The Role of Indicators in Decision-making

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The statement presented on behalf of the Executive Director of UNEP highlighted the strategic roles of indicators in guiding data collection, in focusing information analysis tools, and in translating the results of environment development assessments into meaningful, usable, policy-relevant information for decision-making.

The goal must be to influence policy - the decisions, agreements and behaviors of people, governments and international organizations relating to human interactions with ecosystems. UNEP intends to help coordinate the work at international sustainable indicator development through a combination of active participation and networking.

There are four areas where progress is needed:

- Linkages need to be reinforced between experts and decision-makers to make certain that all our efforts in indicator development are tailored precisely to the needs of the users.

- Developing country expertise and points of view must be involved, to avoid the Northern orientation of commonly used economic indicators and ensure the relevance and acceptability of the indicators to the larger global community.

- The large number of national and international initiatives on indicators coordination building on the meaninful cooperation between UNEP, DPCSD, UNSTAT, and others.

- Finally, greater attention needs to be paid to the critical linkages between economic, social, institutional and environmental elements, so as to deal with the socio-economic causes of environmental problems.

(Please refer to full text compiled in part III of this report)

THE ROLE OF INDICATORS IN DECISION-MAKING

International Consultation on Sustainable Development Indicators
(Gent, Belgium, 9-11 January 1995)

Discussion Paper prepared by UNEP and DPCSD

1. Introduction

Indicators perform many different functions and roles in everyday life and are embedded in our intellectual analysis and communication patterns. They allow us to better organise, synthesize, and use information we receive from the society in which we live.

Sustainable development indicators are called for when there is a need for informed decision-making and associated, cost-effective data collection to respond to that need. They are aimed at being supportive and responsive to decision-making processes at local, national, regional and global level. Sustainable development indicators (incorporating environmental, economic, institutional and social factors) are useful in the entire decision-making cycles that govern development processes, serving as guides and landmarks throughout these cycles.

World-wide, there are many initiatives to develop sustainable development indicators for a wide variety of management purposes, guiding local, national and regional development. What was lacking was a global process to draw upon these initiatives and make use of their collective expertise and knowledge to arrive at consensus with regard to technical validity, comparability, and political acceptibility. Within the framework of the Commission on Sustainable Development (CSD), such a global process has now been set in motion, addressing, amongst others, the development of a framework of indicators for sustainable development, while at the same time promoting international comparability and acceptability. This process requires regional and global information exchange and harmonization efforts, and must strike a delicate balance between what is technically optimal and politically and financially feasible at present.

Indicators thus can become important tools to communicate and make accessible statistical, scientific, and technical information to non-technical user groups. They can play an important role in transforming information into action at national and international levels.

This paper deals with indicators that support national and international policy making. It discusses the development and use of such indicators in decision-making process cycles. It describes various types of indicators from basic indicators to highly-aggregated policy-performance indices, and links them to decision making processes. It illustrates the importance of placing the development of indicators in a logical, coherent framework, addressing the many issues pertaining to sustainable development as called for in Agenda 21. Finally, this paper addresses the need for an international process to harmonize indicator development, to develop more cost-effective data collection efforts, and to reduce reporting burdens, and describe briefly the initiative taken by DPCSD in this regard.

2. The context for indicator development: the decision-making cycle.

The decision-making cycle includes four major stages: problem identification, policy formulation, implementation, and evaluation (see figure 1). These processes take place at all levels of government (although here we focus on national and international levels) and involve many different cultural, social, institutional, economic and environmental inputs and considerations. Indicators can support effective decision-making and policy setting throughout each stage of the decision-making cycle by, amongst others, simplifying masses of technical data, communicating key conditions and trends and providing tools for measuring progress towards achieving sustainable development.

Problem identification and awareness raising

Indicators can help to identify and build awareness of socio-economic and environmental priority issues that societies need to address to move towards sustainable development. These so-called "descriptive" indicators summarise sets of individual measurements for different issues and communicate the most relevant information to managers, decision-makers, the general public and other user groups. They help to define economic, social, institutional or environmental problems and help decision-makers decide whether action has to be taken on a specific issue or not.

