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Economic Commission for Latin America and the Caribbean

**REPORT OF THE SEMINAR ON
SUSTAINABLE DEVELOPMENT INDICATORS IN LATIN AMERICA
AND THE CARIBBEAN**

Santiago, Chile, 29-30 November 2001

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A. ATTENDANCE AND ORGANIZATION OF WORK

In the framework of the project NET/00/63 “Sustainability Assessment for Latin America and the Caribbean”(PESALC), on 29 and 30 November 2001, the Environment and Human Settlements Division of ECLAC, in conjunction with the Department of Economic and Social Affairs of the United Nations (DESA), organized a consultation seminar at ECLAC headquarters in Santiago, Chile, on sustainable development indicators for Latin America and the Caribbean.

The objectives of the seminar were as follows: (1) to analyse and exchange regional experiences on the construction of sustainability indicators; (2) to discuss the obstacles to implementation and strategies for overcoming them; and (3) to start a regional network of sustainable development indicators.

Attendance¹

The seminar was attended by representatives of the following countries: Argentina, Brazil, Chile, Colombia and Costa Rica. Also participating were officials and one consultant from the Environment and Human Settlements Division and one official from the Statistics and Economic Projections Division of ECLAC.

B. AGENDA

Thursday, 29 November 2001

Registration of participants and delivery of documentation

Inauguration of the Regional Seminar

Alicia Bárcena, Director of the Environment and Human Settlements Division- ECLAC
Enrique Ordaz, Director of the Statistics and Economic Projections Division – ECLAC

Introduction and work methodology

Gilberto Gallopín, ECLAC

1 See Annex 1.

First session. Indicators of sustainable development: conceptual and methodological framework

Presentation of the project Sustainability Assessment in Latin America and the Caribbean (PESALC),
Gilberto Gallopín, ECLAC

Approaches and experiences in building sustainability indicators relevant for Latin America and the Caribbean,
Rayén Quiroga, consultant, ECLAC

Discussion

Second session. Experiences in the region

Chile

Progress report on environmental sustainability indicators
Karin Molt and Mauricio Lorca, National Environment Commission (CONAMA)

Argentina

National Strategy for Sustainable Development
Carlos Merenson, Department of Natural Resources and Sustainable Development

Mexico

Advances and perspectives for environmental and sustainability indicators
Yosu Rodríguez and Armando Yáñez, Ministry of the Environment and Natural Resources (SEMARNAT)

Discussion

Friday, 30 November 2001

Third session. Experiences of countries in the region (continued)

Colombia

Progress in Environmental Sustainability Indicators for Colombia. A collective construction
Francisco Canal and Camilo Montoya, consultants Ministry of the Environment

Brazil

Sustainable Development Indicators. State of the Art
Guido Gelli, Brazilian Geographical and Statistical Institute (IBGE)

Megacities project. Rio de Janeiro Pilot Project
 Alfredo Gastal, Ministry of the Environment

Costa Rica

Eight years of experience in the systematization of sustainable development indicators
 Edgar Gutiérrez-Espeleta, University of Costa Rica

Discussion

Fourth session. Proposals for follow-up and for future action

Joint work on the design of future activities Continuation of work and conclusions

C. PROCEEDINGS

At the opening session, introductory speeches were made by Alicia Bárcena, Director of the Environment and Human Settlements Division and Enrique Ordaz, Director of the Statistics and Economic Projections Division, both from ECLAC. The seminar was described as an excellent opportunity for participants to learn about the experiences of other countries in the region with indicators for sustainable development; to strengthen the incipient activities of some countries, and to continue the integration and cooperation in both ECLAC Divisions. The ECLAC Directors were particularly appreciative of the interest shown by the Department of Economic and Social Affairs (DESA) of the United Nations in supporting the seminar, since it also implied an integration of the work and experiences that DESA had been carrying out for some time. Lastly, they welcomed the participants, whose expertise in the field would enrich the discussions at the seminar.

The floor was then taken by Gilberto Gallopín who referred to the objectives and the methodological and logistic aspects of the meeting.

Participants then made presentations following the order set out on the agenda of the seminar.

