

**SUPPORTING SUSTAINABLE DEVELOPMENT GOAL 7,
“BY 2030 ENSURE UNIVERSAL ACCESS TO AFFORDABLE,
RELIABLE AND MODERN ENERGY SERVICES”**

**A NEXUS APPROACH TO ENERGY ACCESS, LESSONS
LEARNED, AND MOVING FORWARD**

UN Economic And Social Commission For Western Asia

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Accelerating Progress toward SDG 7: UN System Contribution
21 July 2016

40
YEARS

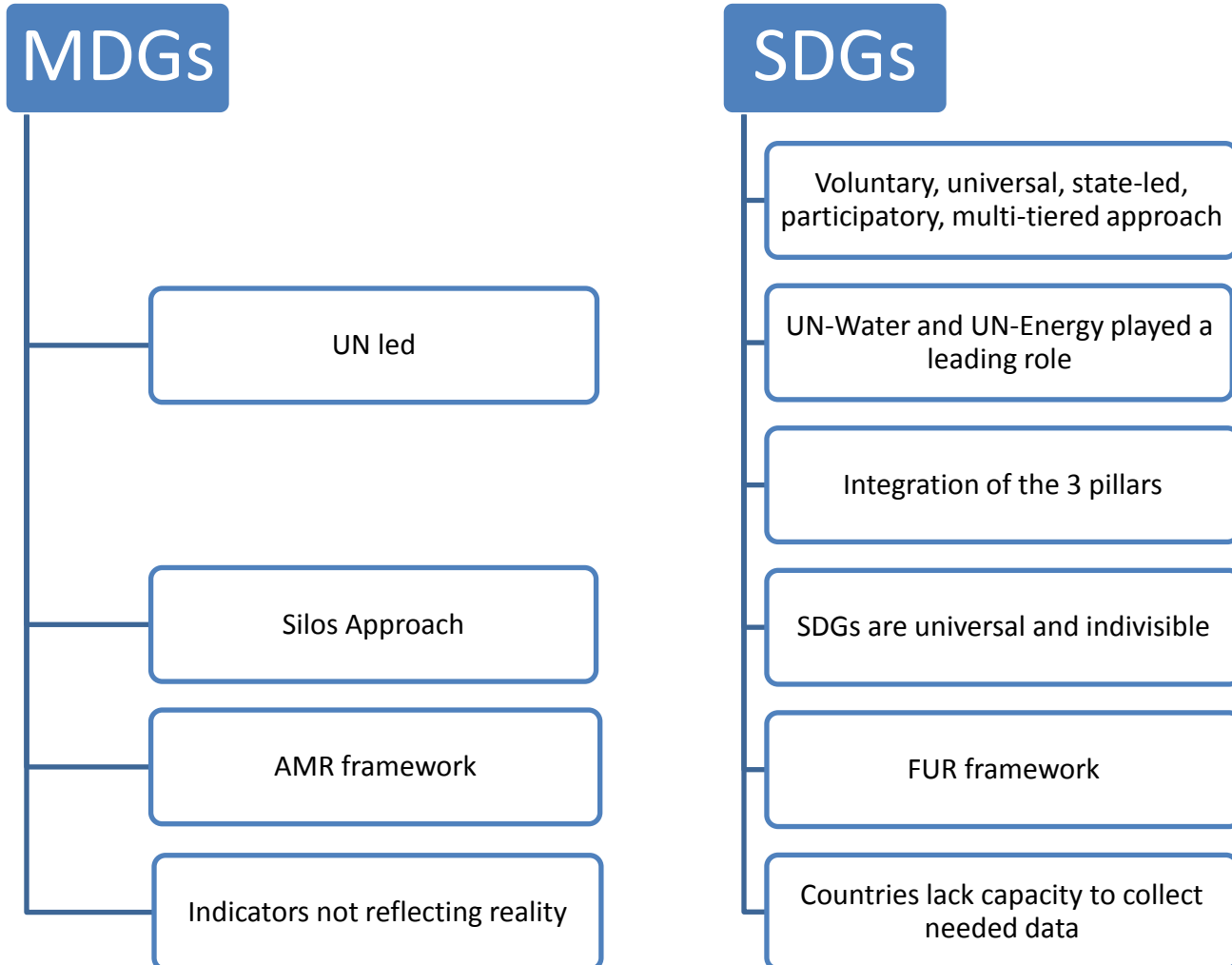
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The Nexus Approach - SDGS

From MDGs to SDGs: Lessons Learned



The SDGs regional challenges: an ESCWA perspective

2 ZERO HUNGER



Scarcity of freshwater and land degradation.