Descriptive indicators are representative for key factors impacting on sustainable development, for conditions and trends, and for action taken to move towards sustainable development. They are based on transparent scientific values (technical) or statistical calculations. They are relatively simple and easy to understand. They might contain known biases and can allow for alternative valuations to mitigate concerns about such biases.

Such indicators constitute powerful tools to raise awareness for action on existing and emerging environmental and sustainability issues that require intervention. They thus catalyse the first stage in the decision-making cycle: identification of the problems society must address and raising sufficient awareness and concern to lead to action.

Policy formulation

The second stage in the decision-making cycle is formulation of sound policies and strategies to address the identified problems. Sets of descriptive indicators alone seldom provide all the insights necessary to guide policy setting and decision-making for optimal solutions. A further analysis, integrating multidisciplinary information sets, might be required.

Problems often have complex causes and with many alternative policy approaches to solutions --legislation, abatement strategies, development of economic instruments, altered management or development strategies, etc. Such policy approaches can, in turn, potentially affect many economic sectors or components of society. Evaluating policy options thus often means considering and analyzing a broad range of data and information relevant to the problem under consideration. It might require weighing options against existing or newly set policy goals and technical targets.

In this process, model calculations, scenarios, or other analytical exercises such as cost-benefit and multi-criteria analyses, are useful and often necessary tools. More aggregated indicators than the descriptive indicators emerge from these analyses, summarising the findings of the analyses and helping to communicate them in an understandable and useful form to policymakers and managers. These aggregated indicators are mainly directed towards the specific policy formulation processes they want to support.

Policy implementation

The third stage of the decision-making process deals with policy implementation through measures and actions agreed during the previous stage. This involves establishing both broad (policy) goals and specific (technical) targets to be achieved, and/or using and adapting goals and targets developed during previous stages of the decision-making cycle Often such targets can be expressed in terms of a descriptive indicator associated with the problem --a percent reduction in the emission of air pollutants, etc. Or, they are associated with aggregated, policy-process specific indicators derived from the analyses used in policy formulation. Selected sets of indicators, and their associated goals and targets, can thus be supportive to, and become the language or the shorthand of, policy implementation processes.

Setting such targets to guide the implementation of policies is primarily a national or local prerogative; societies decide what, how, and when they want to reach certain targets. For some problems affecting the global commons such as stratospheric ozone depletion or issues of regional concern such as international river basins, global or regional targets might also be set through international conventions, treaties, or action plans to which nations agree. Targets may also need periodic adaptation as circumstances and perceptions change. Setting targets is thus a **dynamic** process that takes the socio-economic development and context into consideration. No single and finite set of global indicators and associated target values can, therefore, be negotiated and agreed upon at any moment in time. Rather, the development of a harmonized process of indicator development and target setting require national and international collaboration and negotiation.

Policy evaluation

The last stage in the decision-making cycle deals with evaluating the effectiveness and impact of policies adopted. The performance of implemented measures has to be evaluated and results fed back into the policy process, so as to continuously adapt the policy processes and ensure that the most cost-effective and socially acceptable responses are being employed. Again, this is a task mainly performed at the national or even sub-national level, with regional or global policy evaluation occurring when and where relevant. Performance evaluation can be done by measuring how an indicator value has moved towards its associated target or goal.

In a number of countries, sets of "performance" indicators have been developed specifically for this last step of the policy life cycle. Such performance indicators incorporate both a descriptive indicator and a specific policy target (see also the SCOPE paper). Indicators for this stage in the process can be (but are not necessarily) highly aggregated, spanning several problems or issues and a number of different policy implementation efforts. For example, a "performance" indicator, related to achieving urban air pollution targets, might incorporate half-a-dozen different pollutants, each with different abatement measures, and might be directed towards simplifying the internal reporting process and improving communication with decision-makers.

3. Indicator frameworks, matrixes and hierarchies.

To address the many issues and areas that pertain to sustainable development an organised set of indicators - an indicator framework - is needed that spans and integrates environmental, economic, institutional and social factors and addresses their interactions. A key challenge is to organise and structure indicator development in ways that are not only useful across the decision-making cycle but also integrate the many aspects and processes leading to sustainable development. One approach to this process is proposed in figure 2.

