

**FIRST SUB-REGIONAL TRAINING WORKSHOP
ON ENVIRONMENT STATISTICS
BANGKOK, 8 – 19 MAY 2000**

DEVELOPMENT OF ENVIRONMENT STATISTICS IN AFRICA

1996 – 1999

April 2000

I. INTRODUCTION

1. The Medium Term Plan (MTP) 1996-2001 was the main policy directive for the activities of the Secretariat during the period 1996-1999. According to the MTP, the statistical activities implemented during the period were aimed at:

- a) maintaining a regional data base for economic, social, demographic and environmental statistics;
- b) Providing technical assistance to member States to improve their national statistical system in pursuance of the objectives of Addis-Ababa Plan of Action for Statistical Development in Africa and its strategy implementation.

2. During the period under review, ECA's activities in Environment Statistics were implemented, in pursuit of the objectives set out above under two biennium periods, 1996-1997 and 1998-1999. The detailed work programme for 1996-1997 and the draft work programme 1998-1999 were endorsed by the Ninth Session of the Conference of African Planners, Statisticians, Population and Information Specialists in March 1996.

3. A major development during the period, which has to be mentioned, was the deepening of the UN financial crisis and the restructuring of the Secretariat. As a result, the ECA statistical activities experienced drastic shortfalls: the staff resources were reduced from 9 to 6 statistical assistants, while the professional posts, of which one was the post of environment statistician, went down from 12 to 8 compared to available resources in the 1995-1996 biennium. Following the restructuring of the secretariat the ECA programme of work was revised and a sub-programme "Harnessing information for development" which included the statistical and database activities, was implemented. A new division, "Development Information Services Division" (DISD) with responsibility for the implementation of the sub-programme was established.

4. The paper therefore describes the ECA's role in the present context in the development of environment statistics in Africa. It summarises the work completed during the period under review and covers progress made in establishing a regional database on environment statistics in Africa and in providing technical assistance to member States. On basis of the experience gained so far, the paper specifies areas which need further attention in the 2000-2001 work programme. Proposals on the direction of future work during the next medium term plan, especially the development of technical cooperation and of databases at national, regional and international levels will be presented.

II. ACTIVITIES IN 1996 - 1999

5. According to the programme budgets and the programme implementation plans (PIP) for the period, the following outputs and operational activities had been planned:
 - a) the provision of environmental data to government statisticians and planners extracted from the ECA sectoral regional database;
 - b) the publication of African Compendium of Environment Statistics (biennial, 1995 and 1997 issues);
 - c) the conducting of advisory services missions to member states, on request, on the establishment or improvement of environment statistics;
 - d) The provision of support for two workshops on environment statistics (for English and French speaking countries respectively).
6. As ECA/DISD has established a sectoral database on environment statistics, data sets were produced and dispatched to ECA member States. The 1995 and 1997 issues of African compendium of environment statistics have been published. One advisory mission for a short-term training has been carried out and the workshops were implemented respectively in November 1997 and November 1999.

A. Data collection, compilation and presentation

1. Development and maintenance of a regional database on environment statistics:

7. The data sets produced from the ECA multi-sectoral database focused on drought and desertification and were sent to countries for information, verification and updating. They included selected indicators on land use, area of forest cover, production of roundwood, livestock density, area affected by desertification, rainfall and agroclimatological data and water resources etc.... Additional data related to energy, mineral production, biomass were also compiled. The data were derived mainly from national publications, FAO publications (Yearbooks on Forestry, Fishery, Production, Agroclimatology) and from the United Nations Energy Statistics Yearbook.

2. African Compendium of Environment Statistics:

8. This publication has selectively presented limited aspects of: agriculture and demographic data, land use, mineral production, energy balance, meteorological and greenhouse emission data. DISD is

aware that the diversity of data presented from year to year does not respond to perceived interest of the users and they are much environment related data rather than environment data.

9. One of the outcomes of the workshops held during the period is that improved provision of data by the National Statistical Offices could focus on environmental data (Annexe I). It will ensure that future issues of the African Compendium of Environment Statistics will contain much more "real" environment statistics and then meet the needs of users.

