



Renewables for Sustainable Development

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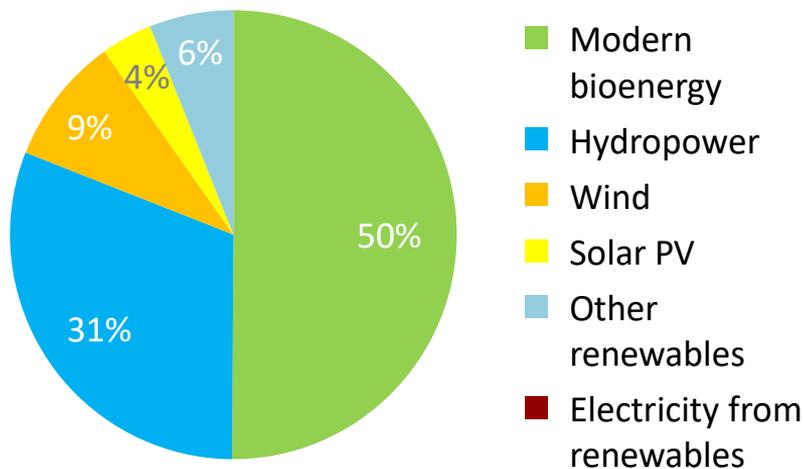
Symposium du SER, Paris, 6 February 2019



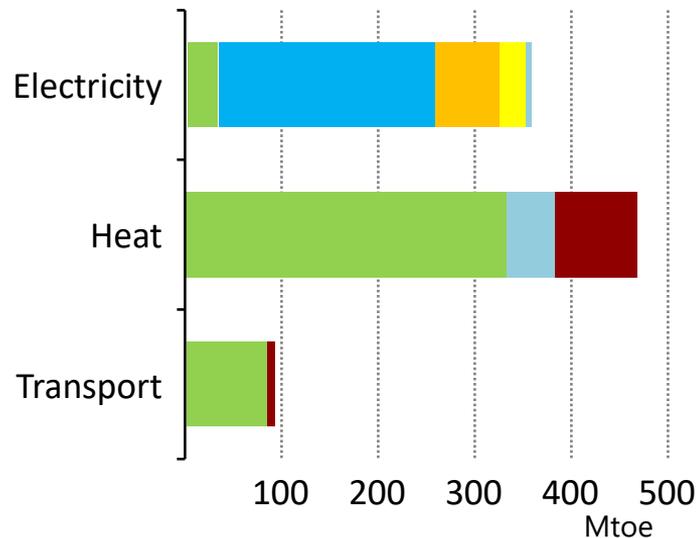
- Global **CO₂ emissions** are on the rise again indicating growing disconnect between climate goals and energy-market trends
 - **Oil demand continues to grow**, with increasing shares of long-haul transport & petrochemicals
 - **Natural gas is on the rise**: China's rapid demand growth is erasing talk of a 'gas glut'
 - **Renewable electricity is growing fast, driven by strong solar PV growth** while other key technologies & efficiency policies need a push
- For the first time, global **population without access to electricity fell below 1 billion**
- **Electricity** is carrying great expectations, but questions remain over the extent of its reach in meeting demand & how the power systems of the future will operate
- Policy makers need well-grounded insights about different possible futures & how they come about.

