

6.6.1. WORLD OF WETLANDS:

Change in the extent, condition, flows, services and pressures of water-related ecosystems over time

Definitions:

Indicator 6.6.1 should relate to all inland water bodies and water-related ecosystems

Inland means up to but not including the coastline

Including salt lakes, as saline or brackish waterbodies would otherwise be missed out, (SDG 14 and 15 relating to marine and terrestrial systems).

Includes natural, artificial or semi-natural.

Concepts:

Ecosystem types

Inland waters (use RAMSAR definitions which is more comprehensive than UNEP definitions). Refer to “Tabulations of Wetland Type characteristics, Inland Wetlands and Human-made wetlands”

Change – a shift from one state (extent, type, quantity or quality) to another state over time, measured against a point of reference. Capture changes in wetland types, net changes, spatially explicit.

Rationale:

Use UNEP definition

Help national reporting to report against relevant multinational agreements – SDG, RAMSAR, CBD, Vienna

SEEA ACCOUNTS

Pick and choose from list:

Key:

Exist in many countries

Global datasets available

Extent Account

Area of water-related ecosystems as defined above

- Global datasets (remote sensing) – use with caution– supplement with ground-truthing.
eg. GSWE, GROWI, Water Lake, WWF Global Lakes and Wetlands Database Global Surface Water Explorer (GSWE). This is limited to open water only and misses out vegetated wetlands.
- Global products on vegetated wetlands, eg. Global Mangrove Mapping (Japanese space agency)
- Ref Global Wetlands Outlook for comprehensive list of data products
- National inventories, eg. Ramsar (comparable with other national datasets if they use different definitions of wetlands?)
- Regional datasets, eg. thematic layers on water bodies etc provided by EEA.
- Potential wetlands (pre-inventory) estimated from Earth observation data.
- Wetness Index (ESA) - surface water and soil moisture content
- Wetland Extent Trends (WET) index (Dixon et al., Darrah et al.)
- Water observations from spaces (WOFS) (Australia)

Condition Account

By waterbody, or river basin, or by administrative area.....

A. Water quality indicators

Physico-chemical (state) parameters:

- Suspended matter TSS (possible by remote sensing)
- pH
- Ammonia
- NPK
- Dissolved oxygen
- Dissolved organic carbon (DOC)
- Temperature
- Conductivity
- Salinity

Biological (state) parameters:

- BOD eg. [India Central Pollution Control Board](#)
- Chlorophyll A (possible by remote sensing)
- bacterial coliforms

Condition Account

By waterbody, or river basin, or by administrative area.....

B. Basin characteristics:

- Urban areas in basin eg. Global Urban Footprint
- Natural vegetation or forest cover in basin, many products available eg. ESA-CCI-LC, SEEA MODIS
- Agricultural area eg. CCI-LC, SEEA-MODIS

Condition Account

By waterbody, or river basin, or by administrative area.....

C. Biodiversity:

- Species (water-related) populations, eg LPI, Norway Nature Index, Uganda Biodiversity Index
- Abundance indices
- Alien invasive species
- Endemic species
- National-level IUCN red list water-related species

Physical Flow Account

- Basin area
- Flow/runoff including hydrological flows (cubic metres/year) from mountains (ice and snow, cryosphere) and forests in the watershed
- Precipitation
- Evapotranspiration

Pressure Account

A. Hydrological indicators by water basin

- Withdrawals eg. FAO Aquastat
- Water footprint (University of Twente, NL)
- Water availability for natural wetlands (environmental flows)
- Dredging
- Degree of modification (canalization, barrages and reservoirs)
- Canalization

Pressure Account

B. Resource extraction

- Trawling
- Fishing
- Hunting
- Harvesting of wild plants
- Mining
- Quarrying
- Extraction of aggregates and sand mining

C. Land use

- Landuse, Agricultural conversion, Urbanization. eg. FAO global map of irrigated areas ESA-CCI, SEEA-MODIS
- Artificialization (conversion from natural to human-made)
- Fragmentation and connectivity

Ecosystem services account

A. Provisioning

- Water availability (surface and ground water) eg. FAO Aquastat
- Water withdrawals, FAO Aquastat
- Food availability (eg. fisheries, aquaculture)
- Wetland products
- Fuel

Ecosystem services account

B. Regulating/supporting

- Flood control eg. see <http://portal.swos-service.eu/mapviewer/detail/1.html#/wetland/23/product>
- Groundwater replenishment Global dataset on transboundary aquifers
- Water purification
- Shoreline stabilisation and storm protection
- Sediment and nutrient retention and export
- *Climate change mitigation and adaptation (???)*

C. Cultural

- Spiritual benefits per capita
- Recreation and tourism