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THE CSD WORK PROGRAMME ON INDICATORS OF SUSTAINABLE DEVELOPMENT¹

Paper submitted by United Nations Division for Sustainable Development (UNSD)

Summary: The 1992 Earth Summit recognized the important role that indicators can play in helping countries to make informed decisions concerning sustainable development. This recognition is articulated in Chapter 40 of Agenda 21 which calls on countries at the national level, as well as international, governmental and non-governmental organizations to develop and identify indicators of sustainable development that can provide a solid basis for decision-making at all levels. Moreover, Agenda 21 specifically calls for the harmonization of efforts to develop sustainable development indicators at the national, regional and global levels, including the incorporation of a suitable set of these indicators in common, regularly updated and widely accessible reports and databases.

In response to this call, the Commission on Sustainable Development (CSD) in 1995 approved, the Programme of Work on Indicators of Sustainable Development and called upon the organizations of the UN system, intergovernmental and non-governmental organizations with the coordination of its Secretariat to implement the key elements of the work programme.

The main objective of the CSD Work Programme was to make indicators of sustainable development accessible to decision-makers at the national level, by defining them, elucidating their methodologies and providing training and other capacity building activities.

A document "Indicators of Sustainable Development: Guidelines and Methodologies" has been prepared as the culmination of the CSD Work Programme on Indicators of Sustainable Development (1995-2000). It provides a detailed description of key sustainable development themes and sub-themes and the CSD approach to the development of indicators of sustainable development for use in decision-making processes at the national level. This report also finalizes the presentation of the proposed framework and the core set of indicators that is made available to member countries to assist them in their efforts to measure progress toward sustainable development. It has been made available through the Internet website <http://www.un.org/esa/sustdev/isd.htm> and will be available in hard copy in October 2001.

¹ Extract from: United Nations Division for Sustainable Development; "Indicators of Sustainable Development: Guidelines and Methodologies", New York, August 2001

Development of a Working List of Indicators and Methodology Sheets

One of the significant tasks of the early stage of the programme was the preparation of a working list of indicators and related methodology sheets. Building on existing work, a cooperative, consultative, and collaborative approach was used. More than thirty organizations of the United Nations system, other intergovernmental, non-governmental and major group organizations supported this work, assuming lead roles in the drafting of methodology sheets appropriate to their mandate and experience.

An Expert Group, consisting of 45 members from non-governmental organizations and United Nations agencies, guided the overall process. In addition, approximately 100 individuals with indicator experience from international and national agencies, and non-governmental organizations participated in the process by providing advice and comments and contributing their ideas, information and expertise.

The collection of indicators and methodology sheets was published by the United Nations in August 1996 under the title of “*Indicators of Sustainable Development: Framework and Methodologies*”. This document, commonly referred to as the ‘blue book’, was distributed to all governments with the invitation to use and test the indicators, and to provide feedback on the results.

Content of the Methodology Sheets

The methodology sheets contain, inter alia, the following information:

- Basic information on the indicator, including its definition and unit of measurement. In addition, the relevant Agenda 21 chapter and the type of indicator are listed to locate the indicator in the DSR framework;
- Purpose and usefulness of the indicator for sustainable development decision-making (i.e., policy relevance); international targets where these are available; and the relevant international conventions, if the indicator is primarily of global significance;
- Conceptual underpinnings and methodologies associated with the indicator, including the underlying definitions, measurement methods, and a summary of its limitations and alternative definitions;
- Data availability to illustrate the importance of regular data collection and updating to support systematic reporting;
- Listing of the agency(ies) (lead and cooperating) involved in the preparation of the methodology sheets; and
- Other information (e.g., contact points, other references and readings).

A conscious effort has been made to use a consistent format to frame the contents of the methodology sheets. The methodology sheets were designed to assist countries with the task of developing the priority indicators that are considered most relevant in the context of their sustainable development policies and programs. The methodology sheets were to form a base and starting point for the process of indicator development and were understood to be open for enhancement, refinement, amendment, and change.