Indicator frameworks, organising individual indicators or indicator set, in a coherent manner, have several additional uses. They can guide the overall data and information collecting process. They are useful communication tools to decision makers, summarising key information derived from many different sectors. They suggest logical groupings for related sets of information, promoting their interpretation and integration. They can help to identify important issues for which adequate information is lacking, thus identifying data collection needs. Finally, indicator frameworks can help to spread reporting burdens, by structuring the information collection, analysis and reporting process across the many issues and areas that pertain to sustainable development.

The driving forces-(pressure)-state-response framework.

One of the frameworks widely used when developing environmental indicators is the pressure-state-response framework, developed by the OECD and other international bodies. Human activities, processes and patterns (driving forces) impact on the environment and in a number of cases exert pressure on it. Pressures for example include use of natural resources and emission of pollutants and waste. These pressures can result in changes in the state of the environment: polluted air or water, lowered soil fertility, erosion or salinization, for example. In many instances, such changes in the environment have immediate or potential impacts on the functioning of ecosystems or societies, such as shortages of clean water or collapse of fisheries from overuse. Measures of how society responds to these environmental changes include institutional, legal or financial measures, or changes in management strategies or development plans. These actions can be interlinked, such that a response to one problem becomes the "pressure" for another; increased pesticide use, for example, can be both a response to perceived loss in yield and a cause of water pollution.

The driving force-(pressure)-state-response framework provides a logical basis for the organisation of sustainable development indicators. When focusing on indicators for sustainable development it is recommendable to replace "pressure" with "driving forces", in order to reflect more accurately the economic, social and institutional dimensions of sustainable development. This framework also provides a basis for distinguishing among different types of indicators in terms of their usefulness at different stages of the decision-making process. Experience both internationally and in several countries suggests, for example,

that "state" indicators that describe actual conditions in the environment are especially important in problem identification and awareness building. Discovery of the Antarctic ozone hole, for example, helped to galvanize international attention to the issue of stratospheric ozone depletion. Driving force indicators are key to policy formulation. Response indicators such as measures on reducing emissions of ozone-depleting gases become useful in the policy evaluation process when compared with targets, such as those agreed in the Montreal Protocol.

A basic indicator matrix.

Table 1 proposes an indicator matrix, based on the driving force, state, response framework (columns) and clusters of chapters of Agenda 21 (rows). Using clusters of chapters of Agenda 21 as the second organising principle for the matrix, beside the driving forces-state-response framework, ensures that the different aspects (social, economic, institutional and environmental) of sustainable development are addressed. It has the advantage that it facilitates national monitoring of progress towards sustainable development and national reporting of the implementation of Agenda 21 to such international bodies as the Commission on Sustainable Development. Though many variations can be envisaged for this basic matrix and the proposed indicators listed there in, its importance lies in the orderly and harmonized organisation of national and international indicator development work.

The indicator matrix, proposed in Table 1, is being developed by DPCSD in collaboration with experts from the United Nations Statistical Division and reflects inputs from other UN-system organizations, members of the Bureau of the Commission on Sustainable Development and participants in a workshop on indicators hosted by the World Bank on 22-23 September 1994.

The following set of criteria was applied for the selection of indicators:

- primarily national in scale and scope;

- relevant to the main objective of assessing progress towards sustainable development;

- understandable in that are clear, simple and unambiguous;

- realizable within the capacities of national governments, given their logistic, time, technical and other constraints;

- conceptually well founded;

- limited in number, remaining open-ended and adaptable to future developments;

- broad in coverage of Agenda 21 and all aspects of sustainable development;

- representative of an international consensus, to the extent possible; and,

- dependent on data which are readily available or available at reasonable cost/benefit ratio, adequately documented, of known quality and updated at regular intervals.

In the matrix, the indicators are grouped in categories covering economic, social, environmental and institutional issues, in line with major sections in Agenda 21. For the selection of indicators the following considerations have been taken into account:

- economic indicators have been used for many years at national, regional and international levels. The economic issues reflected in the matrix are all well developed and the proposed indicators aim at capturing the specific issues most relevant to sustainable development;

- social indicators also have been developed over the past years and are widely used. A set relevant to Agenda 21 is recommended for inclusion in the matrix by the Division for Sustainable Development;

- environmental indicators have been developed more recently. For some of the environmental aspects, data and indicators are, as yet not easily available. To the extent possible, use is made of environmental indicators being developed by UNEP, the UN system-wide Earthwatch, the environment statistics programme of the Statistical Commission and various relevant international legal instruments and bodies. In addition, consideration has been given to the findings of a project launched by SCOPE, in cooperation with UNEP, to develop a set of highly aggregated environmental indicators;

- institutional indicators are largely undeveloped and are not reflected significantly in the proposed matrix. On the other hand, it must be emphasized that some of the response indicators for the other categories also could be considered as institutional indicators. An effort is now underway, in consultation with UNDP and other organizations, to move forward in the development of institutional indicators.

