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Workshop Promoting renewable energy investments with a nexus approach: co-benefits across sectors

Economic and Social Commission for Western Asia

Natural resource management within a nexus approach, Policies and Operational tools: Role of renewable energy technologies



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The Nexus concept

- **Various approaches touch on different aspects of the nexus:**
 - Sustainable development
 - IWRM
 - Sustainable agriculture
 - Green economy
 - Sustainable production and consumption frameworks
- The **Nexus** materialized as a conceptual framework that highlights **interdependencies** between the water, energy and food sectors, and the need to pursue **integrated management** across all three sectors
- A **nexus** approach aims to **reduce trade-offs** and **build synergies** by considering interactions and dependencies at all stages, it enhances the **efficiency** of the entire system rather than increasing **productivity** of a specific sector often at the expense of others
- Traditionally, Nexus relationships have addressed bilateral interdependencies
- More recently, they have addressed links between at least three sectors, mainly **water-energy-food**, emphasizing resource management and services delivery

The WEF security nexus within the context of the SDGs

The 2030 Agenda for Sustainable Development clearly states that the SDGs are **universal, indivisible, integrated and people-centered**

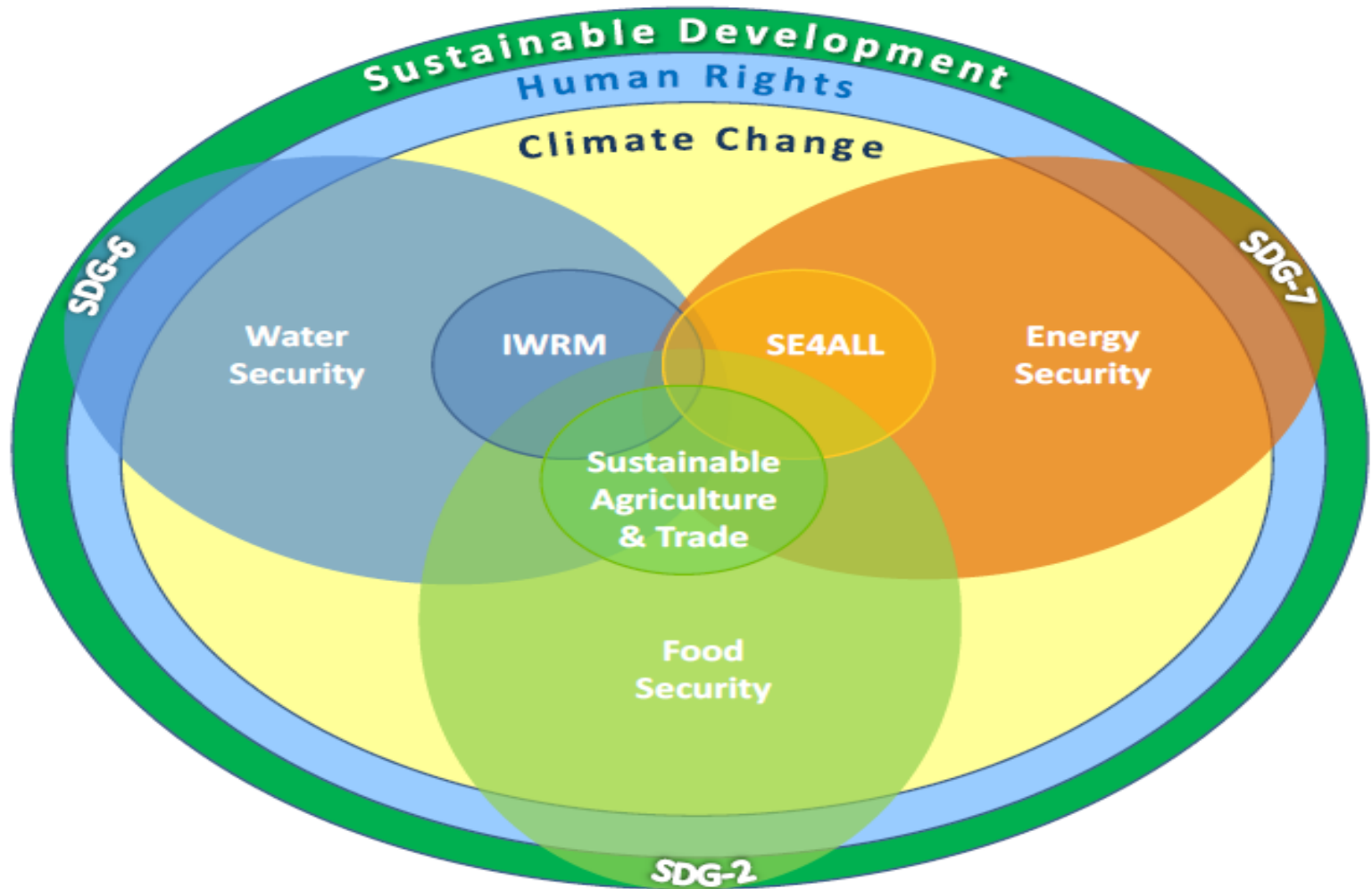
(in preamble & paras. 5, 18, 55, 71)