Gilberto Gallopín. Presentation of the Project Sustainability Assessment in Latin America and the Caribbean (PESALC)

The project comes under the work area “Evaluation of sustainability” of the Environment and Human Settlements Division (DMAAH) of ECLAC. This work area is an on-going activity of the Division directed towards the design and creation of a systematic database, the design and monitoring of integrated indicators of sustainability, the assessment of trends towards sustainability in the region (evaluating risks and opportunities), and the identification of emerging strategic issues.

The objectives of the PESALC project are as follows:

General objectives

To support the policies of countries in the region by providing a periodic, systematic and integrated evaluation of progress towards sustainability using a combination of social, economic and environmental indicators, organized within a systemic framework, and elements for the explanation of the relevant processes.

Short-term objectives

- To define and apply as a pilot activity the indicators and the conceptual framework for a subset of countries in the region.
- To assess the feasibility of producing a periodic report on the advances towards sustainability in the region.

This project is supported by the Government of the Netherlands and executed by the Environment and Human Settlements Division (ECLAC) in collaboration with researchers from the Latin American and Caribbean Demographic Centre (CELADE) – Population Division of ECLAC – the International Centre for Tropical Agriculture, the Instituto Universitario di Architettura di Venezia (IUAV) and the Potsdam Institute for Climate Impact Research (PIK).

Background

The Commission on Sustainable Development (CSD) of the United Nations defined and tested in a pilot exercise some 134 sustainable development indicators (SDI), which it subsequently reduced to 58, using a four-dimensional framework (social, economic, environmental and institutional), 15 themes and 38 sub-themes, within which the 58 indicators were defined. The PESALC is based on this and other experiences and attempts to go beyond the mere identification and calculation of sustainable development indicators, based on the fact that for an appreciation and understanding of progress and setbacks in sustainable development, the following is needed:

- a set of sustainable development indicators
- an integrated framework from which to evaluate the behaviour of the indicators
- the inclusion of important but often unquantifiable factors and trends.
- The feasibility study underway includes the development of three conceptual and methodological pillars currently under development:
- The attempt to integrate SDI and integrated indicators, adopting socio-ecological systems as the conceptual unit of analysis under a systemic approach.
- The analysis of the causal dynamic (based on case studies and on the analysis of processes).

- The spatial perspective (using Geographic Information Systems–GIS) for some indicators.

The Estimated Industrial Pollution (national level) is presented as an example of a case study together with the analysis of the growth of the 10 most polluting industries compared with the average industrial growth.

The study of the indicators of Unfulfilled Basic Needs (UBN) is presented as an example of spatial analysis, using data drawn directly from National Censuses, GIS and multivariate statistical studies. The data are disaggregated spatially at the tertiary administrative level (municipalities or cantons). Other examples presented involve the comparison between poverty and the inappropriate use of land, and the dynamic of the distribution of poverty between 1990 and 2000.

Rayén Quiroga. Approaches and experiences in building sustainability indicators for Latin America and the Caribbean.

In recent years, intensive work has been done to develop indicators for decision-making, particularly by developed countries and some international agencies, but also in some countries of our region, with initiatives that comprise various scales and different methodological approaches. Some countries are developing environmental sustainability indicators, while more recently, others work from the perspective of sustainable development, that is incorporating (but not necessarily linking) the economic, social, environmental and institutional dimensions of development.

Within Latin America, environmental indicators are being designed by government environmental agencies and/or by statistical institutes, while experience in work with sustainable development indicators is more limited. Countries that are in the forefront with SDI are Mexico, Chile, Brazil and Colombia.

The agencies that have put forward “aggregate” indicators propose monetized indices or indicators. The index-type measurement initiatives which have been reported as important relate to four indices: the Daly and Coob IBES, the Environmental Sustainability Index, the Living Planet Index and the Environmental Footprint. Valuable elements can be found in each of these, for example, the ability to synthesize elements of the economic, ecologic and social dynamic. Nevertheless, as already stated, it is important to recognize that their construction introduces an important methodological and technical effort, which demands resources, and as such, in recommending them for use by the countries in the region, one should assess whether they are cost effective in relation to systemic-type indicators.

From the review of the state of the art, it may be concluded that there is, of course, no universal recipe for designing and implementing appropriate indicators, but that each country or agency should carry out its own design, which will guarantee that the indicators produced are really useful for decision-making purposes, thus justifying the significant investment of resources in producing and maintaining them.

