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COUNTRY PRESENTATION

Title

Summary Paper on Environment Statistics:
Liberia

Presenters

Francis F. Wreh
Department of Statistics
Ministry of Planning and Economic Affairs (MPEA)

And

James E. Coleman
Environmental Protection Agency (EPA)

Country

Liberia

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I. Introduction

Liberia is a small country located on the south-western bulge of West Africa, bordered by Sierra Leone, Guinea, the Ivory Coast and the Atlantic Ocean. It covers an area of 111,370 km², of which 15,050 km² is water and the remaining 96,320 km² is land. The topography is characterized by flat coastal lowlands, inland rolling hills and mountain ranges in the far north, and the climate is wet and humid. It lies within the upper Guinean Forest region and prior to the impact of man was almost entirely covered by tropical moist forest. The country is endowed with many natural resources, including iron ore, timber, rubber, gold and diamond.

Environment statistics and its corresponding methodological aspects are emerging concerns of Liberia's environmental management. Until recently, no single entity was responsible for environmental governance and environmental information was fragmented among various line ministries and agencies, as well as international organizations and institutions that had a stake in the Liberian environment. The main Government entity responsible for collecting and disseminating statistical information is the Ministry of Planning and Economic Affairs (MPEA), but its mandate has been limited to the compilation and dissemination of demographic and socio-economic data.

The need for the development of a collaborative institutional framework for the collection of Environment Statistics in Liberia can never be overemphasized, especially in this post-conflict reconstruction period in the country's history. Notwithstanding, the development of Environment Statistics in Liberia is promising, especially with the establishment of the Environmental Protection Agency of Liberia (2003) that has the mandate to coordinate, monitor, supervise and consult on all activities in the protection of the environment, as well as the creation of the Liberian Institute for Statistics and Geo-Information Services (2004).

II. Situation of Environment Statistics in Liberia

Core Environment Statistics and its corresponding methodological issues are emerging concerns for sustainable development in Liberia, especially during this post-war national reconstruction period in the country's history. With the return of peace to the country since the inception of civil war in late 1989 that lasted for more than a decade, the Government has begun putting in place measures that will ensure the proper management of the country's rich natural resources, hence the environment in general especially to foster peace and sustainable development.

The responsibility for harnessing environmental statistics has not been the function of a particular entity. Consequently, environmental information has been decentralized among the several line ministries and agencies that have a stake in environmental governance. Principal among these have been the Ministry of Planning and Economic Affairs (MPEA) which compiles demographic and socio-economic data, Forestry Development Authority (FDA) and the Environmental Protection Agency (EPA) – formally the National Environmental Commission of Liberia (NECOLIB).

The Environmental Protection Agency of Liberia (EPA) was recently established through an Act of National Legislature (2003) and a key priority is to now strengthen policies and technical linkages with other ministries, agencies, as well as other environmental non-governmental organizations, especially through a collaborative institutional framework for the development of Environment Statistics for Liberia. Also, once provided with sufficient capacity in terms of administration, staff and equipment, the EPA will act as the principal authority for the inter-sectoral management of the environment and will cooperate, monitor, supervise and consult with relevant stakeholders in the protection of the environment and sustainable use of natural resources.

The development of Environment Statistics in Liberia is promising. Recent efforts in the area of environmental protection and management include the Compilation of The State of the Environment Report (NECOLIB, 2002). Hence, this initial effort has thus laid the foundation for the development of Environment Statistics for Liberia. Moreover, under the Environmental

Protection Agency Act, environmental units are to be created in relevant sector ministries that will serve as sectoral contact units for the EPA on environmental matters.

III. Availability and Sources of Environmental Data

At the moment, there is no particular compilation and publication of environment statistics in Liberia, although some socio-economic and demographic data are available. Some environmental data are also available on certain thematic areas such as Atmosphere, Biodiversity, Coastal and Marine Environment, Forests, Fresh Water, Land and Urban Environment. Moreover, available environmental information is partial and fragmented among various line ministries and agencies that prior to the establishment of the Environmental Protection Agency, also assumed responsibility for environmental governance. Some of these entities include, the Ministry of Planning and Economic Affairs (MPEA) - the main statistical entity in Liberia through its National Statistics Division. The MPEA Compiles and disseminates demographic and socio-economic data obtained from the censuses and surveys that it conducts periodically, such as the Population and Housing Census, the Household Income and Expenditure Survey, and the Annual Surveys of Business Establishments.