The 2030 Agenda affirms the **Human Right** to Water & Sanitation by aspiring for all:

“A world where we reaffirm our commitments regarding the human right to safe drinking water and sanitation and where there is improved hygiene; and where food is sufficient, safe, affordable and nutritious. A world where human habitats are safe, resilient and sustainable and where there is universal access to affordable, reliable and sustainable energy”.



Water-energy-food nexus within the context of the 2030 Agenda for sustainable development



Inclusive national development pursuing policies that embrace the principles of universality and inclusivity

Scale and scope of analysis of WEF security nexus within the context of sustainable development

Global level

Development
Priorities, SDGs

Climate Change

Trade flows,
financial regimes

Technology
Transfer

Regional level

Regional specificities

Natural resource
endowments

Geopolitics, refuge
flows

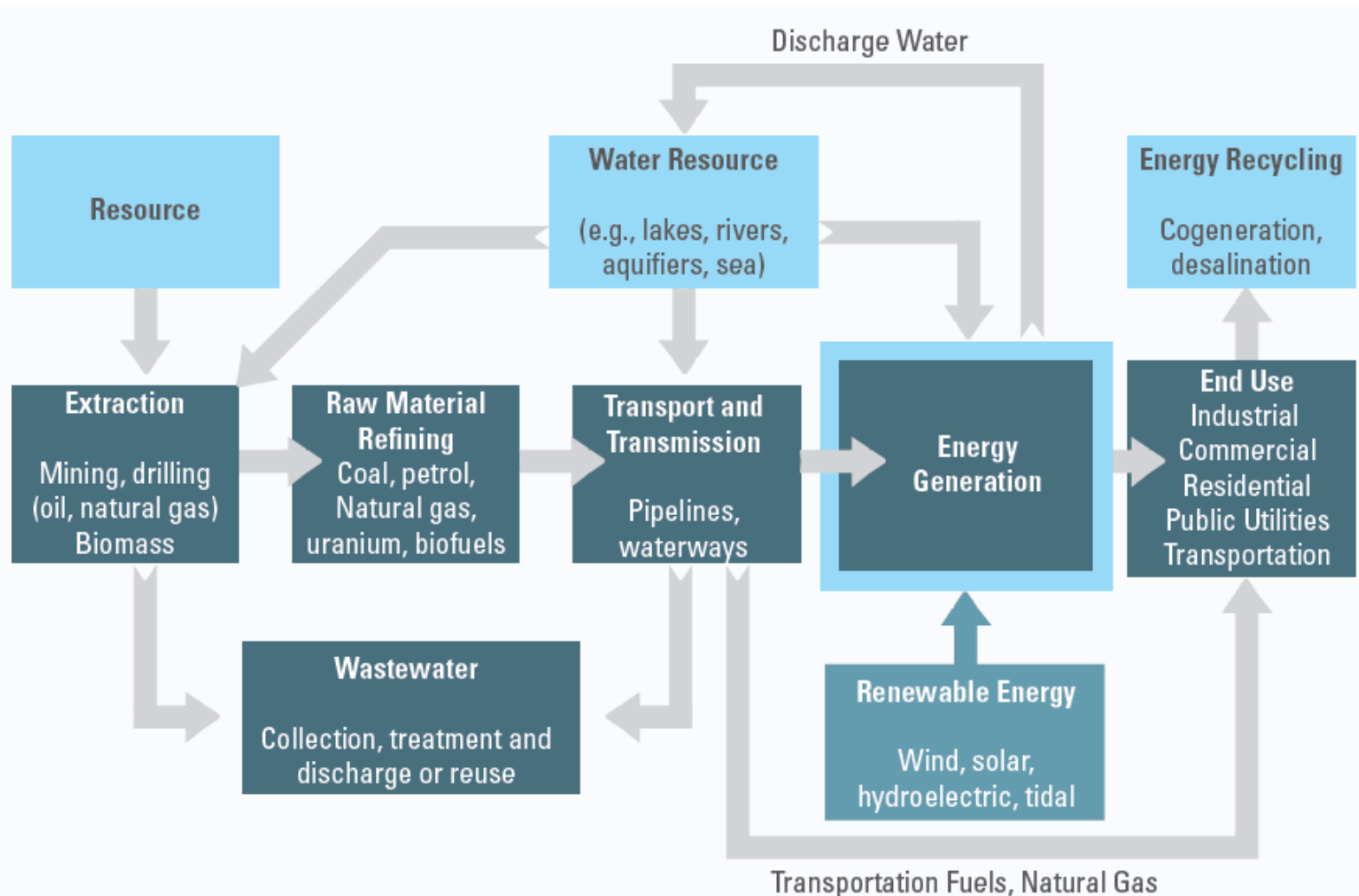
Arrangements to
foster regional
integration and
inter-state
cooperation

