International Energy Agency

Where are we with renewable energy?

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International Energy Agency, Energy Data Centre

UNECE Workshop on Present and Future of Sustainable Renewable Energy;
10th International Forum on Energy for Sustainable Development (IFESD),
Bangkok, October 2019

2019: fastest growth of renewable power additions in four years

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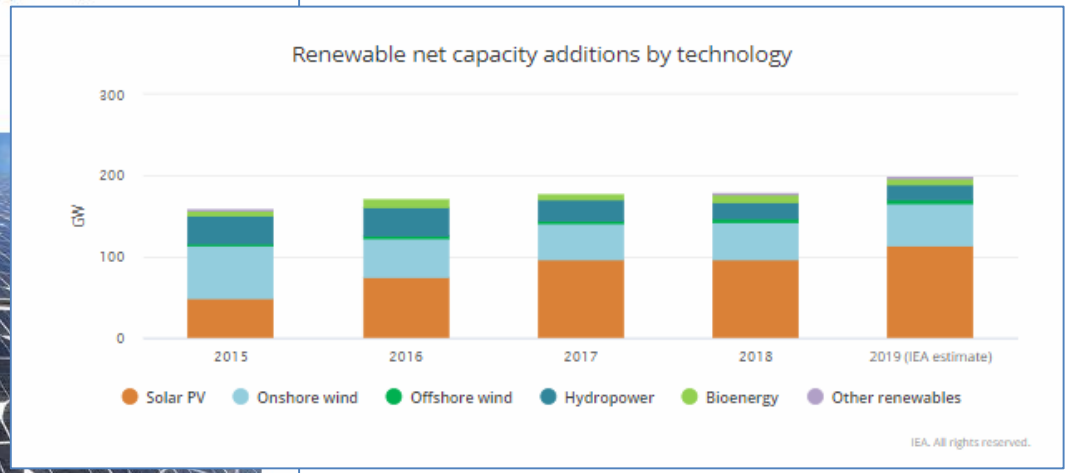
Transport Policy databases

After stalling last year, renewable power capacity additions to hit double-digit growth in 2019

20 September 2019

Solar PV drives strong rebound, with help from onshore wind



Key upcoming IEA reports on renewables:

- **21 October:** Renewables 2019, the IEA's annual market review and forecast for renewables.
- **25 October:** World Energy Outlook special report on offshore wind.

