

GLOBAL ENERGY TRANSFORMATION

A Pathway to Sustainability Based on Renewables

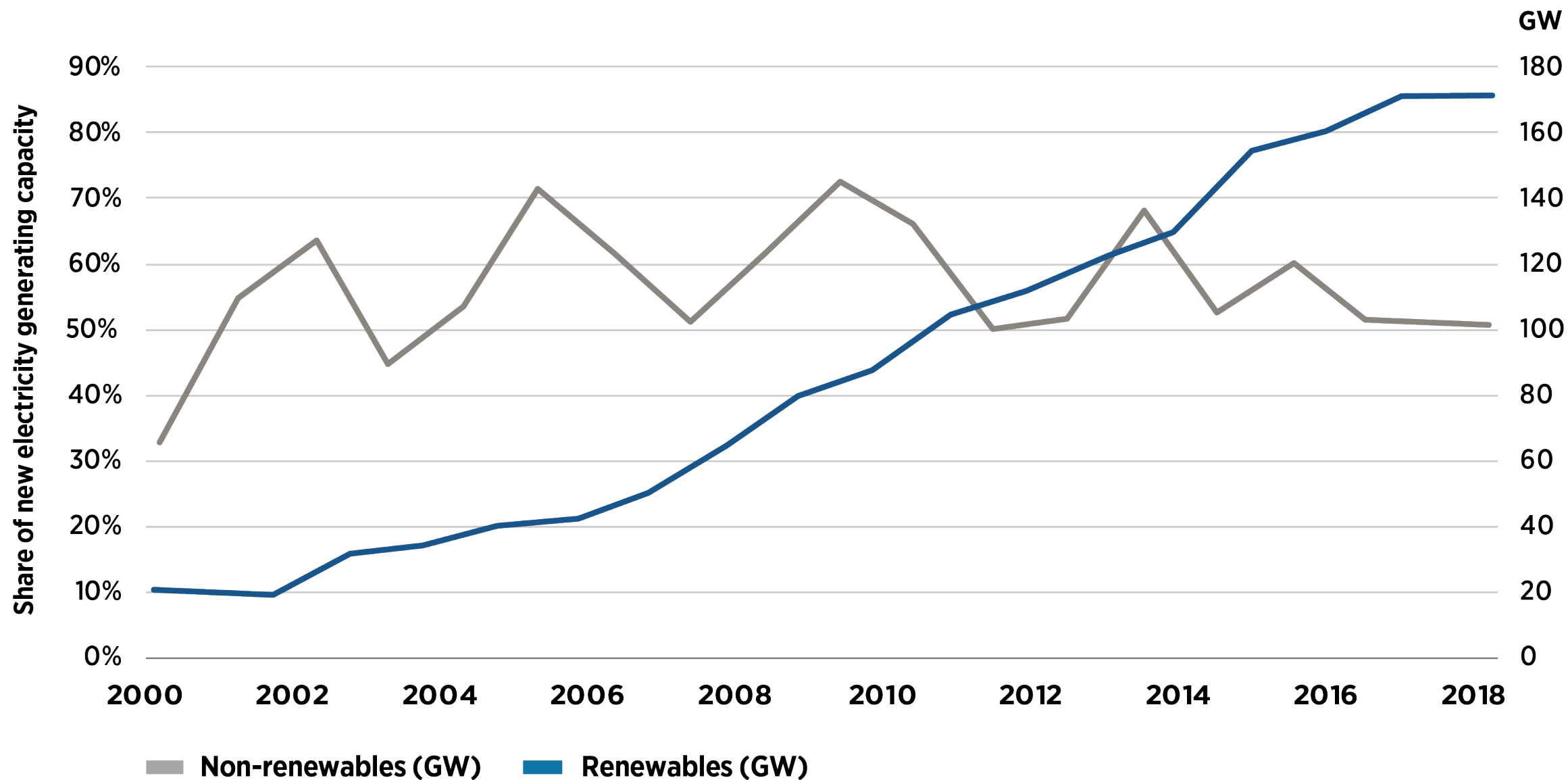


A ROADMAP TO
2050

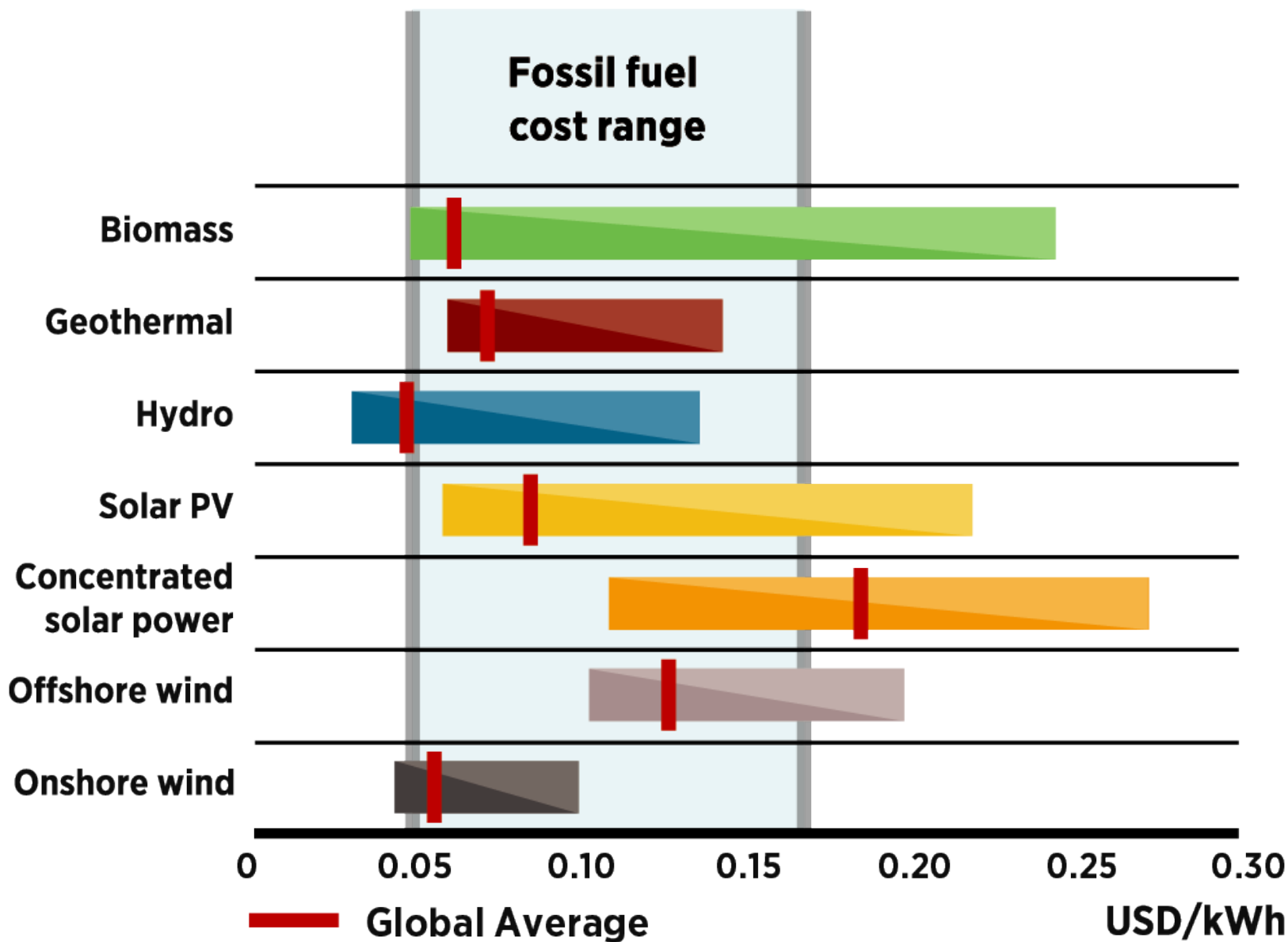
Francesco La Camera
Director-General

16 October 2019 • International Energy Forum • Riyadh

Capacity additions in power sector



The strong business case of renewables continues to solidify



Cost of Electricity

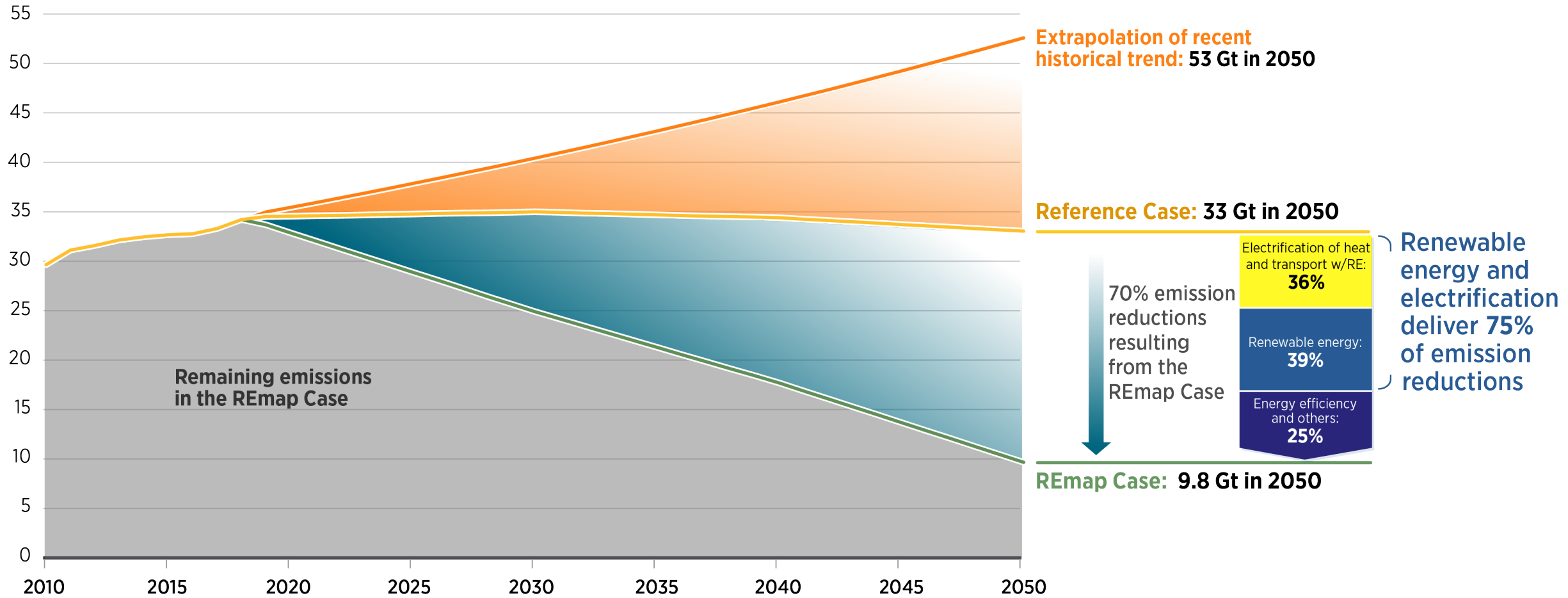
Global levelised cost of electricity from utility-scale renewable power generation technologies (2010-2018)

Source: IRENA Renewable Cost Database

- **Bioenergy** 0.062 USD/kWh
- **Geothermal** 0.072 USD/kWh
- **Hydro** 0.047 USD/kWh
- **Onshore wind** 0.056 USD/kWh
- **Concentrated solar power** 0.185 USD/kWh
- **Solar PV** 0.085 USD/kWh
(Solar PV projects cost has fallen 77% between 2010-2018)