The literature and expert workshops confirm that the three most important challenges that arise are the financing necessary for developing quality SDI systems and operating them over a period of time; the insufficient weight given to the potential that these SDI have as tools for decision-making by most of our Governments; and, lastly, methodological problems, such as the lack of synergy or linkage in the SDI proposed or implemented to date.

Moreover, our countries are facing a scientific, methodological and creative challenge to move forward with the measurement of a process that is still being defined conceptually and which, by the same token, presents significant difficulties in being concretized to a level that permits the quantification of highly complex and dynamic phenomena.

For the Latin American and Caribbean countries, which are facing multiple needs and budgetary constraints, it is even more crucial to address these challenges in an imaginative and cooperative way. If the industrialized countries have had to work hard to develop them, our region is facing difficulties that are equally, if not even more, challenging.

CHILE

Karin Molt and Mauricio Lorca. Progress report on Environmental Sustainability Indicators

Since 1997, a proposal for the selection and validation of Sustainable Development Indicators (SDI) has been implemented. Under the leadership of the National Environment Commission (CONAMA), this initiative seeks to generate tools in support of governmental management and to foster the development of policies for sustainable development in all the administrative regions of the country.

In the last four years, the process for generating indicators has been completed for 10 out of the 13 regions in the country, which have defined regional sustainable development indicators. Moreover, the first steps are being taken to generate National Sustainable Development Indicators in order to facilitate comparisons with other countries in the world.

The SDI were originally generated according to socioeconomic dynamic or “families”; socio-economic, life support or environmental pressure; social and institutional; ecological support. Later, however, they were systematized under the headings of the dimension of sustainable development: economic, environmental, social and institutional dimensions.

The set of regional sustainable development indicators allowed to have “common indicators” spanning all regions of the country, but with disaggregated information, and to establish a set of “specific indicators” accounting for the specifics of each region.

A change in administration in CONAMA in early October 2001 shifted the emphasis in the development and maintenance of SDI towards validated and consensual environmental indicators both at the national level and at the regional level, the purpose being to focus attention

on the environmental situation in the country. Work will also be done in the establishment of an institutional framework for monitoring and controlling the system, which has not yet been defined in a concrete way.

One problem is the lack of effective coordination of the environmental information generated in the public sector, which could be used as inputs for the indicators system. Moreover, the system has not yet been properly validated in the eyes of the public. Multisectoral committees will have to be created to treat issues of generation, updating and dissemination of information on environmental indicators. Currently, CONAMA is reviewing the methodology for obtaining indicators on the basis of the work to date in order to generate a substantial proposal on environmental sustainability indicators

ARGENTINA

Carlos Merenson. National Strategy for Sustainable Development

A brief survey of the world situation reveals the existence of threats to the natural and social life support systems leading to the conviction that the current system is absolutely unsustainable.

Thus, in order to move forward from the current state of unsustainability to a process of national development that is truly sustainable using a proactive approach, a set of objectives and actions are defined as a starting point for addressing the issue and initiating a discussion which can lead to the adoption of a national strategy for sustainable development (NSSD).

An account is given of actions devised and projected for applying sustainable development criteria and indicators at the national level.

Generally speaking, and this case is no exception, the point of departure for actions is one of data collection and the second phase is to test the indicators identified with a view to the establishment of a national system of sustainability criteria and indicators.

Since the National Office for Sustainable Development is responsible specifically for conservation and the sustainable use of natural resources, work has been carried out in this area on the identification and application of indicators geared mainly towards an assessment of relevant economic, social and ecological issues, which are described in detail in the presentation.

In this context, an account is given of activities of the “Argentine Group for Identification and Evaluation of Indicators of Desertification”; the preparation of the first forestry report for 2003 on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests for non-European countries (Montreal Process); criteria for assessing the conservation and sustainable management of wildlife and planned actions relating to indicators of fish and aquaculture resources, particularly the development of a system of indicators on the state of the country’s wetlands.

Lastly, a brief analysis is given of the national system of statistics, checking the availability of economic and social information; the lack of environmental information makes it difficult to construct a reliable set of sustainability indicators.

MEXICO

Yosu Rodríguez and Armando Yáñez. Advances and perspectives for environmental and sustainable development indicators.

The views outlined here are those of the General Office of Environmental Statistics and Natural Resources, which is charged with the processing and integration of statistics and indicators relating to the environment and sustainability and digital mapping in order to generate information services for decision-making and dissemination.