3. Other technical publications:

10. ECA/DISD has also published some background indicators on environmental and natural resources topics in other publications. Tables and graphs on land use, mineral resources production and price as well as energy balance for Africa covering a number of years, were included in the African Socio-economic Indicators and the Africa in figures publications.

B. Technical co-operation

1. Advisory services

11. Advisory services on the implementation of the 1993 System of National Accounts (SNA) were provided to the Government of Seychelles in the form of "on the job-training" for the NSO and the Ministry of Environment staff on the System of Integrated Environment and Economic Accounting. Further discussions regarding additional support in this field are underway.

2. International co-operation

12. ECA recently participated in the OECD one day meeting on Accounting for Environmental Depletion last year. Contacts have been made with the staff of OECD Statistics Directorate on the possibility of technical co-operation between OECD and ECA/African countries in the field of environment statistics.

3. Group training

13. A joint ECA/UNSD workshop on Environmental Statistics, Indicators and Accounting for African English-speaking countries, with the financial support of UNSD, was held in November 1997. The workshop was attended by twenty-two participants from eighteen member States and representatives of two Statistical Training Programme for Africa (STPA) centers. A similar workshop funded by the

Netherlands Government was conducted for French and Portuguese-speaking countries with the participation of twenty representatives from seventeen countries and one STPA center. The objectives of the two workshops were, on the one hand to train trainers and on the other hand to define regional strategies and priorities for the development of environment statistics.

14. The grant provided by the Netherlands Government was also used for the preparation of technical documents for the two workshops. They include country profiles prepared by national focal points (Annexe II List of countries) and a draft Framework for the collection of environment statistics in Africa prepared by a consultant.

15. The country profiles dealt with:

- a) Key environmental problems and issues in the country;
- b) Documentation of environmental information currently available and institutions actively involved in environmental data collection, processing and/or analysis;
- c) Important issues in the development of a system of collection, processing and dissemination of environment statistics;
- d) Overview of planned environment activities at the national level (completed and on-going activities)

16. The Framework proposed a matrix for generating environment statistics where the rows are priority environment issues or statistical topics adopted during the first workshop and the columns present the driving force indicators, the associated statistical variables/indicators and the response indicators (Annexe III).

17. In addition, several UNSD detailed publications were distributed to participants and all these technical documents were used in different sessions of the workshops.

18. The workshops adopted many recommendations and called upon ECA and donor agencies to help African countries in establishing/developing and strengthening national capabilities in the field of environment statistics by addressing conceptual, methodological and institutional aspects of the collection, compilation, analysis and interpretation of the natural and man-made environment.

19. Finally, under this category of activity, it should be mentioned that the ECA Food Security and Sustainable Development Division (FFSDD) conducted a seminar on Environmental and Natural Resource Accounting in October 1998, whose objective was to support the efforts of African Government to identify, capture and use resource rent for economic development effectively.

III. FUTURE ORIENTATION OF THE PROGRAMME OF WORK

1. The 2000-2001 work programme

20. Taking into account the human and financial resources available to the Division, it is planned to implement the following activities in the field of environment statistics:

- a) Printouts/diskettes on environment statistics;
- b) Technical publications;
 - i) African compendium on environment statistics ;
 - ii) Finalization of the draft Framework for collection of environment statistics in Africa ;
 - iii) Guidelines on environment statistics in Africa.
- c) Advisory services missions to countries, upon request, and data collection missions.

21. In order to produce the Framework and Guidelines publications and to implement some advisory services missions, the division plans to obtain specialized expertise through the services of consultants.

22. The proposed programme budget contains the allocation of the resources needed for consultants and travel for the entire Division. The implementation of these two outputs therefore depends of the priority area among the statistical activities.

2. Elements for an expanded programme on environment statistics up to 2006

23. In order to go beyond a short-term perspective for environment statistics in Africa, the Division is drafting a project document for presentation to donors to obtain funding from extra-budgetary sources which would allow to pursue activities beyond the modest scope of the regular programme budget. In addition to the request for funding an expert, the elements for this expanded programme up to 2006 would focus on capacity building, especially in the following areas:

- a) Providing for a south-south exchange of information and experiences with an aim to helping some countries to learn from other countries;
- b) Establishment of a core of environment indicators for which data will be collected;
- c) Development of Energy and Natural Resources data bases for Africa with presentation and training in Geographic Information System (GIS) software;
- d) Promoting and undertaking of the use of environment statistics for policy analysis and planning;

- e) Development of an integrated system of environment statistics in the framework of the 1993 SNA.

