

## Chapter 3:

### Indicators - Measuring the Progress of the Africa Water Vision 2025

The Africa Water Vision 2025 was formulated as a guideline for overcoming pervasive underdevelopment through rational and integrated development and management of water resources for sustainable development whilst maintaining the integrity of the ecosystems. In order to quantitatively measure the progress, a number of indicators were selected along the methodologies developed for the World Water Development Report (WWDR). These indicators reflect the socio-economic drivers for the implementation of Integrated Water Resources Management (IWRM) principles and the goals of the Africa Water Vision. These two components would then be merged to formulate the first edition of the African Water Development Report (AWDR), (ECA, 2002).

#### Identification and development of indicators

Indicators are needed:

- To present the complex phenomenon in meaningful, understandable and comparable objective numbers to decision-makers and the public; and
- To establish objective benchmarks to analyze changes over time and space.

#### Approaches

##### Bottom up

Logic framework: From data to variable to parameter to indicator.

It is based on the information pyramid, aggregation of available primary data into hierarchical levels, using intuitive and mathematical tools. Mostly used in data rich situations.

Weaknesses: Reductionist approach leading to reduction of internal variability and loss of relational issues to other resources and processes.

##### Top down

Logic framework: From vision to themes to indicators in terms of the cause-effect approach and the system approach.

It is based on the log frame, which is a programme management tool serving purposes in both design and monitoring within the Programme Cycle Management (PCM).

**A generalized log frame approach consists of:**

- Goal – a real world attainable outcome;
- Purpose – designed actions around interventions; and
- Output – backed by a number of activities.

## **Methodological approaches**

**1. Systems approach:** All systems depend, to some degree, on the resource providing capacities and waste absorbing capacities of their environment.

**Applications to sustainability indicators**

- Human systems – social and individual development and governance
- Support systems – economic and infrastructure
- Natural systems – resources and environment

**2. Cause and effect approach:** The most widely used approach. First conceptual framework called:

Pressure – State – Response (P-S-R) framework (OECD, 1994)

- Enabled trade-offs; and
- Link between environmental, economic and social indicators.

**Weakness:** Often fails to take entire system into consideration and lacks explicit linkage to policy.

**Other cause-effect classifications based on P-S-R framework**

- Driving force-Pressure-State-Response (D-P-S-I-R) framework, used by the European Environment Agency (EEA), the United Nations Environment Programme (UNEP), and the World Resources Institute (WRI);
- Driving force-State-Response (D-S-R) framework, used by the United Nations Commission on Sustainable Development (UNCSD) for Agenda 21 Indicators;
- Pressure-State-Impact-Response (P-S-I-R) framework; and
- Driving force-Pressure-State-Exposure-Effects-Action (D-P-S-E-E-A) framework used in the

Burden of Disease (BoD) studies of the World Health Organization (WHO), the United Nations Children's Fund (UNICEF) and the Water Supply and Sanitation Collaborative Council (WSSCC).

Box 3.1: Criteria for the Selection of Indicators

**Scientific requirements**

- Robust, well-founded basis in scientific knowledge;
- Representativeness, describing the state or quality of an issue or subject, giving significant and precise information;
- Clearly and consistently defined so as to be unambiguous or lend themselves to various interpretations, or to give inconsistent results in different situations;
- Be developed within an agreed upon conceptual and operational framework;
- Quantitative expression;
- Be sensitive insofar as that a small change to be measured should result in a measured change in the indicator;
- Anticipatory, early warning, capable of an indication of degradation before serious harm has occurred;
- Stability, low natural variability in order to separate stress caused effects from random fluctuations;
- Specific for a certain stress or effect;
- Broadly applicable to many stressors and sites, usable in different regions;
- Uncertainties need to be specified; and
- Transformable (intelligent).