The existing institutional situation with respect to information on sustainability and with respect to the development of land management is ambiguous, since, in both cases, there are various institutions involved, but lacking a common conceptual framework.

Handling information for environmental management is highly complex given the different approaches and scales involved; for example, information may relate to the planet, international regions, the national, state and municipal levels or may concern the river basin and sub-basin, zone of influence, ecosystem and their various combinations.

In the last few years, there have been advances in the development of statistics and indicators both at the conceptual level and in terms of their implementation. There has been a shift from an approach based on measurement of the elements (water, air, earth and biota) to a recognition of the need to understand and measure relationships, that is, the state of ecosystems, river basins or bio-regions and, with respect to construction, statistics have been compiled with historical series and precise description of the information and set of indicators of environmental performance and sustainability.

At the same time, advances in land management and geomatics, resulted in various outputs completed during the year 2001; for example, various sustainability indicators were presented for comparing different regions within the country; geospatial indicators by river basin, the case of the Hydrological Administrative Region VIII (which aims to assess the sustainability of water resources in the river basin with an integral perspective on supply and demand of the resource), and micro-regional indicators, with a view to arriving at a consensus for joint work by the different stakeholders.

In this process, the main lessons were as follows:

Sustainability indicators do not apply to everything; they are a system of signs and are established on a case by case basis.

A distinction should be made between sustainable development indicators and indicators for measuring the sustainability of natural or environmental resources.

Quantitative indicators are limited but useful.

Indicators are needed for policy-making and, thus, specific details on the what and where are essential, hence the need for specialization.

The main focus of sustainable development must be land management, hence the need to coordinate indicators and management.

The major difficulties arise in the following areas:

Design of qualitative indicators

Obtaining indicators for shorter periods

Ensuring that they are used by decision-makers

Improving public information

Ensuring that the outputs are converted into information services

The conceptual frameworks for the measurement of man's relationship with nature are limited, particularly in practical terms.

We have not found any simple, practical integral way of expressing a set of indicators in an integrated way.

These are the points that we put forward for discussion in this workshop.

COLOMBIA

Francisco Canal Alban and Camilo Montoya Velásquez. Progress in environmental sustainability indicators for Colombia. A collective construction

Under the leadership of the Ministry of the Environment and with the collaboration of fifteen public institutions and the technical and financial support of ECLAC and the United Nations Development Programme (UNDP), Colombia is progressing towards the construction of national indicators of environmental sustainability. The following institutions are participating:
Ministry of the Environment

Special Administrative Unit of Colombian National Natural Parks

Institute Alexander Von Humboldt (IAVH)

Institute of Hydrology and Meterology (IDEAM)

Institute of Marine Research (INVEMAR)

Geographic Institute "Agustín Codazzi"(IGAC)

Regional Autonomous Corporation of Antioquía (Corantioquía)

Regional Autonomous Corporation of Risaralda (Carder)

Macarena Mountains Corporation (Cormacarena)

Valle del Cauca Corporation (CVC)
 Regional Autonomous Corporation of Cundinamarca (CAR)
 Administrative Department of the Environment for Bogotá (DAMA)
 Administrative Department of the Environment of Barranquilla (DADIMA)
 Administrative Statistical Department (DANE)
 National Planning Department (DNP)
 Office of the Controller General of the Republic (CGR)
 Association of Autonomous Regional Corporations and Urban Environment Authorities in Colombia (ASOCARS).

Thirty-nine environmental sustainability indicators have been retained from a preliminary list examined over the past nine months. A final meeting will be held in 2001 and the final revision made to define the Preliminary List of Selected Indicators, which will shortly be populated.

The framework used in this process is based on the proposal made by the Commission on Sustainable Development (CSD) on the grouping of themes and sub-themes.

In this instance, there will be four themes, ten sub-themes and thirty-nine indicators. Initially, the main objective of this exercise was to provide an initial diagnosis of the state of the natural resources and environment at the national level.

The key to the institutional process lies with the “Inter-Agency Committee on Indicators”, which is made up of officials from the different participating agencies. More than mere representatives, the members are persons who are committed to the outcome of the process.