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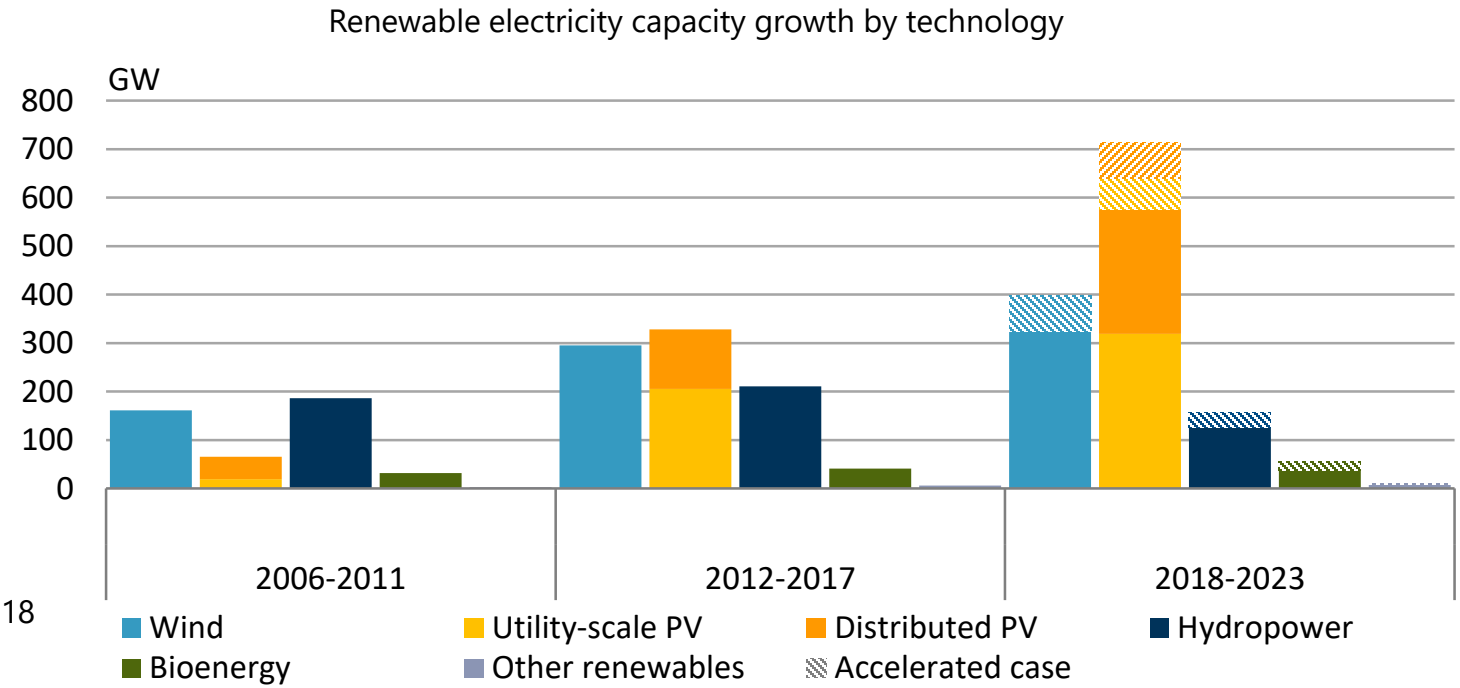
Solar PV expansion in electricity larger than all renewables combined