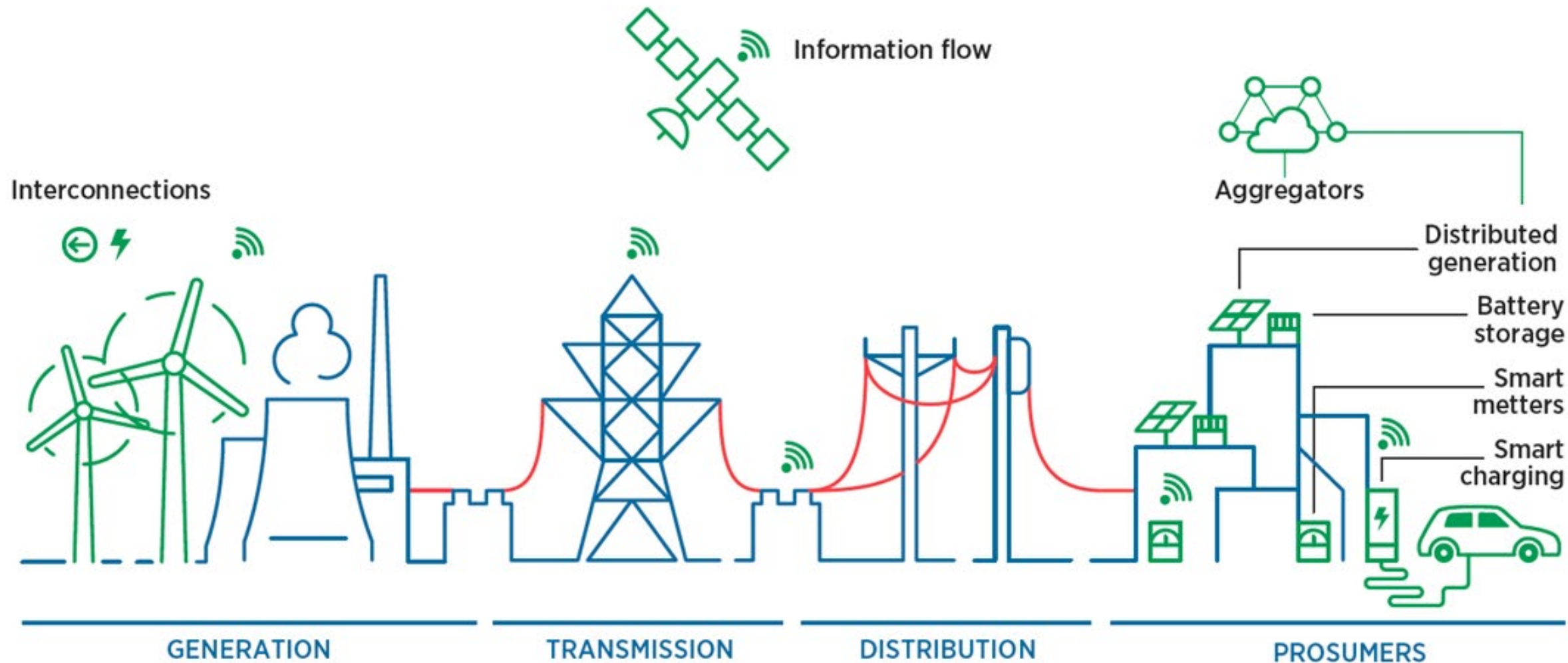
Renewables & electrification can deliver 75% of energy-related CO₂ emission reductions needed

Annual energy-related CO₂ emissions, 2010-2050 (Gt/yr)