Reliance on international trade and foreign land agreements.

6 CLEAN WATER AND SANITATION



Most water scarce region in the world.

High dependency on transboundary water.

Accessibility constraints due to occupation and conflict.

7 AFFORDABLE AND CLEAN ENERGY



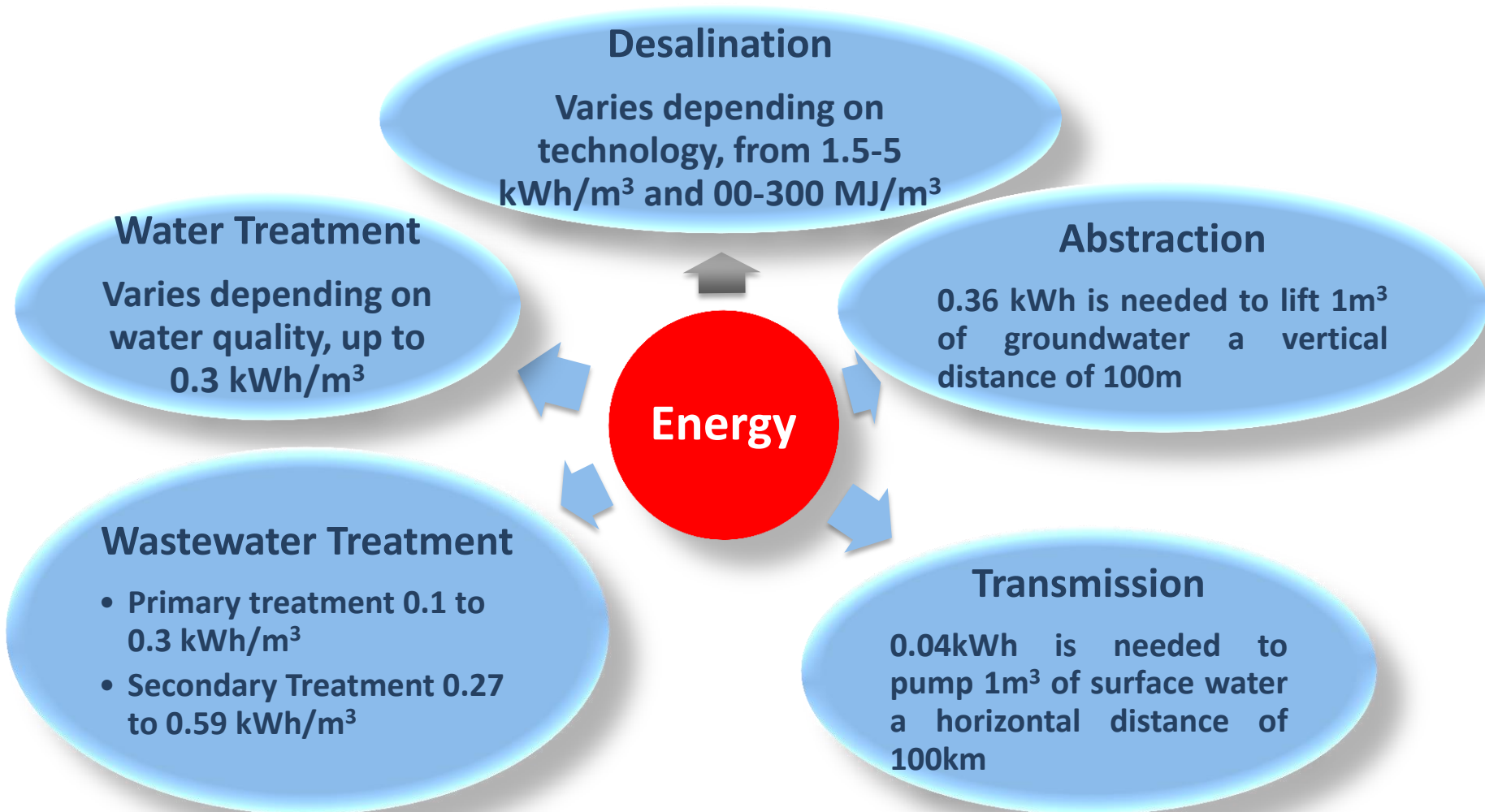
Rich in fossil fuels and renewable energy.

Low rural electrification.

Arab countries seek optimal energy mix that includes renewable options and maximized efficiency.