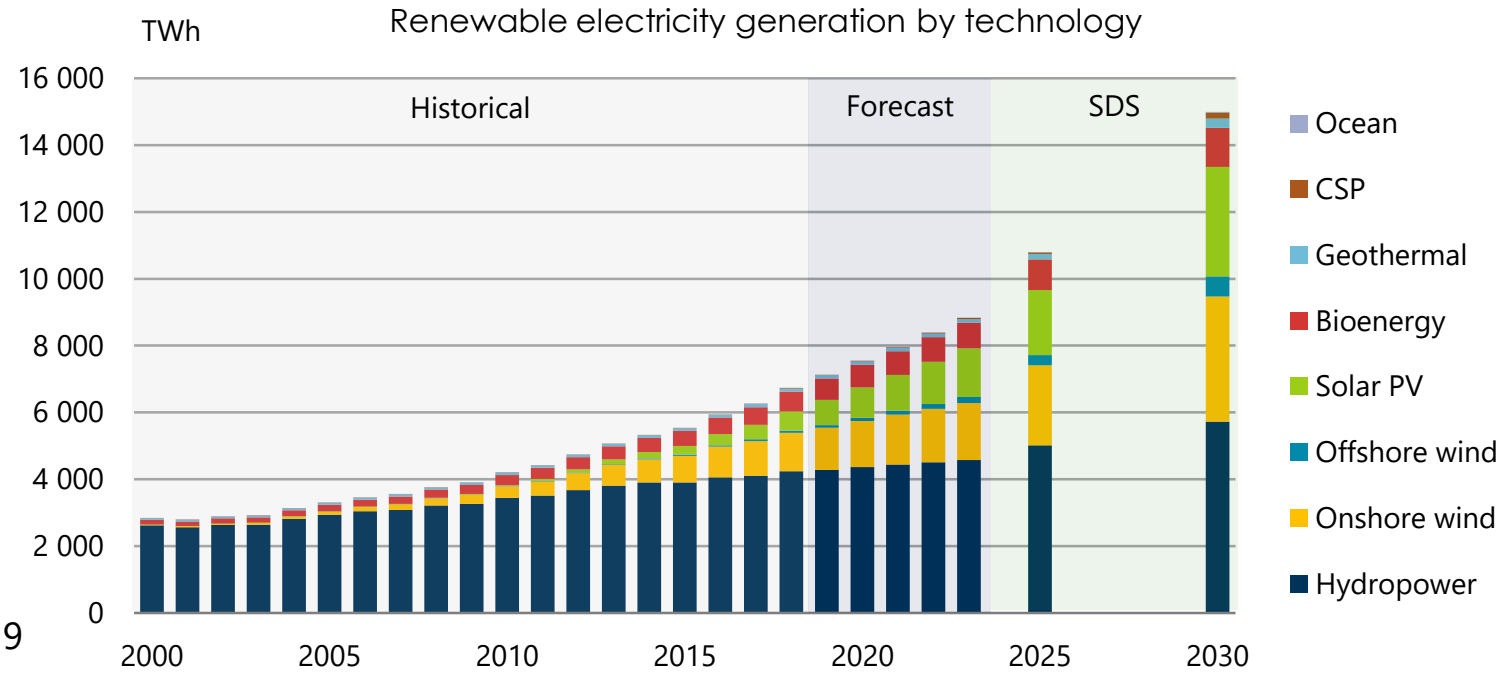


IEA, Renewables 2018

Distributed generation capacity growth makes the difference in solar PV's leadership
Cumulative PV capacity could reach 1.1 TW and wind over 0.9 TW by 2023 under the accelerated case

Despite PV growth, renewable power is not “on track”

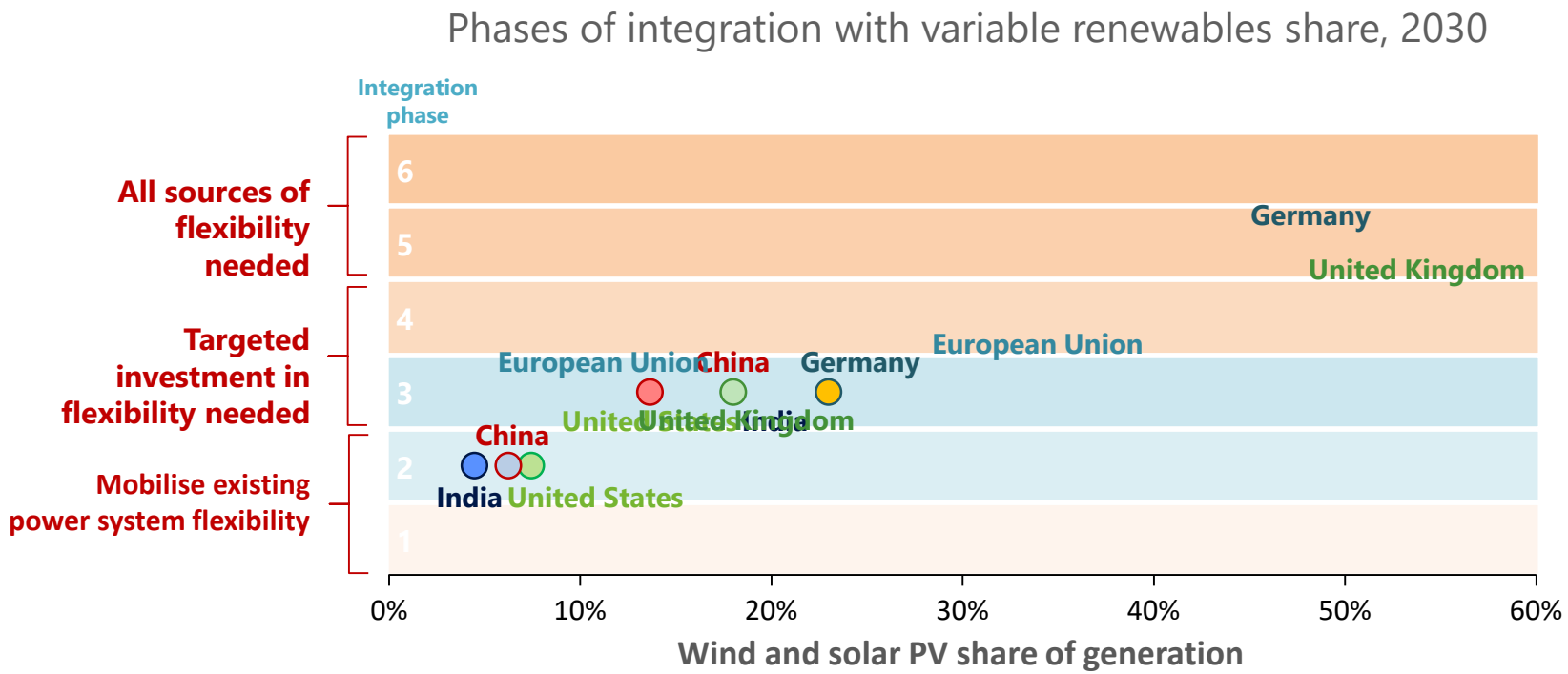
- Solar PV
- Onshore wind
- Offshore wind
- Hydropower
- Bioenergy
- Geothermal
- CSP
- Ocean