Modern bioenergy: the overlooked giant of renewables

Total final energy consumption from renewables, 2017



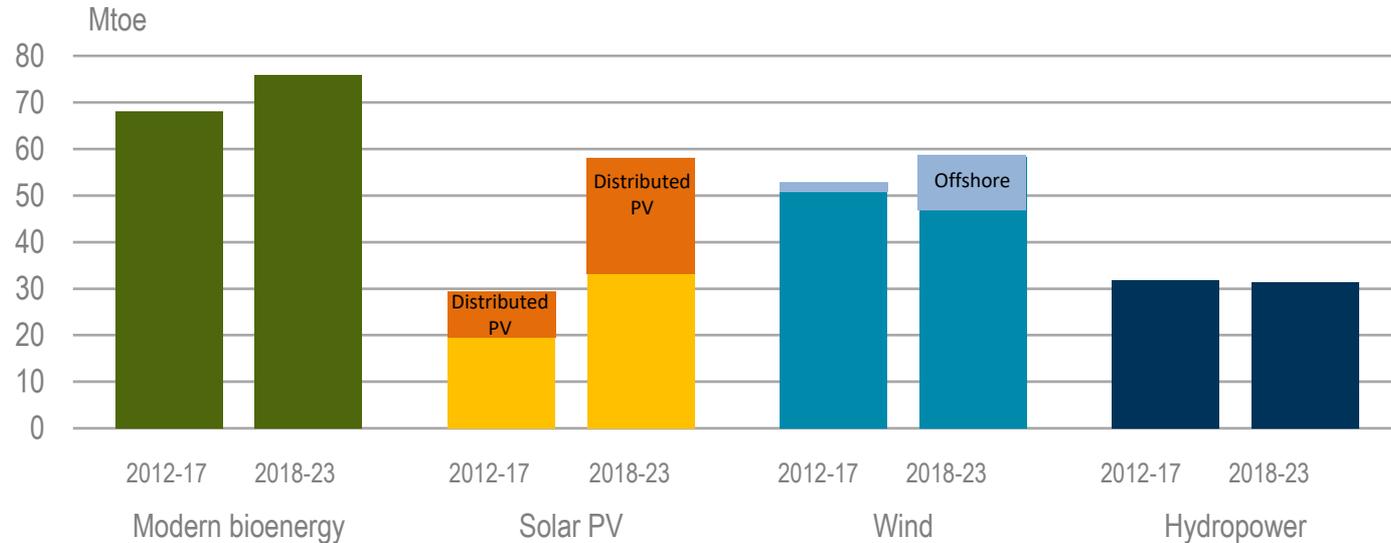
Total final energy consumption from renewables by sector, 2017



Modern bioenergy is the only renewable source that can provide electricity, direct heat and transport fuels
Two thirds of modern bioenergy heat is used in industry

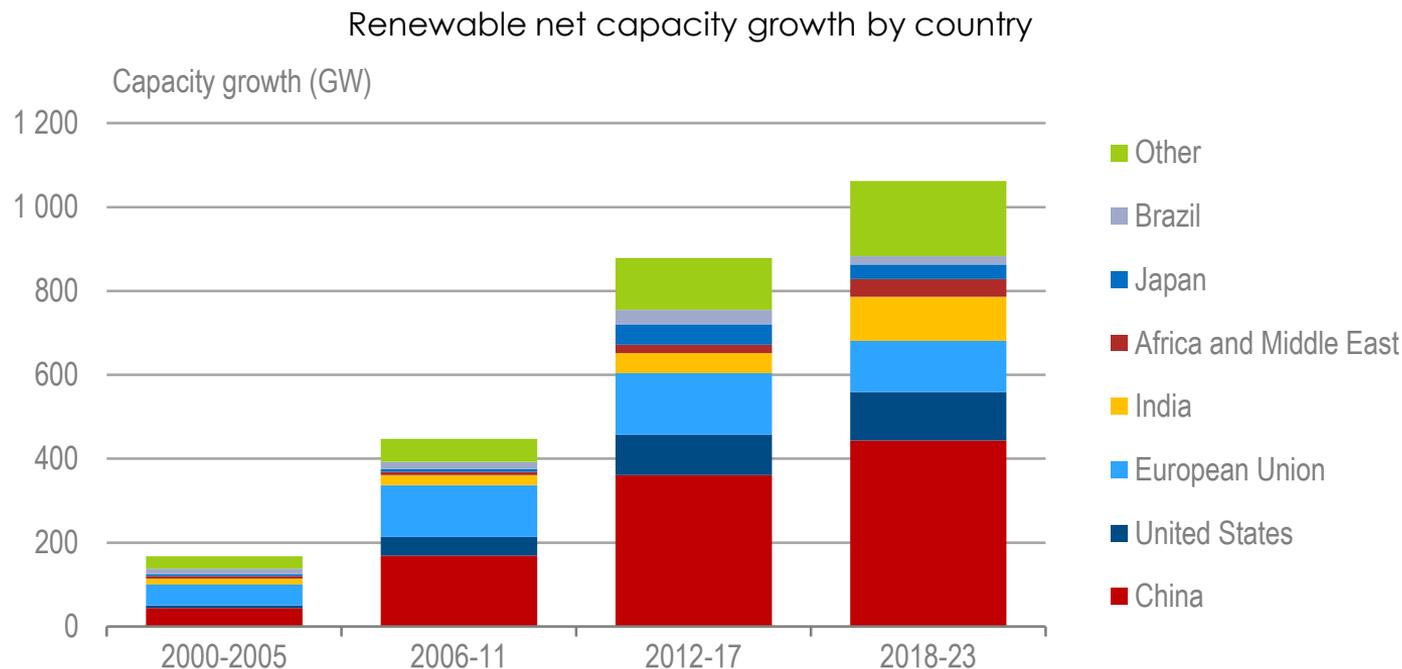
What comes next in renewables worldwide growth?

