

# **Renewable energy in the Near and Middle East**

## **IRENA Perspective on Global Energy Transition in the Region**

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German Near and Middle East Association

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in Bonn

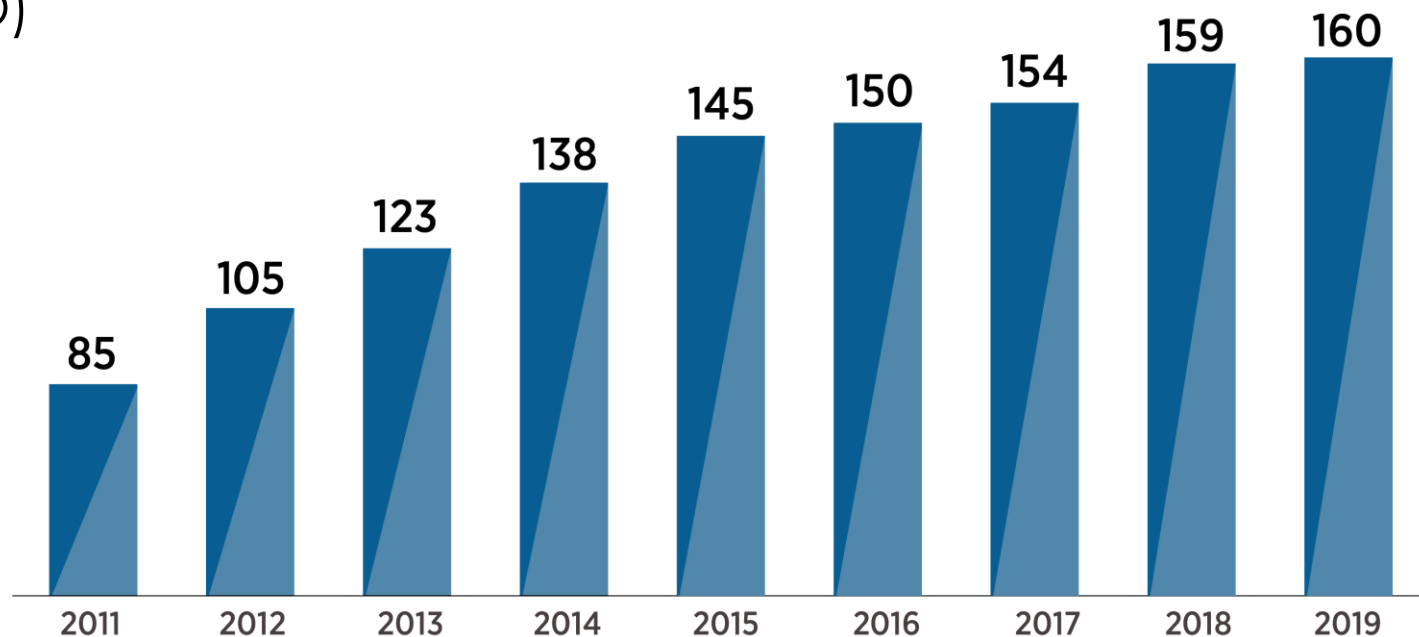
**February 9 2022; 10:30 till 12:00**

# IRENA at a glance

## Mandate

To promote the widespread adoption and sustainable use of **all forms of renewable energy** worldwide

- » Intergovernmental Organization (IGO)
- » Established in 2011
- » Headquarters in Masdar City, Abu Dhabi, UAE
- » Country Support & Partnerships (CSP)
- » Permanent Observer to the United Nations – New York, USA
- » Director-General – Francesco La Camera