IEA, Tracking Clean Energy Progress, 2019

PV prospects are optimistic for continuous growth; Bioenergy improved status due to policy developments in China and India; Other technologies require more policy support.

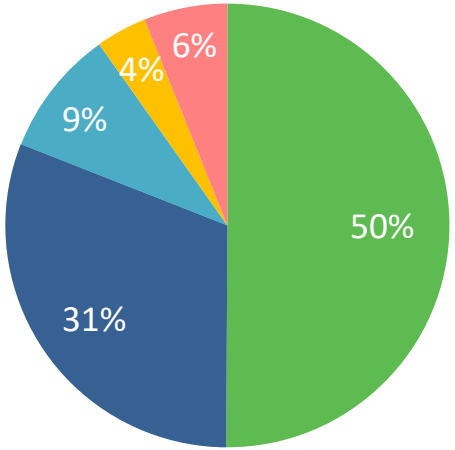
Flexibility: the cornerstone of tomorrow's power systems



Higher shares of variable renewables raise flexibility needs and call for reforms to deliver investment in power plants, grids & energy storage, and unlock demand-side response

Power grows fast, but modern bioenergy is the overlooked giant

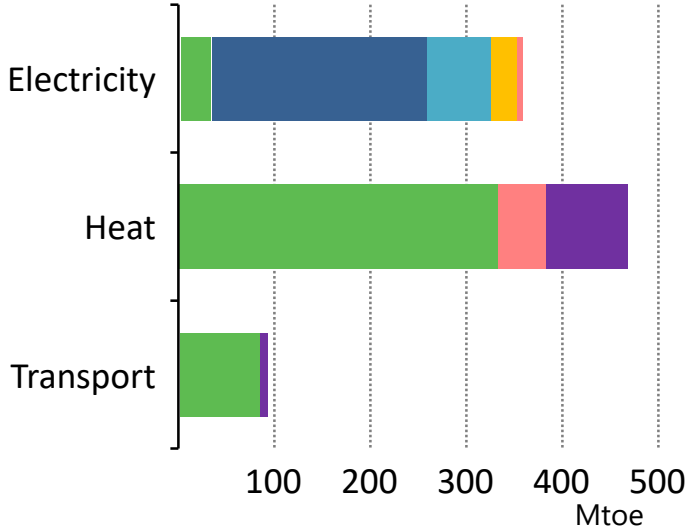
Total final energy consumption from renewables, 2017



- Modern bioenergy
- Hydropower
- Wind
- Solar PV
- Other renewables
- Electricity from renewables