Total energy consumption growth of renewables over 2012-23



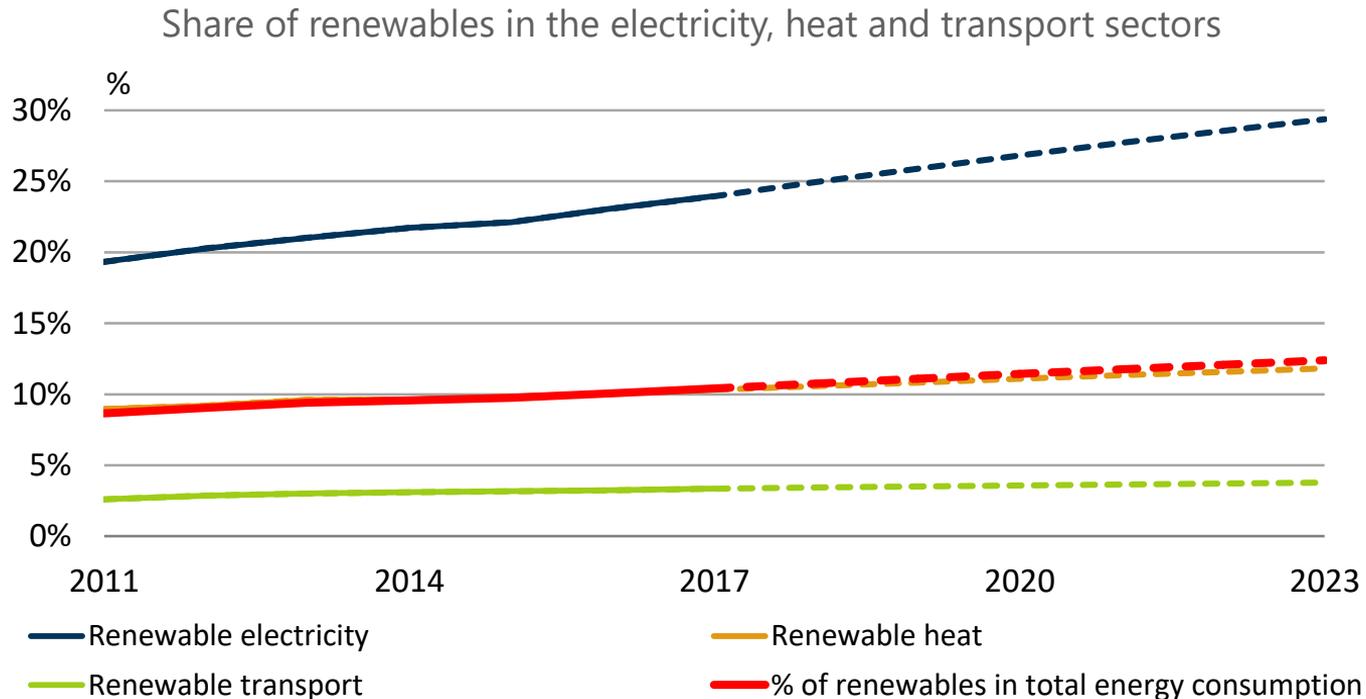
Total renewable energy consumption is expected to increase by almost 30% over 2018-2023, covering 40% of global energy demand growth

Renewables account for 70% of global capacity expansion



Europe's forecast revised up due to new auction announcements and new 2030 targets; US growth revised down due to tax reform and trade tariffs; India's expansion stable