24. Since environment statistics activities are in their infancy in the region, it is envisaged that as a greater capacity is built up, the work programme will become more extensive and ambitious.

IV. CONCLUSION

25. ECA's effort will continue to assist African countries in integrating environment statistics into regular programmes of the National Statistical Services, thus adding a third element to the two classical areas demographic/social and economic statistics. The ultimate aim is to generate environment statistics for planning and monitoring the natural and man-made environment.

26. The availability of data varies considerably among African countries. In a few countries, environment statistics programmes could be tackled immediately. But in the majority of member States, the process of establishing environment statistics will, however, take longer and require that support for basic and advanced training as well as conceptual and data development assistance is provided.

SELECTED AFRICAN ENVIRONMENTAL DATA

Annexe I

- (a) Access to safe drinking water;
- (b) Access to infrastructure, including sewerage, waste collection, electricity;
- (c) Physical resource accounts including use of renewable resources;
- (d) Land with inherent soil constraint;
- (e) Urbanization;
- (f) Agricultural data on areas for important crops, yields etc...
- (g) Energy data;
- (h) Use of fertilizer, pesticides, biocides;
- (i) Details on flora, fauna and protected area;
- (j) Information on legal measures in countries as they relate to the environment.

AFRICAN COUNTRIES WITH COUNTRY PROFILE ON ENVIRONMENT STATISTICS BY SUB-REGION

Annexe II

English-speaking countries		French and Portuguese-speaking countries	
<u>NORTH AFRICA</u>		<u>AFRIQUE DU NORD</u>	
Egypt	X	Algeria	
Libyan Arab Jamahiriya		Mauritania	X
Sudan			
		Morocco	
		Tunisia	X
<u>WEST AFRICA</u>		<u>AFRIQUE DE L'OUEST</u>	
Gambia	X	Benin	X
Ghana	X		
Liberia		Burkina Faso	X
Nigeria	X	Cape Verde	
Sierra Leone		Côte d'Ivoire	
		Guinea Bissau	X
		Mali	X
		Niger	X
		Senegal	X
		Togo	
		ENSAE (1)	
<u>CENTRAL AFRICA</u>		<u>AFRIQUE CENTRALE</u>	
		Cameroun	X
		Central African Republic	
		Chad	X
		Congo	
		Equatorial Guinea	X
		Gabon	
		Sao Tome and Principe	X
<u>EAST AFRICA</u>		<u>AFRIQUE DE L'EST</u>	
Eritrea		Burundi	X
Ethiopia	X	Comoros	
Kenya	X	Democratic Republic of Congo	X
Seychelles	X	Djibouti	X
Somalia		Madagascar	
Tanzania United Rep. Of	X	Rwanda	X
Uganda	X		
ISAE (1)	X		
EASTC (1)			
<u>SOUTHERN AFRICA</u>		<u>AFRIQUE AUSTRALE</u>	
Botswana	X	Angola	X
Lesotho	X		
Malawi	X		
Mauritius	X		
Mozambique			
Namibia			
South Africa	X		
Swaziland			
Zambia	X		
Zimbabwe	X		
TOTAL	16	TOTAL	17