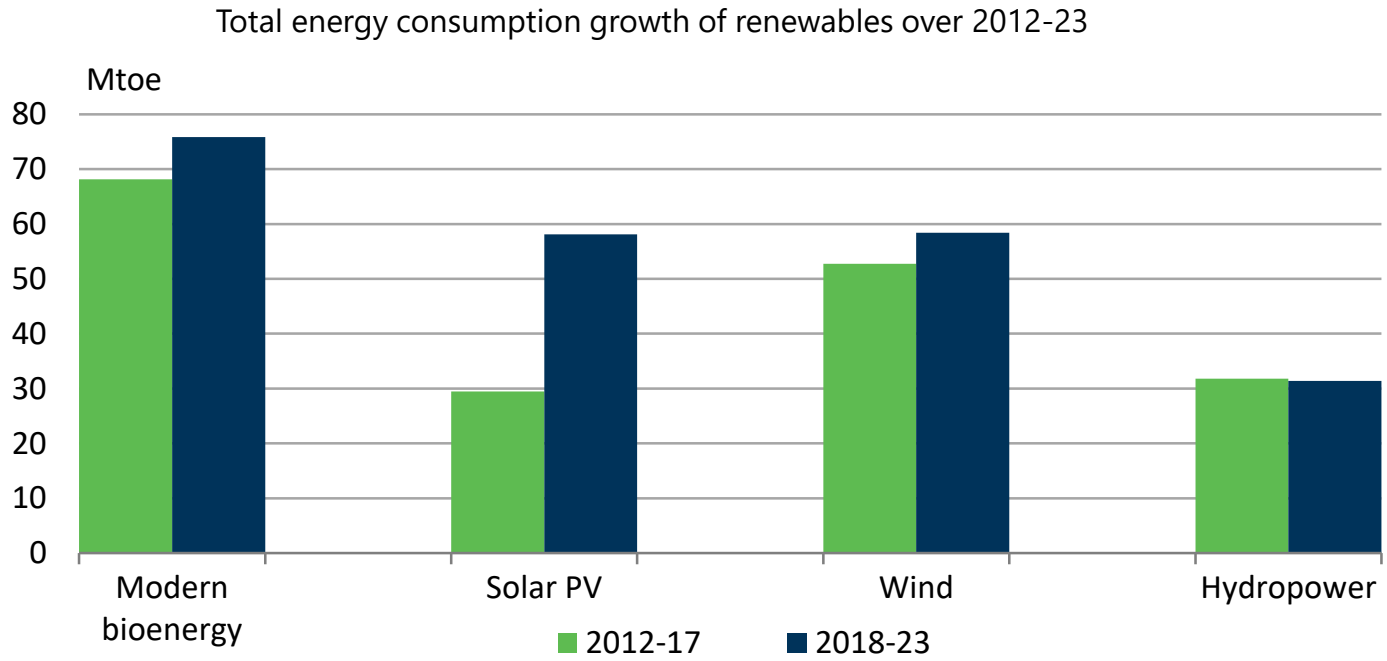
IEA, Renewables 2018

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

Modern bioenergy set to lead renewables growth

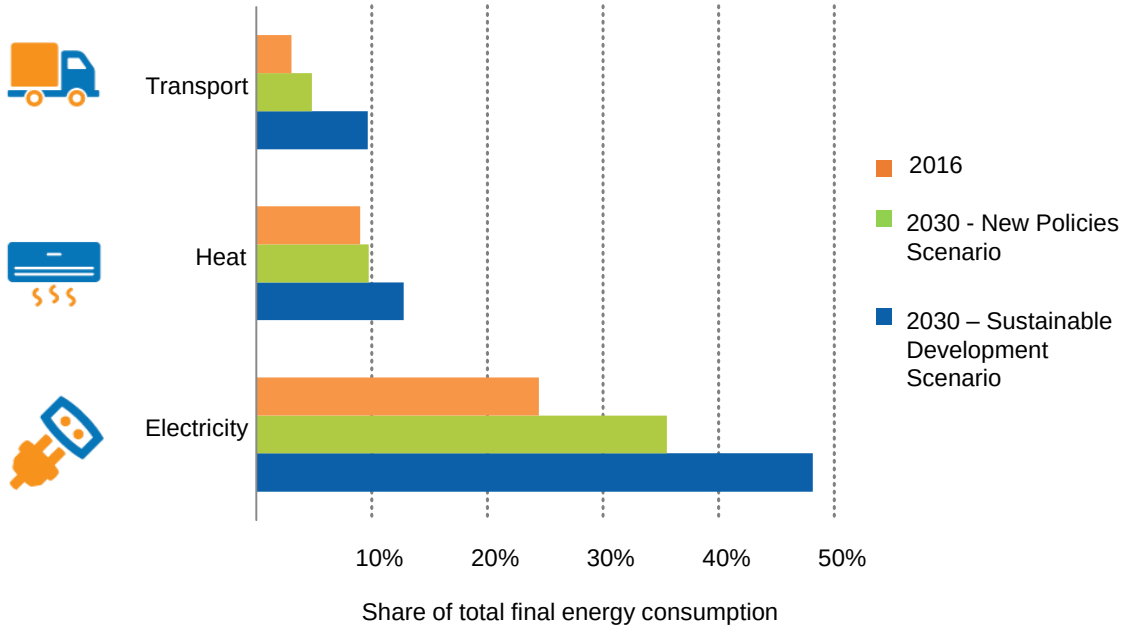


IEA, Renewables 2018