Training and Capacity-Building

To address the need for building the necessary capacity and knowledge on the use of indicators, a series of briefing and training workshops at the regional level was initiated from November 1996 through June 1997. These were organized by the CSD Secretariat with the support and cooperation of the Economic and Social Commission for Asia and the Pacific (ESCAP) and the Government of the Netherlands for Asia and the Pacific; the Government of Costa Rica for Latin America and the Caribbean; and by the Government of Ghana for the Africa region. The Africa regional workshop was co-sponsored by UNDP's Capacity 21 Programme.

The main objective of all the workshops was to provide an introduction and training in the use of indicators as tools for national decision-making and to explore related methodologies for indicator development. Special attention was given to identifying national priorities and relating them to the process of indicator identification and selection.

Several countries followed up on the regional workshops with national training workshops. In the Asian and Pacific region, ESCAP provided seed money for implementation of national training workshops, which were convened in China, the Maldives, Pakistan and the Philippines.

National Testing

At the Fourth Session of the CSD in 1996, the Commission encouraged Governments to pilot test, utilize and experiment with the proposed initial set of indicators and related methodologies over a 2-3 year period. The purpose of the national testing was to gain experience with the use of indicators, to assess their applicability according to national goals and priorities of sustainable development, and to propose changes to the set and its organizational framework.

The national testing programme was launched in November 1996, on the occasion of the International Workshop on Indicators of Sustainable Development held in Ghent, Belgium and hosted by the Governments of Belgium and Costa Rica. The countries attending the meeting reviewed and endorsed the guidelines for national testing. The guidelines essentially provided suggested testing procedures, including modalities for its organization, implementation options, assessment and evaluation methods, institutional support and capacity building, and reporting requirements.

Twenty-two (22) countries covering all regions of the world participated, on a voluntary basis, in the testing process. By regions, the testing countries were:

Table 1: Testing Countries

Regions	Countries
Africa:	Ghana, Kenya, Morocco, South Africa, Tunisia
Asia and the Pacific:	China, Maldives, Pakistan, Philippines
Europe:	Austria, Belgium, Czech Republic, Finland, France, Germany, United Kingdom
Americas and the Caribbean:	Barbados, Bolivia, Brazil, Costa Rica, Mexico, Venezuela

In addition to the official testing countries, a number of countries (Canada, Nigeria, Switzerland, and the United States, among others) were affiliated with the process through voluntary sharing of information, participation in meetings and other forms of exchange of expertise. The Statistical Office of the European Communities (Eurostat) prepared a test compilation of 54 CSD indicators drawing on statistical data existing within the European Community. This pilot study was produced as an official publication of the European Communities in 1997. Eurostat provided invaluable technical and substantive support throughout the CSD Work Programme and latest produced a publication containing the CSD indicators for the European level².

Countries were requested to provide periodic reports on the testing phase to the DSD for analysis and for circulation to members of the Expert Group and testing countries. The reports of all the testing countries can be found on the Secretariat web site at:

<http://www.un.org/esa/sustdev/isd.htm>.

Most of the testing countries adopted different approaches to the testing exercise, ranging from plain evaluation of data availability for all or a few selected indicators to embarking on the whole process of developing their own independent set of national indicators while using the CSD indicators as a point of reference. Nevertheless, the majority of the countries aligned their processes with the CSD Testing Guidelines while others integrated the guidelines into their own unique design.

All the testing countries employed participatory implementation strategies. This is evident in the respective institutional arrangements chosen by countries as the coordinating mechanism for the testing process. The majority of the countries adopted highly integrated multi-stakeholder strategies involving government ministries, NGOs, academia and relevant business organizations (as in the case of the Philippines, Ghana, Kenya, South Africa, Maldives, United Kingdom) while others confined the process within government ministries (as in the case of China, Austria, Belgium, Brazil).

² Statistical Office Of The European Communities, *Measuring Progress Towards A More Sustainable Europe*, April 2001.

Within these national coordinating bodies, most of the countries also created working groups, expert teams and committees that focused on the indicator work. The formation of an Indicator network (for instance, in South Africa and Finland) was also found useful in fostering the integration of ministries and research institutions.