Two assumptions (or agreements), which are the basis for the construction of environmental sustainability indicators in Colombia, must be stated from the outset. The first is the decision to launch the process by placing emphasis on the so-called indicators of environmental sustainability (with the emphasis on biophysical aspects); in the near future, we will move towards the selection and development of indicators on complementary issues: economic, social and institutional issues. The second is the decision to regionalize the process of selection, formulation and population of indicators, after the finalization of the first phase.

The main lesson to be drawn from the project on indicators may be summed up in the approach of the “project-indicator”; the construction process is deemed successful if a close interaction is obtained between the institutional scientific world and the various social groups and individuals concerned, whose outcome is the socio-political validation of the system on which the latter’s credibility is based.

BRAZIL

Guido Gelli. Sustainable development indicators. State of the art

The Brazilian Geographical and Statistical Institute (IBGE) assumed the terms of technical cooperation with the Ministry of the Environment in December 1999 where the priority issues were chosen for joint treatment between IBGE and MMA. The issues chosen were: the system of economic-environmental accounts, environmental statistics, sustainable development indicators and ecological-economic rehabilitation.

The 59 indicators (20 social, 19 environmental, 14 economic and 6 institutional) address issues such as: health, education, housing, security, population, the atmosphere, land, oceans/seas and coasts, water, biodiversity, economic structure, patterns of consumption and production, institutional capacity and infrastructure.

One of the first methodological difficulties encountered since the start of the project relates to the level of spatial aggregation most appropriate for expressing the phenomena under consideration. Initially, given the project dynamic, it was proposed that the country's situation should be represented by the Federal Units with the most data available for the selected indicators. In the case of some indicators, there is not sufficient data for this level of coverage, since some indicators apply to the entire territory while for others, this aggregation level is inadequate for the particular characteristic considered. Energy consumption is an example of an indicator whose value is shown only for Brazil as a whole, since only a few states have the breakdown for this item. In the case of the water quality indicator, biochemical oxygen demand (BOD) is useful as a local datum, but is no longer meaningful if aggregated by Federal Unit.

In order to obtain a more appropriate valuation in terms of the development process, it was considered more useful to work through a historical series taking 1992 as the base year. This time segment for almost all the indicators will be researched in a second phase of the project.

It should be pointed out that many of the indicators proposed are not part of the survey carried out by the Institute. In this case, it is necessary to resort to other sources, which implies an understanding of the methodology used for its valuation.

For the presentation of results, a simplified form was used with a single sheet format for all the indicators with a view to facilitating the understanding by the user. The sheet includes the indicator number, a definition of the indicator, the item and sub-item to which it belongs, justification for sustainable development, comments on the methodology and information sources.

The project is divided into two phases. In the first, some of the list of 59 indicators will be presented for endorsement by the Consultative Commission on Environmental Statistics established by the IBGE on 4 June 2001 and made up of specialists from various institutions.

Once the Consultative Commission has approved them and its criticisms and suggestions are taken into account, additional indicators will be defined and the outcome will be a publication with final conclusions. This dissemination for the society with all the indicators duly adapted and validated is scheduled for March 2002.

BRAZIL

Alfredo Gastal: Megacities Project. Rio de Janeiro Pilot Project

In the course of the year, the UNDP Regional Office for Latin America and the Caribbean requested the Ministry of the Environment of Brazil to conduct an experiment to assess the methodology proposed for the preparation of Integrated Urban Environmental Reports, testing the basic indicators.

Consultations between the Brazilian Geographical and Statistical Institute and a group of NGOs and local governments led to the formation of a consortium of NGOs – Parceria 21, which is composed of the IBAM, the ISER and REDEH. The aim of the consortium is to make a critical analysis of the UNDP proposal and adapt it to Brazilian conditions with a view to the development of two case studies.

For the case studies, it was considered advisable to choose major cities in different, important ecosystems. Thus, Rio de Janeiro was chosen in the Mata Atlântica ecosystem and Manaus in the tropical rain forest of Amazonia.

This was an important step forward for the Ministry, since it marked the incorporation of the brown agenda by the Brazilian Government. This agenda had been initiated in 1999, when the Ministry of the Environment was restructured resulting in the establishment of the Ministry for Environmental Quality in Human Settlements.

That experience should primarily aim to produce a set of indicators – a sign – which, as Gallopín put it in 1997, “is something that designates or represents something more concrete” ...which may be significant for society as a whole and not only for the experts. Nevertheless, this effort to enhance communication with society does not imply a departure from the scientific rigour which must be the hallmark of an undertaking of this kind.