National and local level








Balance between
national security
imperatives and
policy dictates to
satisfy WEF needs of
the citizens

Special attention to
non discrimination and
ensuring the right to
water, food and
sustainable energy for
development across
communities

Embedded water in energy



Regional Policy Toolkit

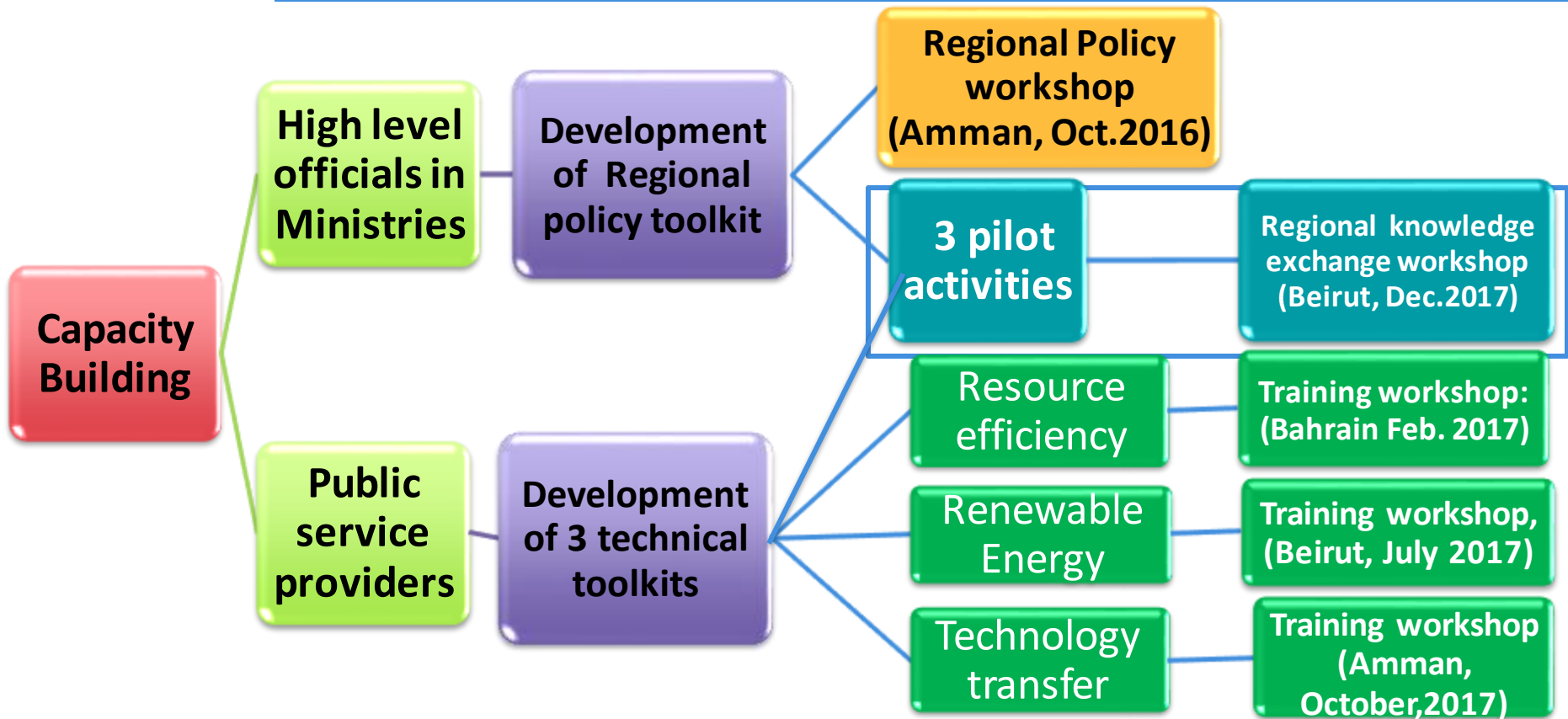
Module 1		Knowledge and awareness raising on the nexus
Module 2		Policy coherence
Module 3		Examining the water-energy security nexus
Module 4		Improving efficiency
Module 5		Informing technology choices
Module 6		Promoting renewable energy
Module 7		Addressing climate change and natural disasters