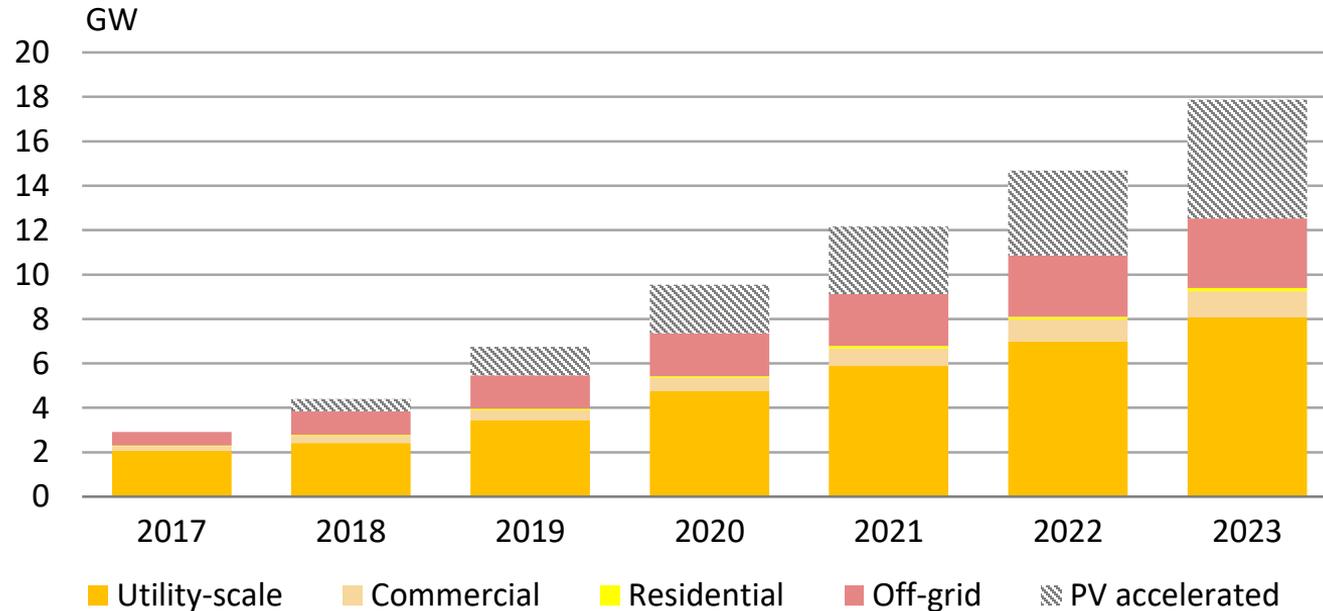
Renewables share of energy consumption increases by one-fifth



**Electricity contributes two-thirds of renewables growth
But electricity accounts for less than 20% of total final energy consumption**

Solar PV to quadruple in Sub-Saharan Africa

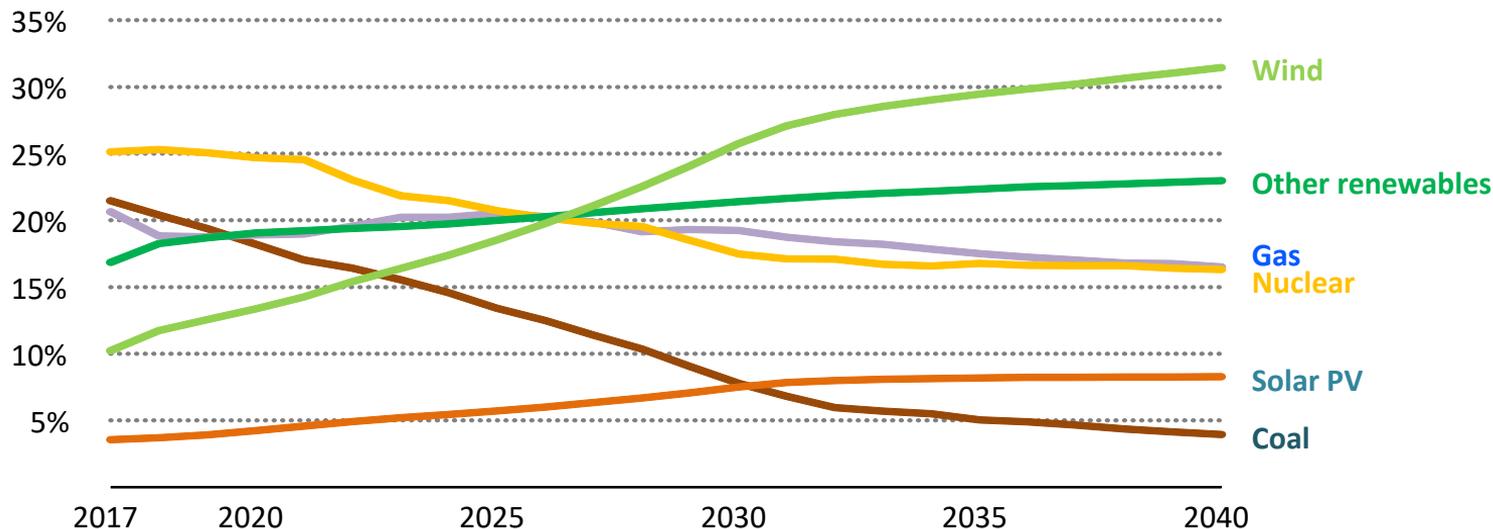
SSA cumulative solar PV capacity additions per segment



