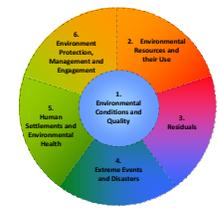# Environment and Energy Statistics Workshop for the Arab Region

Handout 1: Types of sources of environment statistics and main characteristics

Type of source	Examples of source	Examples of statistics	Examples of advantages	Examples of disadvantages	Challenges for developing countries
1. Statistical Surveys a. Censuses	Censuses such as population and housing, economic, agricultural or other sectoral censuses may include environmental aspects. Specific environmental censuses may cover establishments engaged in activities such as water management or waste management.	Drinking water supply Basic sanitation Waste management Housing quality Use of fertilizers and pesticides in agriculture	More representative of the universe of informants, more accurate data outcomes	Periodicity is low Expensive	Refining sectors of the instrument to capture more and better environmental information
1. Statistical Surveys b. Sample surveys	Includes general purpose instruments (which may cover environmental issues) such as household surveys, business surveys and other sectoral surveys. Also includes emerging surveys specifically designed to gather environmental information, i.e., environmental management surveys for business establishments (industry, tourism, agriculture, etc.), municipal environmental management surveys and public opinion polls on the environment, among others.	Drinking water Basic sanitation Housing quality Establishments with environmental management systems Production and handling of solid waste Opinion barometers on environmental policies and management	Greater periodicity and therefore more frequent updating of data series	Sampling and representativeness of sample may be a concern in case of surveys designed for other than environmental purposes	Refining sectors of recurrent instruments to capture more and better environmental information Developing and maintaining specialized environmental surveys of different sectors and on different levels
2. Administrative records	Statistical exploitation of records maintained by different government and non-governmental agencies for administrative purposes, at various levels (national, regional, provincial, municipal, and so on) such as: Customs records (imports), sectoral ministry records, public finance and budget records, tax returns records, environmental authority records.	Number of motor vehicles Environmental licensing Designation of protected area Environmental education actions Public spending on environment protection	High periodicity of production (annual, quarterly and even monthly) and thus high frequency of updating	Terms and definitions may differ from those used in statistics; access to microdata may be limited; metadata may be missing	Building statistical capacities in sectoral ministries and public services Requires stable national inter-institutional coordination

Type of source	Examples of source	Examples of statistics	Examples of advantages	Examples of disadvantages	Challenges for developing countries
3.Remote sensing	All kinds of remote sensing and atmospheric measuring tools that produce images and their interpretation: satellite imaging, aerial photography, geodata, geodesy, geomatics.	Satellite imaging to inventory forests Remote imaging of urban sprawl (city surface) Land cover and land use (types) Level, height or retract of principal glaciers	Very accurate Costs of imaging have declined considerably	High cost of interpreting images Many national statistical offices and Ministries of the Environment do not have specialists in geomatics	Requires geo-spatial literacy among officials responsible for environment statistics Requires sufficient resources to interpret images and build geospatial representations of data
4.Monitoring systems	Includes various quality and pollution monitoring stations and networks such as: Urban air pollution monitoring stations, surface water quality monitoring systems, glacier monitoring systems, seawater or coastal water quality monitoring systems, and so on. Meteorological, hydrological monitoring networks.	Various parameters sampled to establish: Quality of drinking water Urban air quality Coastal - marine pollution Temperature, precipitation, water flows of rivers	In general, good to excellent quality and more accurate data and microdata	High cost of installing and maintaining monitoring systems and thus of producing microdata Usually point specific measurements don't allow for aggregation over space unless the network is dense enough	Need to coordinate the flow of data from primary source in terms of periodicity, aggregation and format required for feeding into statistical production (series, indicators)
5.Scientific research and special projects	Data collected by universities, research agencies and organizations to fill in gaps in knowledge, assess effectiveness of or develop alternative policies etc.	Ecosystem health; Diversity and population trends of selected species; Characteristics of solid waste; Process specific technological parameters of residuals	Low cost; minimize response burden; can be used to fill in data gaps; useful to developing coefficients	Terms and definitions may differ from those used in statistics; access to microdata may be limited; metadata may be missing Often have limited scope and often produced on a one-time basis	Require close collaboration of statisticians with experts of the different scientific fields

Source: FDES 2013, Table 1.1