Meanwhile, the Rio pilot project adheres to the basic concepts of pressure, state and response as defined by the Organisation for Economic Cooperation and Development (OECD). Nevertheless, these are understood here as a tool for planning a type of development aimed at greater sustainability.

The Ministry of the Environment, in coordination with IBGE, takes this opportunity to propose that ECLAC join in the discussion of the phases of this process as a regional partner whose multiple experience can enrich the project as a whole, not just for one country, but as the basis for other national experiments.

COSTA RICA

Edgar Gutiérrez-Espeleta. Eight years of experience in the systematization of indicators to support sustainable development

In 1993, Costa Rica formally launched efforts to systematize information to support a broader view of what had traditionally been seen as the national development process. Inspired by the resolutions of the United Nations Conference on Environment and Development (Rio de Janeiro, 1992) and encouraged by the recommendation of the Inter-American Institute for Cooperation in Agriculture and the German Agency for Technical Cooperation (GTZ), a group of academics from the University of Costa Rica took up the challenge of measuring sustainability in the sectors of agriculture and natural resources in Latin America and the Caribbean. This experiment gave rise to an alternative to the conventional approach but did not generate any echoes in the international community.

Subsequently, in 1994, and within the framework of the Higher Public Education, a group was integrated which designed what later became known as the State of the Nation Project, which sheltered the paradigm of sustainable human development and implemented it along five fundamental lines: equity and social integration; opportunities, stability and economic solvency; harmony with nature; strengthening democracy and good governance; primary relationships, social relationships and values. This report was prepared annually and currently other Central American nations have replicated the experiment; in addition, at the regional level the State of the Region Project was prepared and will enter its second edition in 2002.

In 1995, the National Commission on Environmental Statistics (CONEA) was formed, and although lacking the formal support of government agencies, held the first National Workshop on Environmental Statistics in 1996. Subsequently, the Ministry of Planning and Economic Policy invited CONEA to join the National System for Sustainable Development (SINADES) as a technical consultative Commission on information for sustainable development (INFODES). This commission used to operate and coordinate the activities of various stakeholders, but failed in its endeavours owing to a lack of economic support. It was dismantled in January 1998 just before the presidential elections.

In 1997, the University of Costa Rica and UNDP created the Development Observatory. Its aim is to give continuity to earlier initiatives in a context of policy transparency, scientific rigour and durability in time. This initiative was supported originally by Capacity 21 and the Legislative Assembly, and currently operates at the regional level as part of the network of UNEP collaborating centres. It maintains scientific and support links with various global projects.

Since its origin and with the aim of democratizing the access to information, a CD-ROM was designed called Costa Rica Development Trends, which presents information for more than 1,300 historical series (since 1985). Also, with the collaboration of the International Institute for Sustainable Development (IISD) of Canada, the database was classified in accordance with the chapters of Agenda 21 and the type of indicator (state, conductor, response). Currently, with the

support of DESA and UNCSD, work is being done on the implementation of the 57 indicators put forward in order to follow up on sustainable development. The book will be published in the first quarter of 2002.

In October, the Ministry of the Environment and the Development Observatory of the University of Costa Rica convened a workshop of national environmental experts as part of the Costa Rica GEO project in order to come to an agreement on the definition of the environmental problems in the country. One outcome of this workshop was the recommendation of a minimum set of environmental variables which should be present in a national system of environmental information to be created in the near future with support from the Costa Rica GEO project. Methodological sheets for processing the relevant data are now being designed.

As a follow up of the commitment by Costa Rica, in the last meeting of the Forum of Ministers of the Environment of Latin America and the Caribbean, held in Rio de Janeiro, a proposal was made to UNEP Regional Office for Latin America and the Caribbean for the implementation of Decision 6 (Environmental Indicators). The project is expected to come into implementation by in February 2002.

D. DISCUSSIONS

Three general discussion sessions were held on the topics on the agenda. We recapitulate below, under separate headings, the issues that were highlighted by participants.

Environmental and sustainable development indicators

It was repeatedly emphasized that care should be taken to distinguish between sustainable development indicators (SDI) and environmental indicators. Both are useful, but they are not the same. SDI usually encompass environmental indicators but the opposite is not necessarily true.