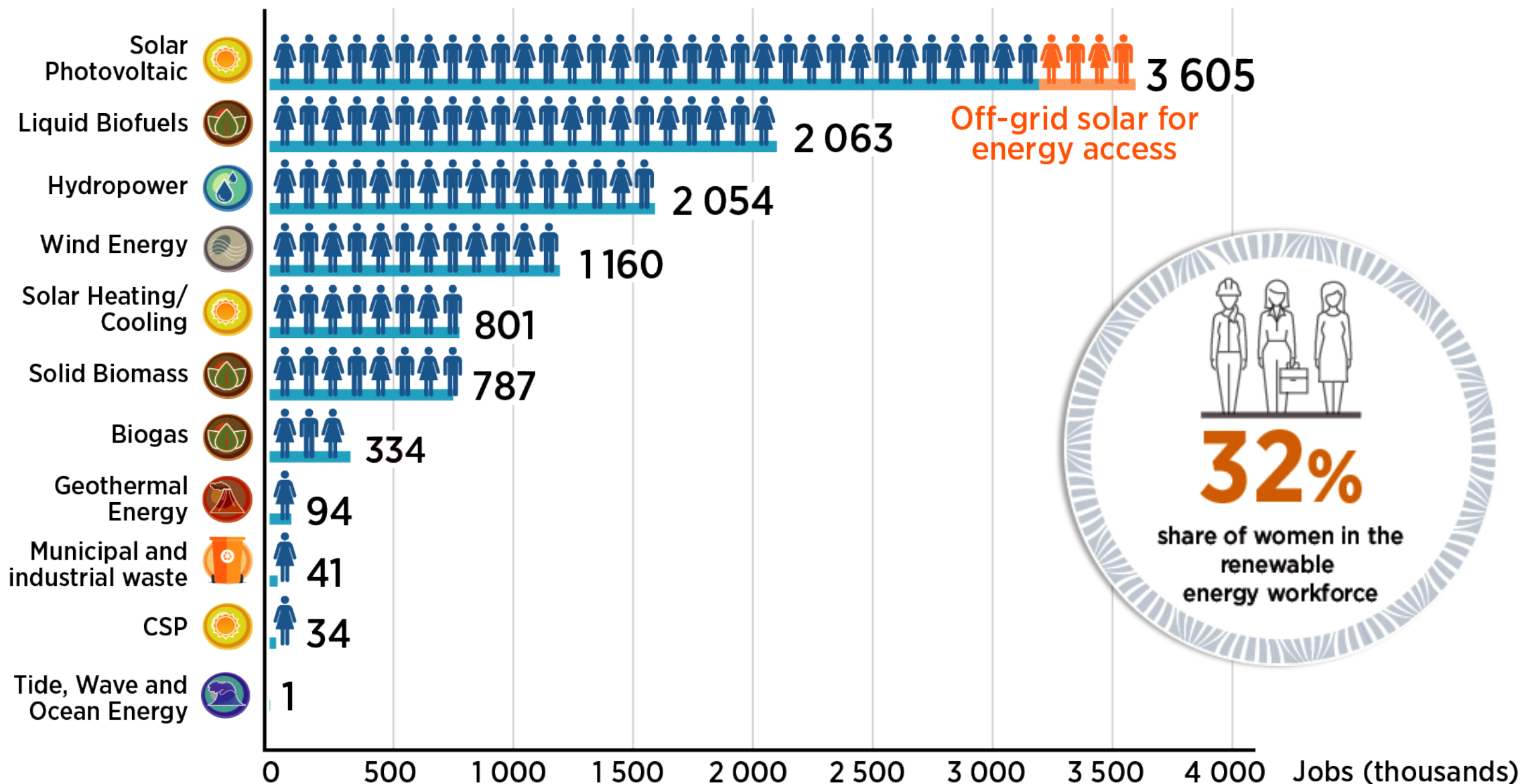


With energy efficiency included, this rises to over 90%.