PV growth off grid will deliver initial electricity services to estimated 30 million people. Growth could be 50% faster with investment risk-mitigation mechanisms

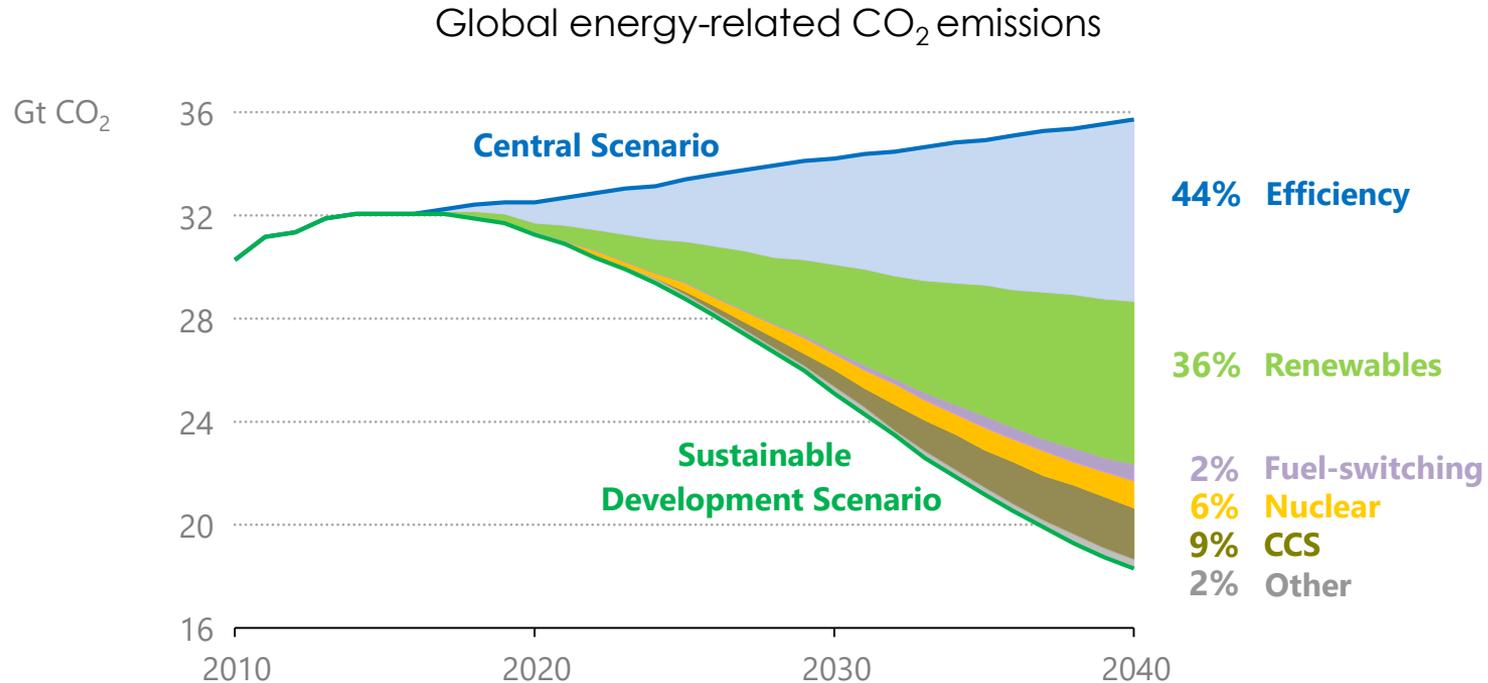
Wind to become the largest electricity source in the EU

Share of electricity generation by source in the WEO NPS in the European Union, 2017-40