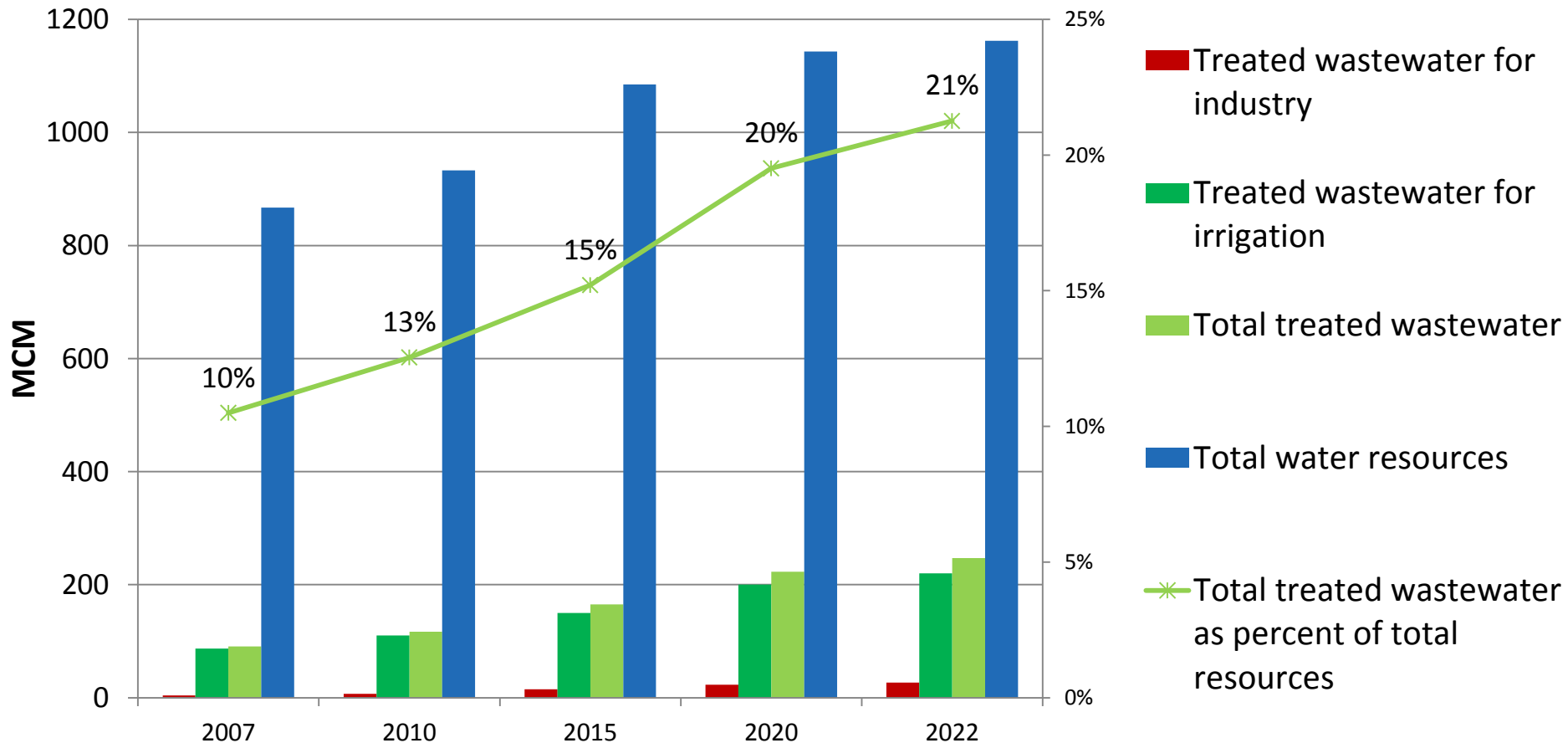
Energy for Water





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Energy for Water: Treated Wastewater Reuse