Several countries also experimented with “twinning” where two or more countries agreed to either engage in mutual exchange of information and experience in indicator development (e.g., South Africa and Finland) or where one country provided significant technical and financial support to another participating country (France and Tunisia). These arrangements provided an excellent platform for information exchange and sharing of expertise creating win-win situations with the involved countries achieving a wider knowledge base.

Midway through the implementation of the testing programme, a global meeting of testing countries was hosted by the government of the Czech Republic in Prague in January 1998. The meeting took stock of the progress of implementation and discussed ways to improve the process and ultimately the results of the programme.

Evaluation of the Testing Results and Indicator Set

The testing phase was officially concluded in December 1999 with the International Workshop on CSD Indicators of Sustainable Development, hosted by the Government of Barbados, and supported by the Government of Germany and DSD. This meeting provided the forum for the assessment of the CSD indicators of sustainable development, their applicability and usefulness in supporting national decision-making; and served as a venue for exchange of information at the national, regional and global level on sustainability indicators and their practical use.

All relevant information on the testing programme including country reports was compiled and organized into a database (CSD ISD Database). This database served as an analytical tool for reviewing testing results, the indicator framework and the working list of indicators.

Many countries pointed out that the testing process was, in general, a successful exercise. The highly participatory approach adopted by countries in the testing exercise not only heightened awareness of the value and importance of indicators but also increased levels of understanding on sustainable development issues. Moreover, the testing has reportedly inspired the launching of other indicator initiatives and has tied many players together.

Notwithstanding the aforementioned successes, several institutional constraints affected the implementation of the testing, such as, limitations on the availability of financial and human resources; difficulty in mobilizing the relevant experts and stakeholders, lack of coordination between statistical agencies and the indicator focal point, low level of awareness among stakeholders, low level of commitment on the part of participating institutions, competing work demands and government leadership transitions that resulted in discontinuities in the implementation of the indicator process. This called for beefing up capacity-building programs in the form of human resource and organizational development. A strong human resource base is

central to the multi-stakeholder process as are properly coordinated and highly committed institutional mechanisms.

Time as well as financial constraints also affected the testing undertaken in some countries. In view of the need to go by the rather strict timetables of the testing process, adjustments had to be made on the degree and level of consultations.

To be more successful, it was also felt that the indicator programme should be viewed and treated as a more permanent programme that is closely linked with national reporting to the CSD and integrated with the development of national policy.

The Working List of Indicators

Testing results showed that sustainable development indicators clearly have potential for assisting in national decision-making. Countries reported to have used or planned to use the indicators to:

- bring important issues to the political agenda;
- help to identify main trends in priority sectors;
- facilitate reporting on the state of sustainable development to decision-makers and the general public, both domestic and international;
- promote national dialogue on sustainable development;
- help to assess the fulfillment of governmental goals and targets, and in the revision of these goals and targets;
- facilitate the preparation and monitoring of plans;
- help to assess the performance of both policies and actions when implementing the plans;
- state the concept of sustainable development in practical terms; and
- focus the national and sectoral programmes and state budgets towards sustainability.

As can be expected, not all of the indicators in the working list were found relevant in the context of a testing country. In selecting the applicable indicators, most countries, engaged in a process of prioritising the indicators in relation to national goals using relevant criteria such as: availability and accessibility of data, usefulness and policy relevance. In general, however, the testing countries found the working list to be a good starting point for identifying options from which they could choose national indicators.

While testing had been carried out at the national level, it was nonetheless perceived to have an international context taking into account the mandate of CSD and the structure and content of the methodology sheets which describe commonly accepted methodologies, internationally harmonized terminology and internationally compatible classification systems. The primary goal of the indicator programme, however, is to develop a means to assist national decision-making. On the other hand, it is considered that a good indicator system should be able to reflect the specific issues and conditions of a country or a region but should nevertheless be harmonized internationally to the extent possible.

Most countries, nonetheless, shared the view that the final list of indicators should be short, focused, pragmatic and flexible so that it could be adapted to country-specific conditions.

Revising the Framework and Indicator List

Guided by the reports from the testing countries and continuing expert discussions on the indicators and the framework, the DSD began, in early 1999, the process of defining the appropriate measures to take in the light of the various concerns raised during the implementation of the work programme.