Highly-aggregated indicators.

The basic indicator matrix proposed above is specific to the purposes of developing a core set of indicators for sustainable development. Other indicator sets might be developed for different purposes, for example, for summarising monitoring data and inventory information, or geared towards specific policy processes.

Top-level politicians and the general public want short, concise messages that tell where we are today and how we are progressing. This need for simplicity has resulted in a small number of highly-aggregated indicators for economic and social policy making and reporting purposes. Thus, whether or not the GDP is an adequate indicator to sum up an economy, it is often used that way, especially at the highest levels of national and international decision making. In some countries, the unemployment index, or basic health and educational indicators, play the same role in the social sphere. The SCOPE indicator project was established explicitly to consider the possibilities for similar levels of aggregation in the environmental sphere (see SCOPE report). Highly aggregated indicators are less useful in the early stages of the decision-making cycle, when specific problems or issues are identified, but become increasingly useful toward the end of the cycle for policy evaluation: indeed, GDP growth and unemployment figures are frequently used in many industrial countries as shorthand measures of the effectiveness of economic and social policy.

The development of these interrelated and increasingly aggregated sets of indicators is consecutive rather than simultaneous, and might be at different stages for different issues. There is no need to develop highly-aggregated policy evaluation indicators when, as yet, no policy has been set or when the importance of the issue for the total social and economic fabric has not been determined or does not warrant priority action. However, the requirements for further aggregation of descriptive indicators have to be kept in mind when first developing the basic set. In other words, to enable the development of a cost-effective, timely and logical approach to indicators, the requirements of all end-users, throughout the whole decision cycle, have to be considered. That means issues of aggregation need to be thought through early on during indicator development.

4. Indicator development at the international level

International indicator development harmonization

All the above pertains mainly to indicator development at the national level, and thus is the prerogative of national governments. However, **harmonization** of national efforts might result in major benefits at the international level. Harmonizing indicator development through agreement on a core set of indicators and common analytical frameworks will allow for their compilation and aggregation at regional or global levels. It will improve the international comparability of environmental and sustainable development information collected at the national level. It thus can be used to advance international collaboration and joint action on issues of common concern.

Reducing reporting and data collection burdens.

Furthermore, a harmonized and consistent set of indicators, used at the national level, can simplify, integrate and reduce the workload for national reporting to international forums such as the Commission on Sustainable Development and the Conferences of the Parties to international conventions, while at the same time assisting international appraisal of progress made towards the implementation of Agenda 21. To avoid a plethora and overburdening of national reporting mechanisms, repeating much of the same basic information in different formats to different forums, it is important to streamline and align different reporting processes. Use of indicators, developed along the lines described above, can play an important role in this.

With regard to data collection, similar sets of indicators used by different countries will promote the global harmonization of national monitoring and inventory activities. Since indicators can be powerful tools in guiding data and information collection processes, harmonization of their development at the international level will result in more focused and cost effective global monitoring and observing systems. It will also advance the integration of monitoring processes with decision making processes, and communicate user requirements to those that implement data gathering at local, national, regional and global levels. Regular reporting on the State of the Environment at all levels can also be guided and harmonized through indicator work. Indicators can thus become a basic organising principle for consistent and harmonised reporting on environment and sustainable development at national, regional and global levels.

This process of harmonization will require broad consensus among nations as to the utility and use of indicators with regard to their strategic roles in guiding data and information collection and assessment, enabling better informed policy and decision-making, evaluating the cost-effectiveness of international policies and strategies, and measuring progress towards the implementation of Agenda 21. Agreement will be needed on the usefulness of indicators as an international organising and harmonizing principle for user-oriented information processes in support of sustainable development.

