



Strengthening IWRM under current and projected conditions of water stress and scarcity

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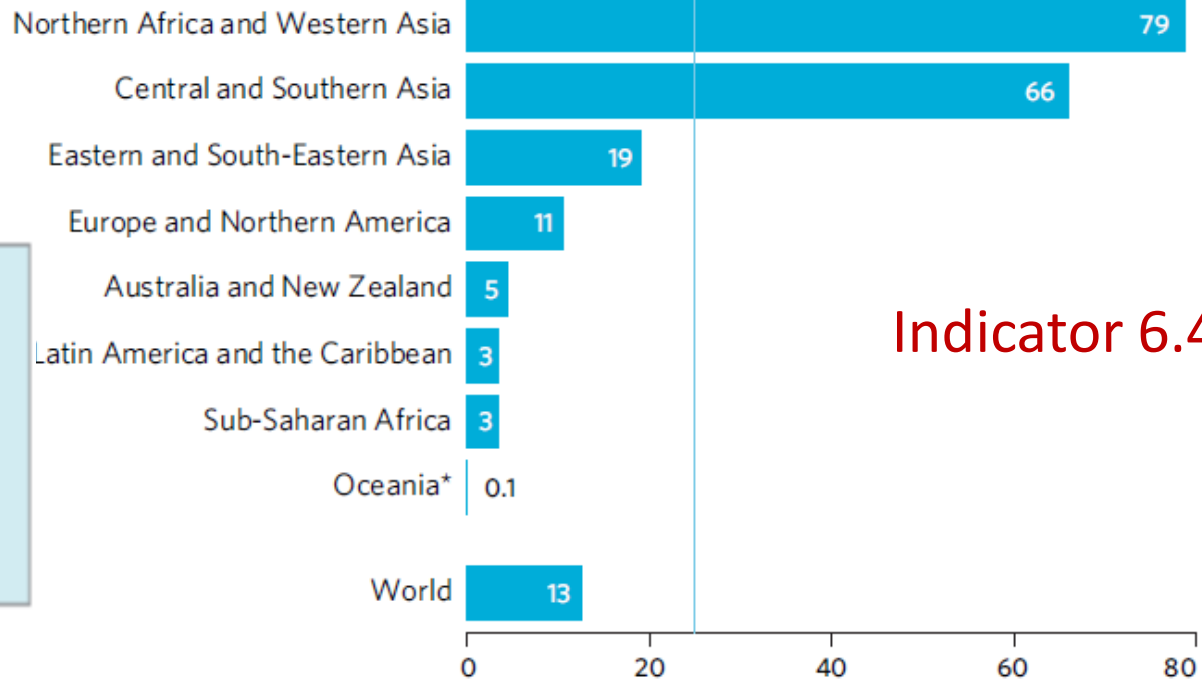
Context & Challenges

2017 Report on SDG

Transboundary



Level of water stress: freshwater withdrawal as a proportion of available freshwater sources, around 2014 (percentage)



