

# Nexus Perspectives: Water, Energy and Climate

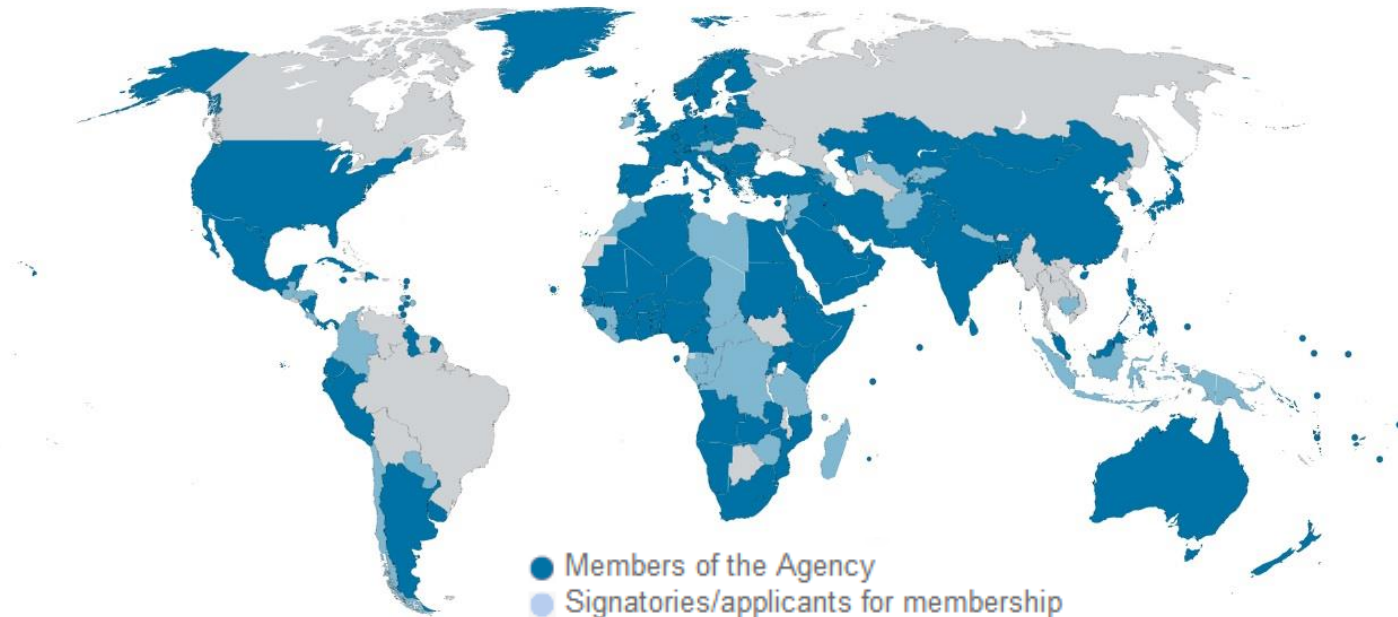
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## Introduction to IRENA

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- Intergovernmental renewable energy agency, headquarters in **Abu Dhabi**, United Arab Emirates. Innovation and Technology Centre in **Bonn**, **Germany**
- **Established:** April 2011
- **Mandate:** Biomass, Geothermal, Hydro, Ocean, Solar, Wind
- **Membership:** 129 Members; 38 Signatories/States in accession (as of 27 February 2014)

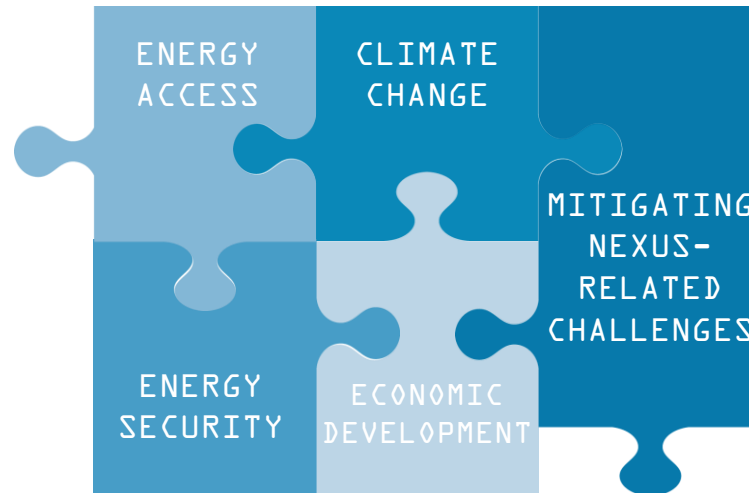


# Resource Nexus: Growing risks and challenges

- The challenges posed by the Nexus are already impacting the way we think about, generate, transport, store and consume energy.
  - **Energy for water**
  - **Water for energy**
- These challenges will continue to intensify
  - By 2035, energy consumption will increase by 35% which will increase water consumption by 85%
  - 70% of 593 of the world's largest listed corporations identified water as a substantive business risk
  - 2.8 billion people live in areas of high water stress and 1.2 billion in areas with physical scarcity; By 2030 we will need 45 percent more water just to meet our food needs.