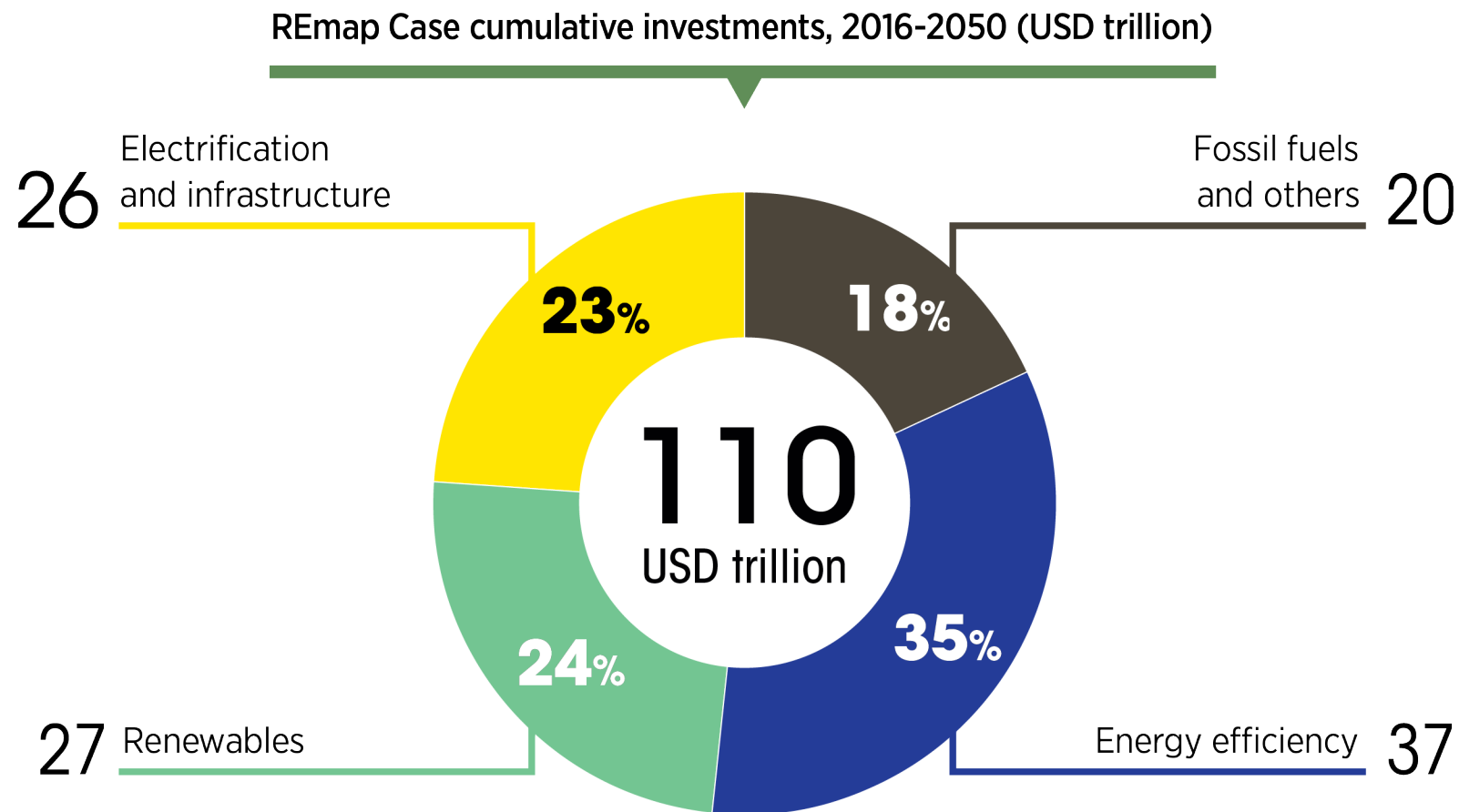
Grid integration: increasing interaction and flexibility