At its fifth meeting in April 1999, the Expert Group on Indicators of Sustainable Development discussed midstream actions to prepare for the conclusion of the work programme.

While the DSR approach proved useful in organizing the indicators and the testing process as well, the Expert group felt that there was need to refocus the indicator framework to emphasize policy issues or main themes as recommended by a number of countries. It was felt that re-designing the indicator framework in this manner would make the value of indicator use more obvious and thereby help stimulate increased Government and civil society involvement in the use and testing of indicators. Following this resolution, a study was undertaken to design a theme-based indicator approach.

The resulting organization presents the indicators under four major dimensions, further broken down into themes and sub-themes. The determination of the major areas, themes and sub-themes was based on a broad range of information, the major ones of which were the reports of the testing countries and international initiatives that have measured or conceptualised sustainability. The testing reports were analysed to generate the following information: priorities that each country stated in order to achieve sustainable development, CSD indicators tested, considering why they tested them and what problems they had in the process, new indicators proposed and the criteria used by each country in the indicator selection. This is described in greater detail in Section III below.

Regarding other major international initiatives on indicator development, every effort was made to work towards convergence between the CSD effort and those of other organizations and agencies. Information was therefore analysed taking into account the goals identified by each international initiative and the indicators selected to measure progress towards those goals.

CSD Thematic Indicator Framework

A framework for organizing the selection and development of indicators is essential. Nevertheless, it must be recognized that any framework, by itself, is an imperfect tool for organizing and expressing the complexities and interrelationships encompassed by sustainable development. Ultimately, the choice of a framework and a core set of indicators must meet the needs and priorities of users, in this case national experts, civil society groups and decision-makers responsible for the development and use of indicators to monitor progress towards sustainable development. It should be stressed that any country wishing to use indicators, in any systematic

way, must develop its own programme drawing on the resources currently available. The CSD framework and core set of indicators outlined in this report provide a good starting point for such a national programme.

The framework employed in the CSD work programme to guide the selection of sustainable development indicators has evolved from a driving force-state-response approach to one focusing on themes and sub-themes of sustainable development. In essence, the rationale for the theme framework is to better assist national policy decision-making and performance measurement. More specifically, the following factors guided the development of the revised framework:

- country recommendations;
- the inclusion of common priority issues relevant to assessing sustainable development progress;
- the desire for comprehensiveness and balance across the sustainable development spectrum, as reflected in Agenda 21; and
- limiting the number of indicators to achieve a core set.

The theme framework has been developed to address the following considerations: future risks; correlation between themes; sustainability goals; and basic societal needs.³ In addressing future risks, the framework becomes a proactive tool to assist decision-making especially where quantitative thresholds are known. Such sustainable development challenges, are reflected in many global, regional, and national assessments, such as UNEP's GEO-2000 report.⁴ A successful framework should reflect the connections between dimensions, themes, and sub-themes. It should implicitly reflect the goals of sustainable development to advance social and institutional development, to maintain ecological integrity, and to ensure economic prosperity. Such goals echo basic human needs related to food, water, shelter, security, health, education, and good governance. The international community has established more specific benchmarks or targets for many of the themes and sub-themes. These reference levels are summarized in Annex 1.

As a result of this iterative process, a final framework of 15 themes, 38 sub-themes and 58 core indicators has been developed to guide national indicator development beyond the year 2001. It covers issues generally common to all regions and countries of the world. It should be noted that the organization of themes and sub-themes within the four dimensions of sustainable development represents a 'best-fit' to guide the selection of indicators. This does not mean that issues should be considered exclusively within only one dimension. The social sub-theme of poverty, for example, has obvious and significant economic, environmental, and institutional linkages. The framework, together with the core set of sustainable development indicators, is summarized in the table below.

³ United Nations Department of Economic and Social Affairs, *UN CSD Theme Framework and Indicators of Sustainability*.

⁴ United Nations Environment Programme, *GEO-2000: UNEP's Millennium Report on the Environment*, Earthscan Publications, 1999.