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

RENEWABLES ARE NOT ON TRACK FOR 2030. EFFORTS NEED TO ACCELERATE IN TRANSPORT AND HEAT END-USES.

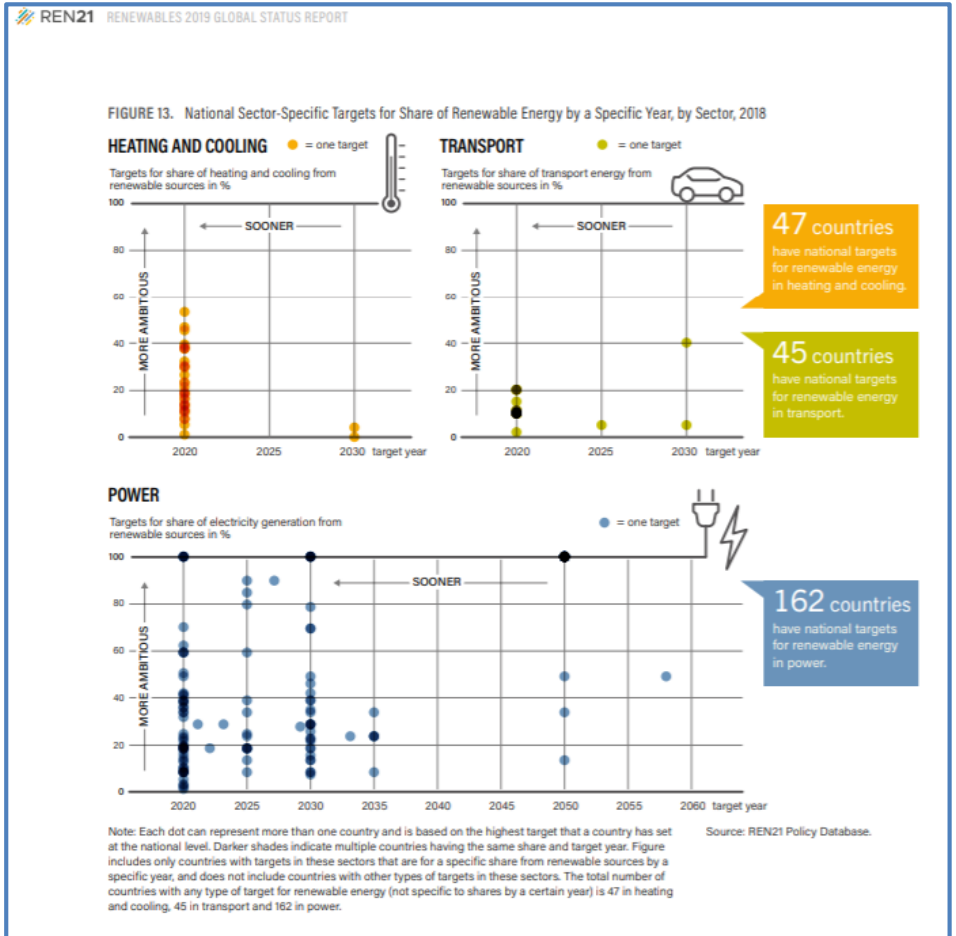
Renewable energy share of total final energy consumption by end use and by scenario