Integration of indicators

It has been argued that the issue of aggregation of indicators (vertical integration) presupposes an underlying conceptual framework of development. The conceptual frameworks for the relationship man/nature are limited, particularly in practice (for example the frameworks that stress conservation without taking into account productive alternatives). For example, one participant objected to the use of the phrase "environmental sustainability" and proposed replacing it by "sustainability of human life on the planet".

One participant stated that there was an irreducible multiplicity of SDI scales. For each scale, the important values of the indicators (and even the variables themselves) may be different. This is a serious methodological problem; in principle, this would require a system-hierarchical framework.

The important point is to develop *integrated indicators*; almost all of those being used (including those of the Commission on Sustainable Development) are sectoral. No simple and practical way has yet been found for expressing a set of SDI in an integral way. The real challenge is how to measure sustainable development and one challenge is to integrate in order to comply with the chapters of Agenda 21, which could itself serve as a framework for integration.

Objectives and users of indicators

It was stated that no single or optimal set of indicators exists for all cases, countries and decision-makers. SDI must always be associated to a purpose. Indicators point something out to someone and both the indicator and the purpose must be clear before the former can be designed. A menu of alternative indicators is required rather than a single set.

One participant stated that the request for Governments to formulate indicators must come from civil society.

Another participant commented that the interest in the SDI should come from the countries themselves, as opposed to the international agencies, and that a given indicator does not necessarily correspond to the interests of both. Another participant pointed out, however, that the international conventions (adopted by the countries) were one of the areas in which indicators, above all comparable indicators, were needed. Often, this has prompted efforts to develop indicators in the national sphere in countries in the region.

One participant claimed that many developing countries (for example many of the G77) were opposed to the development of common indicators for different countries, lest they should be used to impose conditionalities.

It was stated that in general, there is an irreducible multiplicity of interests and objectives regarding indicators.. It is normal and a positive thing that there should be different objectives. The important point is that there should be dialogue and communication between different organizations or decision-makers, whose requirements vary. The logical options for dealing with this multiplicity are as follows: (1) to construct an intricate but impracticable catalogue of indicators in an attempt to satisfy all interests and objectives; (2) to manage different sets of independently derived indicators for the different interests and objectives (which would be a waste of efforts and resources and would lead to problems of comparability); or (3) to maintain a smooth dialogue and communication regarding the different experiences and systems of indicators, while maintaining respect for the plurality of such experiences and systems.

In terms of seeking some kind of equivalence between the different indicators, strong and weak criteria could be defined. (1) equality criterion (the attempt to define a universal set of indicators for all cases); comparability criterion (some criterion or conversion factor whereby meaningful comparisons can be made between countries or situations); and (3) a compatibility criterion (the weakest form of equivalence, for example, between different indicators that seek to provide some information on a particular attribute of the system).

SDI and participation

There are wide differences between countries in terms of the level of participation by the public and by government agencies in defining and using indicators. One of the participants stressed that participation depended on the politics, organization and culture of each country. Participation presupposes access to information; if this were lacking, then there could be no true participation.

According to another speaker, participation with respect to SDI serves many purposes. For example, participation in generating indicators is important in cases where the indicators relate to the perception of situations or to the extent of public satisfaction with the existing situation. In other cases, participation can fulfil an important role in the validation of SDI. Participation is clearly a central aspect of the issue of appropriation and social use of indicators. Lastly, the valuation of indicators (the value – not necessarily a monetary one – assigned by the society to the levels of SDI) clearly requires the participation of the different strata of society. Being clear as to the areas and form of the participation is essential.

Communication and dissemination of SDI

One of the problems put forward regarding this issue was how to ensure that SDI will be used by the decision-makers and how to improve the transmission of information to the society. One essential point was that indicators should serve for communication purposes. Hence, the work with journalists could be important. An SDI communication strategy would have to be defined and different indicators might be necessary for different audiences, bearing in mind their training, experience and objectives.

According to one participant, the issue of communication and visualization of the indicators and of information for sustainable development in general, is a major challenge. How does a decision-maker (whether he be a politician or a subsistence farmer) perceive and use information for his/her activities? Producers of indicators need to have a better understanding of this. Hence the need for scientific research to ascertain how decision-makers use information; in addition, it would be necessary to develop communication packages based on the modern techniques and discoveries in the areas of visualization, pattern recognition, integration of different forms of information, complementary modes for presenting information (for example, numbers, figures, animations, artificial intelligence and expert systems).