The Ministry of Lands, Mines and Energy regulates the water sector (surface and ground) of the country, and collects information and conducts research on hydrological and meteorological conditions in the country. The Ministry of Agriculture manages and supervises agriculture programme (subsistence farming and pesticide application).

Other government institutions include the ministry Transport, Forestry Development Authority, Bureau of Maritime Affairs, Liberia Water and Sewer Corporation, Liberia Petroleum Refining Corporation, National Port Authority, etc. In addition, environmental information on Liberia can be acquired from international organizations and institutions working in Liberia and abroad such as Fauna and Flora International, Africa Development Bank, Humanitarian International Committee, etc.

IV. Overview of Socio-economic and Environmental Considerations

Table 1: Liberia: Socio-economic and forest Data

Land area	96,940 km ²
Population (1989)	2,400,000
Urban Percentage	41 % (1987)
National Population Growth Rate	3.3%/annum
Rural population growth rate	1.7%/annum
High Forest Cover	42,000 km ² (1989)
Percentage High forest cover	43% (1989)
Deforestation Rate	2%/annum (1980s)
Forest Tax Revenues	US\$ 20,000,000 (1989)
Timber Production	1,000,000 cu.m. (1989)
Timber Export Value	US\$ 200,000,000 (1989)
Bush meat Production (commercial)	45,000 tonnes (1989/90)
Bush meat Value (commercial)	US\$ 24,000,000 (1989/90)

Source: Mayers 1991

Liberia is endowed with a wealth of natural resources including iron ore, gold and diamonds, which if wisely exploited could contribute significantly to the country's sustainable development. However, uncontrolled exploitation of these resources has rigorously constrained the potential for attaining this objective. Additionally, the recently ended civil war has worsened the country's long-term environmental problem.

The main causes of environmental degradation in Liberia include shifting cultivation, uncontrolled logging, fuel wood harvesting, encroachment by human settlement, illicit fishing and unsustainable mineral and sand mining activities.

Based on the State of the Environment Report for Liberia (NECOLIB/EPA, 2002), the following overview of environmental thematic areas is hereby presented:

A. Atmosphere

Climate, Temperature and Rainfall: The climate of Liberia is generally determined by the equatorial position and distribution of high and low pressure belts over the African continent and Atlantic Ocean. Because of this position and the moderating influence of the nearby Atlantic Ocean, the country has a fairly warm temperature throughout the year with very high humidity. The average annual temperatures of Liberia range from 75°F to 85°F (24°C to 30°C) in the coastal areas, while in the interior they are between 80°F to 90°F (24°C to 30°C). The highest temperatures occur between January and March and the lowest temperatures are usually recorded during the months of August and September. These low temperatures are mainly caused by the large amount of cloud cover, which is common over much of coastal West Africa (NECOLIB/EPA, 2002).

Based on the prevailing precipitation, two seasons are differentiated – rainy and dry seasons. The rainy season lasts from late April to October. The months of heaviest rainfall are June, July and September. The dry season begins in November and ends in April.

The average annual rainfall near the coast is estimated at 4770mm, while toward the interior, the amount decreases to an average annual amount of 2080mm. There is a high average annual rainfall near the coast because the coastline runs approximately from southeast to northwest and at right angles to the prevailing southwesterly rain bearing winds. As the maritime air reaches the coast, it is forced to rise and once it cools condensation takes place, hence, the extremely heavy rainfall near the coast.

Information on climate in Liberia is rather incomplete and some observations are considered unreliable. Unfortunately, all meteorological stations within the country were damaged during the recently ended civil war.

Table 2a: Rainfall in Liberia (Monthly mean and Annual mean)