Irrigation

Indicator 6.4.2

Groundwater



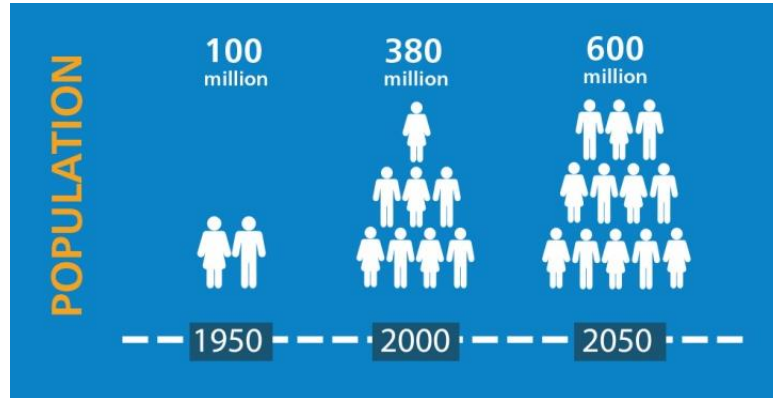
- Degrading water quality
- Pollution

— 25 per cent: threshold that marks the beginning stages of water stress



Drivers for Water Scarcity Intensification

Demography

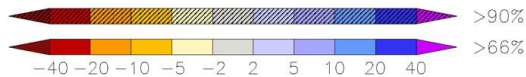
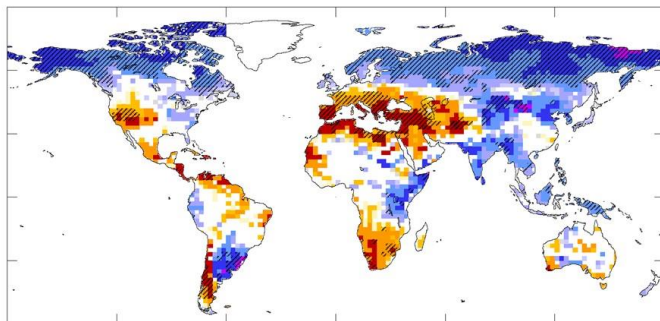


(Urbanization/Energy/Development)

Food Insecurity



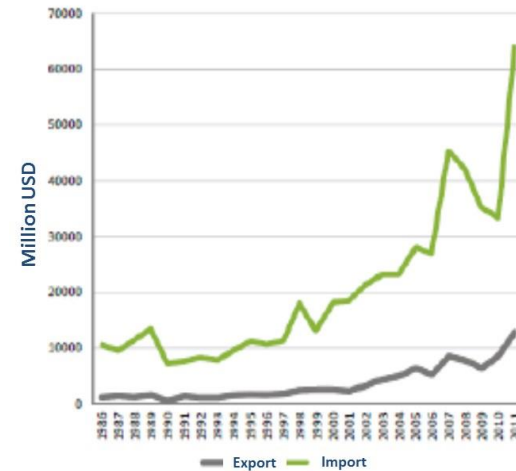
Climate Change



runoff

(Milly et al., 2005)