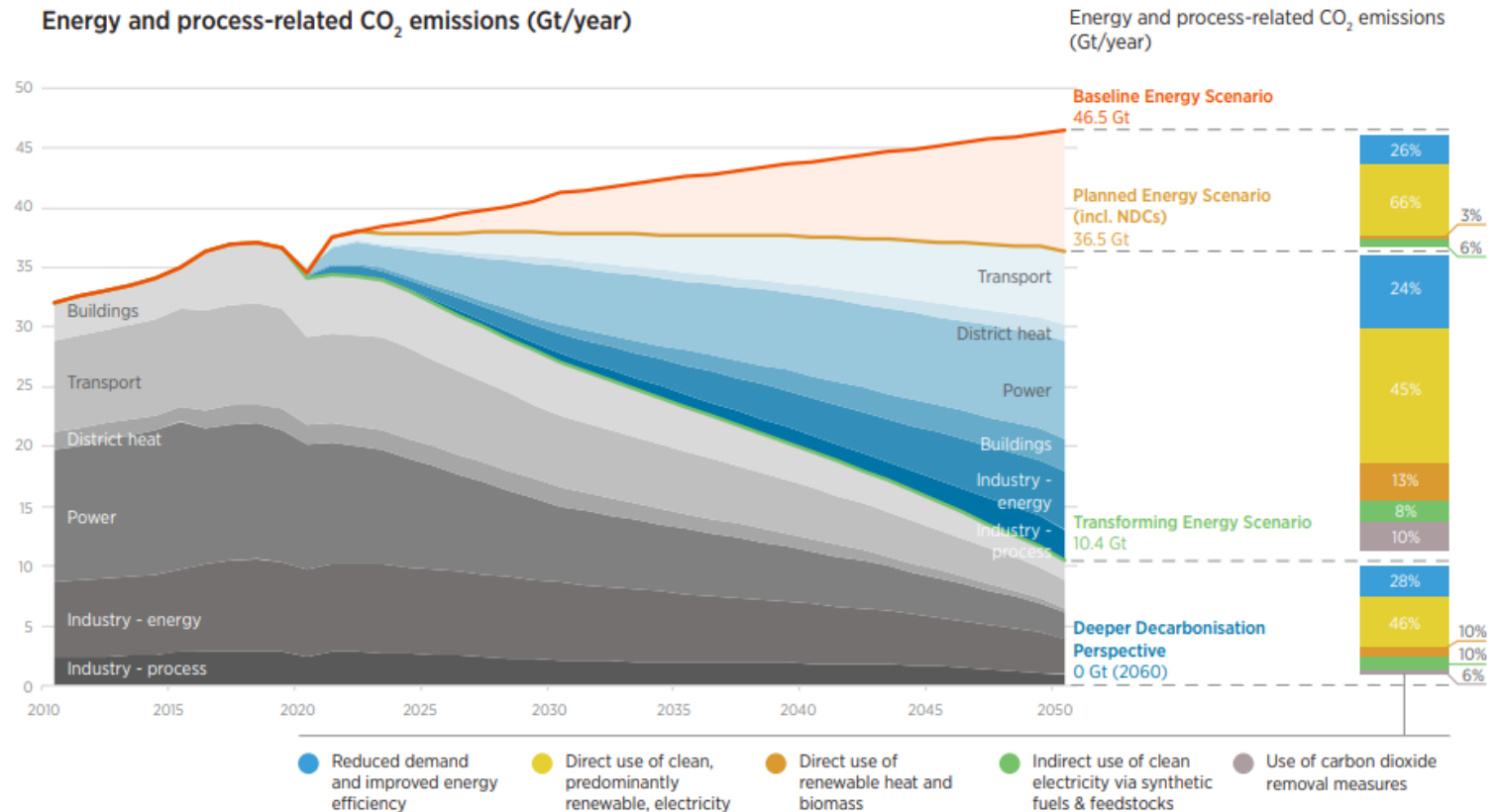


## Membership

2022: 165 members + 19 in accession

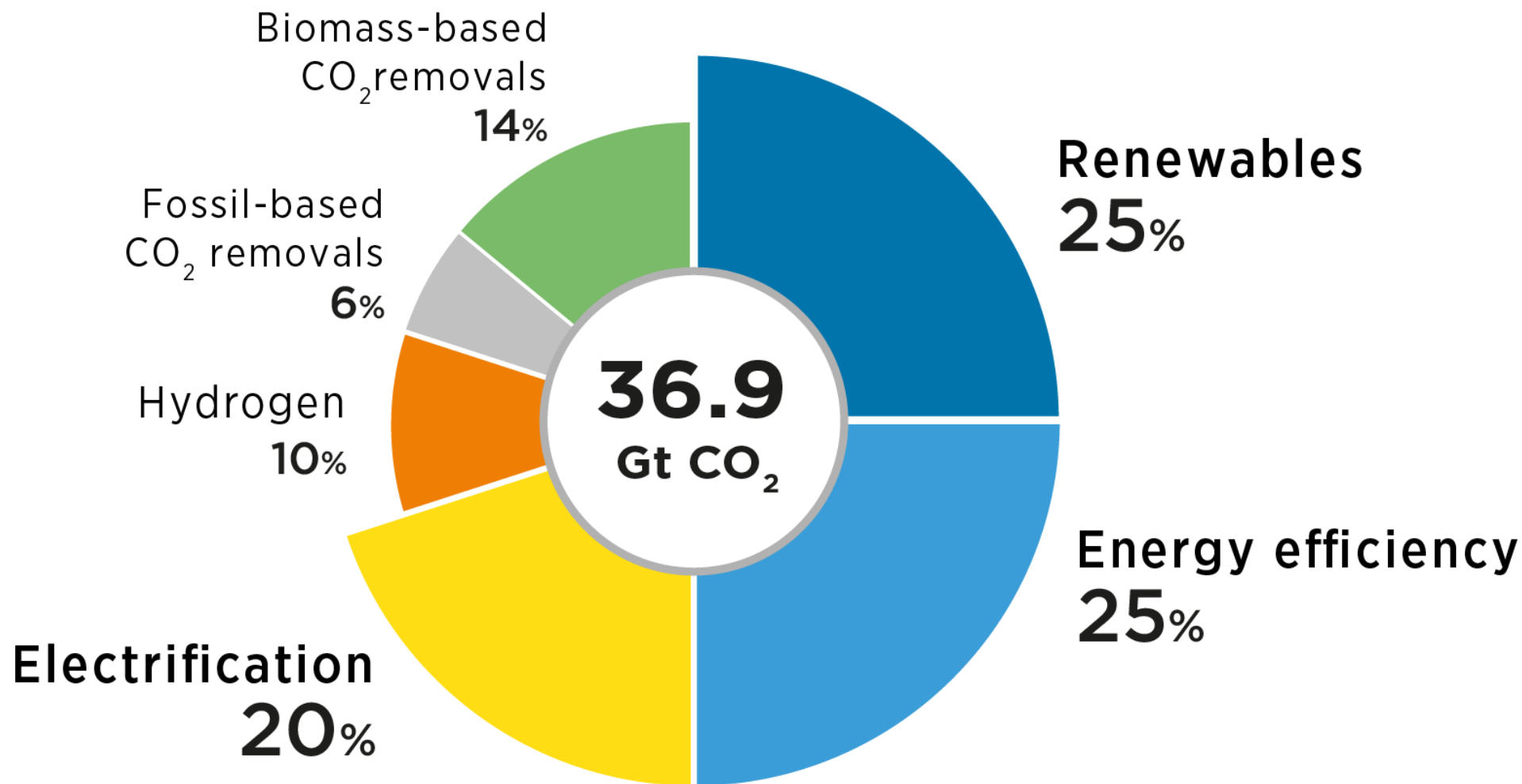
# Renewables and efficiency key to meeting global climate goals