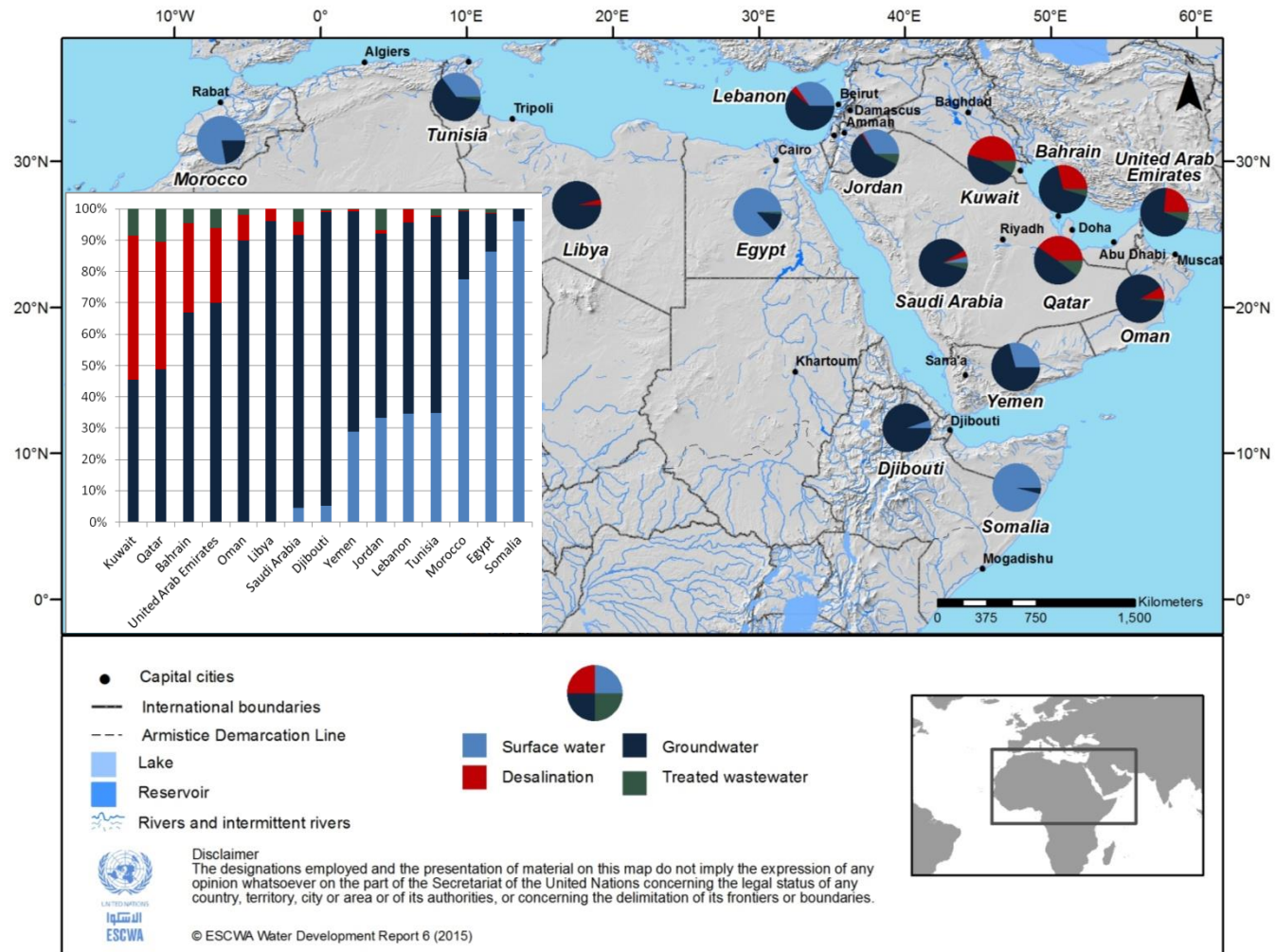


Source: Ministry of Water and Irrigation (2009). *Water for Life: Jordan's Water strategy, 2008-2022*. Rev. 10.270309 Available from http://www.mwi.gov.jo/sites/en-us/Documents/Jordan_Water_Strategy_English.pdf. Total resources for the year 2022 are without the Red-Dead Sea conveyance project