CSD Theme Indicator Framework

SOCIAL		
Theme	Sub-theme	Indicator
Equity	Poverty (3)	Percent of Population Living below Poverty Line
		Gini Index of Income Inequality
Unemployment Rate		
Health (6)	Gender Equality (24)	Ratio of Average Female Wage to Male Wage
	Nutritional Status	Nutritional Status of Children
		Mortality
	Sanitation	Life Expectancy at Birth
		Percent of Population with Adequate Sewage Disposal Facilities
	Drinking Water	Population with Access to Safe Drinking Water
	Healthcare Delivery	Percent of Population with Access to Primary Health Care Facilities
Immunization Against Infectious Childhood Diseases		
Contraceptive Prevalence Rate		
Education (36)	Education Level	Children Reaching Grade 5 of Primary Education
		Adult Secondary Education Achievement Level
	Literacy	Adult Literacy Rate
Housing (7)	Living Conditions	Floor Area per Person
Security	Crime (36, 24)	Number of Recorded Crimes per 100,000 Population
Population (5)	Population Change	Population Growth Rate
		Population of Urban Formal and Informal Settlements
ENVIRONMENTAL		
Theme	Sub-theme	Indicator
Atmosphere (9)	Climate Change	Emissions of Greenhouse Gases
	Ozone Layer Depletion	Consumption of Ozone Depleting Substances
	Air Quality	Ambient Concentration of Air Pollutants in Urban Areas
Land (10)	Agriculture (14)	Arable and Permanent Crop Land Area
		Use of Fertilizers
		Use of Agricultural Pesticides
	Forests (11)	Forest Area as a Percent of Land Area
		Wood Harvesting Intensity
Desertification (12)	Land Affected by Desertification	
Oceans, Seas and Coasts (17)	Coastal Zone	Algae Concentration in Coastal Waters
		Percent of Total Population Living in Coastal Areas
	Fisheries	Annual Catch by Major Species
Fresh Water (18)	Water Quantity	Annual Withdrawal of Ground and Surface Water as a Percent of Total Available Water
	Water Quality	BOD in Water Bodies
		Concentration of Faecal Coliform in Freshwater
Biodiversity (15)	Ecosystem	Area of Selected Key Ecosystems
		Protected Area as a % of Total Area
	Species	Abundance of Selected Key Species

ECONOMIC		
Theme	Sub-theme	Indicator
Economic Structure (2)	Economic Performance	GDP per Capita
		Investment Share in GDP
	Trade	Balance of Trade in Goods and Services
	Financial Status (33)	Debt to GNP Ratio
Total ODA Given or Received as a Percent of GNP		
Consumption and Production Patterns (4)	Material Consumption	Intensity of Material Use
	Energy Use	Annual Energy Consumption per Capita
		Share of Consumption of Renewable Energy Resources
		Intensity of Energy Use
	Waste Generation and Management (19-22)	Generation of Industrial and Municipal Solid Waste
		Generation of Hazardous Waste
		Generation of Radioactive Waste
		Waste Recycling and Reuse
Transportation	Distance Traveled per Capita by Mode of Transport	
INSTITUTIONAL		
Theme	Sub-theme	Indicator
Institutional Framework (38, 39)	Strategic Implementation of SD (8)	National Sustainable Development Strategy
	International Cooperation	Implementation of Ratified Global Agreements
Institutional Capacity (37)	Information Access (40)	Number of Internet Subscribers per 1000 Inhabitants
	Communication Infrastructure (40)	Main Telephone Lines per 1000 Inhabitants
	Science and Technology (35)	Expenditure on Research and Development as a Percent of GDP
	Disaster Preparedness and Response	Economic and Human Loss Due to Natural Disasters

Numbers in brackets indicate relevant Agenda 21 chapters.

Core Indicators

Within the context of the theme framework, the objective of selecting a minimum number of indicators as a core set could be realized. Countries are encouraged to adopt and use this set as a starting point for their national indicator programmes. The core set is based on consultation with countries, particularly those represented in the testing programme, lead agencies within and beyond the UN system who have responsibilities for sustainable development including Agenda 21 implementation, and indicator experts. In addition, valuable guidance is provided by the results of the indicator testing experience itself.