- To achieve the **Transforming Energy Scenario**, energy-related CO<sub>2</sub> emissions need to fall by 3.8% per year on average until 2050.
- Annual energy-related CO<sub>2</sub> emissions would need to decline at least **70% below 2018 levels by 2050**.
- Over half of the necessary reductions come from renewables and one quarter from energy efficiency measures.
- When including direct and indirect electrification (such as green hydrogen and technologies like EVs), the total reductions increase to over 90% of what is required.
- The **Deeper Decarbonization Perspective** shows how emissions can be further reduced to zero



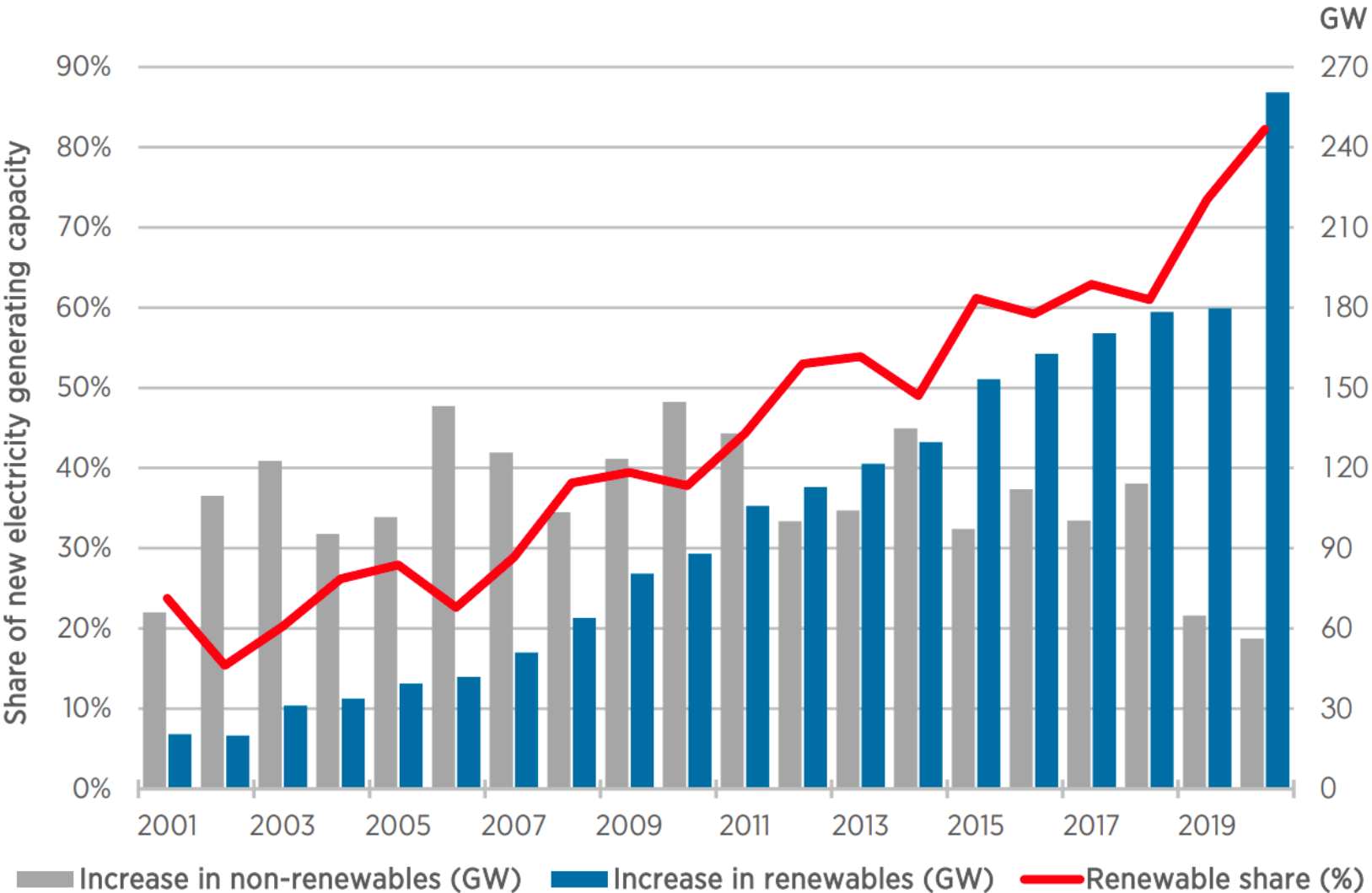


## Renewables, efficiency and electrification dominate energy transition



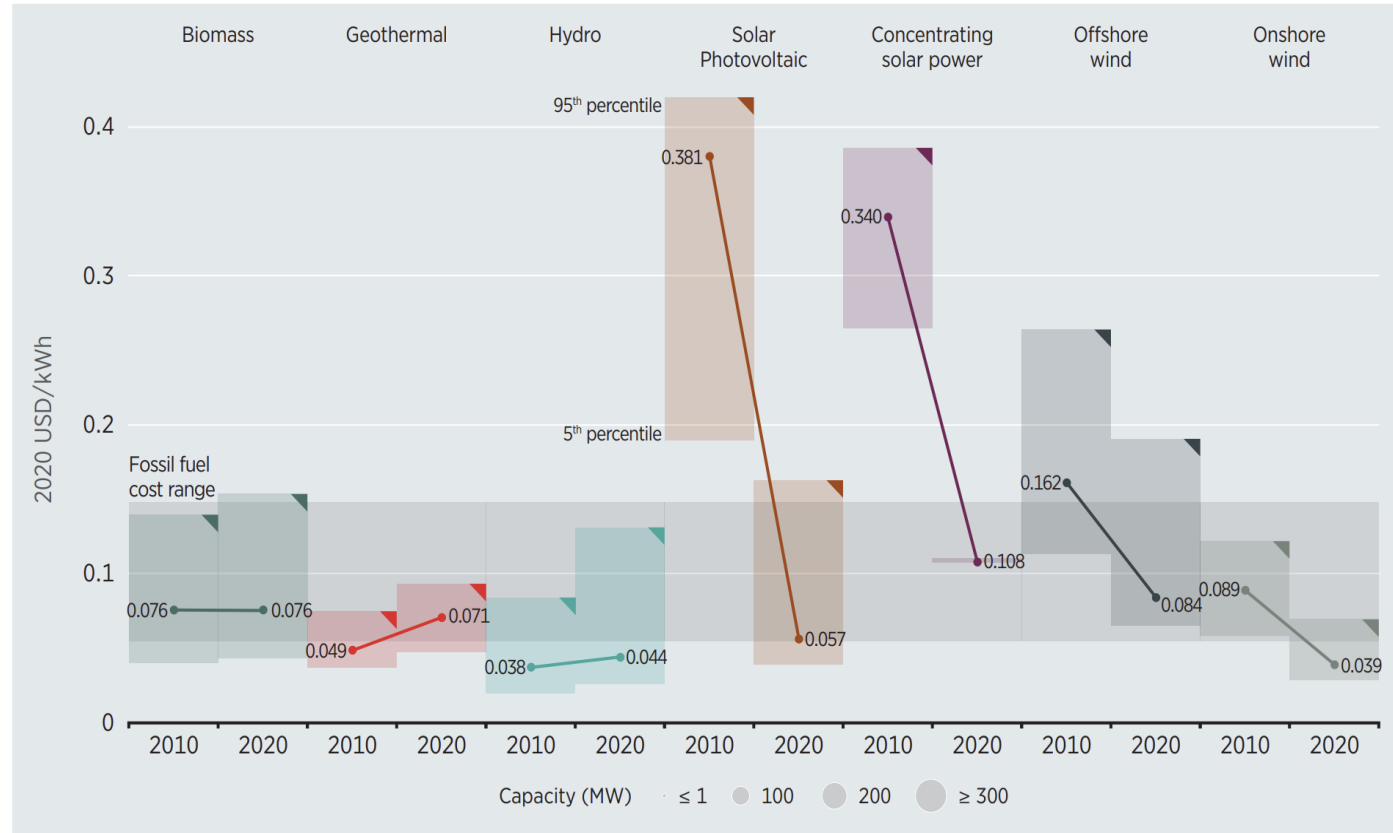
90% of all decarbonisation in 2050 will involve renewable energy through direct supply of low-cost power, efficiency, electrification, bioenergy with CCS and green hydrogen.

