

Walter Radermacher and Karl Schoer (Federal Statistical Office of Germany), "Sustainable Development Indicators and Environmental-Economic Accounting"

Abstract

The central subject of a policy for sustainable development is the co-ordination of the different sector policies with the objective of finding a balance between conflicting economical, ecological and social goals. The headline indicators for sustainable development itself are mainly a communication tool directed to the general public and the media. They are used for describing important problems under a sustainability perspective and they serve as an instrument for controlling general performance of political measures. But more detailed data are required for the analysis of the underlying mechanisms and reasons for change of the indicator values as well as for the formulation of measures and the assessment of the effects of these measures. Therefore, the individual indicators should be consistently embedded into an underlying database from which they can be derived by aggregation. Further, the underlying data for the individual indicators should be part of a comprehensive framework that ideally integrates all relevant topics, in order to take account of the interdependencies between the different indicators. The accounting system with its three principle parts, the National Accounts (SNA) and the satellite systems Environmental-Economic Accounting (EEA) and the Socio-economic Accounting (SEA) provides an ideal framework to meet these data requirements.

I. Data requirements for sustainability policy

The central subject of a policy for sustainable development is the co-ordination of the different sector policies with the objective of finding a balance between conflicting economical, ecological and social goals. Various SD indicator sets have been developed for describing important problems under a sustainability perspective and at the same time serve as an instrument for general performance control of political measures.

Therefore the individual indicators should be embedded into an underlying, more detailed database from which they can be derived by aggregation. The disaggregated data for the individual indicators provide the necessary information for a detailed analysis. So the underlying data for the individual indicators should be part of a comprehensive framework that ideally integrates all relevant topics, as a policy for SD is characterised by not only looking on how far the goals for the individual indicators can be achieved, but has to have in mind the interdependencies between the topics and the simultaneous achievement of different economic, environmental and social goals. The central point is the integration, i.e. the policy for SD cannot be a policy of its own. The subject of such a policy rather is co-ordination of the different sector policies with the objective of finding a balance between conflicting goals. Decisions on measures aiming at the improvement of one indicator at the same time have to consider the effects that may occur on the other relevant goals of the overall strategy for SD. The rather complex analytical tools required for that type of policy approach demand a homogeneous and coherent database depicting the interdependencies between the different indicators.

An accounting approach is the most comprehensive and efficient way to provide the required database. Conceptually as a systems approach the accounts provide a most complete and theoretically sound

system description of the relevant stocks and flows. Practically the accounts, as a secondary statistical approach, are a rather cost-efficient tool for generating an underlying database by bringing together and harmonising otherwise scattered, not fully coherent and incomplete primary data in a systematic manner and by providing the basis for estimates to close remaining data gaps.

The SNA is the world wide accepted standard for describing the economic process. The EEA and the SEA extend the economic accounts by a description of the interrelationships of the economic to the environmental and the social system and between the environmental and the social system. The satellite systems in principle use the same concepts, definitions and classifications as the SNA. That guarantees that the data of all three sub-systems can be combined with each other, i.e. they form an integrated database that covers the three principal topics of a sustainability approach. In this way such an expanded data set is an ideal framework to meet the above mentioned requirements.

From the data set of the SNA most of the economic and partly also social indicators can be derived. The SNA data set is the basis for already existing and proven analytical tools that are related to the economic process. The extension of this tool for analysing environmental-economic questions has already been put into practice successfully in Germany and other countries.

The type of analysis discussed hitherto is directed at deepening. That is, the indicators are disaggregated in order to get an insight into the reasons of the development of the specific indicator and the interrelationship to other topics of the set. However, the indicator set for SD is usually comprised of headline indicators (level one), which were selected for representing a specific topic. Having in mind this it may also be necessary to broaden the scope of the analysis by supplementing the headline indicators by additional indicators (level two indicators) in order to obtain a more comprehensive description of the problem and especially to control whether a headline indicator is representing the problem under consideration in a sufficient manner also in future. Embedding these types of indicators also into the accounting data set could be useful, but seems to be less urgent.

II. Measuring the “sustainability gap”

There are two principle approaches for measuring the “sustainability gap”, the indicator and the accounting approach. The sustainability gap indicates how far the present state of a society differs from a situation that meets the requirements of the sustainability paradigm. Work on sustainable development (SD) indicator sets is usually carried out more or less independently from the accounting work. Linking these two approaches could yield considerable synergies.

