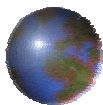# *Environmental Databases*

Ashbindu Singh

UNEP Division of Early Warning and Assessment-North America

Environmental Databases

Broad categories:-

- **Text e.g. Treaties data base**

- **Statistical e.g. Air quality, Water quality**

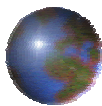- **Spatial e.g. Forest cover, Protected Areas**

Commonly Available Datasets Related to Environment

Land/Biodiversity	Air	Water
- Land use distribution	- Traditional fuel consumption	- Population with access to safe drinking water
- Domesticated land (excluding urban and built up areas)	- Commercial energy production	- Water withdrawal by sector
- Wood production	- Electricity production	- Annual water withdrawals
- Forest area	-CO_2 emissions per capita	- Annual groundwater recharge
- Agricultural land	- SO_2 emissions per capita	- Annual renewable water resource
- Protected areas	- Greenhouse gas emissions	- Annual river flows
- Globally threatened species	- Production of selected minerals an materials	- Desalinated water production
- No of endangered species	- City air pollution (for selected cities)	- Nutrient concentrations
- Endangered species management programs		

Environmental Databases: Problems

- **Lack of comprehensive coverage**

- **Rather old**

- **Unknown quality**

- **Can not answer: what is happening where in a scientifically credible fashion**

Global Environmental Reports

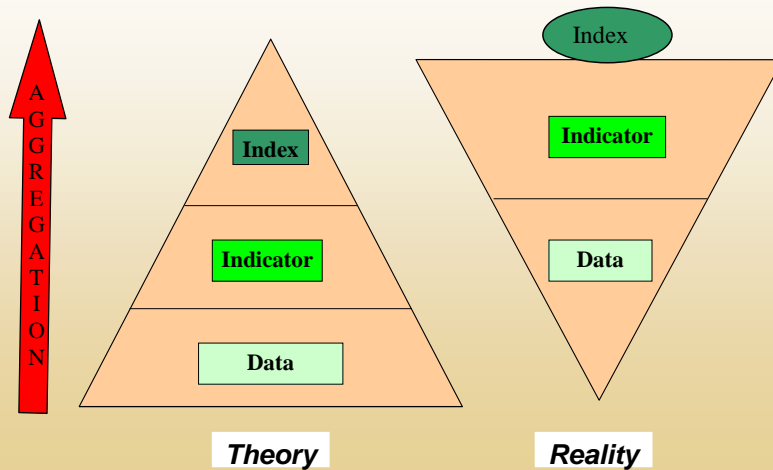|		
Global Environment Outlook	Biennial	UNEP
State of the World / Vital Signs	Annual	World Watch Institute, UNEP
World Resources Report	Biennial	WRI, UNEP, UNDP, WB
Towards Sustainable Development – Environmental Indicators	Biennial	OECD
Other thematic and topical reports	Irregular	The World Bank, UN agencies, NGOs

Many environmental indicator initiatives

Initiative/Agencies	No. of indicators
International	
A Better World for All 2000 / IMF, OECD, UN and World Bank (WB)	5
UN Statistical Division/ Intergovernmental Working Group on the Advancement of Environmental Statistics	55
An Assessment of the Statistical Indicators Derived from UN Summit Meetings (Draft)/Friends of the Chair of the United Nations Statistical Commission for the 2002 UNSC Meeting	43
"Shaping the 21st Century" Project / WB, OECD, UN, and WRI	10
Indicators of Sustainable Development / UN Commission of Sustainable Development	61
Environmental Performance Indicators / WB	64
1999 Environmental Data Compendium / OECD	23
10 Indicators for Environment/OECD	10
Regional	
Environmental and Sustainability Indicators Project / International Center for Tropical Agriculture (CIAT) and UNEP	93
State of the Environment in the European Union / European Environment Agency	16
Nordic Set of Environmental Indicators / Nordic Indicator Group	37
National	
Sustainable Development in the United States / US Interagency Working Group on Sustainable Development Indicators	16
Ecological Indicators for the Nation / US Commission to Evaluate Indicators for Monitoring Aquatic and Terrestrial Environments: US Commission on Geosciences, Environment and Resources and US National Research Council	13
Canada's National Environmental Series/ Environment Canada	43
Sustainability counts: consultation paper on a set 'headline' indicators of sustainable development / UK Department of Environment, Transport and the Regions	7
Green Headline Indicators – Monitoring Progress towards Ecological Sustainability / Swedish Environmental Advisory Council	12

Information Pyramid: Theory and Reality

Index

Indicator

AGGREGATION

Index

Indicator

Data

Data

Theory

Reality

Millennium Declaration Goals :Indicators

All 191 member states have pledged to meet these goals

➢ **Proportion of land area covered by forest**
➢**Ratio of area protected to maintain biological diversity to surface area**

➢**Energy use (kg oil equivalent) per $1GDP (PPP)**
➢**Carbon dioxide emissions (per capita)**