(1) STPA centers

CAN ENVIRONMENTAL STATISTICS MATRIX

III

Priority environmental issue or statistical topic	Driving force indicator	Associate statistical variables/indicators	Response indicator
Deforestation	<ul style="list-style-type: none"> Wood harvesting intensity Land clearance for farming Bushfires 	<ul style="list-style-type: none"> Forest loss/unit area Area of forest cover Number if bushfires Acreage of burnt area Change in regeneration of common species Humidity and soil moisture 	<ul style="list-style-type: none"> Managed forest area ratio Protected forest as a percent of total forest area Exportable species Reforestation rate Stumpage fee/price per timber Forest inventory
Desertification and drought	<ul style="list-style-type: none"> Fuel wood consumed per capita Population living below poverty line in dry land areas 	<ul style="list-style-type: none"> National monthly rainfall index Satellite derived vegetation index Land affected by desertification 	
Loss of biological diversity	<ul style="list-style-type: none"> Ecosystem risk index Rate of habitat loss Rate of species extinction 	<ul style="list-style-type: none"> Number of threatened species Number of extinct species Number of diminishing or declining habitats 	<ul style="list-style-type: none"> Protested area/total land Protected area/sensitive areas Ecosystem inventory Fauna and flora inventory
Soil erosion and degradation	<ul style="list-style-type: none"> Land use change Livestock per km² of semi arid lands Use of fertilizers Use of agricultural pesticide 	<ul style="list-style-type: none"> Arable land per capita Soil quality change: alkalinity, salinity, organic matter, erosion Surface cover d iron pans surface cover of rocks vigor of crop growth, appearance and frequency of indicator species, crop yields, hands affected by detertification 	<ul style="list-style-type: none"> Protected area as of total land area
Water quality and access	<ul style="list-style-type: none"> Annual withdrawals of ground and surface water Domestic consumption of water per capita Industrial, agricultural water user per GDP <p>Industrial, agricultural and municipal discharges directly into freshwater bodies</p>	<ul style="list-style-type: none"> Ground water reserves Access to safe water Water quality index by fresh water bodies Acidification of fresh water bodies Concentration of fecal coliform in fresh water bodies Concentration of lead mercury and pesticides in fresh water bodies 	<ul style="list-style-type: none"> Percentage of pop. with sanitary services Waste water treatment total and by type of treatment (% of population served) Access to safe drinking water (% of pop. served) Density of hydrological network

Priority environmental issue or statistical topic	Driving force indicator	Associate statistical variable/indicators	Response indicator
Air quality	<ul style="list-style-type: none"> • Pollution load • Emission of Co₂ So₂ and No₂ 	<ul style="list-style-type: none"> • Ambient concentrations of Co₂, So₂, No₂, O₂ and suspended particles or TSP in urban areas • Air quality index • Weather and climate conditions • Environmental, related diseases 	<ul style="list-style-type: none"> • Expenditure on air pollution abatement • Reduction in the consumption of substances and emissions
Human settlements and population growth	<ul style="list-style-type: none"> • Rate of urban population growth • Percentage of population in urban area 	<ul style="list-style-type: none"> • Percentage of total population in urban area • Area and pop. in marginal settlements • Stock of shelter and infrastructure • Shelter index • Housing price to income ratio • Percentage of pop. with sanitary services • Floor space per person • Room occupancy rate 	<ul style="list-style-type: none"> • Housing expenditure per GNP • Infrastructure expenditure per capita
Coastal erosion and degradation	<ul style="list-style-type: none"> • Population growth in coastal areas • Discharges of oil into coastal waters • Release of nitrogen & phosphorous to coastal waters • Coral mining along the coast • Sand winning along the coast • Beach development i.e. buildings 	<ul style="list-style-type: none"> • Maximum sustained yield for fisheries • Algae index • Beach profiles • Loading of Nitrogen and phosphates in coastal waters • Size of drowned beaches • Coastal settlements endangered or flooded • Rate of immigration into the coastal zone 	<ul style="list-style-type: none"> • Expenditure or coastal protection or defense wall • Expenditure on coastal zone management • Coastal zone management plans