Managing the Nexus: Keys to a nexus approach success

- Political commitment and scientific backing
- Institutional and policy framework
- Solid understanding of the sectoral linkages
- Participatory approach
- Establishing clear dialogue between sectors
- Develop common standards
- Unified and coherent agenda
- Bridging the planning divide between sectors
- Synergies and trade-offs
- Negotiation skills and team-building
- Monitoring and accountability measures
- Improve governance models and financing incentives
- Strong commitment to the nexus paradigm at practice level

Overview of the UN Development Account Project: Main activities



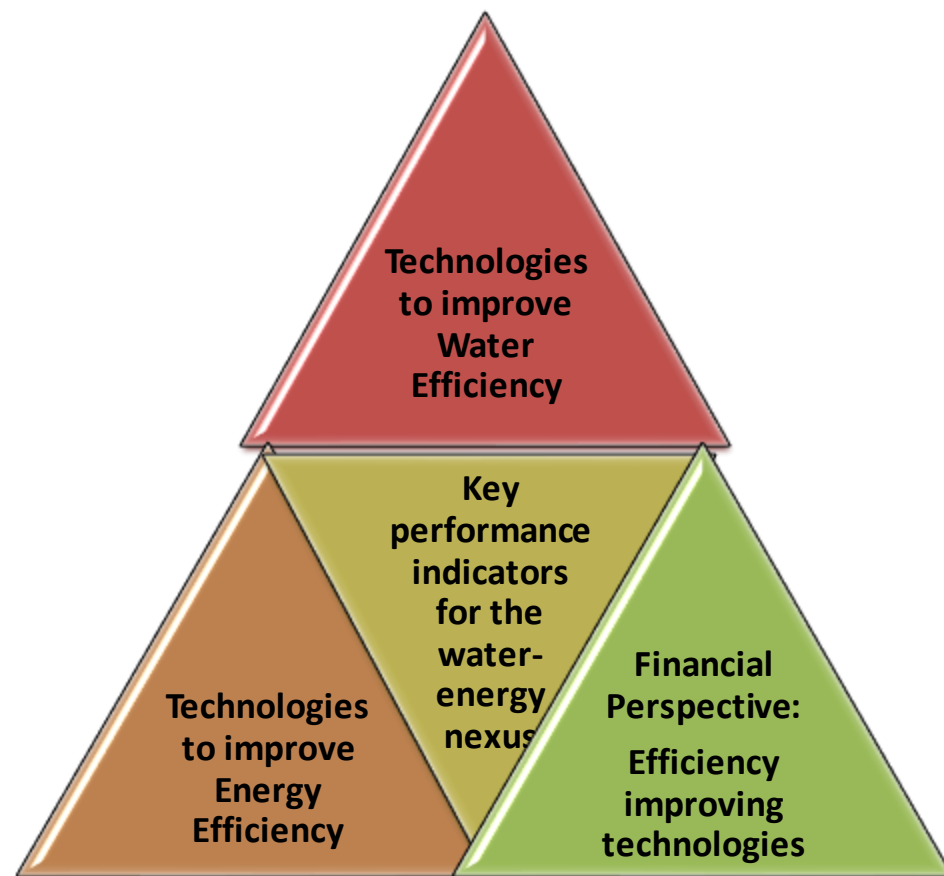
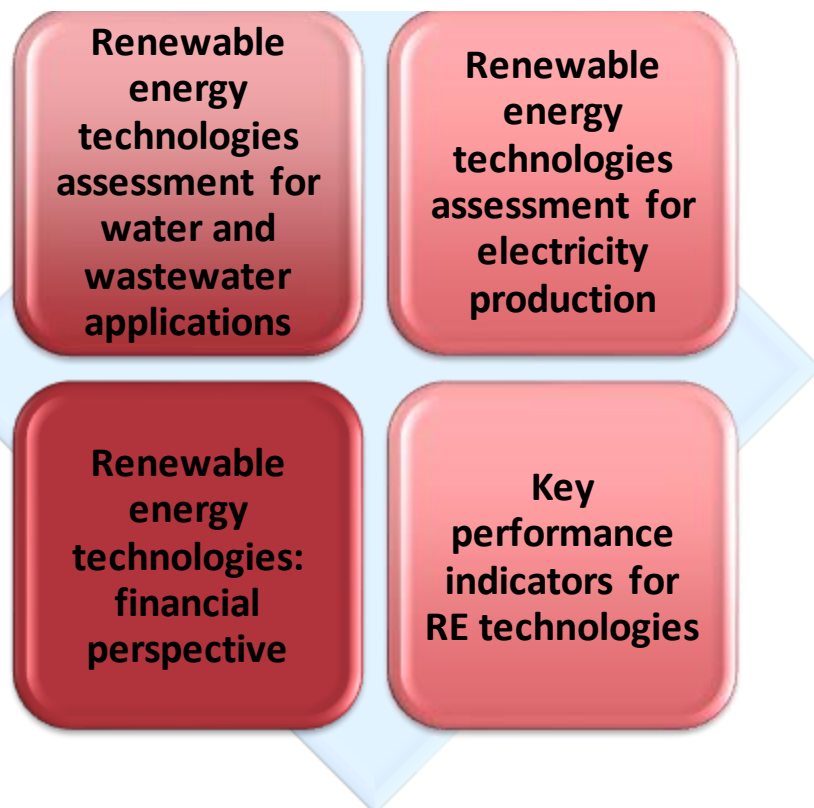
Pilot Projects:

- Photovoltaic Solar System for Water Pumping Moghra Oasis, Egypt
- Use of Photovoltaic Solar Systems for Groundwater Pumping Suwayda, Syrian Arab Republic
- Improving Energy Consumption in Hydraulic Systems, Kairouan, Tunisia



Water-Energy Nexus Operational Toolkit; Resource efficiency, Renewable energy, Technology transfer

<https://www.unescwa.org/sites/www.unescwa.org/files/publications>



W-E Nexus & RE: Aspects and Opportunities

RE can boost water security by improving accessibility, affordability and safety; abstraction and conveyance, treatment, distribution, end-use, waste water collection and treatment, constructing, operating and maintaining water-supply facilities

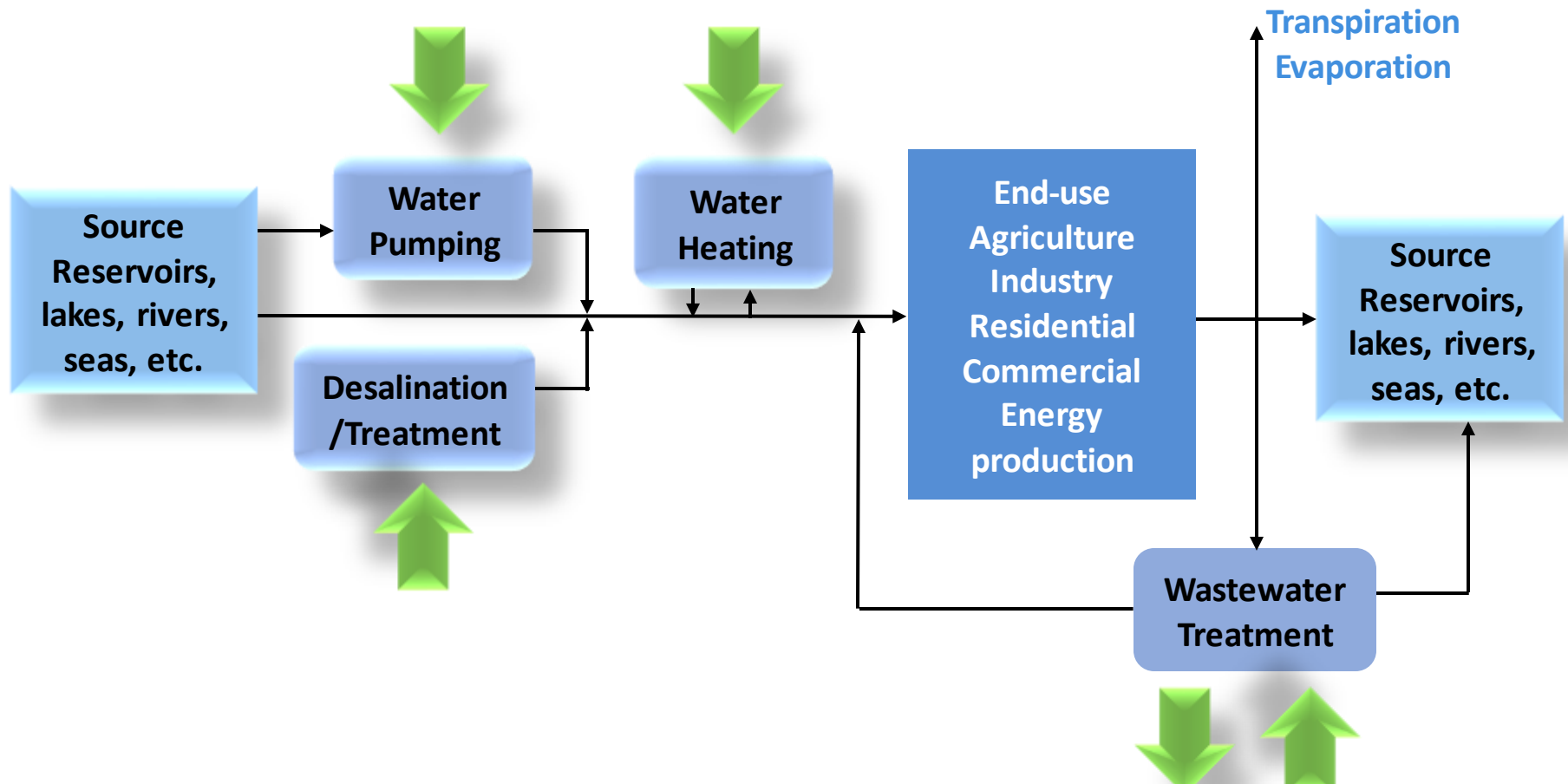


An energy system with substantial shares of RE could be less water-intensive; extraction and mining, fuel processing, thermoelectric cooling, transportation, waste disposal and emission control, constructing, operating and maintaining energy generation facilities

RE opportunities in the water-energy nexus:

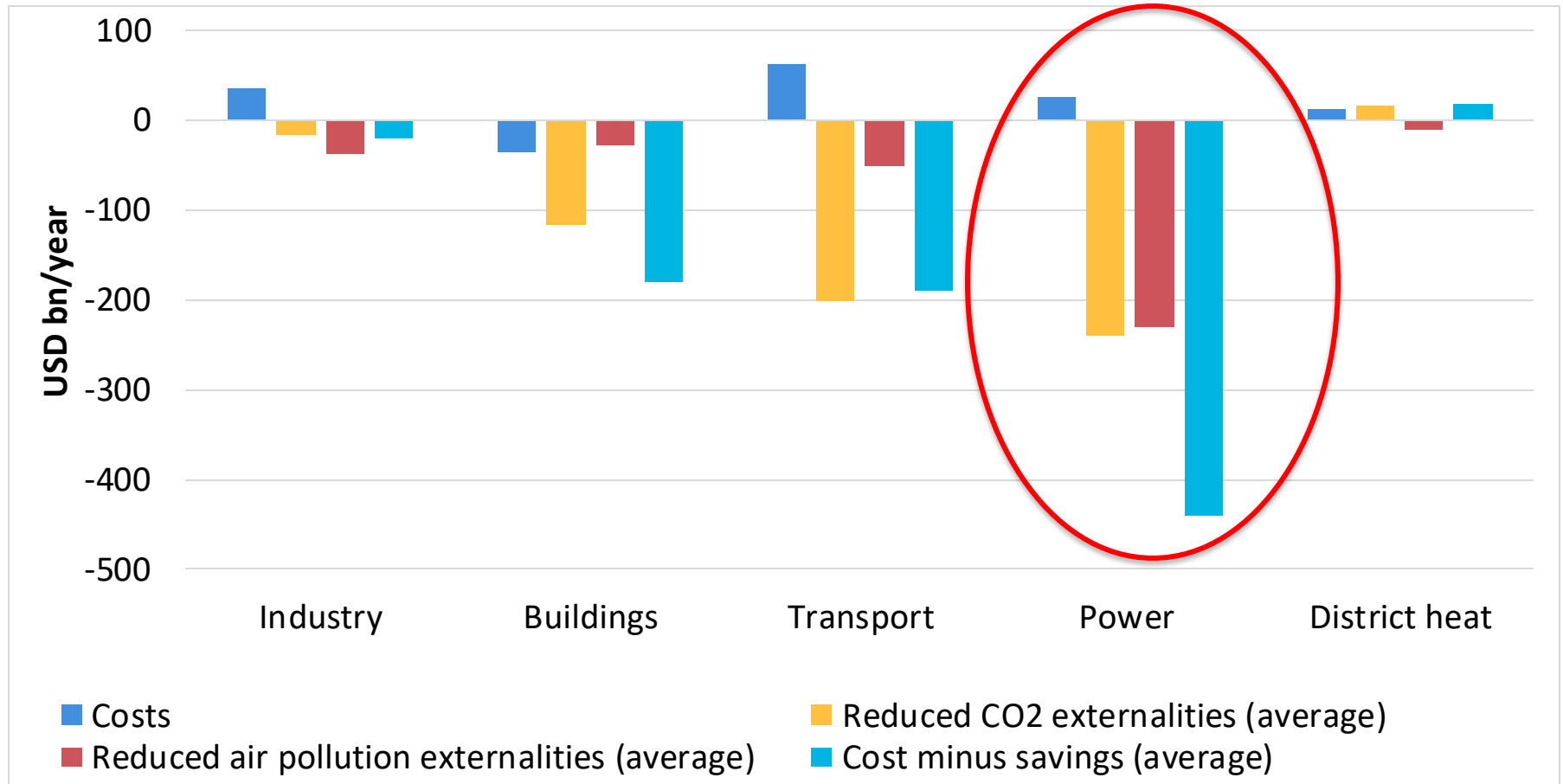
- Reduce water-intensity of power sector
- Improve access to water
- Enhance reliability of water supply
- Bridge the water gap in arid regions
- Replace traditional water heating
- Provide different energy sources that use small water amounts and encourages water saving.