SDG7 Energy Progress, 2019

Source: IEA, 2018

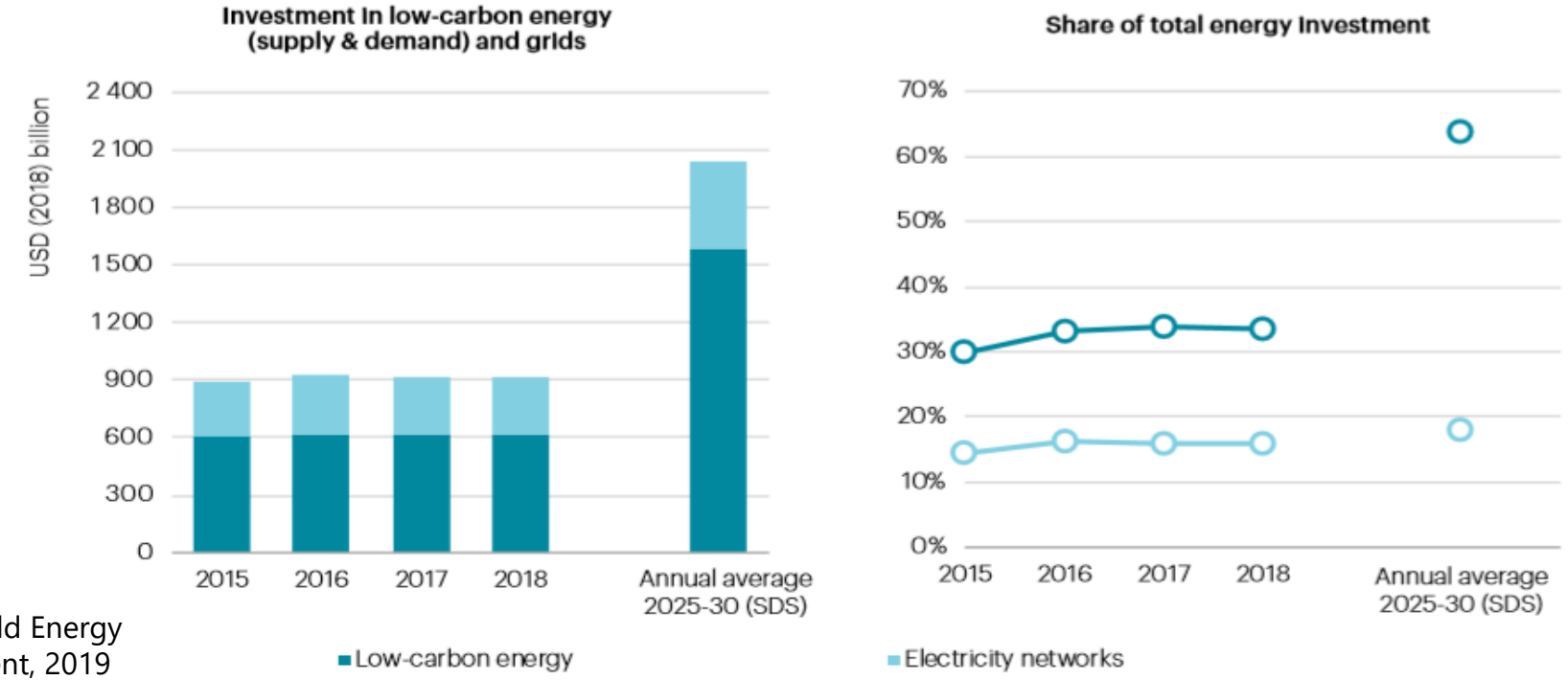
Uneven policy efforts across sectors – electricity leading