In summary, the theme framework and the core set have overcome many of the difficulties experienced with the 1996 Indicators of Sustainable Development Framework and Methodologies resource document used in the testing phase. The indicators clearly reflect common priorities among national and international issues. The number of indicators in the core set has been considerably reduced from the suggested preliminary list of indicators used in the testing phase. In total, 58 indicators are included in the core set compared to the original 134 presented by the 1996 publication. Problems associated with duplication, lack of relevance and meaningfulness, and absence of tested and widely accepted methodologies have largely been eliminated. Those indicators retained in the core set represent a better balance of the sustainable development themes common to national policy development, implementation, and assessment needs. Nevertheless, any suggested set of indicators must be adapted to country-specific conditions and needs and be subject to revision and updating over time as new experience is gained and new approaches and methodologies become available.

The theme framework and its set of sustainable development indicators meets the CSD indicator programme objective of having an agreed core set available for all countries to use by the year 2001. Wherever possible, the core indicators are common to other international initiatives. In this way, the core set represents a sound launching pad for national governments to develop their own indicator programmes and to monitor their own progress; especially against the goals and objectives of national sustainable development strategies and plans. It also represents a common tool to assist governments in meeting international requirements for reporting, including national reporting to CSD. Wide adoption and use of the core set would help improve information consistency at the international level.

As noted, countries will need to exercise flexibility and judgment in their efforts to develop national indicator sets for sustainable development. In this context, it is important to emphasize that the core set is considered sound and appropriate at this point in time. As the testing process clearly demonstrated, the institutional area needs further development and refinement in comparison to the other three dimensions.⁵ In addition, considerable care will need to be taken in the interpretation of certain indicator trends in the context of sustainability and linkages among themes. For example, the *use of agricultural pesticides* as an indicator recognizes the potential for enhanced productivity. Increased pesticide use, however, also has implications for water quality. With the indicator *floor area per person*, a decrease may imply overcrowding and deteriorating living conditions, while an increase suggests a higher level of material and energy consumption and land use. In other cases, methodological deficiencies or data access may make it difficult to develop a few of the indicators within certain countries, for example *mortality rate under five years old* or *intensity of material use*. In recognition of these difficulties, improvements will need to be defined and tested, and the framework and indicators should be periodically revisited and updated to reflect these advances.

Countries are encouraged to use the framework and core indicators in the way that best meets their specific needs related to sustainable development priority setting, policy making, monitoring, and evaluation. The framework and core set will play different roles depending on the state of indicator development in a specific country. Countries may wish to use the core set as a starting

⁵ The need for better institutional indicators is addressed in Spangenberg, Joachim H., Pfahl, Stefanie, and Deller, Kerstin, *Elaboration of Institutional Indicators for Sustainable Development*, E. Schmidt Publications, Berlin, Germany, 2001 (in press).

point to develop national sets, others may take the opportunity of using the core set to broaden the focus for specific dimensions to achieve a more comprehensive perspective on sustainable development. It may be appropriate for others to use the core set as a benchmark to verify or consolidate existing indicator programmes. It is unrealistic to expect that all the indicators of the core set will be of equal relevance to all countries, recognizing their diversity.

For further information please contact:

Birgitte Alvarez-Rivero
Sustainable Development Officer
United Nations
Division for Sustainable Development
2 UN Plaza, Room DC2-2250
New York, NY 10017
Tel. (212) 963 8400
Fax (212) 963 1267
E-mail: alvarez-riverob@un.org

Annex 1

International Goals, Targets, and Standards Related to Themes and Sub-Themes of Indicators of Sustainable Development