# Renewable Share of Annual Power Capacity Expansion



Renewables now account for one third of global power capacity today

# Recent Costs Evolution



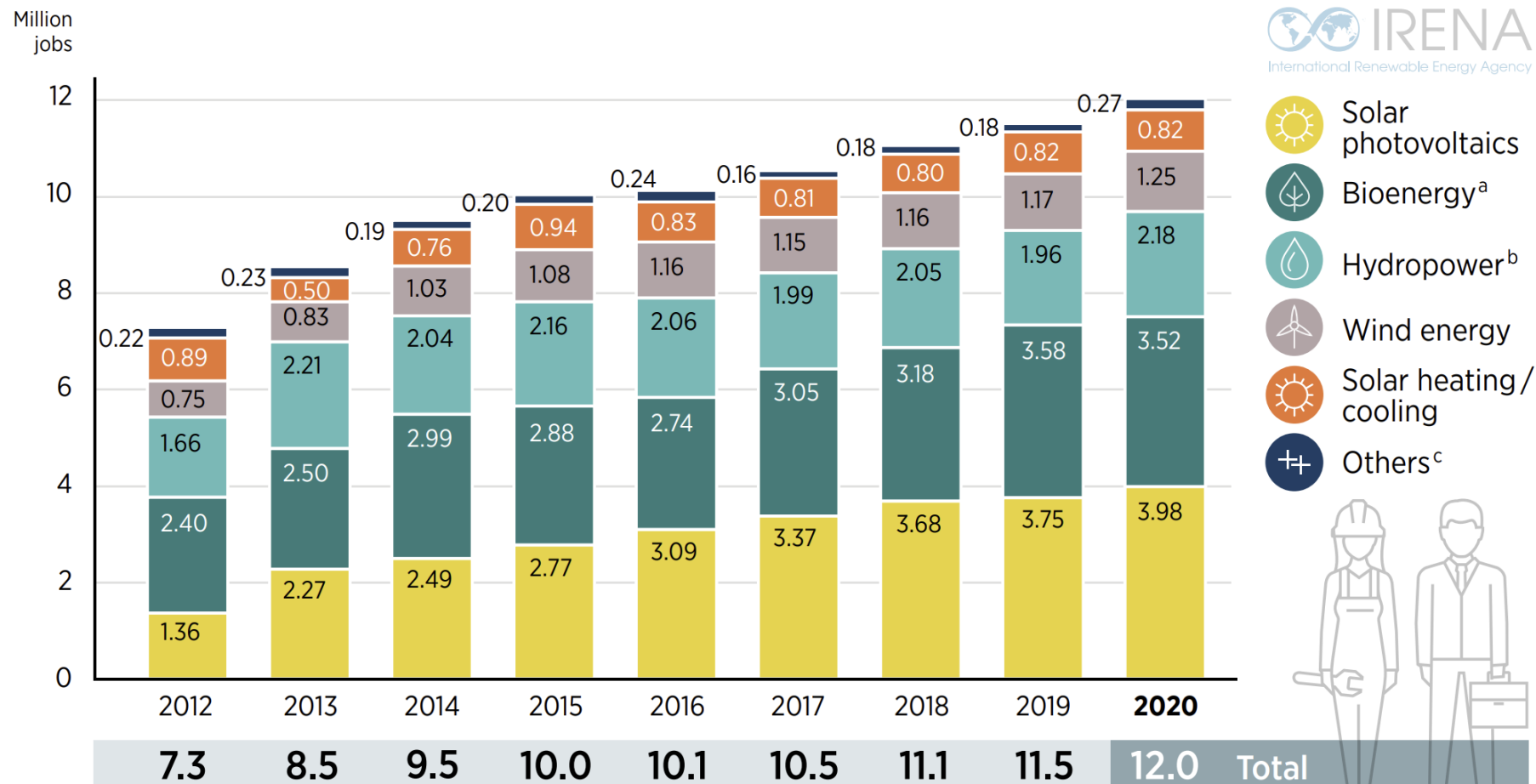
Source: IRENA Renewable Cost Database

Note: This data is for the year of commissioning. The thick lines are the global weighted-average LCOE value derived from plants commissioned in each year. The project-level LCOE is calculated with a real weighted average cost of capital (WACC) of 10% for OECD countries and China in 2010, declining to 5% in 2020; and 10% in 2010 for the rest of the world, declining to 7.5% in 2020. The grey band represents the fossil fuel-fired power generation cost range, while the bands for each technology and year represent the 95th percentile bands for renewable projects.