# Nexus “friendly” pathways for growth

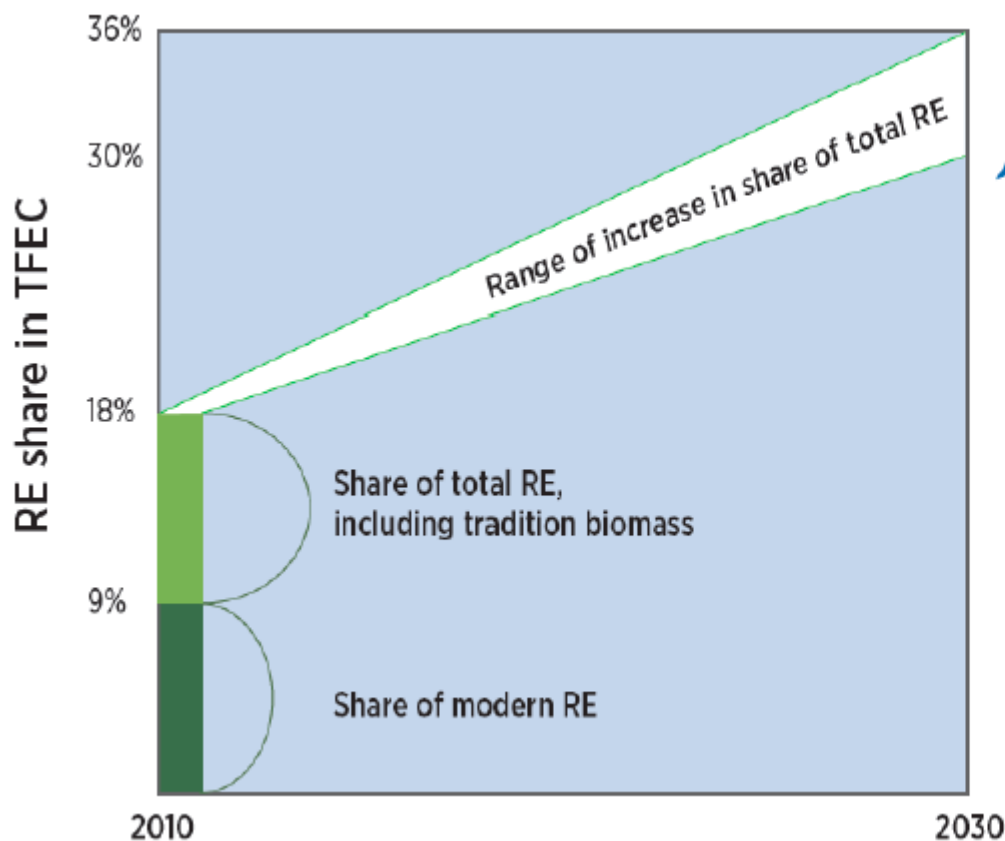
- Silo-approach → resource management → integrated “nexus” approach
- The role of renewable energy in the Nexus needs to be assessed as it will be an integral element of a low-carbon, sustainable energy system.