Energy Demand of Water in the Arab Region

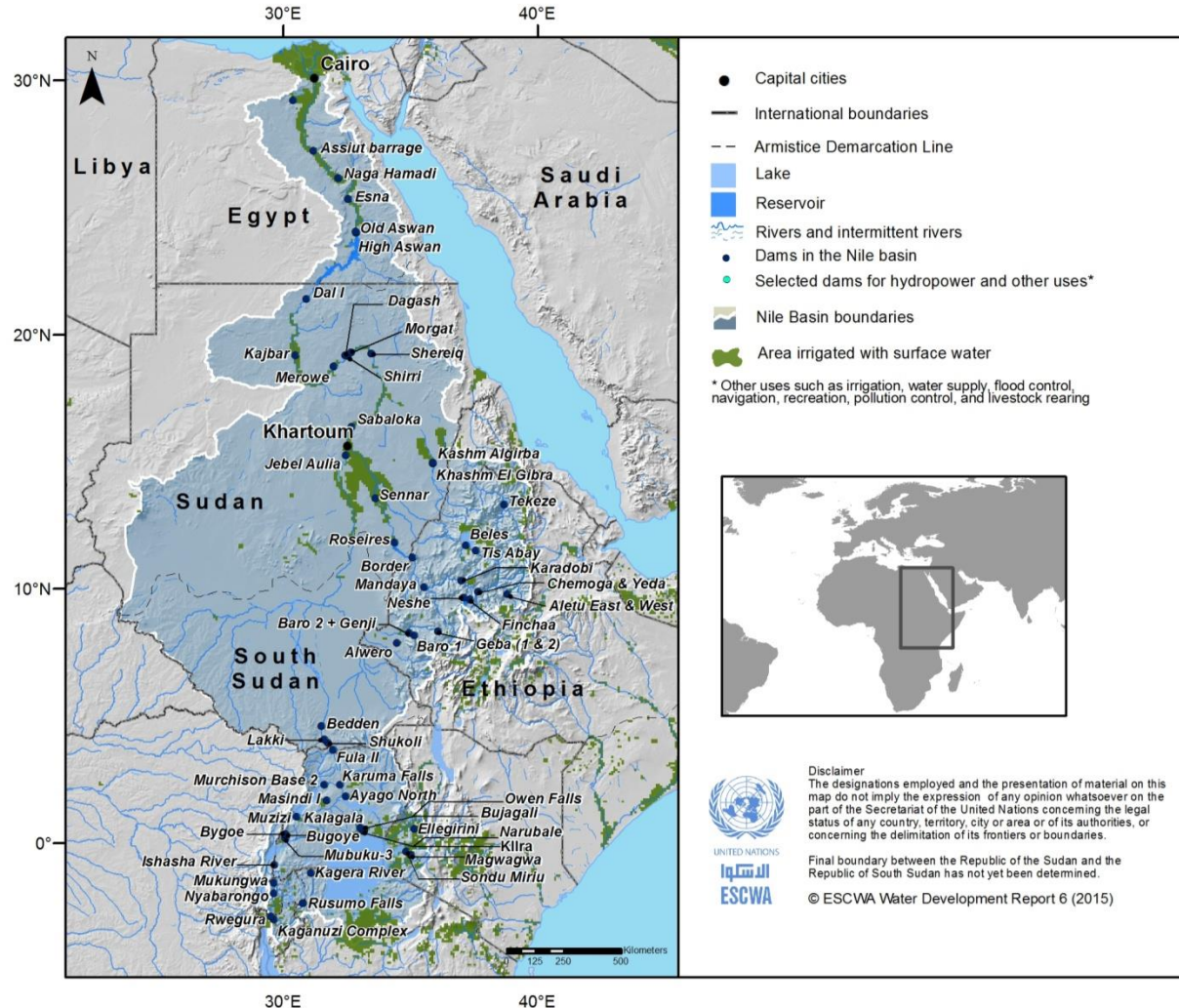
- Jordanian water sector accounts for ~15% of total annual electricity generated
- Saudi Arabia: Groundwater pumping accounts for 10% of total fuel consumption
- Libya: Groundwater pumping accounts for 14% of total fuel consumption
- Bahrain: 30% of total energy use is for desalination





Water for Energy: Hydropower

- On the Euphrates River Basin
8,580MW installed capacity
- On the Nile River Basin, hydropower potential is ~20GW, only 26% is currently used





Water for Energy (oil sector)

Extraction/Processing of fuels

- 16.7 to 46 litres of water per barrel of extracted oil
- 2.6 to 4 barrels of water to produce one barrel of oil from oil shale
- Processing requires 200 to 800 litres of water per ton of crude oil

Water

Produced water

- Oman has highest water-oil ratio of between 6:1 and 10:1
- UAE has the lowest water-oil ratio of 0.35:1