The CSD initiative

The need for indicators for sustainable development is stated repeatedly throughout Agenda 21 and especially in chapter 40, "Information for Decision making". Paragraph 40.6 of Agenda 21 requests countries and international governmental and non-governmental organisations to develop concepts of indicators of sustainable development. According to the CSD multi-thematic programme of work, chapter 40 will be on the agenda of the third session of the CSD in April 1995. DPCSD, as the task manager for chapter 40, has the overall responsability to prepare for these CSD deliberations.

In response to this, DPCSD is preparing an indicator work programme to be presented to the third session of the CSD in April 1995. In preparation for the development of this work programme, a proposal for a basic indicator matrix, as presented in Table 1, has been developed, in consultations with a large number of national and international organizations. The next step is to identify the actors who would further develop the indicators, including the underlying methodology and provide information on availability of related data.

This international consultation, hosted by the Belgian Government, is viewed as one of the activities to assist in the development of the indicator work programme for the third session of the Commission of Sustainable Development in 1995, with a view to developing a full set of indicators for sustainable development for use by national governments in 1996.

References

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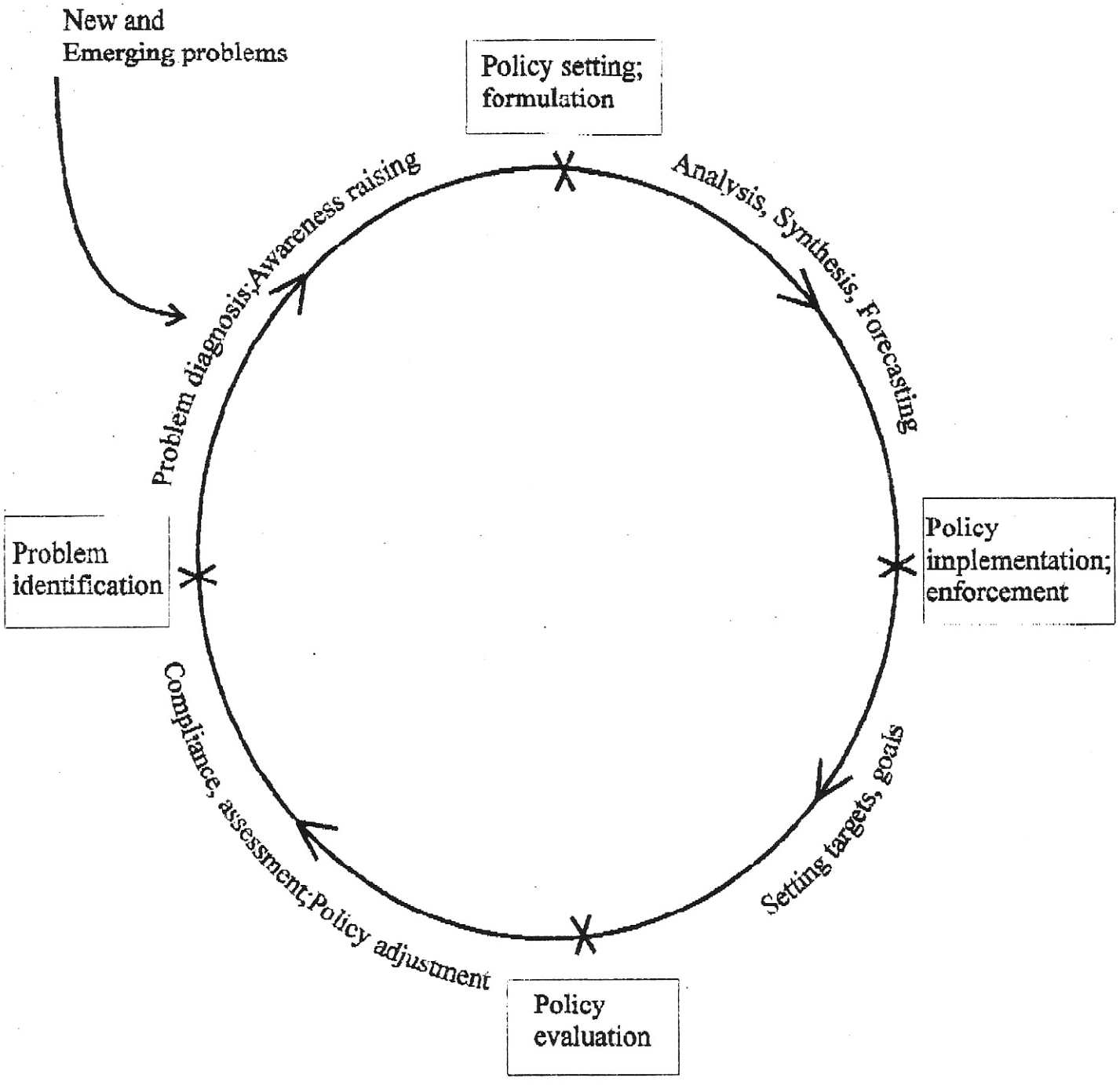
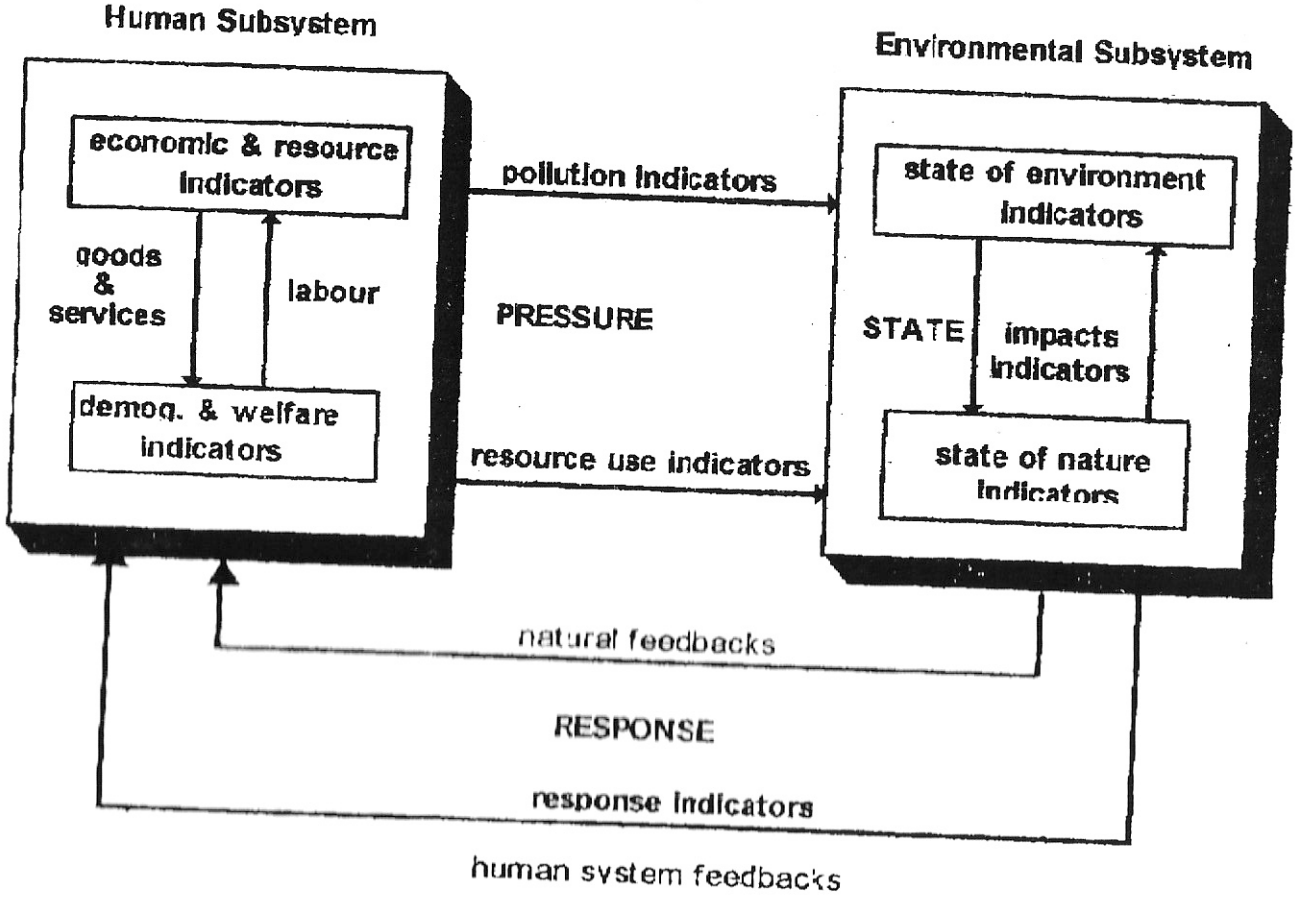
Figure I : Decision-making cycle



