DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS
STATISTICS DIVISION
UNITED NATIONS

ESA/STAT/AC.108
UNCEEA/Prelim/9e
Background paper

Preliminary Meeting of the UN Committee on Environmental-Economic Accounting
New York, 29-31 August 2005
Two United Nations Plaza, Conference Room 23rd floor

RESEARCH AGENDA: SEEA-2003 CHAPTERS 9 AND 10 VALUATION TECHNIQUES FOR MEASURING DEGRADATION MAKING ENVIRONMENTAL ADJUSTMENTS TO THE FLOW ACCOUNTS

Federal Statistical Office Germany

In the chapters 9 and 10 of SEEA 2003 it seems less useful to decide upon an order of priorities for the individual unresolved issues which have been identified and to work on them than in the other chapters of SEEA. The reason is that the question of the monetary valuation of degradation and the derived adjustment of economy-wide aggregates was the most controversial issue during the London Group's SEEA revision process. Basically, two opposing positions may be identified, first, persons or institutions who support – starting from a microeconomic approach – monetary valuation of environmental degradation with the aim to use the results for the adjustment of core economic aggregates. Second, those who recommend – starting from physical accounts – a macro-economic modelling approach in order to show the effect of societies' response activities on the economy.

For the first group, the main point is to adjust the economic aggregates according to the environmental degradation, while the second intend to show how economic aggregates change when political measures for reducing environmental pressures are taken. In line with these positions, the discussion about the environmental targets plays a different role for both sides. In the first case, environmental policy targets are defined as a *result* of adjusting the aggregates (only when the effects of environmental pressures on the economy are known is it possible to decide about the aims to be pursued). In the second case, society's targets are a *precondition* for defining policy measures and assessing their effects on the economic process.

For **monetary valuation**, there exist three different approaches, namely the damage cost approach, the maintenance cost approach and the modelling approach:

- The damage cost approach aims at identifying the costs of environmental damages caused by economic activities.
- The maintenance cost approach describes (ex post) the direct hypothetical monetary costs of reducing the actual pressures on the environment/of observing the limits to pressure established by the natural sciences.

  Both (micro-economic) approaches aim at monetarising the use of the environment. By means of such procedures a "sustainability gap" can immediately be determined in monetary terms – at least with regard to the ecological part. In addition, various adjusted macro-economic aggregates such as EDP may be calculated on this basis. Both approaches are based on the following threefold assumption: 1. valuation problems can be solved at the micro level in a broadly accepted way, 2. the calculated results can be added up and 3. feedback to the original aggregates is considered to a satisfying degree.
- The supporters of a **modelling approach** reject monetary valuation of degradation at least as a task of official statistics. They argue that the integration of environmental goods (at least of global ones, such as the climate, for example) would imply serious intervention in the economic system and therefore would lead to substantial – not only marginal – changes of all macro-economic parameters. What sets modelling approaches apart from others is that the core economic model is extended by the relations to the environment measured in physical terms. In the context of such approaches it is therefore possible to model the

different ways of developing towards an economic system respecting the sustainability targets of society.

According to this concept, environmental accounts within official statistics provide rather detailed data on environmental pressures in physical terms which are fully compatible with SNA monetary data. These results may be used to support environmental policies aiming at sustainable development which encompass the entire policy cycle, i.e. from describing the problems, identifying the targets, analysing the interlinkages and defining measures to monitoring the results of the measures taken. In this context, the hybrid analysis is of great importance, which means bringing together physical data from environmental accounts with identically classified monetary data from SNA, especially from input-output-tables. Quite a number of politically relevant indicators linking the environment and the economy may be developed by aggregation or by combination of such data. As a kind work-sharing, the data provided by official statistics then are used (mostly) by scientific and research institutes within their modelling work in order to analyse the economic effects of different environmental protection measures.

The underlying **causes of these opposing positions** go back to differences concerning the respective situation, i.e. the environmental problems regarded as most urgent, experiences gathered in the past, institutional arrangements, user needs and the state of the art within the national statistical system and the development of national environmental accounts. Possibly even more important are differences concerning the theoretical basis and axiomatic background of the supporters of the two directions. As a consequence, acceptance of the inaccuracies inevitably connected with monetary valuation techniques varies substantially in the two groups – and this will certainly stay so for quite some time.

What can be done?