**Policy requirements**

- Tailored to the needs of the primary users;
- Have ownership by users;
- Problem has to be manageable, thus cause-effect chain of indicator has to be known in order to enable tackling of the problem;
- Having a target or threshold against which to compare an explicit scale ranging from undesirable states to desirable states (along with specific weightings) in order to assess the significance of the information;
- Recording either changes in the means recommended by policy or changes in the development impact attributable to policy;
- Lend itself to be linked to models, forecasting and information systems;
- Simple, easily interpretable and appealing to society in order to ease communication between policy-makers and society;
- Matching with national and international policy plans and indicating the progress of policy;
- Availability of historical data in order to show trends over time;
- Data should be readily collectable, thereby lowering the technical and collection costs; and
- Normalized to make things comparable and provide a basis for regional, national and international comparison.

Collected from: Report WWDR Indicator Workshop, Hoon et al., 1997, Van Harten 1995, De Zwart 1995, Hendriks 1995 OECD, Kuik and Verbruggen 1991, Liverman et al. 1998.

Table 3.1: Overview of a Number of Indicators, their Aims and the Correct Spatial Scale of their Use

Indicator	Information provided	Aim	Spatial scale
Gross National Product (GNP)	Economic activity per country	Comparison of economic activity between countries	Global
Water Stress Index (WSI)	Percentage of water demand that cannot be satisfied without taking measures	Indication of areas suffering from water stress	Low spatial scale: grid cell or watershed
Water Poverty Index (WPI)	Index based on the components resource availability, access to water, capacity of people to manage water, use of water, environment	Providing information on water and poverty related issues	Different scales possible depending on the aim: - communities and regions for comparison within a country - countries for comparison on a global scale
Indicator species	Presence or abundance of the species	Indication of the ecosystem quality	The scale of one ecosystem or comparable ecosystems located in same climate range

Source: WWDR, UNESCO, 2003

Table 3.2: List of Minimum Significant Indicators Selected for the First Edition of AWDR

Challenge Areas	Indicators
Drivers	<ul style="list-style-type: none"> <li>• Human Poverty Index: 5 indicators</li> <li>• Incidence of water-related diseases</li> <li>• Population figures/growth rates</li> <li>• Internal renewable water resources with a country</li> <li>• Withdrawals: % of total annual renewable freshwater</li> <li>• Water scarcity: proportion of people affected</li> <li>• Water shortages: proportion of people affected today</li> <li>• Proportion of people without minimum drinking water</li> <li>• Trans-boundary rivers: % of population dependent on</li> <li>• Polluted water: % of population exposed to pollution indicators like coliforms, industrial substances, acid, heavy metals, nitrates, sediments, salinization, pesticides</li> <li>• Natural disasters: deaths from water-related causes</li> <li>• Climate change: effect on water scarcity</li> </ul>
Meeting basic needs	<ul style="list-style-type: none"> <li>• Actual and total water supply coverage (urban, rural disparities)</li> <li>• Actual and total sanitation coverage (urban, rural disparities)</li> <li>• Percentage or number of people unserved with basic sanitation</li> <li>• Percent or number of people unserved with improved drinking water and extension of piped water supply</li> <li>• Incidence of water-related diseases</li> <li>• Investment in drinking water supply and sanitation</li> <li>• % of Health Impact Assessment (HIA) of water resources development and compliance with HIA recommendations</li> </ul>