NO.	STATIONS	JANUARY		JULY		ANNUAL	
		MM	INCH	MM	INCH	MM	INCH
1.	Robertssport	30	1.2	726	28.6	48.22	189.9
2.	Monrovia	43	1.7	928	365	4793	188.7
3.	Buchanan	33	1.3	770	30.3	4096	161.3
4.	Harbel	45	1.8	599	23.6	3376	132.9
5.	Robertsfield	43	1.7	719	28.0	4793	188.7
6.	Greenville	86	3.4	386	15.2	3970	156.3
7.	Harper	149	5.9	147	5.8	3047	119.9
8.	Bong Mines	23	0.9	327	12.8	2732	103.6
9.	Belle Yella	10	0.4	339	13.4	2238	88.1
10.	Salala	26	1.0	431	16.9	2370	93.3
11.	Bomi Hills	26	1.0	689	27.1	3255	128.2
12.	Bopolo	23	0.9	552	21.7	2674	105.3
13.	Goodrich	30	1.2	639	25.2	3442	135.5
14.	Suacoco	18	0.7	305	12.2	1910	75.2
15.	Foya	29	1.1	599	23.6	2975	117.1
16.	Zwedru	28	1.1	327	12.9	1981	78.0
17.	Pine Town	59	2.3	395	16.6	2553	100.5
18.	Ganta	17	0.7	569	14.5	2055	80.9
19.	Tappita	27	1.1	559	15.1	4835	72.2
20.	Mt. Nimba	35	1.4	604	23.8	3565	124.6
21.	Sanniquellie	20	0.8	483	19.0	2445	96.2
22.	Zorzor	26	1.0	439	17.3	2029	82.24
23.	Kolahun	8	0.5	508	20.0	2796	110.1
24.	Voinjama	18	0.7	452	17.8	3015	118.7

Source: FRG, statistic – Bundesamt Wiesbaden, 1973, P. 62

W. Schulze: A New Geography of Liberia, 1973, P. 201

Table 2b: Temperatures in Liberia (Monthly means and Annual means)

		JANUARY		JULY		Annual Yearly	
NO.	STATION	°C	°F	°C	°F	°C	°F
1.	Monrovia	26.8	80.2	25.2	77.4	26.0	78.8
2.	Harbel	26.2	79.2	24.2	75.9	25.8	78.4
3.	Robertsfield	26.8	80.2	25.2	77.4	26.0	78.8
4.	Greenville	25.1	77.2	24.9	76.8	25.2	77.4
5.	Bong Mines	26.2	79.2	25.1	77.2	26.5	79.7
6.	Bomi Hills	26.0	78.8	24.0	75.2	26.2	79.2
7.	Salala	27.0	80.6	25.6	78.1	27.0	80.6
8.	Zwedru	26.4	79.5	25.6	78.1	26.9	80.4
9.	Ganta	24.4	75.9	25.6	78.1	26.0	78.8
10.	Tappita	25.0	77.0	25.4	77.7	26.0	78.8
11.	Mt. Nimba	25.0	77.0	18.1	64.6	19.6	67.3
12.	Kolahun	21.4	70.5	23.9	45.0	23.8	74.8
13.	Voinjama	24.5	76.1	24.4	75.9	24.7	76.5

Source: FRG: Statistisches Bundesamt Wiesbaden laen derhericht.

Liberia 1973 P. 62 and W. Schelze, Liberia – 1975

B. Biodiversity

Liberia's plant and animal life is remarkably diverse, with extremely high rate of endemism. Recent estimates of the Forestry Development Authority (FDA, 1999) shows that the flora of the country includes over 2000 species of flowering plants of which 230 are valuable timber tree species. Also, the country is home to approximately 125 mammal species, 590 bird species, 162 native fish species, 74 known reptiles and amphibians and over 1,000 insect species. There are 59 endemic plant species, 13 bird species, as well as several mammals, which include the pygmy hippopotamus, Liberian mongoose, Diana monkey, etc.

The demand for bush meat is a major threat to wildlife species loss in Liberia. It is estimated that about 100,000 tons of bush meat is consumed and traded annually (FDA, 1991). This trend amounts to approximately US\$ 75 million per annum.

Due to the more than 14 years of civil conflict, almost all of the country's infrastructures were destroyed, including its main electricity/energy producing plant, the Liberia Electricity Corporation (LEC). Consequently, Charcoal and fuel wood is currently the main source of energy in the country, which account for over 70 percent of the annual energy consumption. Although electricity was intermittently produced by LEC in 1998, it was estimated that 14,807 kilogram of charcoal was produced. However, in 1999, production rose to about 255,624 kilogram, representing an increase of 1,626.3 percent.

Because of the country's high dependence on charcoal and fuel wood for energy, many areas of the country are experiencing deforestation. Studies have indicated an annual deforestation rate of 1 percent (37,000 hectares per annum).

C. Marine and Coastal Environment

The coastline of Liberia is about 350 miles (560 km²) and about 58 percent of the country's population lives along this coast. With an area of continental shelf of 14,894 km² and territorial sea of up to 159,200 km², the coastline produces 7,616 metric tones of fish and 126 metric tones of molluscs and crustaceans, annually (UNEP, 2004).