≈ year 2050

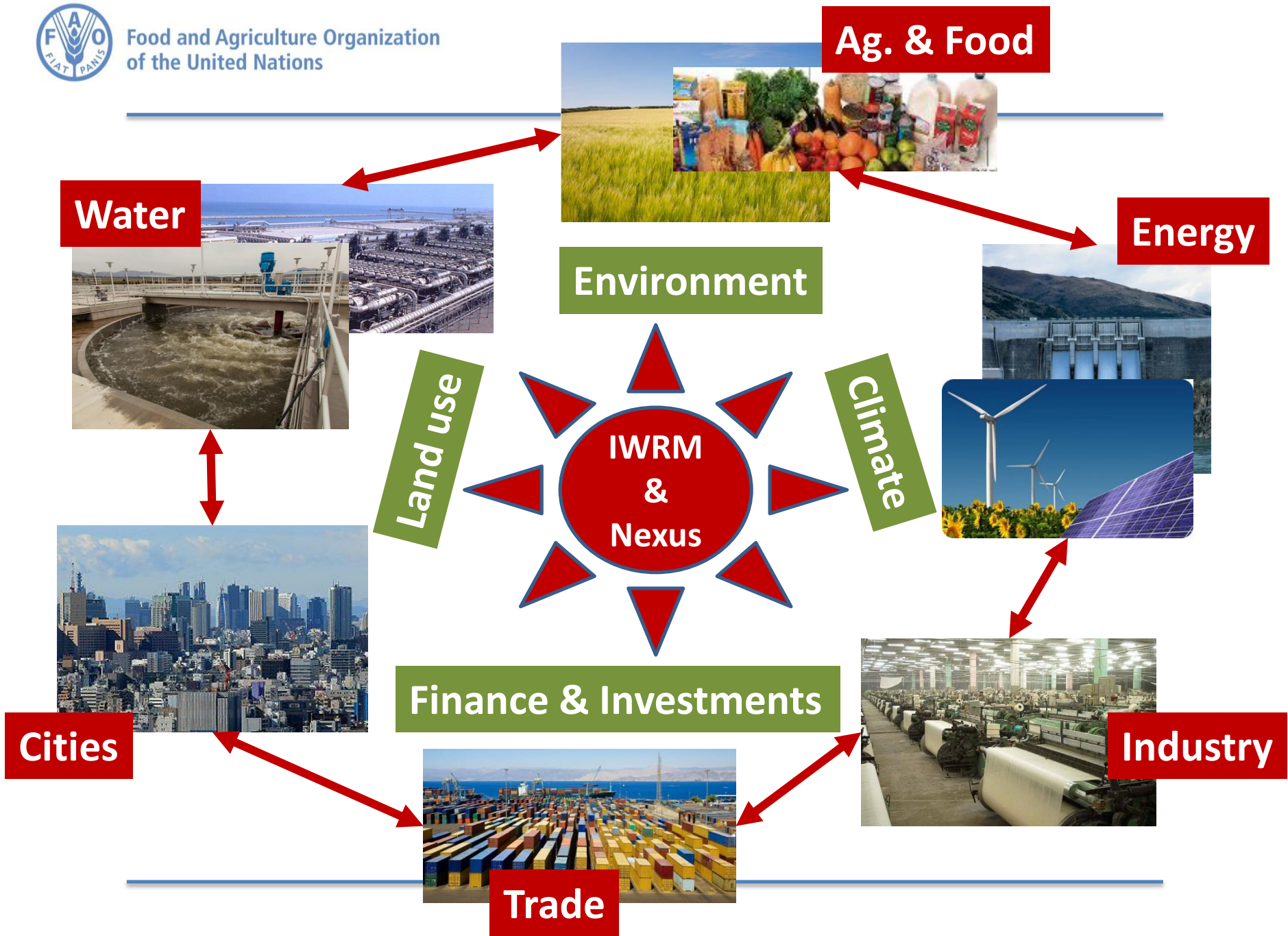




“A **process** which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems”

The **Nexus** approach can complement the IWRM by providing the **content analysis** to the process, i.e., it adds the quantitative dimension to IWRM

Under the Arab condition of water scarcity, it is necessary also not to compromise the **sustainability of water resources** (and development) by setting the **limit of water consumption**



Ag. & Food



Water



Energy



Environment

Land use



Climate



Finance & Investments

Cities



Industry



Trade



SDG target 6.4

SDG-6.4: By 2030, substantially increase **water-use efficiency** across all sectors and ensure **sustainable withdrawals** and supply of freshwater to address water scarcity and substantially reduce the **number of people** suffering from water scarcity



SDG indicators

FAO is custodian agency for the indicators of the SDG target 6.4:

- 6.4.1 Change in water use-efficiency over time ($\$/m^3$).
 - 6.4.2 Level of water stress: freshwater withdrawal in percentage of available freshwater resources (%)
 - 6.4.3 *Number of people affected by water scarcity/stress (??)*
-



Water Scarcity

“An imbalance between supply and demand of freshwater in a specified domain as a result of a high rate of demand compared with available supply, under prevailing institutional arrangements and infrastructural conditions”

It is a **relative** concept, depending on the balance between supply and demand for water

It is a **dynamic** concept as it varies over time as a result of hydrological variability (either natural or human-induced)

Determinants: Population growth, natural water endowment and hydrology, water development (including production of new water), infrastructure development (including storage and distribution), institutional capacity to provide services, policies of development



Determinant	Governmental Control
Demography (population growth)	-
Natural water endowment	-
Hydrology/climate	- (some interference)
Water development	X
Infrastructure development	X
Institutional capacity	X
Developmental policies	X

It would be appropriate to have a metric for 6.4.3 that capture demand (from people) & supply (from govts)



Proposed metrics

- Sub-national **disaggregation** of indicator 6.4.2, layering with population density
- Computation of **water withdrawal per capita**, at sub-national level
- Level of water stress based on **% of water gap to full demand satisfaction** (GAP_w)

$$GAP_w = \frac{(\text{Minimum demand} - \text{water withdrawal})}{\text{Minimum demand}} \times 100$$

WATER GAP TO FULL-DEMAND (%)	LEVEL OF WATER
< 0	None
0-25	Moderate
26-50	High



Food and Agriculture Organization
of the United Nations

Thank you



<http://neareast.fao.org>