<p>Water for cities</p>	<ul style="list-style-type: none"> <li>• Growth of mega-cities</li> <li>• Proportion of urban population with access to improved water supply and sanitation</li> <li>• Water supply: access to “improved” water supply:- % for different types (house connection, yard tap, public tap, unserved)</li> <li>• Water supply cost per litre</li> <li>• Water supply: unaccounted for water- % of distribution input</li> <li>• Water consumption levels: Domestic: litres per capita per day, water metre tariff (punitive structure aimed at reducing undue consumption)</li> <li>• Type of water source (ground water, river, mix)</li> <li>• Industry &amp; commercial consumption: m<sup>3</sup> per day</li> <li>• Under-five child mortality rates: death per 1000 live births</li> <li>• Children &lt; 5yrs: diarrhoeal diseases linked to inadequate water and sanitation</li> <li>• Water source (river) distance from demand center: &gt; 8 km, inter-basin transfer: %</li> </ul>
<p>Securing food supply</p>	<ul style="list-style-type: none"> <li>• Average food price</li> <li>• Average per capita food consumption (country and regions): show breakdown into cereals, oil crops, livestock and fish</li> <li>• Irrigated area versus total arable land in the country</li> <li>• Agricultural water use by country</li> <li>• Average grain yield</li> <li>• Consumption of livestock products (regions and countries)</li> <li>• Fish consumption (marine, inland and aquaculture for whole country)</li> <li>• Water use for irrigation (net and gross)</li> <li>• Internal and external investment sources for irrigation and drainage</li> <li>• Food imports/exports</li> </ul>
<p>Water and ecosystem</p>	<ul style="list-style-type: none"> <li>• Land converted to agriculture</li> <li>• Area of wetland drained</li> <li>• Hydrological indicators (flow etc.)</li> <li>• Emissions of water pollutants by sector</li> <li>• Compliance with water quality standards for key pollutants</li> <li>• Number or presence/absence of non-native (alien) species</li> <li>• Rapid Biodiversity Inventory- Conservation International/Field museum AquaRAP</li> <li>• Numbers and proportion of threatened species</li> <li>• Commercial and other fisheries catch</li> <li>• Food production trends</li> </ul>
<p>Water and industry</p>	<ul style="list-style-type: none"> <li>• Industrial use per capita by total developed water</li> <li>• Efficiency/productivity (output per m<sup>3</sup>)</li> <li>• Pollution (limited available data)</li> </ul>
<p>Water and Energy</p>	<ul style="list-style-type: none"> <li>• Distribution of households with access to electricity (rural, urban)</li> <li>• Total electricity production and sources</li> <li>• Cost per unit of electricity</li> <li>• Hydroelectricity (potential and developed capacity)</li> <li>• Efficiency/productivity of hydro power plant (output per m<sup>3</sup>)</li> <li>• Pollution (limited available data)</li> </ul>

Sharing water	<ul style="list-style-type: none"> <li>• Dependence of countries water resources on inflows from neighbouring countries (inflow as ratio of total water availability)</li> <li>• Number of international basins</li> <li>• Number of treaties/cooperative events for international rivers</li> <li>• Shared aquifers- number/resource volume/conflicts relating to changes that might suggest international basins where there is a requirement for greater co-operation. Indicators of these types of changes are:             <ol style="list-style-type: none"> <li>i. Newly internationalized basins</li> <li>ii. Basins with unilateral projects and lack of institutional capacity (treaties/bodies/ positive relations)</li> <li>iii. International basins where non-water-related hostilities exist between states</li> </ol> </li> <li>• Proportion of water use by industry, agriculture and domestic sector</li> </ul>
Managing risks	<ul style="list-style-type: none"> <li>• List of severe natural disasters since 1994</li> <li>• Losses in human life (number per year)</li> <li>• Losses in real and relative social and economic values (total losses, % of GNP, growth, investments and development benefits)</li> <li>• Population exposed to water-related risk (number of people per year, income groups)</li> <li>• Number of people living within 100-year flood zone. Vulnerability map based on the proportion of land within 1 km of river with slope of less than 1 degree</li> <li>• Legal and institutional provisions for risk-based management (established /not established)</li> <li>• Budget allocation for water risk mitigation (total and % of total budget/yr)</li> <li>• Risk reduction and preparedness action plans formulated (% of total number of countries)</li> </ul>
Valuing water	<ul style="list-style-type: none"> <li>• Annual investment in water for agriculture, water supply and sanitation and environment &amp; industry</li> <li>• Sources of investment funds</li> <li>• Level of cost recovery for water supplies for agriculture and rural water supplies</li> <li>• Level of cost recovery for water supplies for urban water supplies</li> <li>• Costs per litre of urban and rural water supplies</li> <li>• Price of water charged to farmers for irrigation</li> <li>• Comparison of the price of water from the public utilities and informal water vendors.</li> </ul>
Governing water	<ul style="list-style-type: none"> <li>• Existence of institutions (water resources authorities) responsible for management (including issuing abstraction and discharge licences), which are independent of water users. Percentage of land area covered by such institutions</li> <li>• Number of water authorities and average area covered by each</li> <li>• Existence of water quality standards, for effluent discharges, minimum river water quality targets</li> <li>• Numbers of instances when water service providers experience a raw water shortage</li> <li>• Existence of legislation advocating Dublin principles</li> <li>• Institutional strengthening and reform since 1992</li> </ul>
Ensuring the knowledge base	<ul style="list-style-type: none"> <li>• Gross primary school enrolment</li> <li>• Illiteracy rate</li> <li>• Density of hydrological monitoring stations by river basin and national</li> <li>• Research and development expenditure</li> <li>• Number of television sets and radio receivers per 1000 people</li> <li>• Number of telephone lines per head</li> <li>• Inventory of water-related databases</li> </ul>