Not only it is necessary to have different indicators for different decision-makers, but it is also important to present the same indicator using different methods and media for different decision-makers and audiences.

Institutional issues

Bearing in mind that both the generation of indicators and the responsibility for the success of environmental management lay usually with the Government, it is necessary to find ways of minimizing biases and ensuring transparency and objectivity. It was argued that the important point was not whether SDI-designers or policy-implementers belong to the Government, but rather whether they are from independent agencies and whether the generators of indicators are relatively autonomous (for example the Central Banks and the National Statistical Institutes have autonomy vis-à-vis the Ministries of Economy in most countries in the region).

The formulation of indicators also poses institutional problems due to the reduction of State capacity for developing and maintaining additional information systems. Indicators should be maintained basically by Governments, owing to the costs implied. This does not exclude the generation of indicators being a more participatory process, for example through workshops where good ideas often emerge.

The other institutional problem raised was that of the existence of departments that overlap and work on very similar issues and each collects its own indicators.

The problem of cooperation failures and exchange of information between the different agencies that produce and use the information, detectable from the United Nations system to the national and subnational levels, was also mentioned.

Others

Other points mentioned but not dealt with in detail include the following:
The importance of horizontal (south-south) cooperation in the SDI issue, the present seminar being an example of such cooperation.

The problem of matching administrative boundaries with natural boundaries (for example in analysing the relationship between socio-economic data presented by provinces or municipalities and environmental data presented continuously – as for example rainfall and temperature – or else by hydrographic basin or ecosystem).

The need and methodological difficulties encountered in producing qualitative indicators for important but non-quantifiable attributes (cultural, sociopolitical or other).

How to obtain indicators in shorter periods. Many variables (particularly environmental variables) change much more slowly than is necessary for decision-making, and in addition, there can be time delays; in other cases, sampling is done every 10 years or more (as in the case of population censuses or deforestation surveys).

E. PROPOSALS FOR FOLLOW-UP AND FUTURE ACTIONS

In this final phase of the Seminar, there was a lively and fruitful discussion with proposals that were gradually tending to converge. The participants showed a clear interest in continuing and strengthening ties, in exchanging experiences and in cooperating on the issue of SDI between participating countries (and in including other countries in the region interested in participating).

This would have the following advantages:

- Fulfilling a role of mutual support.
- Identifying shared problems and providing support for solving them;
- Taking steps to establish SDI at the level of the region of Latin America and the Caribbean, in addition to the indicators at the country level, thus providing a perspective of the whole region.
- Possibility of organizing virtual discussions and exchanges on SDI.
- Reviewing current and future experiences of the countries.
- Supporting countries that are beginning to develop SDI.
- Establishing an SDI information centre for the region.
- Seeking resources jointly for methodological developments and the realization of specialized workshops on specific issues (for example, geomatics, visualization of indicators).

Throughout the discussion, it was repeatedly emphasized that SDI were the focus of the proposals and not environmental indicators, for which other forums already existed.

The participants eventually came to an consensus on the following proposals:

To launch an initiative with ECLAC, DESA and the countries in the region leading to the establishment at ECLAC of a programme, project or other appropriate arrangement on SDI, incorporating social, economic and environmental dimensions.

It was proposed that ECLAC, with support from DESA, should act as the focal point helping to define with the countries the objectives of the process and the issue of common interest in relation to SDI.

The SDI programme could set up an Advisory Group of Experts approved by the countries.

In response to the proposal, the organizers of the seminar pledged to support the process trying to facilitate the operation of a Latin American and Caribbean SDI network, exploring the political feasibility of initiating an on-going activity with formal backing from the countries (since the participants in the Seminar had been invited in their capacity as experts, they were not necessarily representing the positions of their countries) and to seek resources for these activities together with DESA and the countries.

The first step in this process will be to send the Report of the Seminar to participants and to DESA, and this will be done shortly.

The representative of Argentina reported that its Government had already requested support from ECLAC for a meeting on SDI early in 2002. This would also be part of the process started in Santiago.

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Annex 2**LIST OF DOCUMENTS DISTRIBUTED**

Indicators of Sustainable Development: Guidelines and Methodologies. Economic and Social Affairs. United Nations. Second Edition, September 2001, pp. 320.

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