REN21, GSR2019

Total investment across low-carbon energy – including supply and efficiency – has stalled in recent years and needs a rapid boost to keep Paris in sight

Global investment in low-carbon energy, including efficiency, and electricity networks compared with investment needs (SDS)



IEA, World Energy Investment, 2019

Note: Low-carbon energy investment includes energy efficiency, renewable power, renewables for transport and heat, nuclear, battery storage and carbon capture utilisation and storage. SDS = Sustainable Development Scenario.

Policy is key to provide framework to manage investment risks

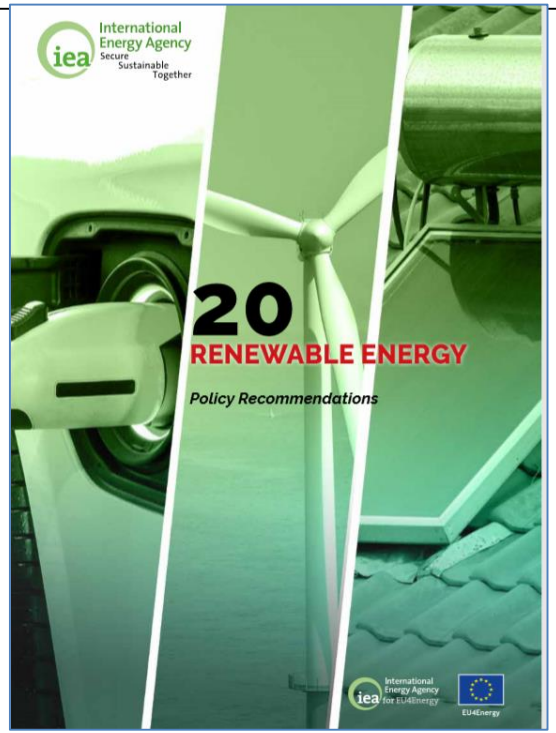
"Current market and policy signals are not incentivising the major reallocation of capital to low-carbon power and efficiency that would align with a sustainable energy future…"

World Energy Investment 2019

iea.org/wei2019

"Financing our energy future requires policy makers to better understand the risks faced by investors and to design and implement policies that allow for the efficient allocation and management of these risks…
Where governments … provide such frameworks, the private sector responds."

The key role of renewable energy policy – regional focus



IEA EU4Energy, 20 Renewable Energy Recommendations

These 20 recommendations provide guiding principles for policy-making, based on best practice observed across IEA member states and partner countries.

They can be adapted to suit specific national and local circumstances.

THE ROLE OF RENEWABLE ENERGY POLICY

FUNDAMENTALS

1. Renewable energy targets
2. Strategies and action plans
3. Renewable energy data
4. Monitoring and evaluation of policies and measures

CROSS-SECTORAL

5. Level playing field in energy pricing
6. Coupling of electricity, heat, cooling and transport sectors
7. Foster public support for renewables at local level
8. Ensure sustainability
9. Innovation support

RENEWABLE ELECTRICITY

10. Adequate remuneration
11. Grid access
12. System integration of variable renewable resources (VRE)
13. Tackle non-economic barriers
14. Reduce the cost of financing

RENEWABLE HEATING AND COOLING

15. Integrate renewable heat and energy efficiency policies
16. Tackle barriers
17. Renewable heating and cooling data

RENEWABLE TRANSPORT

18. Tackle barriers
19. Shift to advanced biofuels
20. Electric vehicles