Source: ECA, 2002; AWDR National Reports, 2003.

## Logical framework (draft) of the GWP used to prepare the Framework for Action of the World Water Vision 21

### Intervention logic

- Goal: Economic well being and social development under environmental sustainability and regeneration improved.
- Purpose: Global water security provided through efficient, equitable and sustainable management and use of water.

### Outputs

- Political will to mobilize people and resources secured;
- Effective water governance for IWRM realized;
- Effective water wisdom generated;
- Solutions to urgent water priorities prepared: protecting the resource, enhancing crop productivity per drop, improving sanitation, urban upgrading, improved flood management; and
- Investment needs for water security identified and agreed upon.

### Box 3.2: International Development Targets Met

- The proportion of people living in extreme poverty in developing countries should be reduced by at least one half by 2015 (Copenhagen).
- The death rate for infants and children under the age of five years should be reduced in each country by two thirds the 1990 level by 2015 (Cairo).
- There should be a current national strategy for sustainable development, in the process of implementation, in every country by 2005, so as to ensure that current trends in the loss of environmental resources are effectively reversed at both global and national levels by 2015 (Rio).
- Reduce by half the number of undernourished people on the earth by 2015 (Rome).

**Purpose:** Global water security provided through efficient, equitable and sustainable management and use of water.

#### **Global water security targets achieved:**

- Comprehensive policies and strategies for IWRM in process of implementation in 75% of countries by 2005 and in all countries by 2015.
- Proportion of people not having access to hygienic sanitation facilities reduced by half by 2015.
- Proportion of people not having sustainable access to adequate quantities of affordable and safe water reduced by half by 2015.
- Increase water productivity for food production from rainfed and irrigated farming by 30% by 2015
- Reduce the risk from floods for 50% of the people living in floodplains by 2015.
- National standards to ensure the health of freshwater ecosystems, established in all countries by 2005, and programmes to improve the health of freshwater ecosystems implemented by 2015.

**Outputs:** Political will to mobilize people and resources secured.

- Complete targets and logical frame for water security by August 2000.
- Regional and National Programmes for Action completed by August 2001.
- Programmes for Action discussed at the Bonn Conference (Dublin+10) in January.
- Programmes for Action and national targets prepared by governments before Rio+10 Meeting in mid-2002.
- 3<sup>rd</sup> World Water Forum (on major water issue arising from 2<sup>nd</sup> World Water Forum) held in March 2003
- First edition of *World Water Development Report* published March 2003.

Effective water governance for IWRM realized.

- IWRM mainstreamed in policy and strategy implementation processes in all countries by 2005.
- Cooperation mechanisms between Riparian States in all major river basins developed and strengthened by 2005, and shared waters agreements formulated by 2015.
- The economic value of water recognized and reflected in national policies and strategies by 2005, and mechanisms established by 2015 to facilitate full cost pricing for water services.
- GWP Toolbox of options for water management developed by 2001.

Effective water wisdom generated.