**Drivers for Renewable Energy Deployment**

# Doubling the share of renewable energy by 2030

## REmap 2030 A Renewable Energy Roadmap

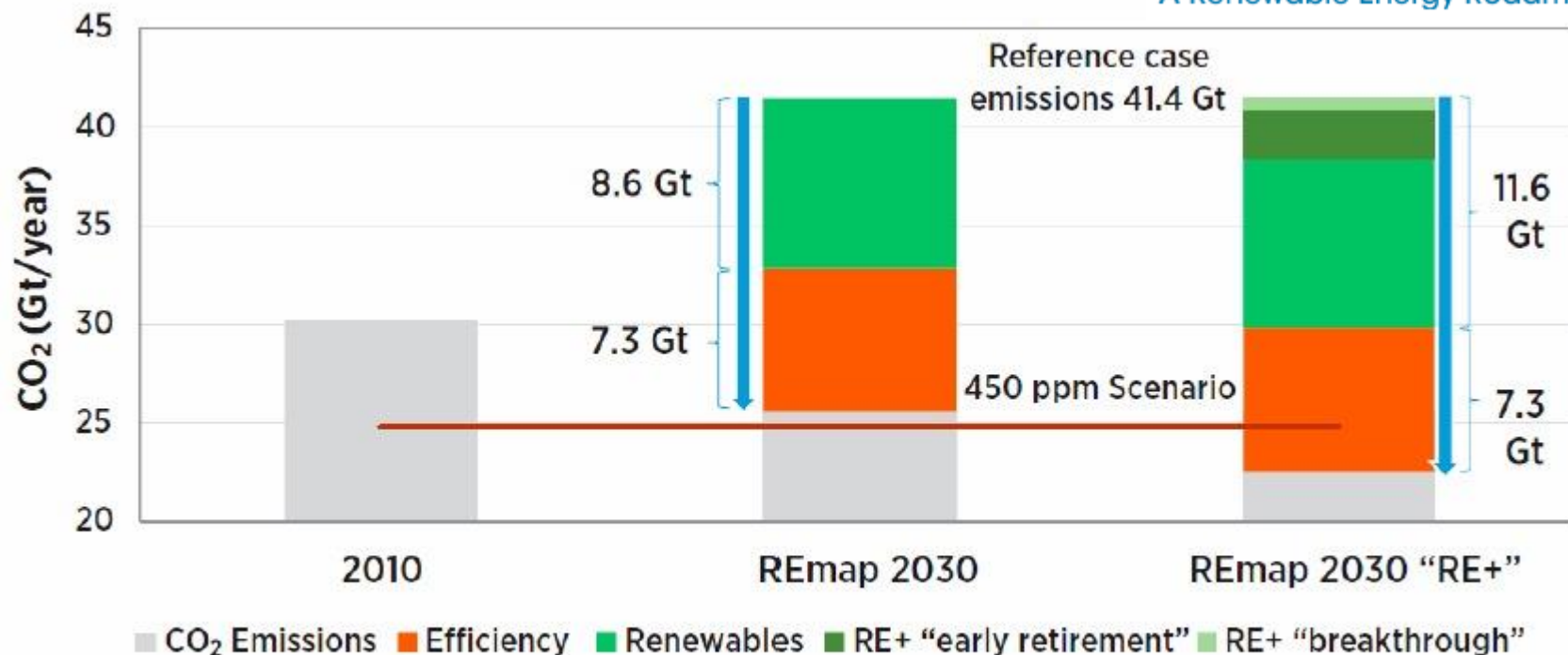


Doubling of share of total renewables in 2030 including SE4ALL goals of efficiency and modern energy access

Tripling of share of modern renewables in 2030

Doubling the share of renewable energy implies a tripling of the share of modern renewables

## REmap 2030 A Renewable Energy Roadmap



Renewable energy can provide half of the CO<sub>2</sub> emission reductions needed in 2030 from the energy sector

Renewable energy - resource nexus (water, land, etc.) knowledge gaps:

- General lack of evidence-based knowledge.
- The lack of cross-sectoral quantitative tools.

## Ongoing IRENA project on the Nexus:

- State of the art review of the existing knowledge on the role and benefits of renewable energy in the nexus (study)
- Development of the conceptual framework for an energy-centric nexus tool to empirically estimate the contribution of renewable energy in the nexus

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- scope existing literature, including on:
  - **Renewable energy and land-use**
    - Assessing the impact of RE deployment on land
  - **Renewable energy and food production**
    - Focusing on identifying cases of RE intervention along the food supply
  - **Renewable energy and the water-energy nexus**
    - *Water for energy production*
      - Water intensity of RE technologies and a comparison with conventional energy technologies
    - *Energy for water supply*
      - Analysing potential for renewable energy intervention along the water supply chain



- Tool, looking at the impact of RE deployment on the water, energy and land component of the nexus
- Macroscopic and snapshot view of RE impact on resource demands
- **Input:** Different RE penetration scenarios in national energy balances using existing RE targets or ambitions.
- **Output:** Snapshot view of the change in resource needs using in-built quantified interlinkages
- Based on the food-centric model developed by the Qatar Energy and Environment Research Institute (QEERI).
- In 2014-15, IRENA will develop concrete case studies

## Scope for collaboration

- The cross-sectoral nature of the issues requires different stakeholders with varying expertise in energy, water, food, land and climate change to collaborate.

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Thank you