

Towards Developing a Framework for State of the Water: An Overview of Selected Indicators

WATER RESOURCE AVAILABILITY

This section lists indicators of theoretical water availability from freshwater to non-conventional resources.

Freshwater resources:

Blue Water:

Blue water is the water available in freshwater bodies including lakes, rivers, streams, and aquifers. This includes natural and actual, where the former refers to the volume available from the hydrological cycle, and the latter refers to the volume available after taking into account treaties with neighboring countries. Source of indicators in this section is derived from FAO- AQUASTAT country water balance sheets of renewable water resources.

Non-renewable water resources (Where to locate?)

Green Water:

Green water is the water available in soils and rainfed vegetation including agriculture, pasture, and forests in the form of evaporation and soil moisture. Source of indicators in this section is derived from K. AbuZeid's numerous studies including "The First Arab Water State Report.."

Non-Conventional water resources:

Grey Water:

Grey Water is the water available from treated wastewater and agricultural drainage.

Silver Water:¹

Silver water is the water available from the process of desalinization.

WATER RESOURCE DEMOGRAPHICS & HUMAN DEVELOPMENT

This section lists theoretical water availability from the perspective of population share. It also looks at the water stress and poverty indices and human development index of each country.

WATER RESOURCE ABSTRACTION, WITHDRAWAL, & USE

¹ This term was recently coined by Dr. Munther Haddadin, former minister of water & irrigation in Jordan (1997-1998).

With focus on domestic, municipal, industrial and agricultural sectors, this sections lists indicators of water abstraction, withdrawal, and use from natural to non-conventional resources.

Water abstraction refers to the removal of water from any source, without taking into account consumptive use.

Water withdrawal refers to the removal of surface water or groundwater for different sector uses, taking into account consumptive use. It does not take into account in stream uses or low consumptive use rates.

Water use refers to the use of water from different sectors, taking into account in stream uses such as in navigation, recreating, and mining.²

This section includes indicators for water withdrawal by source and sector mostly for blue water. It also includes indicators for green water use and use and re-use of non-conventional water resources. Finally, it includes indices for water use sustainability including over-use and re-use and water footprints.

WATER RESOURCE & LAND CHANGES

This section investigates patterns and changes in land uses and their relation to water from urban encroachment on green cover, to change in forest area and rainfed land. It also includes precipitation and evaporation information, and changes in wetland distribution and size.

WATER RESOURCE QUALITY

Water quality is essential for the protection of biodiversity and human health. This section has two categories of indicators where water quality can be assessed:

Water & Ecosystems:

This category lists changes in water quality of ecosystems by looking at pollution levels in river mouths, sedimentation and fragmentation rates, over-depletion of groundwater as well as changes in freshwater species. It also lists multiples indices for water quality globally measured by different institutes. The section takes into account water quality in natural and artificial water ecosystems (e.g. dams).

Water & Human Heath:

² Definitions used from UN-Water Task Force on Indicators, Monitoring and Reporting. Final Report. Monitoring Progress in the Water Sector: A selected set of indicators.

This category attempts to monitor and analyse any trends of major water related diseases in the region using data surveillance from CDC, WHO, and national reports. It also includes the number of people who practice open defecation, posing a threat on water quality and transmission of disease.

WATER RESOURCE SERVICES & INFRASTRUCTURE

This sections investigates the performance of water services through:

Water Accessibility & Coverage:

This includes the percent of the urban and rural water supply coverage and population with improved or unimproved access to clean drinking water and sanitation.

Water Infrastructure:

This includes the number and length of water supply plants and networks, as well as the production capacity of non-conventional water supplies. It also includes a report of major water infrastructure failure including dam and sinkhole collapse.

Water & Energy:

This includes the amount of energy generated using hydropower, and the potential production by each country.

WATER RESOURCE ECONOMICS

This section looks at the economics of water from the perspective of:

Water Productivity:

This includes the water commodity contribution to gross national production in different sectors from industry to agriculture. It also includes information on the percent of people economically active in heavily water-related occupations such as agriculture.

Water Tariffs & Affordability:

This includes a description of water tariff structures in urban and water settlements as well as changes in household water prices and percent of total household expenditure on water.

Water & Finance:

This includes government investments on water-related projects from infrastructure to improvement of sanitation and hygiene, and overseas water development assistance.

Water & Trade:

This category investigates national water savings related to trade and the dependency on water imports. It investigates virtual water volumes of a country which is the volume of water used from other countries to produce the goods it

Imports.

WATER RESOURCE POLICY & POLITICS

Water & Governance:

This section investigates water governance indicators from a list of water laws, rights, and institutions, as well as assessing progress in integrated water resource management. It also looks at corruption levels as a measure of proper ability to implement laws.

Water & Transboundary Issues:

This section investigates the likelihood of conflicts and cooperation between countries over shared water resources and dependency on water resources from neighboring countries.

WATER RESOURCE CLIMATE

This section looks at water and climate from the perspective of:

Water & Extreme Weather Events:

This includes a list of flood and drought events, their severity, economic costs, and number of people affected in each country.

Water & Changing average Temperatures:

This includes changes in precipitation levels over the past 100 years, and projected changes in precipitation levels using different climate change case scenarios, and anticipated climate change affects on freshwater bodies and the hydrological cycle.

Water Storage & Climate Change Adaptive Capacity:

This includes information on natural capacity of countries taking into account natural water storage and adaptation strategies as proposed in UNFCCC national reports.