- Water awareness initiatives instigated in all countries by August 2001.
- Capacity for informed decision-making at all levels and across all stakeholders increased by 2005.
- Investment in research on water issues increased by August 2001.
- Hygiene education in 80% of all schools by 2010.

Solutions to urgent water priorities prepared: protecting the resource, enhancing crop productivity per drop, improving sanitation, urban upgrading, and improved flood management.

- Programmes to tackle urgent priorities formulated, resourced and under implementation in all countries by 2005.
- Action programmes to protect surface and groundwater resources prepared and in process of implementation by 2003, and defined standards achieved by 2010.
- Task force on food-water security reports by end 2001 and action programmes for enhancing crop per drop prepared and in process of implementation by 2003.
- Action programmes for sanitation formulated and in the process of implementation, and knowledge/information about good hygiene practices made universal by 2003.
- Action programmes to integrate water needs (supply and waste) with spatial planning and social and economic needs prepared and in process of implementation by 2003.
- Action programmes for flood preparedness and protection formulated and under process of implementation by 2003.

Investment needs for water security identified and agreed upon.

- Investment needs for closing the resource gaps identified and (indicative) investment plans developed in all countries by 2002.
- Mechanisms for mobilizing new financial resources identified and under process of implementation by 2003.
- Investments committed to the water domain doubled by 2005.
- Private sector-led International Research Foundation established by 2002.

Table 3.3: An example of indicator values per state on water supply and sanitation as the percentage of people with access to improved drinking water resources and access to improved sanitation facilities.

	% of population with access to improved drinking water sources in the year 2000			% of population with access to improved sanitation facilities in the year 2000		
	Total	Urban	Rural	Total	Urban	Rural
Congo Rep.	44	63.7	17.1	68.5	85.6	44.9
Nigeria	57	81	39	63	85	45
Gabon	70	73	55	21	25	4
Benin	63	74	55	23	46	6
Dem R. Congo	77	89	26	20	53	6
Burundi	65	94	63	89	67	90

Source: AWDR National Authors: 2003

## Holistic indicators for sustainable development

The Water Poverty Index (WPI) is an easy-to-use indicator designed to provide a standardized framework for monitoring how best water can be managed to meet the basic needs of development. Monitoring progress in the water sector requires an interdisciplinary approach that may involve both qualitative and quantitative assessment techniques. These should be integrated in such a way as to allow a range of issues to be addressed, while at the same time allowing the views and values of a range of stakeholders to be represented.

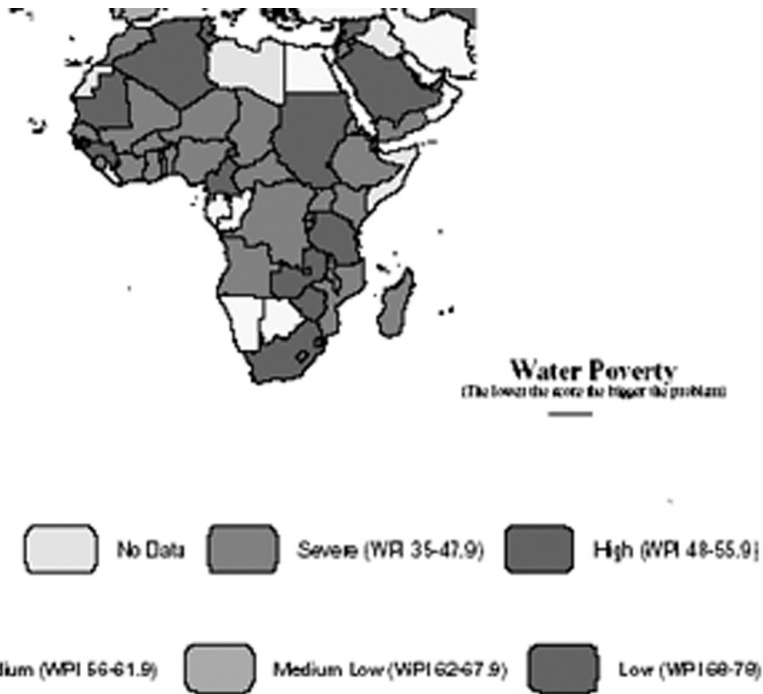
The Water Poverty Index is therefore based on the formulation of a holistic framework for water resource evaluation, which incorporates a wide range of variables in keeping with the Sustainable Livelihoods Approach used by many donor organizations to evaluate development progress. The scores of the index range on a scale of 1 to 100, with the total being generated as a weighted additive value of five major components. Each of the 5 components is also scored on a scale of 1 - 100, (see Figure 3.1 for some results for Africa) and they are:

- **Resource:** The measure of ground and surface water availability, adjusted for quality and reliability;
- **Access:** Indicates the effective access people have to water for their survival;
- **Use:** Captures some measure of how water is used, including sectoral shares;
- **Capacity:** Represents human and financial capacity to manage the system; and
- **Environment:** Tries to capture an evaluation of ecological integrity related to water.

The **Human Development Index (HDI)** is a summary measure of human development created by the United Nations Development Programme (UNDP). It measures the average achievement in three basic dimensions of human development: A long and healthy life, as measured by life

expectancy at birth; knowledge, as measured by a combination of adult literacy (two thirds weight) and the combined primary, secondary and tertiary gross enrolment ratios (one third weight) and; a decent standard of living, as measured by GDP per capita (PPP \$ US). HDI is calculated as a simple average of the dimension indices that refer to the relative level of actual attainment between the maximum and minimum values.

Figure 3.1: Water Poverty Index for Africa



Source: UNDP; Human Development Report 2001, New York - Oxford, Oxford University Press, 2001

The **Environmental Sustainability Index (ESI)** is a measure of overall progress towards environmental sustainability developed for 122 countries (see Table 3.4 for Nigeria). ESI scores are based on a set of 22 core “indicators”, and each of them combines two to six variables for a total of 67 underlying variables. The indicators and variables are chosen through careful review of the environmental literature and available data combined with extensive consultation and analysis, identification of best practices and investigation into interactions between environmental and economic performance. Although in broad terms high-income countries scored higher, among countries of similar levels of per capita income, no strong correlation exists between income and overall environmental sustainability. ESI has been developed through a transparent and interactive system of parameters.