The indicator approach describes the sustainability gap by a selected number of issues considered to be most relevant under a sustainability perspective. The selection of the indicators is based on facts and value judgements. In order to establish broad acceptance of the SD-indicators as being suitable for describing the state of the society objectively, a consensus about the underlying value judgements has to be found among the major protagonists. Ideally all indicators are linked to quantitative development goals. In that case the difference between the present development and the goal indicates the sustainability gap for an individual indicator and subsequently the need for action. To what extent the

society as a whole is moving towards a path of sustainable development can only be estimated by a summarising valuation of the development of the individual indicators of the SD-indicator set.

The accounting approach can provide a multi-dimensional SD-indicator set as well as one-dimensional SD-indicators. One-dimensional indicators measure the sustainability gap by a single figure. The one-dimensional approach that is offered by the SEEA 2003 is limited to environmental sustainability. The gap is measured in monetary terms on the basis of the calculation of adjusted macro-economic aggregates, like the EDP (eco-domestic product). That type of one-dimensional indicator in principle could provide a very powerful description of the sustainability gap. However, an important precondition would be that the indicator is accepted by the public or at least by the main users as being relevant and adequate. With respect to that precondition it has to be noted that in the SEEA-handbook itself the calculation of adjusted macro-economic aggregates is indicated as a still rather controversial issue and the calculation of adjusted aggregates is only mentioned as one possible option in the handbook. The controversy described in the handbook is especially related to the problem of monetary valuation of the degradation of natural capital. By the way, the SEEA revision process under way right now seems to be confronted with the same controversy again.

In practice almost all countries that have a national strategy on sustainable development are using a multi-dimensional indicator approach. Therefore it is necessary not to take up the approach of one-dimensional environmentally adjusted macro-economic aggregates, but to follow the principal idea of describing the sustainability gap by a multi-dimensional indicator approach as well. But unlike in the simple indicator approach described above, the individual indicators have to be systematically linked with integrated physical and monetary economic, environmental and social accounting data.

III. Policy use for the respective SD databases

The respective advantages of the indicator and the accounting approach are of relevance for different steps of the policy cycle, i.e. problem description, diagnosis, measures and performance control.

Problem description:

SD-indicators, which are usually highly aggregated, can reduce the complex reality to a limited number of figures. Therefore they can serve as a rather simple communication tool mainly directed to the general public and the media. They are used for describing important problems under a sustainability perspective and -depending on the process of developing the indicator-set - may more or less reflect the political preferences of the society. The sustainability gap is measured indicator by indicator by comparing the observed values with the target values.

Diagnosis:

For the diagnosis or analysis highly aggregated indicators alone are generally not sufficient. An analysis of the underlying mechanisms and reasons for change of the indicator values requires detailed disaggregated information. The database for further analysis can either be provided by detailed basic statistics or by an accounting system, which is rather situated at a meso-level.

Measures:

Political measures for achieving the sustainability goals of the society should be cost efficient and above all should be tailored for balancing conflicting goals. The general objective of sustainable development requires a holistic policy approach, as the issues of a SD-policy are closely interlinked. A policy for SD is characterised by not only looking on how far the goals for the individual indicators can be achieved, but has to have in mind the interdependencies between the topics and the simultaneous achievement of different economic, environmental and social goals. Decisions on measures aiming at the improvement of one indicator at the same time have to consider the effects that may occur on the other relevant goals of the overall strategy for SD. The rather complex analytical tools required for that type of policy approach demand a homogeneous and coherent database depicting the interdependencies between the different indicators. For that reason it will usually not be sufficient to deal with the different indicators individually. That is, the underlying data for the individual indicators should be part of a comprehensive framework that ideally integrates all relevant topics.

An integrated analysis and especially the formulation of political measures require rather complex analytical instruments. It is one crucial advantage of the SNA data set that it is being widely used as a basis for already existing and proven analytical tools that are related to the economic process. The extension of those tools for analysing environmental-economic questions has already been put into practice successfully in Germany and other countries.

Performance control:

The indicators, especially if they are combined with quantitative goals, serve as an instrument for general performance controlling of political measures. A reduction of the gap between the observed and the target values indicates improvement of sustainable score keeping for individual indicators.

Finally, modelling can provide a more complex approach of score keeping by comparing the "business-as-usual Gross Domestic Product" (GDP) to a "sustainable GDP". This can be achieved by comparing a modelling scenario for the economic-social-environmental system without measures (business-as-usual) with a scenario that simulates the effects of a bundle of measures which are orientated towards respecting the sustainability goals of the society. This kind of analyses - beside others - need accounting data as a crucial input.