➢**Proportion of population with sustainable access to an improved water source, urban and rural**
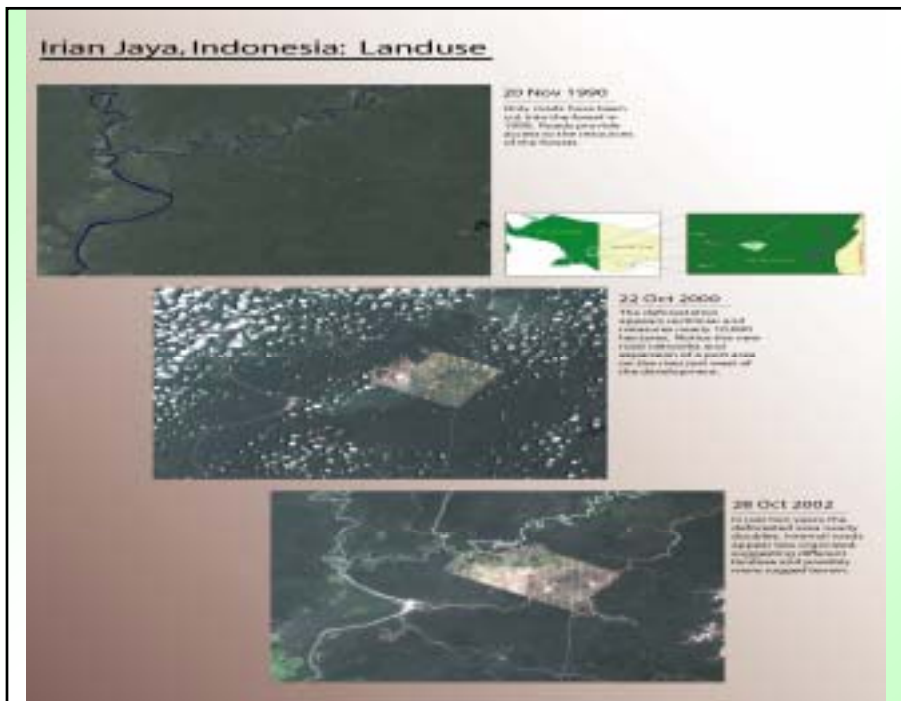➢**Proportion of urban population with access to improved sanitation, secure tenure**

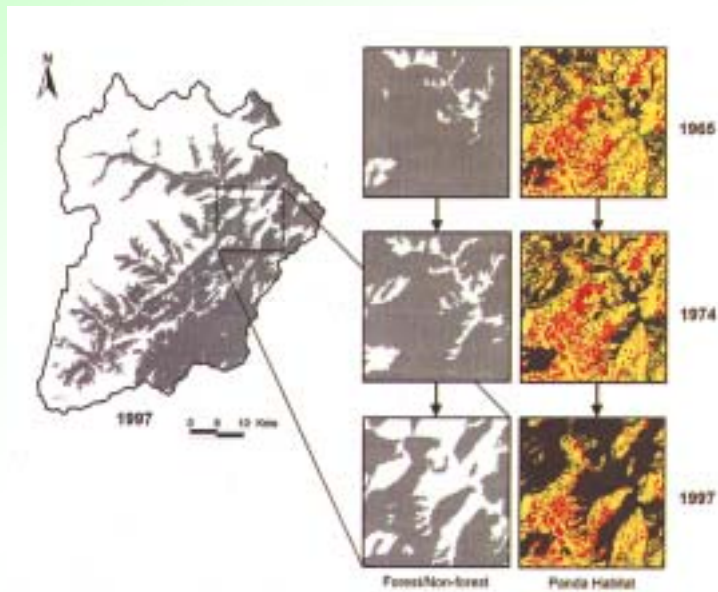## Millennium Development Goals Indicators

CRITERION

➢ *Measure progress towards goals*

➢ *Availability of Time series data*

➢ *Country –wise data available for a maximum number of countries*

➢ *Some international agency responsible for data compilation on a regular basis*

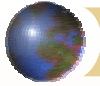*(Only two geospatial data sets: Forest cover and Protected Areas)*

Irian Jaya, Indonesia: Landuse

Wolong Nature Preserve: Protected Area Deforested

Forest/Non-forest   Panda Habitat
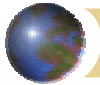
1965

1974

1997

The State of environmental data

• **Availability and quality of environmental data is a major concern**

• **Lack of time series GIS data layers to influence decision makers**

• **Remote sensing and GIS technologies are increasingly providing significant input to data generation and analysis**

• **Focus on "Access mechanisms" compared to "Content development"**

• **Geo spatial data handling technologies are still quite expensive and rather difficult to use.**

What is needed

• **Basic data layers – International and administrative boundaries, Elevation, Hydrology, Land use/land cover change, road, gridded population data, gridded economic data and gazetteer (geographic place name) are urgently needed.**

• **Geo coded orthorectified satellite images are a high priority.**

• **More user friendly technologies for data analysis need to be developed.**

• **Examples of how real life problems are being addressed using geospatial technologies. Where are we making impact?**

Access Mechanism

• **Data availability from various sources : but does it help to answer right questions?**

• **Metadata standards**

• **Interoperability: search capabilities for maps, text and statistics**

• **Earth Portal : Vision (www.earthportal.org)**

Earth Portal is a comprehensive, science-based environmental information resource that will educate millions of people annually about the state of the environment, empowering them to make informed decisions.

Capacity building in developing countries

Three issues:-

- **Adding new categories of data/information not available in the country**

- **Enhancing existing data collection systems by improving their accuracy, efficiency, and cost effectiveness**

- **Altering a part or all of the existing data collection system, wherever appropriate to address "real life" mission critical needs**

Challenge

Operational programme to monitor terrestrial environment on an annual basis and generate policy relevant information

Map data + Statistics

Grand Challenge

A comprehensive capability is needed to pull together and analyze the rich data collections available from multiple sources i.e. economic, social, cultural and environmental-and present results which both specialists and non-specialists can comprehend

How to generate usable information?

Thank You