11 million jobs in renewable energy by today

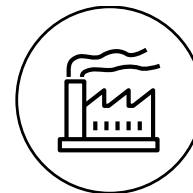
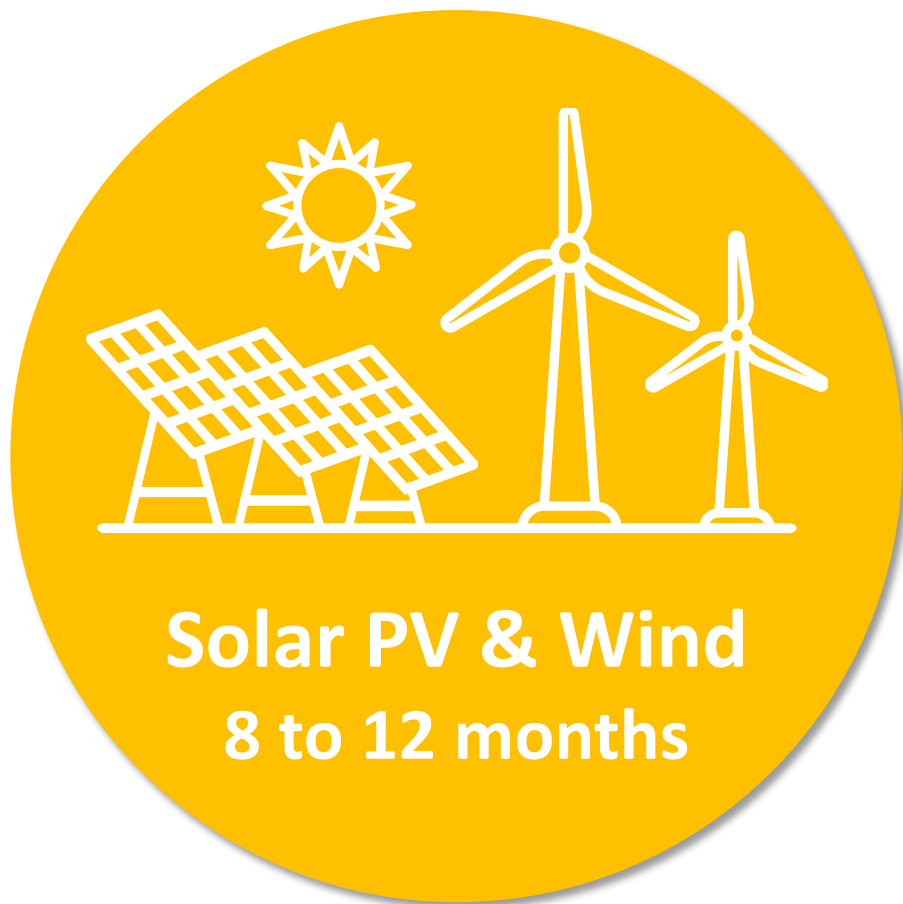


Renewables-based transition is cheaper



- USD 110 trillion needed by 2050 is equivalent to around 2% of global GDP/year over the period.
- Every dollar spent in the global energy transformation saves 3 to 7 USD.