Source: After Winsemius (1986) as referred to in UNEP/RIVM (1994)

Figure 2 : Indicators in the conceptual framework



Source: p.13 in RIVM (in preparation)

Core set of indicators for sustainable development, 19 December 1994
Division for Sustainable Development, UNDPCSD

CATEGORY	CHAPTERS OF AGENDA 21	DRIVING FORCE INDICATORS	STATE INDICATORS	RESPONSE INDICATORS
ECONOMIC	Chapter 2: International cooperation	-Real GDP per capita growth rate (%) -Exports of goods and services (US$) -Imports of goods and services (US$)	-GDP per capita (US$) -EDP per capita / environmentally adjusted value added (US$) -Share of manufacturing value added in GDP (%) -Export concentration ratio (%)	-Investment share in GDP (%)
	Chapter 4: Consumption and production patterns[1]	-Depletion of mineral resources (% of proven reserves) -Annual energy consumption per capita (J)	-Proven mineral reserves (t) -Proven energy reserves (oil equivalents) -Lifetime of proven energy reserves (years)	-Ratio of consumption of renewable resources over non-renewable resources (%)
	Chapter 33: Financial resources and mechanisms		-Total ODA given or received as percentage of GDP (%)	-Environmental protection expenditure as % of GDP -Environmental taxes and subsidies as % of government revenue -Amount of new or additional funding for sustainable development given/received since 1992 (US$) -Programme of integrated environmental and economic accounting (yes/no)
	Chapter 34: Transfer of technology			
SOCIAL	Chapter 3: Poverty	-Unemployment rate (%)	-Population living in absolute poverty (no. and %)	
	Chapter 5: Demographic dynamics and sustainability	-Total fertility rate -Population growth rate (%) -Population density (persons/km^2) -Net migration rate (persons/year)		
	Chapter 36: Promoting education, public awareness and training (including gender issues)		-Adult literacy rate (%) -Primary school enrollment ratio (%) -Secondary school enrollment ratio (%) -Population reaching grade 5 of primary education (%) -Expected years of schooling	-% of GDP spent on education -Females per 100 males in secondary school (no.) -Percentage of women in civil service (%) -Women per 100 men in labour force (no.)
	Chapter 6: Protecting and promoting human health	-% of people without access to safe drinking water -Pesticide residues in fish (mg/kg) -% of urban population exposed to concentrations of SO_2, particulates, ozone, CO and Pb. -Caloric supply per capita (calories/day) -Concentration of coliforms and pesticides in drinking water (mg/l)	-Infant mortality rate (per 1,000 births) -Life expectancy at birth (years) -Incidence of environmentally related diseases (no.)	-% GDP spent on health

CATEGORY	CHAPTERS OF AGENDA 21	DRIVING FORCE INDICATORS	STATE INDICATORS	RESPONSE INDICATORS
SOCIAL (continued)	Chapter 7: Human settlements (including traffic and transport)	-Rate of growth of urban population (%) -Motor vehicles in use (no.) -Number of megacities (10 mill. or more)	-% of population in urban areas -Area and population of marginal settlements (km^2, no.) -Cost/number of injuries and fatalities related to natural disasters[2] -Shelter index -% of population with sanitary services	-Expenditure on low-cost housing (US$) -Expenditure on public transportation (US$)
INSTITUTIONAL	Chapter 35: Science Chapter 37: Capacity-building Chapter 8, 38, 39, 40: Decision-making structures		-Mandated EIA (yes/no) -Programmes for national environmental statistics and indicators for sustainable development (yes/no) -Sustainable development strategies (yes/no) -National councils for sustainable development (yes/no) -Main telephone lines per 100 inhabitants (no.)	-Ratification of international agreements related to sustainable development (no.)
	Strengthening of "traditional information" (part of ch. 40)		-Representatives of indigenous people in national councils for sustainable development (yes/no) -Existence of database for traditional knowledge information (yes/no)	
	Chapter 23-32: Role of major groups		-Representatives of major groups in national councils for sustainable development (yes/no)	
ENVIRONMENTAL Water	Chapter 18: Freshwater resources	-Annual withdrawals of ground and surface water as % of available water -Industrial/municipal discharges into freshwater bodies (l/m^3) -Household consumption of water per capita (m^3)	Groundwater reserves (m^3) -Concentration of lead, cadmium, mercury and pesticides in freshwater bodies (mg/l) -Concentration of faecal coliform in freshwater bodies (no./100 ml) -Acidification of freshwater bodies (PH value) -BOD and COD in water bodies (mg/l)	-Waste water treatment (% of population served, total and by type of treatment)
	Chapter 17[3]: Protection of the oceans, all kinds of seas and coastal areas	-Catches of marine species (t)	-Deviation in stock of marine species from maximum sustained yield (MSY) level (%) -Ratio between MSY abundance and actual average abundance (%) -Loading of N and P in coastal waters (t) -Algae index	