Within the SEEA concept, the physical modules provide the **common data base** for all the approaches shown above. Generally, the damage cost and the maintenance cost approaches both operate rather with natural assets measured in physical terms, whose modifications have to be recorded and evaluated. For assessing changes in the quality of the natural assets (degradation), physical flow data are needed quite often. As explained above, the same goes for the modelling approach. Thus the three approaches overlap considerably as regards the physical data required, i.e. the approaches are not incompatible. This also means that it is generally useful to develop physical accounting even if it is not yet clear which approach will be applied to value degradation.

Bringing **additional research** issues concerning valuation to the agenda will not be the solution for reconciling the opposite positions. There is no doubt that further research and methodology work to improve and standardise methods and the introduction of standards will promote the standardisation process within the two groups. As, however, the opposing positions result from differing theoretical backgrounds on the one hand and different interests on the other, a better convergence of these fundamental positions will quite certainly not be achieved merely by ever improving the state of scientific knowledge. On the contrary, it would therefore

even be harmful to a broad acceptance of SEEA to nurture false hopes that differences in this important field could rapidly be overcome. Neither does it make sense to come to a solution by changing majorities within the committee or the London Group. One must not forget that the reason why SEEA 2003 in the chapters 9 and 10 does not give a recommendation as to which valuation method should be used is that none of the approaches presented there was acceptable for all.

In the end the **needs expressed by** international and especially by national **users** will decide which approach will be the one used for national accounts in practice – while it should be stressed that it can not be expected that the needs of users will be equally strong in different countries or may converge. Taking into account the needs of the users will not provide a rapid solution of the disputed issues, either, since general priorities as voiced by the users will scarcely suffice to decide upon the "right" concept. Instead, a sustainable and permanent demand of users for specific data has to develop as a prerequisite, presupposing that sufficient financial resources will be provided for the production of such figures.

In almost all countries, the practical development of environmental accounts is still in an experimental stage with the aim being to develop a new and promising instrument. It is commonly accepted from the viewpoint of users that there is a need for data showing the interrelationships between the environment and the economy, but it is not quite clear which methods and data lead to this goal. Therefore it is rather difficult to assess the actual, specific demand of users for data from environmental accounting at this stage of the work. The potential of this rather new instrument has partly not yet been realised by most of the users. That is why environmental accountants do not only have to develop basic concepts and produce data but also show potential users applications and analyses of accounts data. In this context it should be mentioned that politicians and the general public attach great importance to the fact that results from monetary valuation and figures like EDP should be produced by the same institutions that produce the standard economic aggregates like GDP. At first view this argument seems convincing: as incorrect economic figures bring about the wrong political decisions, the "right" numbers have to be provided. However, this line of reasoning leads to a dilemma which often is tried to be solved at the expense of data quality – especially of data accuracy. However, an EDP that is not sufficiently reliable would be of little value even if published by official statistics.

The **priorities** for the research efforts initiated by the Committee concerning monetary valuation of degradation therefore should at the present time concentrate on gaining practical experiences with implementing the different fundamental approaches and promoting their application rather than on solving numerous detailed methodological questions. To this end, pilot studies should be initiated if possible in large countries, e.g. China or Brazil.

In detail, the following basic approaches should be tested under various conditions:

- Micro-economic valuation
  - Damage cost approach
  - Maintenance cost approach

- Environmental-economic modelling approach

All three approaches should be tested at the same time in one country (or perhaps several) in order to gain knowledge about their advantages and disadvantages or their strengths and weaknesses. This would be a sound basis for the further discussion of the valuation problem. As a part of the pilot study, the physical data base which is – as mentioned above – a foundation for all three approaches should be developed according to common and internationally comparable standards.

The **UN Committee on Environmental Accounts** might wish

- to discuss whether the proposed procedure (test of the different approaches in a selected country in practice) would further the discussion of the valuation problem
- in the case of consent to this proposal to assign the realization of the pilot study to the London Group
- to review what resources would be needed for the test and to discuss how these funds could be raised.

The tasks of the **London Group** then would be

- to design the scheme of the test
- to discuss the relationships between target setting and valuation (as explained above)
- to find the country (two countries) suitable for the test and willing to participate
- to name the environmental problems for which the study should be performed. The subject should be selected in a way that allows to identify the advantages and disadvantages of the different valuation approaches. This would be more likely in the case of global problems such as air emissions than with local problems.
- to establish a working group consisting of members of the London Group who would perform the study together with the experts of the pilot country or support their work intensively.