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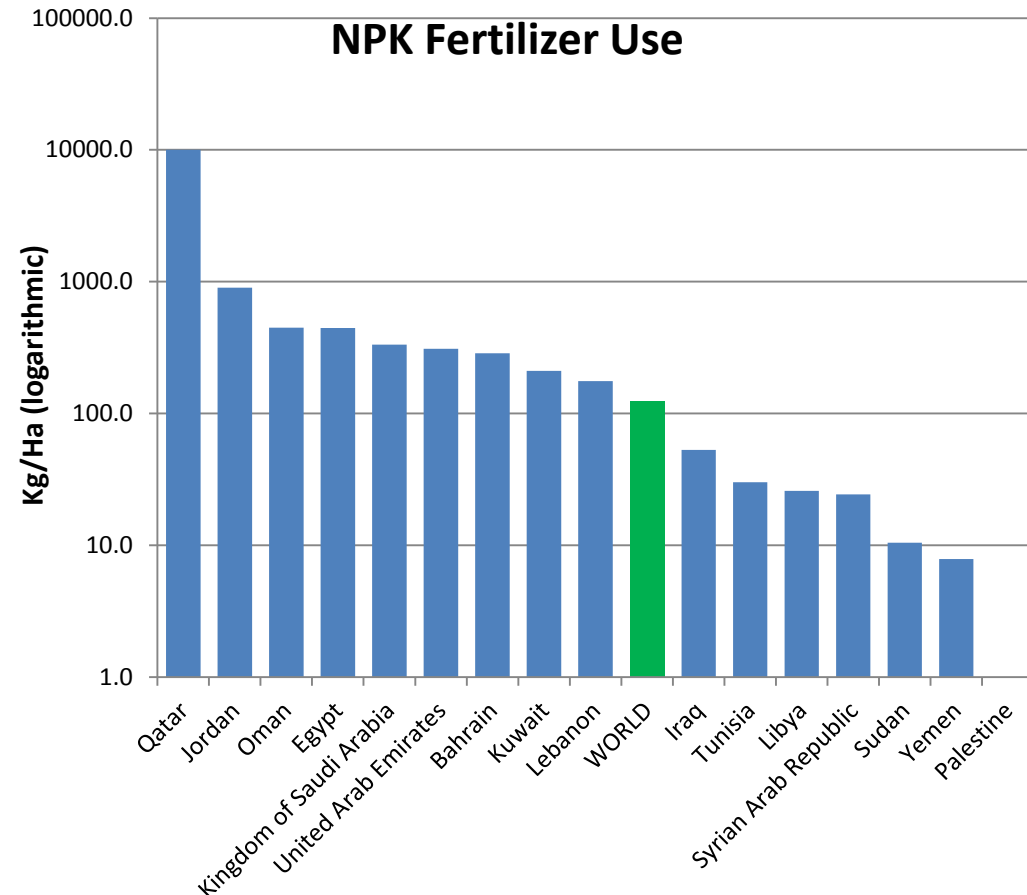
Water and Energy for Food

Direct

- Irrigation (W+E)
- **80% of water withdrawal** in Arab region used for **irrigation** with **50-60% efficiency** in irrigation systems
- Harvesting (E)
- Processing (W+E)
- Transportation (E)
- Storage (E)
- Retailing (E)