CATEGORY	CHAPTERS OF AGENDA 21	DRIVING FORCE INDICATORS	STATE INDICATORS	RESPONSE INDICATORS
ENVIRONMENTAL				
Land[4]	Chapter 10: Planning and management of land resources	-Land use change (km^2)	-Area affected by soil erosion (km^2)/erosion index	-Protected area as % of total land area
	Chapter 12: Combating desertification and drought	-Fuelwood consumption per capita (m^3) -Livestock per km^2 of arid and semi-arid lands	-Land affected by desertification (km^2) /desertification index	
	Chapter 13: Sustainable mountain development			
	Chapter 14: Promoting sustainable agriculture and rural development	-Use of fertilizers (t/km^2) -Use of agricultural pesticides (t/km^2) -Arable land per capita (ha/capita)	-Area affected by salinisation and waterlogging (km^2)	-Cost of extension services provided (US$) -Area of land reclaimed (km^2)
Other natural resources	Chapter 11: Combating deforestation[5]	-Deforestation rate (km^2/annum) -Annual roundwood production (m^3)	-Change in biomass (%) -Timber stocks (m^3) -Forest area (km^2)	-Reforestation rate (km^2/annum)
	Chapter 15: Conservation of biological diversity	-Rate of extinction of protected species (%)	-Threatened, extinct species (no.)	-Protected area as % of total land area
	Chapter 16 Biotechnology			
Atmosphere	Chapter 9: Protection of the atmosphere	-Emissions of CO_2 (t) -Emissions of SO_x and NO_x (t) -Production of ozone destroying substances (t)	-Ambient concentrations of SO_2, CO_2, NO_x and O_3 in urban areas (ppm)	-Expenditure on air pollution abatement (US$) -Reduction in the consumption of ozone destroying substances (% per year) -Reductions in the emissions of CO_2, SO_x and NO_x (% per year)
Waste	Chapter 21: Solid wastes and sewage-related issues	-Waste disposed (t) -Generation of industrial and municipal waste (t)		-Expenditure on waste collection and treatment (US$) -Waste recycling rates (%) -Municipal waste disposal (t/capita) -Waste reduction rates per unit of GDP (t/year)
	Chapter 19, 20, 22: Toxic chemicals and hazardous wastes	-Generation of hazardous waste (t)	Area of land contaminated by toxic waste (km^2)	

Notes:

1. Production and consumption patterns are also reflected in particular by the following indicators:

   - Share of manufacturing value added in GDP (under economic)
   - Export concentration ratio (under economic)
   - Ratio of consumption of renewable resources over non-renewable resources (under economic)
   - Motor vehicles in use (under social)
   - Household consumption of water per capita (under environmental, water)
   - Fuelwood consumption per capita (under environmental, land)

- Production of ozone destroying substances (under environmental, atmosphere)
- Reduction in the consumption of ozone destroying substances (under environmental, atmosphere)

2. Following the SIDS Programme of Action, indicators of vulnerability are to be developed.

3. Further consultation with FAO needed.

4. Further consultation with FAO needed for these chapters (10, 12, 13, 14)

5. Further consultation with FAO needed.