- Renewable power generation costs have fallen sharply over the past decade, driven by **steadily improving technologies, economies of scale, competitive supply chains and improving developer experience.**
- Costs for electricity from utility-scale solar photovoltaics (PV) **fell 85% between 2010 and 2020.**
- The global weighted-average cost of electricity from onshore wind **fell by 56% between 2010 and 2020.**
- New solar and wind projects are increasingly undercutting even the cheapest and least sustainable of existing coal-fired power plants. **800 GW of existing coal-fired capacity has operating costs higher** than new utility-scale solar PV and onshore wind, including USD 0.005/kWh for integration costs.

# Employment Benefits



<sup>a</sup> Includes liquid biofuels, solid biomass and biogas.

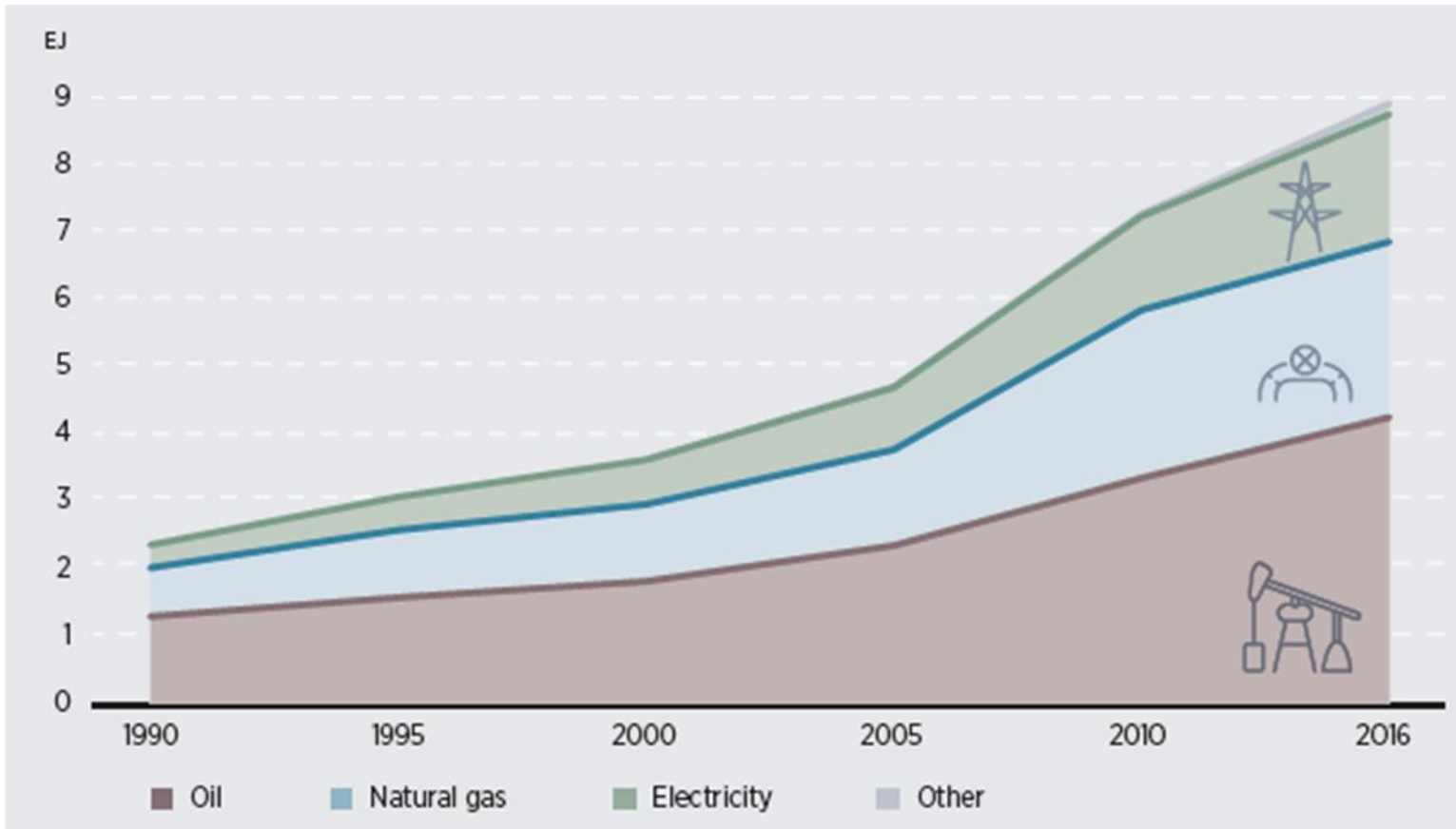
<sup>b</sup> Direct jobs only.

