ESA/STAT/AC.72

Conclusions of the UNSD Workshop on Integrated Environmental and Economic Accounting

(New York, 7-11 June 1999)

The meeting was opened by Mr. Habermann, Director of the United Nations Statistics Division (UNSD), who stressed the importance of international workshops for: a) transferring knowledge on concepts and methods currently being developed; and b) obtaining feedback from countries on their priorities and practices. He also mentioned that the London Group was in the process of revising the current System of integrated Environmental and Economic Accounting (SEEA) and that UNSD will ensure that developing countries' concerns are addressed in the revised SEEA. In this regard, the conclusions of this workshop will be made known to the members of the London Group and would contribute to the revision process.

The aim of the current workshop was to: a) launch the Nairobi Group Manual; b) identify best practices based on country experiences; and c) discuss unresolved issues. The participants felt that the Nairobi Group Manual " Integrated Environmental and Economic Accounting – An Operational Manual" was a useful tool to assist countries setting up a programme on integrated environmental and economic accounting and which could provide practical guidance on the implementation of the SEEA.

The main conclusions of the workshop are summarized below.

FRAMEWORKS

- Participants expressed the need for a common framework that could be implemented by all countries. Different exercises in environmental accounting may produce different sets of figures and confuse the policy makers.
- It was felt that the SEEA, including the NAMEA approach, provides a common, flexible framework and data system linking environmental information to the economic one. Both developed and developing countries are testing some of the modules according to the individual countries' needs and priorities.
- It was noted that the development of concepts and methods of environmental accounting and their implementation is complementary to the 1993 SNA. For example, compilation of natural resources and balance sheet accounts is already included in the 1993 SNA.

ENVIRONMENTAL PROTECTION EXPENDITURE

- Several developed countries have tested the SERIEE framework and are compiling, on a regular basis, environmental protection expenditures. Few developing countries have compiled environmental protection expenditures for the government. The complete compilation of environmental protection expenditures accounts is data demanding. It was suggested that countries tailor the accounts according to the their concerns and priorities.
- One of the problems with the collection of data on environmental protection expenditures is that over time industries move from end-of-pipe to change-in-process techniques to reduce emissions. It was noted that it becomes more difficult to estimate the share of capital expenditures associated with environmental protection activities and the operating and maintenance (current account) costs associated with

these change-in-process abatement techniques. Studies on the environmental protection industry will be more difficult to undertake in the future.

- It was recommended that natural resource management expenditures be integrated into the environmental protection expenditures, as it is in general difficult to distinguish between these expenditures. Also it was proposed that the revised SEEA try to develop classifications for natural resources management expenditures.
- It was further suggested that supply and use of environmental protection products be reconciled. In the SERIEE, supply of environmental protection services equals demand, however, environmental protection goods (adapted and connected products) are only recorded as part of intermediate and final consumption. The output of environmental protection products (goods and services) is identified as part of the environment industry.
- The measurement of the effectiveness of environmental protection expenditures by linking the monetary figures on environmental protection expenditures with emissions was suggested. It was observed that only a global link between the expenditures and total emissions is possible, and not pollutant by pollutant, since environmental protection measures usually abate several pollutants at the same time. The difficulty in linking physical data on environmental pressure with expenditure data differs according to the environmental domain.
- It was proposed to further develop recommendations on how to present information on environmental taxes, subsidies, fees and other economic instruments.

EMISSION ACCOUNTS

- One of the challenges of environmental accounting is the integration of diverse data sources, in particular national accounts data with environment statistics. The need for concordance between the various classifications was expressed repeatedly.
- It was suggested that the available data on emissions be manipulated in order to include them in the national accounts framework, with the long-term objective of modifying current data collection practices and classifications. This would allow for the routine linking of the emission data and the national accounts classifications.