SOCIAL		
Theme	Sub-theme	Goals, Targets, and Standards
Equity	Poverty	i) Reduce proportion of people living in extreme poverty in developing countries by at least one-half by 2015 compared to 1990 (<i>Copenhagen95</i>). ii) Universal access to paid employment (<i>Copenhagen95</i>).
	Gender Equality	Eliminate discriminatory practices in employment (<i>Beijing</i>)
Health	Nutrition Status	Reduce severe and moderate malnutrition among under 5 year old children by 50% from 1990 to 2000 (<i>New York90, Copenhagen95, Beijing95, Rome96</i> ,
	Mortality	Reduce mortality rate for children under 5 years old by two-thirds of 1990 levels by 2015 (<i>Cairo94, New York90</i>)
	Sanitation	Universal access to sanitary waste disposal (<i>Rio de Janeiro92, Copenhagen95, Beijing95</i>)
	Drinking Water	Universal access to safe drinking water supply by 2025 (<i>Rio de Janeiro92, Copenhagen95, Beijing95</i>)
	Healthcare Delivery	i) Universal access to primary health care and reproductive health services by 2015 <i>Cairo94, Copenhagen95, Beijing95</i> ii) Universal immunization against measles (<i>New York90,</i>) iii) Universal access to safe and reliable contraceptive methods (<i>Cairo94</i>)
Education	Education Level	Universal access, and completion of primary education by 2015 (<i>Jomtien90, Cairo94, Beijing95</i>)
	Literacy	Adult literacy reduced by half of the 1990 level by 2000 (<i>Jomtien90, Copenhagen95, Beijing95</i>)
Housing	Living Conditions	Provision of sufficient living space and avoidance of overcrowding (<i>Habitat II</i>)
Security	Crime	Significantly reduce violence and crime (<i>Cairo95</i>)
Population	Population Change	Stabilize world population (<i>Cairo94</i>)
ENVIRONMENTAL		
Theme	Sub-theme	Goals, Targets, and Standards
Atmosphere	Climate Change	i) Reduce overall developed country emissions of CO ₂ equivalents by 5% of 1990 levels by 2008-2012 (<i>Kyoto97</i>) ii) Stabilize GHG concentrations in the atmosphere at a level that prevents dangerous anthropogenic interference with the climate system (<i>FCCC</i>)
	Ozone Layer Depletion	ODS consumption elimination schedule: halons by 1994; CFC, carbon tetrachloride, HBFC, and methyl chloroform by 1996; methyl bromide by 2010; and HCFC by 2030 (<i>Montreal Protocol and Amendments and Adjustments</i>)
	Air Quality	National air quality standards based on WHO air quality guidelines

ENVIRONMENTAL (continued)		
Theme	Sub-theme	Goals, Targets, and Standards
Land	Agriculture	Reduce the number of undernourished people to half their present level no later than 2015 (<i>Rome96</i>)
	Forests	i) All tropical timber products traded internationally shall originate from sustainably managed forest by 2000 (<i>International Tropical Timber Organization</i>) ii) National targets set under the sustained yield principle
	Desertification	
	Urbanization	
Oceans, Seas and Coasts	Coastal Zone	
	Fisheries	
Fresh Water	Water Quantity	Withdrawal limits may apply to specific international treaties between countries
	Water Quality	National water quality standards based on WHO guidelines for drinking water quality
Biodiversity	Ecosystem	10% protected area for each major ecosystem type by 2000 (<i>Caracas92</i>)
	Species	
ECONOMIC		
Theme	Sub-theme	Goals, Targets, and Standards
Economic Structure	Economic Performance	
	Trade	
	Financial Status	Total ODA from developed countries should be at least 0.7% of GNP (<i>United Nations</i>)
Consumption and Production Patterns	Material Consumption	
	Energy Use	
	Waste Generation and Management	i) National targets may apply for solid waste reduction and recycling ii) Prevent and minimize the generation of hazardous wastes (<i>Agenda 21</i>) iii) IAEA safety standards for the management of radioactive wastes
	Transportation	
INSTITUTIONAL		
Theme	Sub-theme	Goals, Targets, and Standards
Institutional Framework	Strategic Implementation of SD	National sustainable development strategies that reflect all interests formulated by all countries by 2002 (<i>United Nations General Assembly97</i>)
	International Coop.	
Institutional Capacity	Information Access	
	Communications Infrastructure	
	Science and Technology	One researcher engaged in R&D per 1000 population [for Africa] (<i>UNESCO95</i>)
	Disaster Preparedness and Response	Improve the capacity of each country to mitigate the effects of natural disasters expeditiously and effectively (<i>United Nations General Assembly89</i>)