<sup>c</sup> "Others" includes geothermal energy, concentrated solar power, heat pumps (ground based), municipal and industrial waste, and ocean energy.

Source: IRENA jobs database.

# Rapidly growing energy demand of the GCC

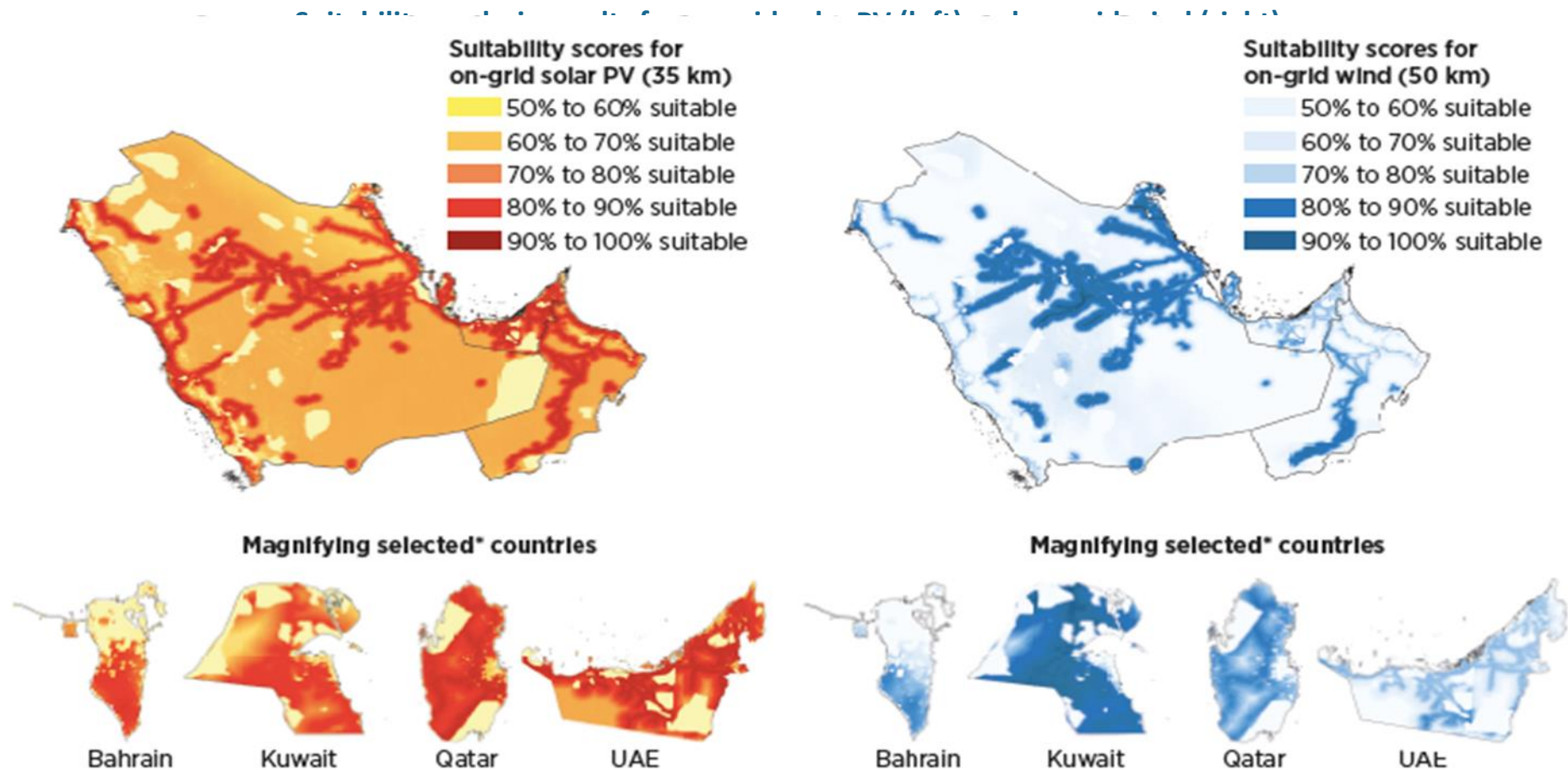
Total final energy consumption by source in the GCC, 1990-2016



- **Total final energy consumption** quadrupled since 1990
- **Drivers:**
  - Economic growth
  - Population growth
  - Fuel and power subsidies
- **Energy demand per capita** higher in GCC countries than most other industrialised countries
- **Energy supply:** Oil and natural gas