<u>Air</u>

- Efforts should be made to try to adjust emission coefficients available from national and international sources to the country characteristics (e.g. fuel used, the technology used and on the pollution control measures in place) and to allocate the emissions to the causing industries using energy consumption data and process sources.
- It was recognized that emissions from mobile sources and from solvent utilization would usually be difficult to allocate to the causing sector and to do so would probably require additional information.
- It was stressed that the revised SEEA should put emphasis on energy accounts as part of the overall system.
- It was noted that emissions data could be used in general equilibrium models and in estimating measures of adjusted productivity.
- The issue of whether, for policy purposes, emissions from electricity generation should be assigned to the users rather than to the electricity supply industry, was raised.

Water

- It was recognized that the methodology for the estimation of water emissions is less standardized than that of air and no international emission coefficients exist.
- It was found that the connection between aspects of water quality and quantity was particularly relevant.
- Multiple primary and secondary effects related to water abstraction (fall in groundwater levels, salination of land, pollution of ground water etc.) make the allocation to causing factors/sectors difficult.

Asset Accounts

- Additivity, as well as consistency with SNA, should be maintained in the asset accounts. Supplementary accounts could be used to represent the quality characteristics as well as the environmental functions provided by the assets. Quality indicators are presented as a memorandum item in the Worksheets presented in the Operational Manual.
- Valuation: The use of the net present value method to value the stock, as an estimate of the future income streams generated from the sale of the asset, and the net price method for changes in stock was discussed. The user cost method or El Serafy method can be used to value depletion – it should not used for valuing stocks and it is not consistent with net present value and net price measures of stock value.
- Discount rates: There was some discussion on whether a social or a private discount rate should be used. A lot of countries seem to use a private discount rate adjusted to real terms.
- Negative rents: When negative net rent calculations occur, a zero value should be reported and should be flagged, as it provides valuable information. Economic activity may continue in the short term, in the case of negative rent, if social objectives outweigh the purely economic considerations.
- Averaging: The issue of using moving averages of prices, costs, rates of return to capital and discount rates was discussed.
- Estimates of capital stocks are usually higher than the market value of the capital. This may result in overestimation of the normal return to capital and, hence, in underestimation of the net rent and, at times, even negative net rent.

Subsoil assets

- Reserves: it was felt that the SEEA asset accounts should include not only proven reserves but also probable and possible (measured and indicated) reserves, at least in physical terms. Several countries are compiling accounts using the above classifications.
- Lifetime resources: It was felt that appearance and disappearances of the asset during the accounting period should be factored in the estimation of the lifetime of the resources. It was also recognized that volatility in prices affects the appearance/disappearance of the asset in the balance sheet.
- Confidentiality: may be an issue when compiling asset accounts. In some countries, the most important resource may be managed by a small number of companies. In particular, when the resource in question is the only one of significance, adding its value to other resources in order to keep the information confidential, may not be a viable option. The contribution to GDP from mining in

some developing countries is in the order of 10% or more, illustrating the importance of subsoil asset accounts for these countries.

Land

- Lack of data was one of the major problems for the compilation of asset accounts for land. Data obtained from satellite images provides information on land cover but not on land use. The need to have land use data cross classified by land cover was mentioned.
- Countries seem to use different classifications of land use (e.g. SNA, ECE, FAO classifications, etc.).
- It was mentioned that although changes in land use are usually accompanied by decreases in quality of the land, its value can increase (for example in the case of. transfer from forestland to agricultural land and from forestland or agricultural land to built-up land).
- The difficulty of isolating that part of soil erosion/degradation caused by economic activities from that caused by natural events was pointed out.
- The valuation of soil should be related to the loss of productivity of the land, rather than to the fertilizer replacement, which may cause further degradation of the land. Estimating the cost of soil erosion based on losses in productivity of land, however, may be misleading, as the changes in productivity depend on many factors, including advances in the management of land and in agricultural practices. Practical experience with the monetary valuation of soil quality changes suggests that further analysis and research is needed.