RE across the water supply chain



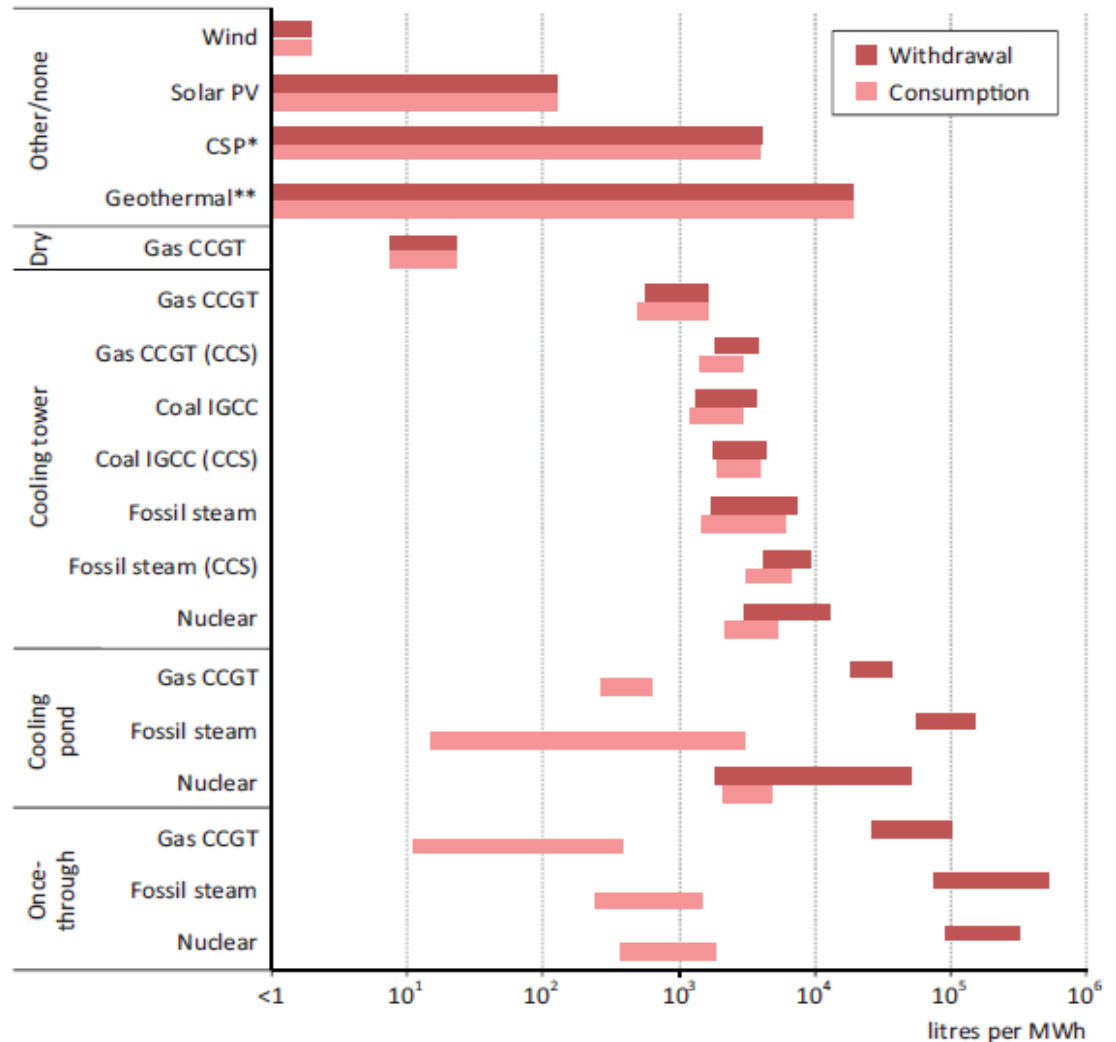
Green arrows indicate potential RE inputs.

Costs and savings of RE by sector in 2030



Water use for electricity generation by cooling technology

- All the RE technologies have the potential to generate electricity with greater amounts of water efficiency, as compared to fossil fuel resources.

