   |                              |                |  |
| l. Small-scale gold mining  |                              |                |  |
| m. Electricity generation *   |                              |                |  |
| n. Land Transport Services  |                              |                |  |

\* Preliminary physical estimates only

**ATTACHMENT B**

**TRAINING CONDUCTED/ATTENDED BY NSCB ON ENVIRONMENTAL ACCOUNTING  
1999**

Training and other Fora initiated by NSCB on PEENRA

| <b>TRAINING/WORKSHOP</b>  | <b>Participants</b>   | <b>Place</b>  | <b>DATE</b>       |
|---|---|---|-------------------|
| <b>TRAINING/WORKSHOP</b>  | <b>Participants</b>   | <b>Place</b>  | <b>DATE</b>       |
| 1. Training on PEENRA Asset Accounts Framework: Presentation of the Land and Soil Concepts and Estimation Methodology.            | 30 Participants from DA, and DENR                                 | Island Cove Resort & Leisure Park, Kawit, Cavite          | Jan. 21-22. '99   |
| 2. Seminar on Environment and the Economy: Focus on the PEENRA System   | 55 Participants from UP, UPLB, Mirriam College, Ateneo, UST, etc. | Environmental Education Center, Mirriam College           | Feb. 5, 1999      |
| 3. Conducted Data Assessment Workshop with Data Producing Agencies  | 50 participants All data sources of PEENRA, NSCB                  | Mandarin Hotel, Manila                                    | Feb 26 '99        |
| 4. Training/Workshop on the PEENRA Asset Accounts Framework and Estimation Methodologies for the Mineral & Forest Asset Accounts. | 25 Participants from FMB, MGB and Policy Planning Div. of DENR    | Villa Cristina Resort & Hotel, Taktak Road, Antipolo City | Jul. 1 to 2, 1999 |
| 5. Lecture on the Policy Uses of Environmental Accounting by Dr. Glenn Marie Lange  | 26 Participants from various Planning Agencies                    | Skytop, Hotel Intercon, Manila                            | Nov. 11, 1999     |



**Training and other Fora initiated by other Organizations but attended by NSCB**

| <b>TRAINING/BRIEFING</b>   | <b>Participants</b>  | <b>Place</b>  | <b>Date</b>                     |
|--|--|---|---------------------------------|
| 1. Training on How to Develop and Create Web Pages, "A Crash Course in Webmastering."  | Noel S. Nepomuceno   | Innotech Training Center, Diliman, Quezon City                | Mar. 18, 1999                   |
| 2. "Client/Server Programming Course", a high level, non-conventional applications development course.   | Noel S. Nepomuceno   | Philippine Software Development Institute, U.P. Diliman, Q.C. | May 3 – Jun. 3, 1999            |
| 3. Study Tour to Statistics Canada – Consultation in the area of Environmental Account   | Raymundo J. Talento, Marriel M. Remulla and Sylvia M. de Perio | Statistics Canada, Ottawa, Canada                             | May 10 to 11, 1999              |
| 4. UNSD Workshop on Integrated Environmental and Economic Accounting and UNSD/FIFAO Joint Workshop on Integrated Environmental and Economic Accounting for Fisheries | Ms. Estrella V. Domingo and Lea H. Amoro                       | United Nations Plaza, New York                                | Jun. 7 to 11 and 14 to 16, 1999 |
| 5. Lecture on PEENRA – Students of SURP – UP Diliman   | Resource Speaker – Sylvia M. de Perio                          | SURP-UP Diliman   | Sept. 8, 1999                   |
| 6. Symposium on Environmental Accounting   | Resource Speaker – Sylvia M. de Perio                          | IDMG-CPAF, UPLB   | Sept. 18, 1999                  |
| 7. Training on Planning for Environmentally Sustainable Development in the Asia – Pacific Region   | Louella R. Ragos, Fe M. Talento and Arnel B. Maaliw            | Asian Institute of Technology in Bangkok, Thailand            | Sept. 20 to Oct. 8, 1999        |
| 8. Sixth London Group Meeting  | Ms. Estrella V. Domingo and Sylvia M. de Perio                 | Canberra, Australia   | Nov. 16 to 19, 1999             |
| 9. Lecture on Environmental Accounting   | Resource Speaker – Sylvia M. de Perio                          | NSCB Conference Room A  | Dec. 10, 1999                   |