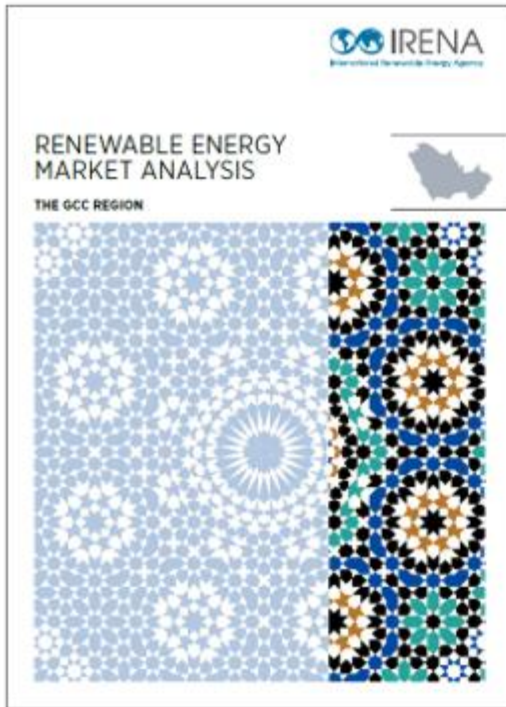


# The GCC's promising energy resource: renewables

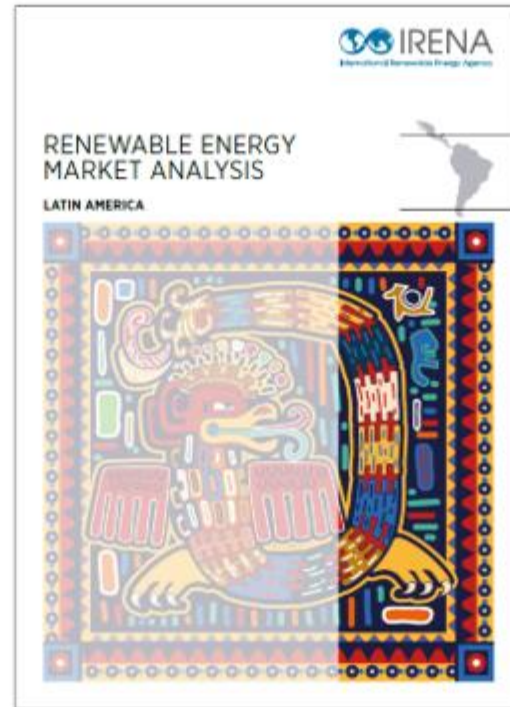


Source: IRENA (2019d), Global Atlas Suitability Map, Solar PV Map Data: World Bank Group, 2018, Global Horizontal Irradiation kWh/m<sup>2</sup> World 1km, Wind Map Data: Technical University of Denmark Global Wind Atlas, Average Wind Speed 1km at 100m height

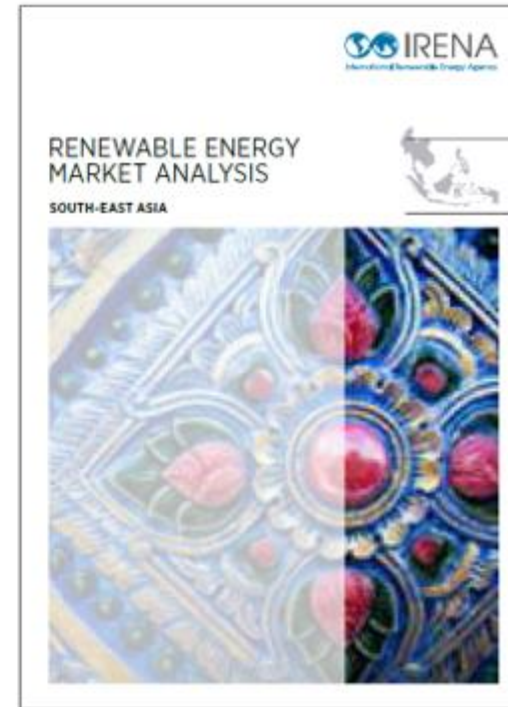
# The Renewable Energy Market Analysis Series



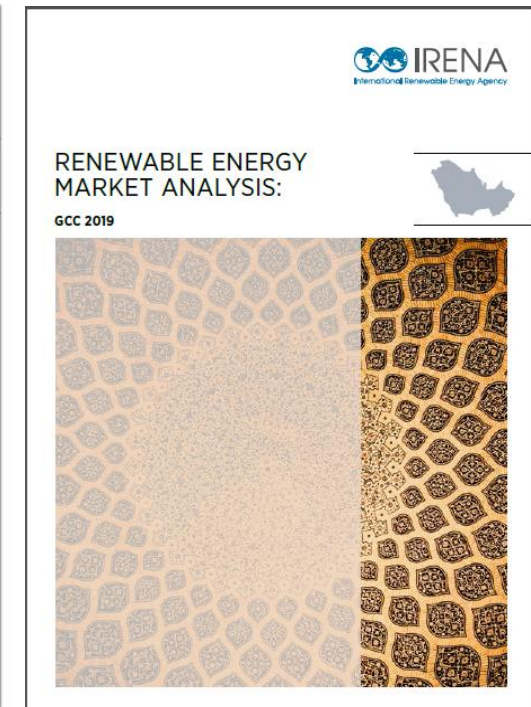
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Energy sector  
overview