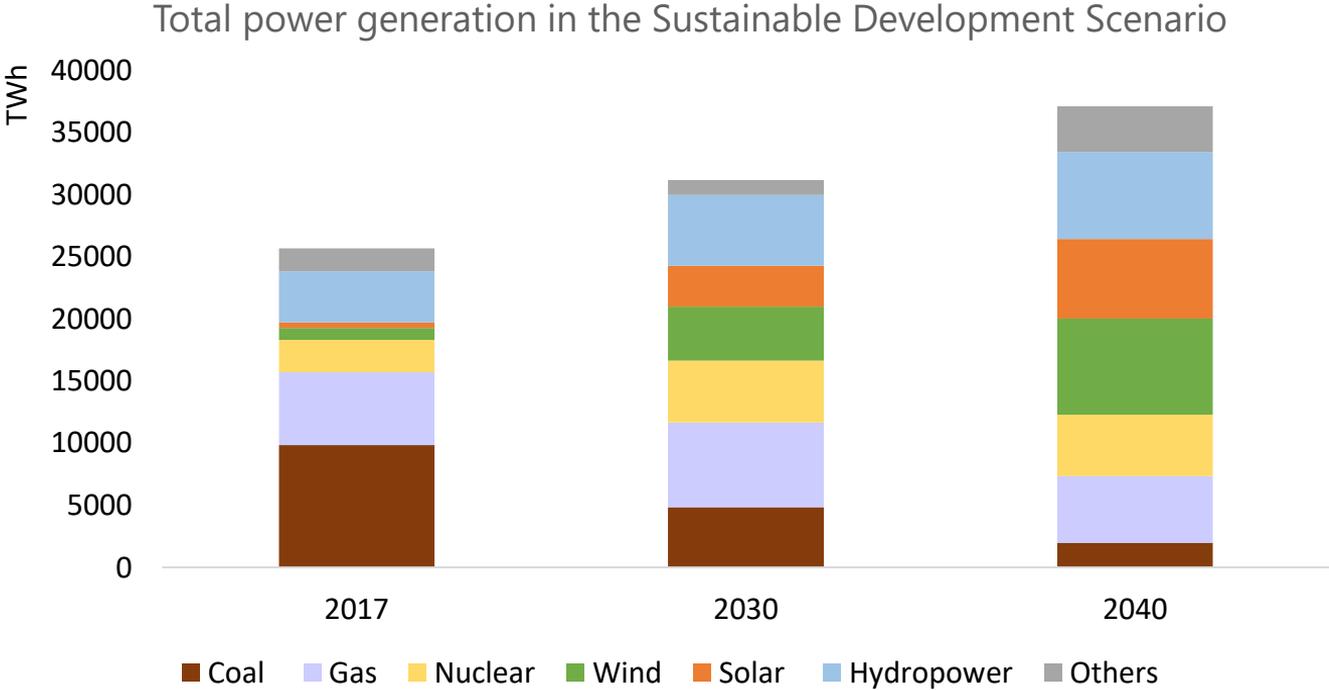
Wind electricity generation in the EU more than triples to 1 100 TWh by 2040; the rapid increase of variable forms of generation calls for new approaches to system integration

A sustainable development pathway is where we need to go



A wide variety of technologies are necessary to meet goals. By 2040 in the SDS wind and solar PV to become the largest source of electricity generation and installed capacity respectively

Renewables to transform the electricity mix



Renewables to account two thirds of global power generation under SDS by 2040. Solar becomes #1 in terms of cumulative installed capacity with 30% of world total

Source: IEA 2019 – All rights reserved

Multiple benefits towards achieving SDGs

Benefits of the Sustainable Development Scenario vs. New Policies Scenario, 2040

In an integrated approach, universal energy access can be reached while also achieving climate goals and reducing air pollutant emissions, at little extra cost

- Paris Agreement and COP24 Paris rule book will require significant efforts on energy efficiency and renewable energy
- There is no single solution to turn emissions around: renewables, efficiency & a host of innovative technologies, including storage, CCUS & hydrogen, are all required
- The rapid growth of electricity brings huge opportunities; but market designs need to deliver both electricity *and* flexibility for secure and cost-effective transitions
- Greater use of bioenergy, solar, wind, & other renewables is needed beyond the electricity sector, including through hydrogen-based feedstocks and fuels
- The IEA is proud to provide all energy stakeholders with timely data, rigorous analysis, an all-of-technology approach and real-world solutions