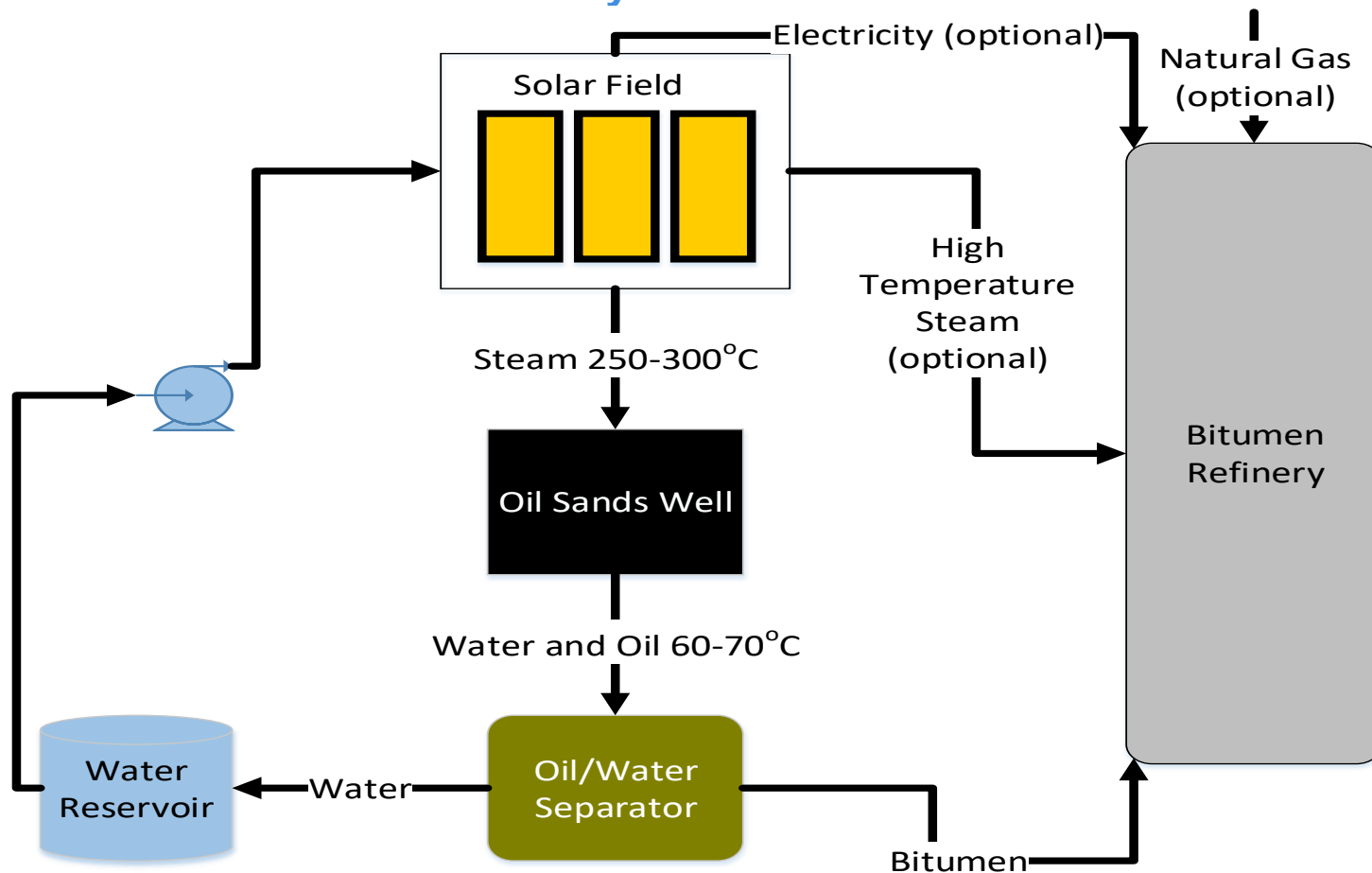


Source: International Energy Agency, 2012.

RE in the oil & gas sector

By 2035, solar energy is forecasted to provide about 5% of the industry's energy needs (≈ 2 PJ of energy).

Solar EOR system for oil sands



Recommendations for promoting RE technologies for integrated management of natural resources

- **Enforce proactive and integrated policies** to manage natural resources more sustainably, especially the water-energy-food nexus with **co benefits cross sectors**.
- There are many opportunities for the use of RE technology to strengthen **the security of the water-energy-food nexus**.
- **The RE technologies** have great potential for **productive activities** to stimulate **entrepreneurial development, women empowerment** and in developing robust value chains in a **nexus approach** to encourage a **sustainable economy**.
- The **costs associated with RE technologies have decreased** over the past few years and become competitive with those of fossil fuels.
- Need to further explore tools and business models that reduce the **perceived risk** of RE projects and that provide guarantees and **de-risking** mechanisms to leverage **private investments**.
- **Indicators** related to RE technology as well for the water-energy-food nexus started to be considered and developed and **data availability** remain a challenge.

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THANK YOU

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