Renewable energy  
landscape

Policy framework

Investment  
framework

In-focus  
discussion

The way forward





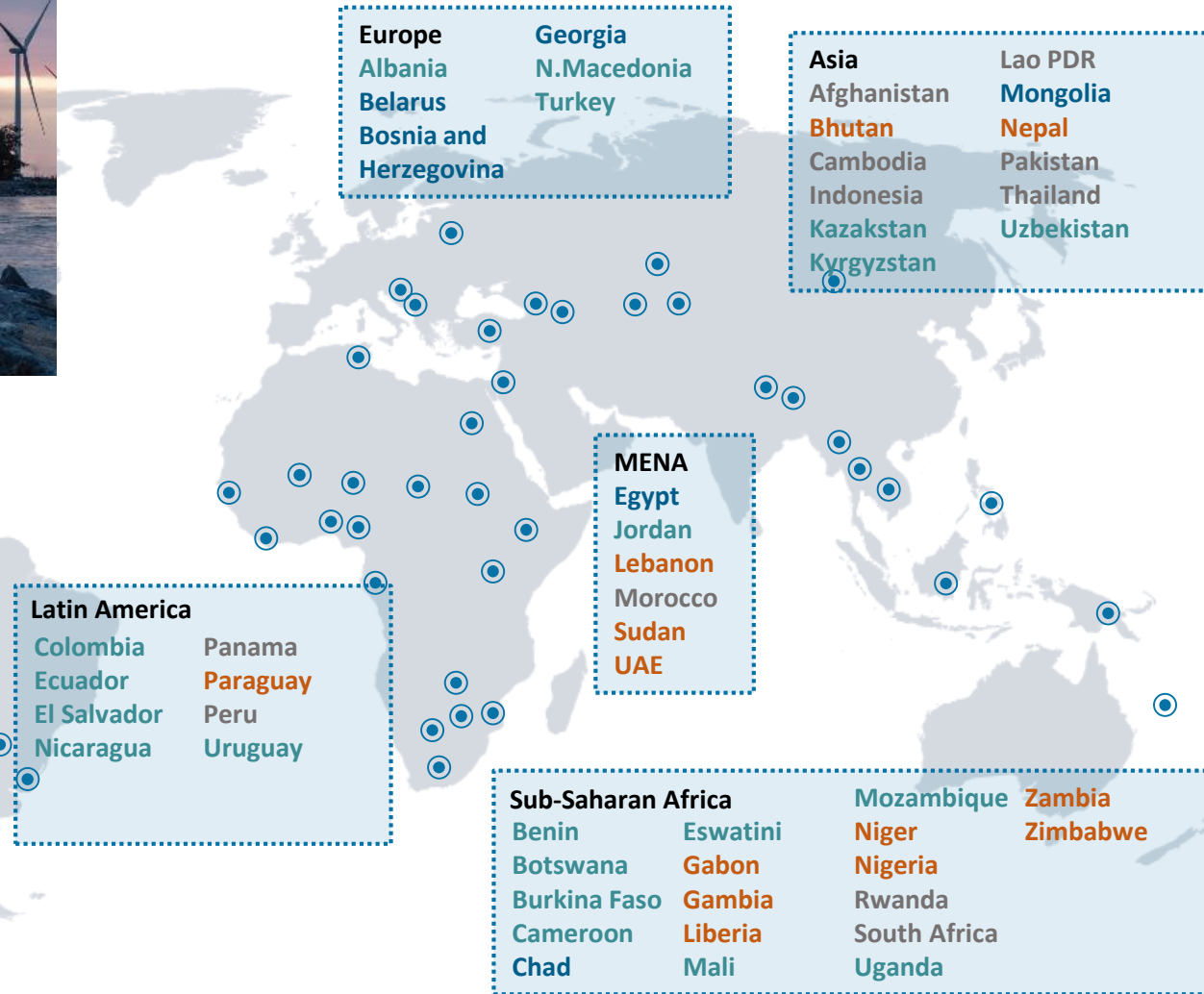
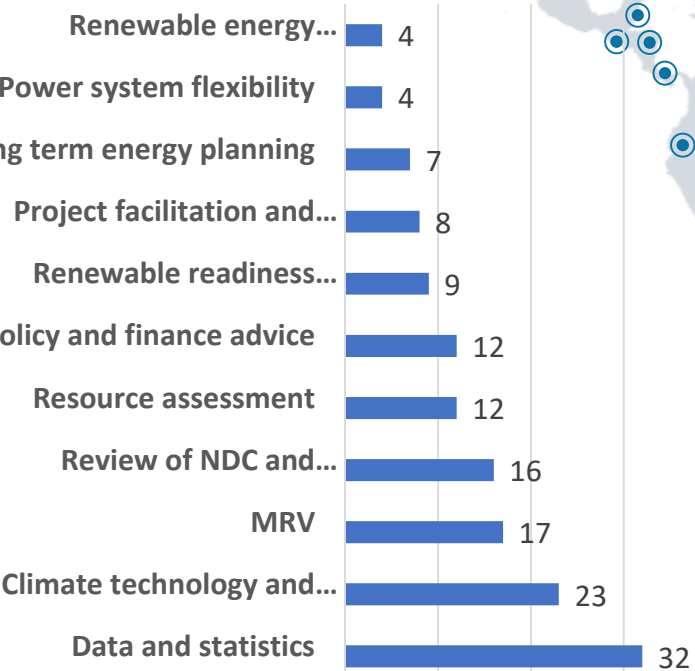
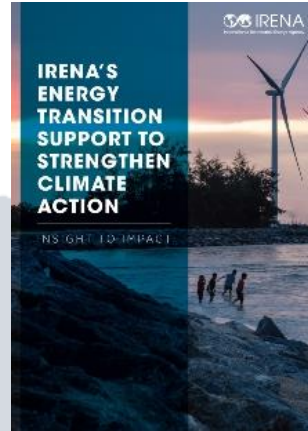
# Energy Transition to Foster Climate Action through NDCs

72 countries

144 work-packages

1.8 bn population

3.2 bn tons of CO2



Disclaimer: Boundaries and names shown on this map do not imply any official endorsement or acceptance by IRENA.



**Interest in Climate action and carbon neutrality – UAE, Saudi Arabia. CoP-27 and 28 in the region, ETAF with IRENA.**



**Increased role for electricity, Power system flexibility and electrification of end-uses**



**Interest in Green Hydrogen and EU cooperation. Local industry and transport decarbonization and also supporting exports**



**Energy Transition and electrification seen as an opportunity for the region and showing leadership**

## 1. Support market creation

- There is no current large-scale market trading green hydrogen. Lower GHG emissions from green hydrogen need to be quantified and tracked to be valued.

## 2. Enable global trade

- Once hydrogen and green commodities are traded across borders, the GHG emissions associated with its production, transport and conversion processes need to be tracked. Need for the same standards in exporting and importing country.

## 3. Promote efficient use of renewable electricity

- Achieved by a hydrogen and green commodity certification system that keeps consistency with certification of other commodities (electricity/gas) coupled with additionality.

## 4. Fundamental component of supporting policy

- Policy instruments like contracts for difference, grants, blending mandates and quotas need to track the green hydrogen to check progress and compliance.

Part of the activities of IRENA Collaborative Framework on Green Hydrogen



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