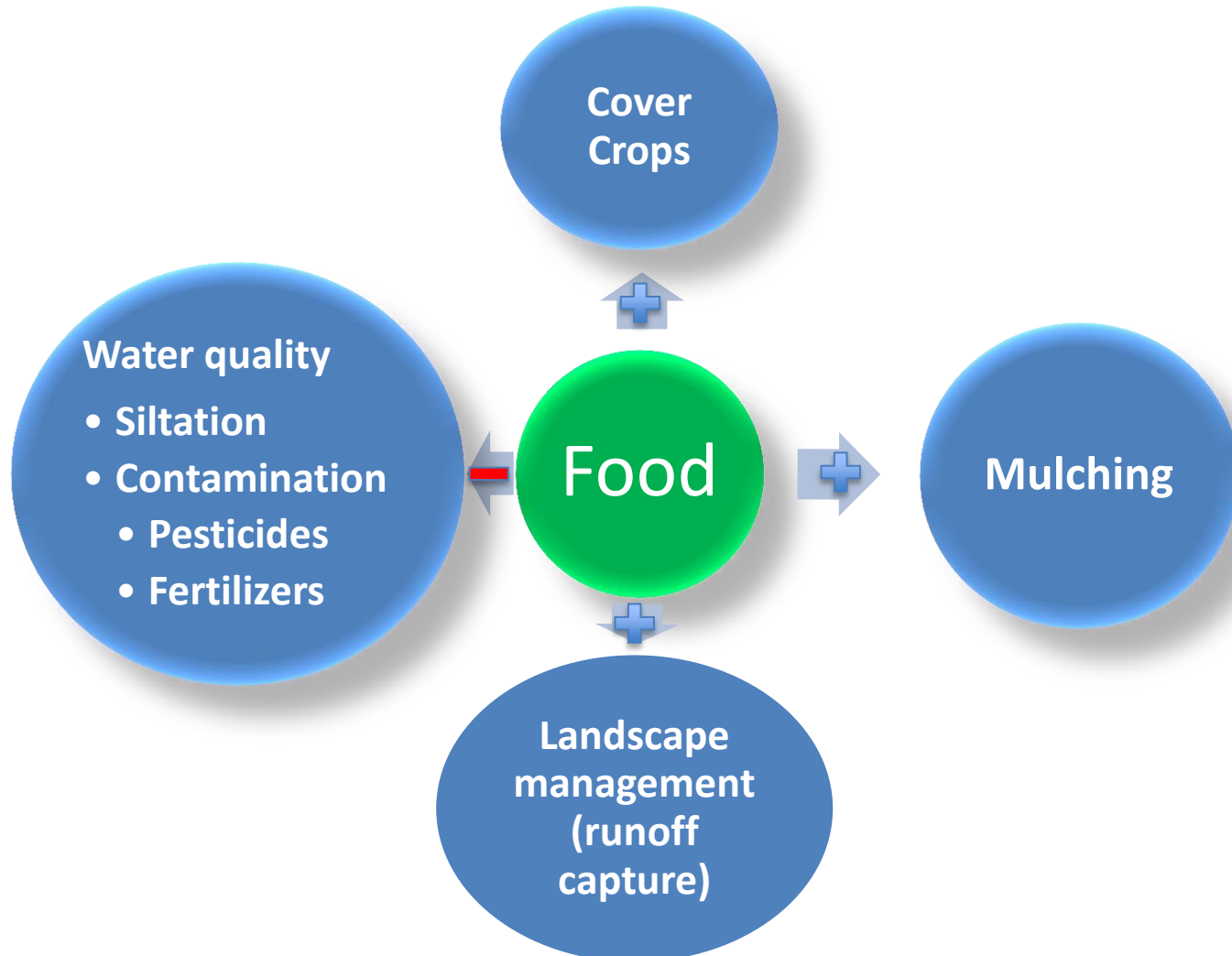
Indirect

- Fertilizers (W+E)
- Pesticides (W)
- Energy embedded in global **annual food losses** can reach up to 38% of the total energy used in the entire food value chain.