#### 1. Human Development Index

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HDI rank <sup>a</sup>	Life Expectancy at birth (years)	Adult Literacy rate (% age 15) and above	Combined primary, secondary and tertiary gross enrolment ratio (%) <sup>b</sup>	GDP per capita (PPP US\$)	Life Expectancy Index	Education Index	GDP Index	Human Development Index (HDI) Value	GDP per capita (PPP US\$) and minus HDI rank <sup>c</sup>
	2000	2000	1999	2000			Index	2000	rank <sup>c</sup>
Medium Human Development									
Libyan Arab Jamahiriya	70.5	80.0	92	7,570	0.76	0.84	0.72	0.773	-2
Mauritius	71.3	84.5	63	10,017	0.77	0.77	0.77	0.772	-18
Tunisia	70.2	71.0	74	6,363	0.75	0.72	0.69	-0.772	-26
Cape Verde	69.7	73.8	77	4,863	0.75	0.75	0.65	0.715	-13
Algeria	69.6	66.7	72	5,308	0.74	0.69	0.66	0.697	-22
South Africa	52.1	85.3	93	9,401	0.45	0.88	0.76	0.695	-56
Equatorial Guinea	51.0	83.2	64	15,073	0.43	0.77	0.84	0.679	-73
Egypt	67.3	55.3	76	3,635	0.70	0.62	0.60	0.642	-10
Gabon	52.7	71.0	86	6,237	0.46	0.76	0.69	0.637	-44
Sao Tome and Principe	65.1	83.1	58	1,792	0.67	0.75	0.48	0.632	14
Namibia	44.7	82.0	78	6,431	0.33	0.81	0.69	0.610	-54
Moroco	67.6	48.9	52	3,546	0.71	0.50	0.60	0.602	-16
Swaziland	44.4	79.6	72	4,492	0.32	0.77	0.64	0.577	-33
Botswana	40.3	77.2	70	7,184	0.25	0.75	0.71	0.572	-62
Zimbabwe	42.9	88.7	65	2,635	0.30	0.81	0.55	0.551	-12
Ghana	56.8	71.5	42	1,964	0.53	0.62	0.50	0.548	1
Lesotho	45.7	83.4	61	2,031	0.34	0.76	0.50	0.535	-5
Kenya	50.8	82.4	51	1,022	0.43	0.72	0.39	0.513	19
Cameroon	50.0	75.8	43	1,703	0.42	0.65	0.047	0.512	0
Congo	51.3	80.7	63	825	0.44	0.75	0.35	0.512	27
Comoros	59.8	55.9	35	1,588	0.58	0.49	0.46	0.511	4
Low human development									
Sudan	56.0	57.8	34	1,797	0.52	0.50	0.48	0.499	-7
Togo	51.8	57.1	62	1,442	0.45	0.59	0.45	0.493	5
Madagascar	52.6	66.5	44	840	0.46	0.59	0.36	0.469	14
Nigeria	51.7	63.9	45	896	0.44	0.58	0.37	0.462	9
Djibouti	43.1	64.6	22	2,377	0.30	0.50	0.53	0.445	-28
Uganda	44.0	67.1	45	1,208	0.32	0.60	0.42	0.444	-1
Tanzania, U. Rep. Of	51.1	75.1	32	523	0.43	0.61	0.28	0.44	21
Mauritania	51.5	40.2	40	1,677	0.44	0.40	0.47	0.438	-16
Zambia	41.4	78.1	49	780	0.27	0.68	0.34	0.433	12
Senegal	53.3	37.3	36	1,510	0.47	0.37	0.45	0.431	-11
Congo, Dem. Rep. of the	51.3	61.4	31	765	0.44	0.51	0.34	0.431	11
Cote d'Ivoire	47.8	46.8	38	1,630	0.38	0.44	0.47	0.428	-17
Eritrea	52.0	55.7	26	837	0.45	0.46	0.35	0.421	5
Bennin	53.8	37.4	45	990	0.48	0.40	0.38	0.420	-4
Guinea	47.5	41.0	28	1,982	0.38	0.37	0.50	0.414	-30
Gambia	46.2	36.6	45	1,649	0.35	0.39	0.47	0.405	-23

Angola		45.2	42.0	23	2,187	0.34	0.36	0.51	0.403	-36
Rwanda		40.2	66.8	40	943	0.25	0.58	0.37	0.403	-6
Malawi		40.0	60.1	73	615	0.25	0.65	0.30	0.400	7
Mali		51.5	41.5	28	797	0.44	0.37	0.35	0.386	0
Central African Republic	African	44.3	46.7	24	1,172	0.32	0.39	0.41	0.375	-15
Chad		45.7	42.6	31	871	0.35	0.39	0.36	0.365	-7
Guinea-Bissau		44.8	38.5	37	755	0.33	0.38	0.34	0.349	0
Ethiopia		43.9	39.1	27	668	0.31	0.35	0.32	0.327	1
Burkina Fasso		46.7	23.9	23	976	0.36	0.23	0.38	0.325	-14
Mozambique		39.3	44.0	23	854	0.24	0.37	0.36	0.322	-10
Burundi		40.6	48.0	18	591	0.26	0.38	0.30	0.313	0
Niger		45.2	15.9	16	746	0.34	0.16	0.34	0.277	-4
Sierra Leone		38.9	36.0	27	490	0.23	0.33	0.27	0.275	0

Table 3.4: Environmental Sustainability Index for Nigeria

	Value 1991	World Ranking 1999	Trends in HDI Values between 1990 – 1999.
Human Development Index HDI	0.455	136	Up. But still down the scale.
Environmental Sustainability Index	Value 2001 31.8	World Ranking 2001; 117	Low on the scale.

Source: AWDR National Report, 2003. Comment: Very low on the world scale.

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