Priority environmental issue or statistical topic	Driving force indicator	Associated statistical variables/indicators	Response indicator
Fish stock depletion	<ul style="list-style-type: none"> • Catches of marine species • Irrigate fishing methods, the use of smaller mesh, chemicals and explosives • Industrial discharges • Agricultural pollution • Domestic discharges 	<ul style="list-style-type: none"> • Changes in fish catch • Size of corals remaining • Rate of petroleum hydrocarbon pollution • Coliform bacteria levels • Size and type of share flora and fauna • Type of trace elements • Dissolved oxygen • Acidity • Meteorological indices • Sediment budget 	<ul style="list-style-type: none"> • Expenditure on fisheries research • Expenditure on environmental education of the fisheries communities • Establishment of standards • Establishment of wear quality guideline
Range land degradation	<ul style="list-style-type: none"> • Overstocking • Bushburing • Destruction of tree cover • Increasing aridity • Vegetation changes • Climatic impacts 	<ul style="list-style-type: none"> • Livestock density/unit area • Frequency/density of palatable species • Frequency/density of toxic species • Change in regeneration of common species 	<ul style="list-style-type: none"> • Management plan • Stocks control measures
Waste management	<ul style="list-style-type: none"> • Generation of municipal waste • Generation of industrial wastes • Generation of hazardous waste • Imports and exports of hazardous wastes • Generation of radioactive waste 	<ul style="list-style-type: none"> • Waste disposal/waste generation • % of pop. with waste disposal system • Area of land contaminated by toxic waste • Chemically induced acute poisonings • Volume and type of waste generated in • Volume and type of waste disposal by type of waste 	<ul style="list-style-type: none"> • Expenditure on waste collection and treatment • Waste recycling systems and facilities • Number of chemicals banned or severely restricted • Expenditure on hazardous waste management • Waste reuse

Priority environmental issue or statistical topic	Driving force indicator	Associated statistical variables/indicators	Response indicator
Wetlands degradation	<ul style="list-style-type: none"> • Clearing and drainage for agriculture • Mangrove harvesting for fuelwood • Dam construction • Irrigation development • Draining for housing and industrial construction • Industrial, Agriculture and domestic discharges 	<ul style="list-style-type: none"> • Hydrological indicators: water levels inflow/outflow rates, sediment transport • Limnological indicators PH, transparency, colour conductivity, dissolved oxygen, BOD, COD • Biological 	<ul style="list-style-type: none"> • Cost of protection and rehabilitation
Climate change and protection of the atmospheres	<ul style="list-style-type: none"> • Emission of green house gasses • Emission of sulphur oxides So₂ • Emission of nitrogen oxides No₃ • Consumption of ozone depleting substances • Generation of industrial and municipal solid waste • House hold waste disposal per capita • Cavanna or bush burning 	<ul style="list-style-type: none"> • Ambient concentration of pollutants in urban areas • Air quality index • Weather and climate conditions • Temperature, rainfall humidity, soil temperature, evaporation, radiation sunshine hours, sea level, flooding of coastline and beaches 	<ul style="list-style-type: none"> • Expenditure on air pollution abatement • Reduction in the consumption of substances and emissions
Environmental education and public awareness	<ul style="list-style-type: none"> • Rate of change of school age pop. • Primary sch. enrollment ratio (gross/net) • Secondary sch. enrollment ration (gross/net) • Adult literacy rate 	<ul style="list-style-type: none"> • Children reaching grades of primary education • School life expectancy • Difference between male and female sch. enrollment ratios • Women per hundred men in labour force 	<ul style="list-style-type: none"> • GDP spent on education

Priority environmental issue or statistical topic	Driving force indicator	Associated statistical variables/indicators	• Response indicator
Noise level in urban areas	<ul style="list-style-type: none"> • Increase in industrial and commercial activities • Absence of noise level standards • Indiscriminate location of industrial and commercial activities • Poor road networks • Excessive pop. concentrations • Urbanization • Over concentration of activities in few areas • Disorganized land use plan or absence of zoning plans 	<ul style="list-style-type: none"> • Noise maps (in decibels) • Noise types industrial, commercial and residential • Number of registered vehicles • Number of noises making centers • Data on traffic flows 	<ul style="list-style-type: none"> • Noise standards • Production of land use and zoning plans • Development control
Bushfires	<ul style="list-style-type: none"> • Land clearing for farming • Hunting for game • Cigarette butt • Fresh fodder for cattle • Honey tapping or harvesting • Religious reasons • Arsonist • Lightening 	<p>Percentage of land burnt</p> <ul style="list-style-type: none"> • Cost of fauna and flora destroyed • Amount of carbon emission • Total biodiversity destroyed • Cost of standing crops and stored cereals • Loss of lives (number) • Cost of property destroyed • Cost of afforestation • Soil fertility of impacted areas • Alkalinity, salinity, organic matter, surface cover of iron pans, vigour of plant or crop growth 	<ul style="list-style-type: none"> • Expenditure on afforestation • Expenditure on environmental; education