The fishery sub-sector provides income through employment opportunity for a segment of the population in Liberia. This sub-sector accounts for about 15 percent of the GDP of the country. About 11,693 metric tons were exported in 1986, compared to 1990 (during the out break of the Liberian civil crisis) when only 7,290 metric tons were exported. In 1999 there was about 4,400 artisanal fishermen and about five commercial fishing companies operating in the country (ENECOLIB/EPA, 2002).

An acoustic survey of the country marine resources indicated a total biomass (total fish resources) of about 800,000 metric tons consisting of pelagic and demersal species (Ibid).

D. Forests

Liberia lies within the Upper Guinea Forest region. The majority of the remaining Upper Guinea Forest is in Liberia, which also contains the two largest remaining forest blocks. Latest inventory estimates the total forest area of the country at about 4.8 million hectares or about 48 percent of the total area of the country (NECOLIB/EPA, 2002). The remaining portions of the Upper Guinea forest are unevenly scattered in fragments across the region in Côte d'Ivoire (28 percent), Ghana (16 percent), Guinea (8 percent), Sierra Leone (5 percent) and Togo (1 percent) – (UNEP, 2004).

E. Fresh Water Resources

Liberia possesses abundant surface water and six principal watersheds. These basins drain about 65.5 percent of the country (UNEP, 2004).

F. Land

The total land area of Liberia is about 111,370 km², of which 96,320 km² is land and 15,050 km² is water (NECOLIB/EPA, 2002). Out of a total landmass of some 9.8 million hectares, 4.9 million hectares or 50 percent is arable. About 600,000 – 800,000 hectares of arable land is permanently under crop cultivation (Ibid).

G. Urban Environment

In Liberia, settlement pattern has a high urban bias. The urban percentage of the total population of Liberia is estimated at 41% (FDA, 1991). The rapid growth of the population of the Capital City Monrovia and other urban centers in the country is merely based on migration due to the absence of basic infrastructures and social services in rural areas such as good road network public amenities, lack of security, etc.

In 1974 about 3 out of every 10 persons in Liberia lived in Montserrado County where the capital is located; in 1974 29 percent of the population lived in urban areas; between 1962 and 1974 the urban population of Liberia increased by 239,000 (NECOLIB/EPA, 2003).

V. Constraints in the Collection of Environment statistics

The collection of environment statistics in Liberia is constrained by lack of objective environmental information, collaborative institutional framework for data collection, standardized methodology, data collection capabilities, data aggregation, derived indicators, trained personnel, among others.

Environmental information is decentralized among various line ministries and agencies, as well as other entities that either exploit natural resources or have a stake in environmental governance. Most of these entities collect environmental data relevant for their own consumption based on their own methodology for collection, etc. Moreover, environmental data collected by these entities are not properly stored. Unfortunately, the possibility of compiling some of said environmental information based on present day experience is slim, as the 14-year civil war that the country underwent left it in total ruins.

Environment statistics is a multi-disciplinary subject and a relatively new phenomenon in the technical context of the country's history. As a result, statisticians working at both the National Statistical Office (NSO) and other line government ministries and agencies are not fully familiar with this emerging concept and its associated ramifications.

VI. Future Plan for Environment Statistics

The post-war national reconstruction plan of Liberia hinges on sustainable development as well as environmental protection and management. Therefore, the need to develop a framework for the development of environment statistics cannot be overemphasized. This framework will serve

as the basis for the collection and dissemination of environmental information that will promote sustainable development.

When a program of environment statistics is launched, statisticians usually choose a relatively simple type of framework as the basis for their program. Since the country is just embarking on a program of environment statistics, it is obvious that the pressure-state-response (PSR) approach recommended by the United Nations will be adopted. Notwithstanding, this by no means excludes the adoption and use of other types of framework as the scope of future efforts expands.

The creation of the Liberia Institute for Statistics and Geo-Information Service (LISGIS) by the Government of Liberia to coordinate the collection and storage of environment statistics in collaboration with other relevant stakeholders in the country has provided an opportunity for the publication/development of a national compendium. This will give an insight regarding the state of the local environment.

VII. Conclusion

In order to adequately contribute to the Africa Environment Information Network (AEIN) framework for strengthening data management and sharing at the national level to support integrated environment assessment and reporting, as well as providing input into the regional reporting processes to produce the African Environment Outlook (AEO) report, the need for first developing Environment Statistics for Liberia through a collaborative institutional framework for data collection can never be greater.

VIII. Reference