Renewables-based transition is faster



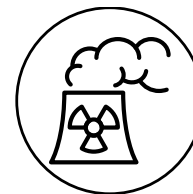
Gas

16 to 20 months (open cycle)
26 to 30 months (closed cycle)



Coal

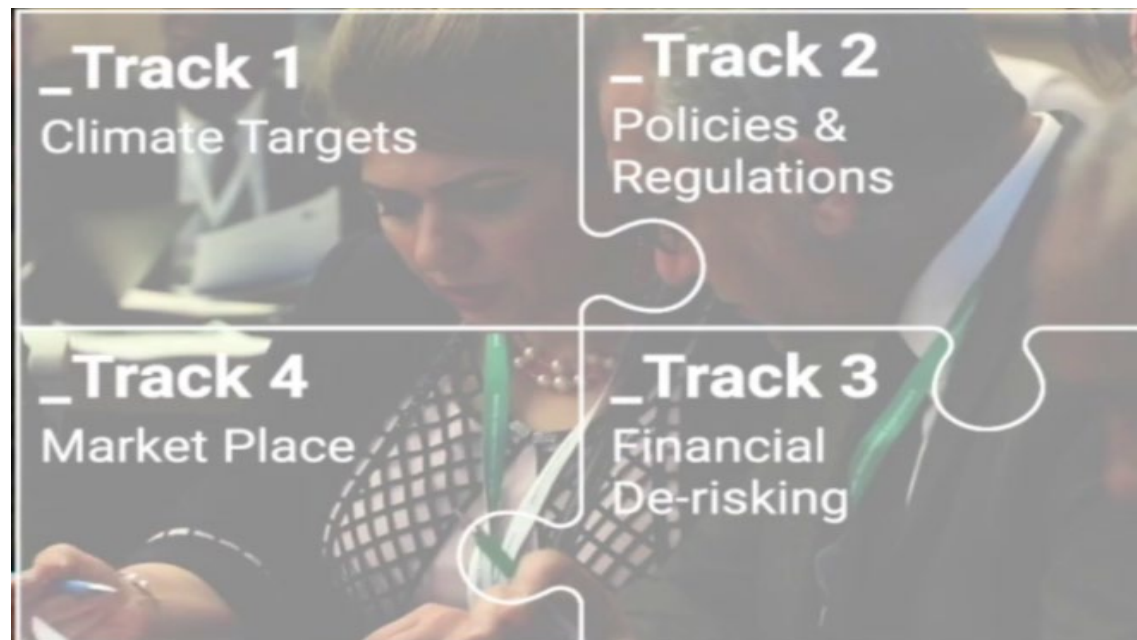
40 to 60 months



Nuclear

80+ months

Climate Investment Platform



The GCC Region: Benefits from Energy Transition

Fuel savings

MBOE

400

300

200

100

0

2020

2025

2030

40

170

354



46-76 billion USD
Discounted Fuel Savings



2 BBOE
Cumulative Fuel Savings

Emission savings

MtCO₂

150

100

50

0

2020

2025

2030

15

67

136

0.8
GtCO₂

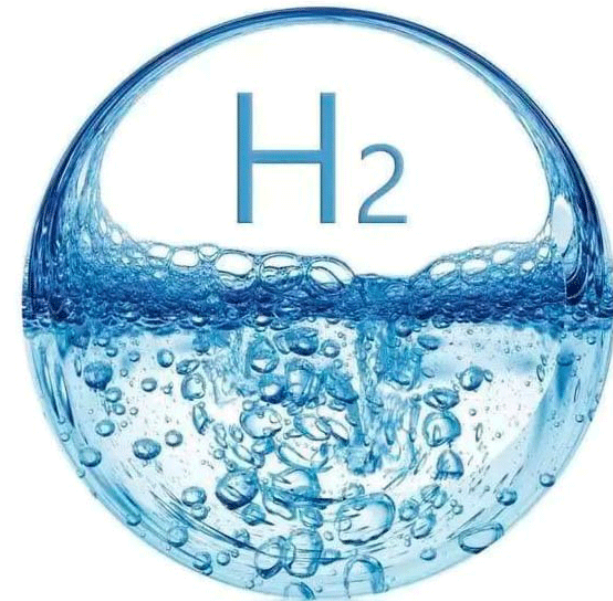


17% Reduction in
Water Withdrawal in 2030



220 500
Jobs in 2030

Opportunities for the Oil and Gas industry



GLOBAL ENERGY
TRANSFORMATION



Global Energy Transformation: A Roadmap to 2050

2019 edition

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