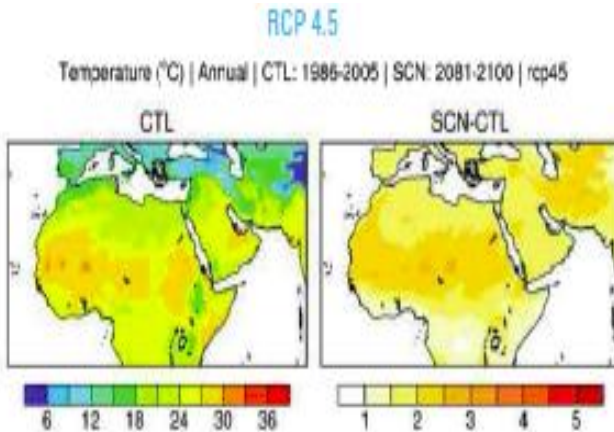


Food for Water



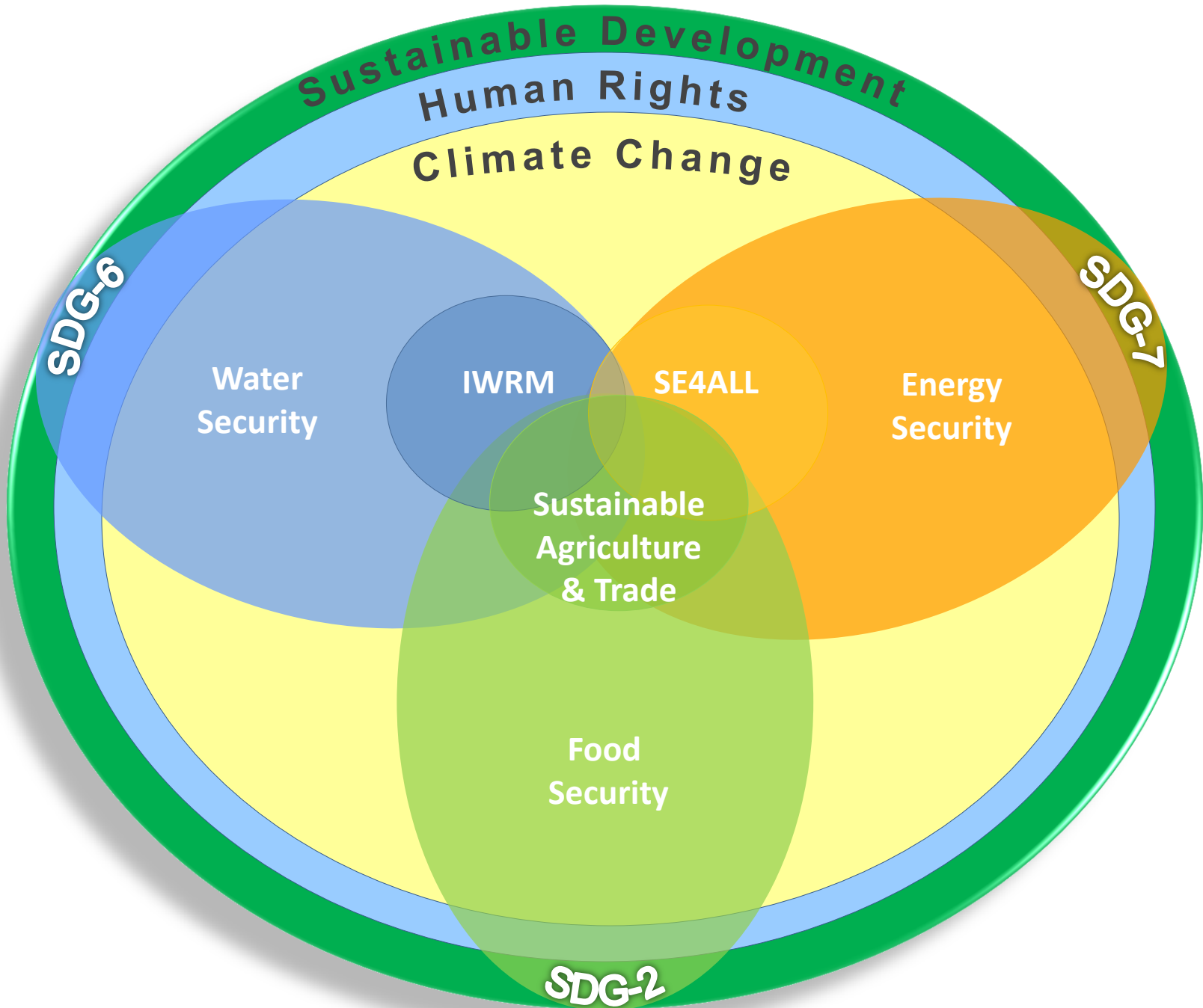
Climate change and the WEF security nexus

- ESCWA is coordinating the **Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources and Socio-Economic Vulnerability in the Arab Region (RICCAR)** which is being implemented in partnership with the League of Arab States and 11 regional and international organization and three climate research institutes.



The effects of climate change do not hit a particular sector and country, but much rather **resonate across a wide spectrum**.

- Consistent warming trend with a general increase in the frequency of warm days and longer summer periods across the Arab region
- The WEF security nexus approach has the potential to effectively **harmonize** these interactions **across sectors and countries**.



Sustainable Energy in the Sustainable Development Agenda 2030



ESCWA Activities in Relevance to the SDG 7 & SE4All

Implementation Approach

Intergovernmental Com. on Energy & WP 2016 - 2017

Publications, reports, fact sheets, EGMs,

- DA Projects (promoting RE investment in the Arab region,
- building capacities in developing green technologies in rural areas...

Capacity building & knowledge sharing

Energy Access & Energy Security

Policies, cleaner technologies, Market, for Conventional & Non-conventional energy resources

Regional Interconnections
Electricity Grids/
Natural Gas Supply

Water-Energy-Food Nexus

Energy Efficiency (EE)

EE in key Sectors:
Power,
Transportation,
Industry

EE Standards & Specifications and indicators

Regional Initiatives to Upscale EE in Arab Member Countries

Renewable Energy (RE)

Support RE Development
Technology/Policies/
implementation Schemes, R&D

Access to Energy Services in Rural Areas
(improving living conditions)

Regional cooperation/
integration: Local Manufacturing, Market, R&D

Climate Change Mitigation

THANK YOU

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