Forest

- FAO definition of forest does not seem to be adhered uniformly across countries. It was suggested that a more general definition of forest be used, allowing countries to adjust it to its particular forest characteristics.
- Produced (cultivated) and non-produced forest: The distinction is usually not clear-cut. One suggestion was to define a cultivated forest as a forest that is regularly managed and a non-produced forest as a forest which is over-mature, that is, one of which is not cut according to the regular cycle.
- Valuation: The stumpage value or insurance value would be the preferred valuation method if it exists. The issue of isolating the value of the land from the value of the forest was discussed.

Water

- Water is a relatively complex issue as quantitative and qualitative aspects are closely linked. The temporal and geographical characteristics of water make the compilation of national water accounts difficult. It was suggested that water satellite accounts including both quantity and quality as well as spatial characteristics of water should be developed. However, not all countries need comprehensive water accounts. The level of details in water accounts should depend on the policy relevance of such accounts and on each country's unique water options.
- Sustainable abstraction: the difficulties in estimating it were mentioned, as stocks of aquifers are usually hard to measure.
- Valuation of water is a major issue in several countries. Several valuation methods were discussed (net present value, price charge, cost to

provide the service, opportunity cost). It was suggested to value the flows of water rather than the stocks, as stocks are very variable depending on environmental and other non-predictable factors. Information on water supply and use by economic sector is very important in order to be able to estimate the value of the water.

- It was noted that several categories of ground water exist. Fossil water, which has a long regeneration cycle of hundreds years, should be treated as a non-renewable resource.

Environmental Valuation

- It was felt that the maintenance cost method, as suggested in the SEEA and in the Operational Manual, was useful for policy making. The main criticism of the method is that the structure of the economy may change, if these imputed costs were actually incurred. Modeling would be the only way of avoiding the above problem.
- It was recognized that valuation, using modeling, was still experimental and would be an exercise of researchers in academia or research institutes. The SEEA would serve as the source of basic information for the models. Experience in this field is still not very widespread and further research is needed.
- It was noted that valuation methods, especially the demand-side (e.g. willingness-to-pay methods), are inconsistent with the SNA.

USES OF ENVIRONMENTAL ACCOUNTING RESULTS

- Several countries started the implementation of the SEEA in response to Agenda 21, as a framework for the derivation of sustainable development indicators, and for monitoring progress towards sustainable growth and development (i.e. demand driven).
- The implementation of the 1993 SNA, which includes the compilation of balance sheet accounts, has provided an impulse for countries to start programmes on environmental accounting.
- The issue of timeliness of economic and environment data was discussed. To enhance policy relevance, estimates of environmental data could be linked to the preliminary national accounts figures and revised as the information becomes available.
- Results of environmental accounting should be presented in an easy to understand form, with analytical results rather than raw tables. Possible examples of data presentation include eco-profiles for emissions showing the value added generated per unit of pollution; change matrices showing the changes in emission-intensity for each pollutant and industry; graphs showing whether taxes capture the full resource rent, etc.
- It was noted that one of the strengths of the SEEA is that it can bring environmental consideration into macro level policy analysis in a formal way.

INSTITUTIONALIZATION OF ENVIRONMENTAL ACCOUNTING

- Environmental accounts should be policy driven, as much as possible. In some cases, though, the results of the compilation have generated interest in the user community. It is therefore very important that data

users and producers work together, in this new field so that the potential of the information included in the SEEA can be used.

- The importance of marketing the use and usefulness of the results of the SEEA compilation in order to obtain the interest and support of the policy makers was pointed out. Selected indicators that can be derived from the SEEA compilation should be explicitly identified.
- It was stressed that one of the major challenges in the compilation of the SEEA is the establishment of a coordination mechanism between the various stakeholders (data users and producers). Several countries have been successful in setting up such a mechanism and are gradually shifting the compilation of the physical accounts to the agencies responsible for primary data collection. Harmonization of the classifications of the data collected would, in the long run, be one of the results of this exercise.

SOFTWARE

- The participants found the SEEA software a useful tool for the compilation of the SEEA.

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