Renewables 2021

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CLUB ESPAÑOL DE LA ENERGÍA

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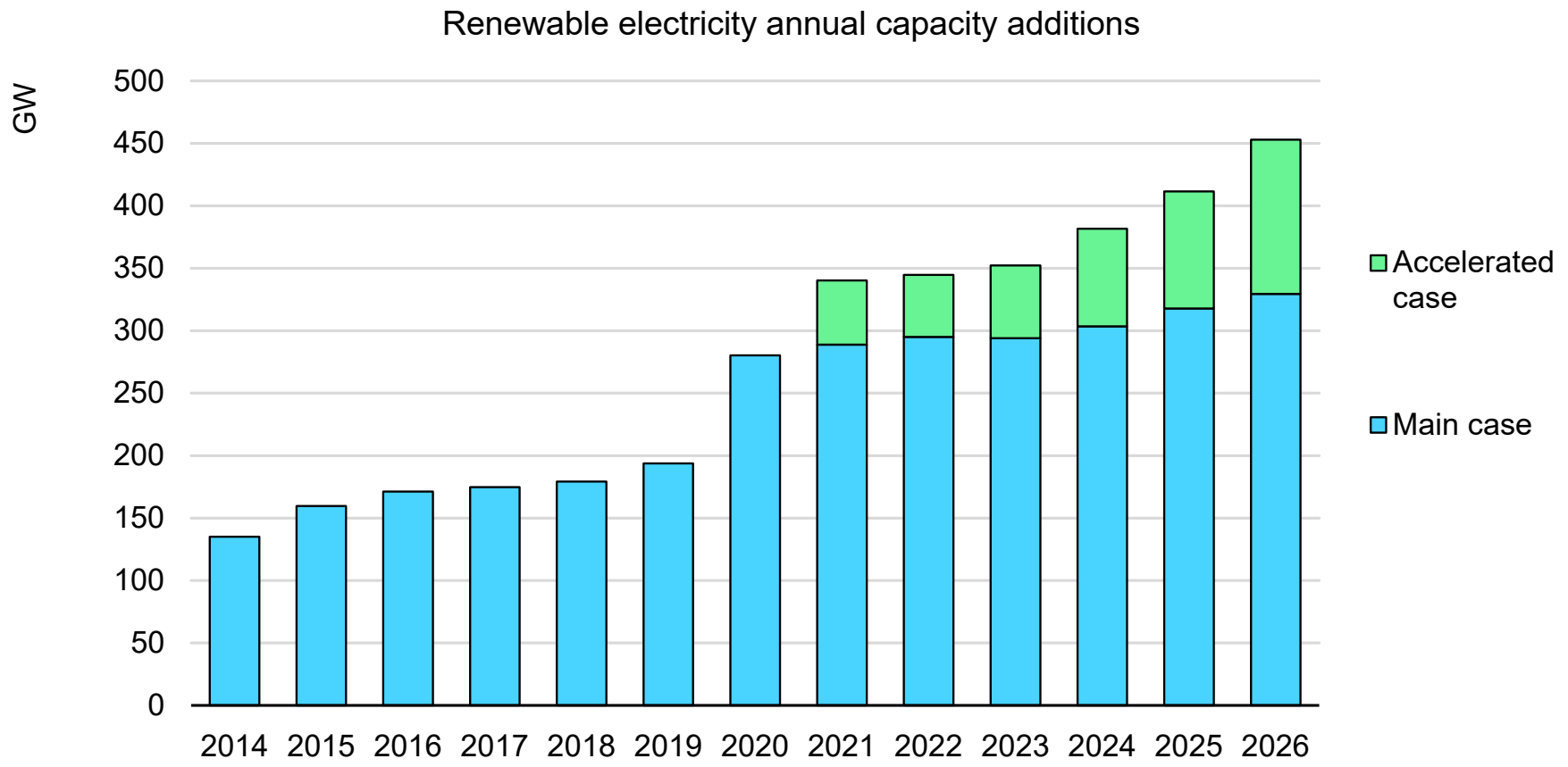
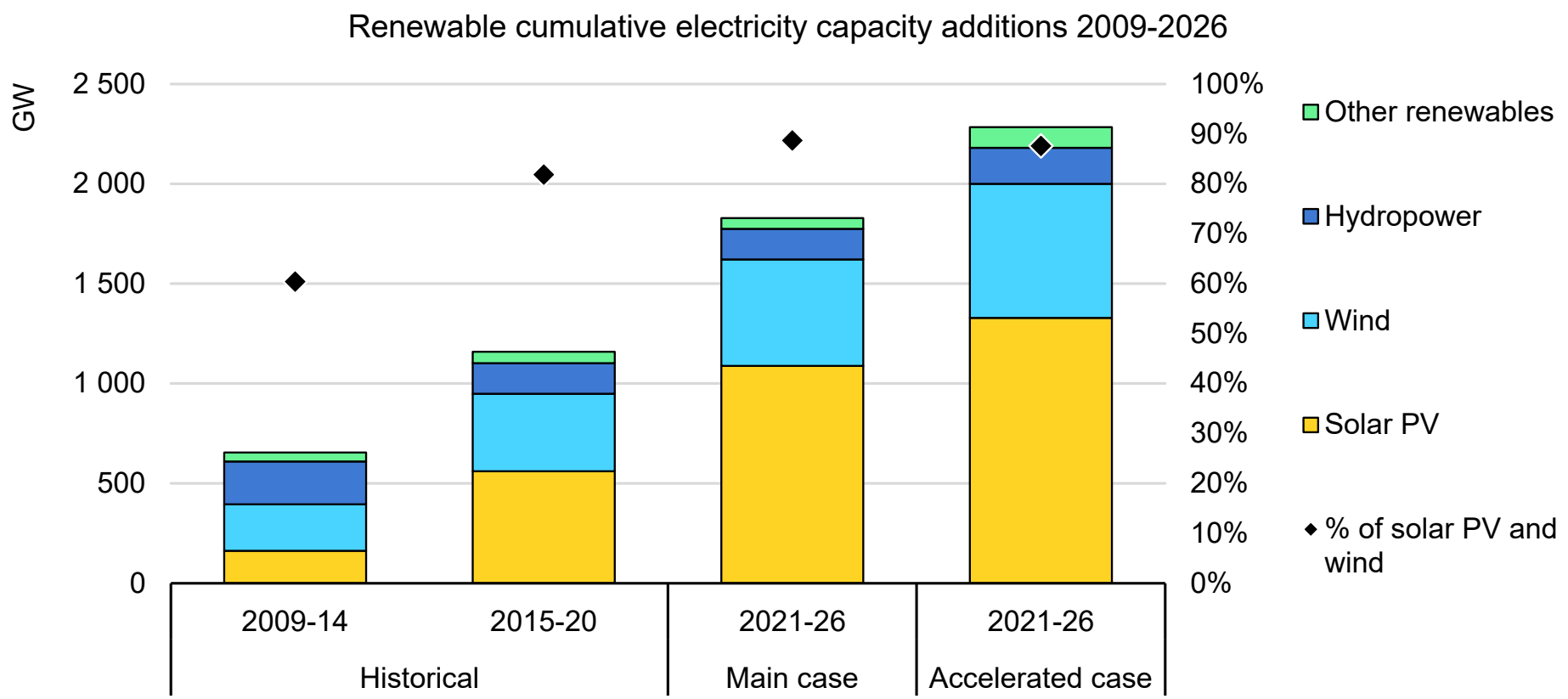
International Energy Agency

2020 marks a step change for renewables growth



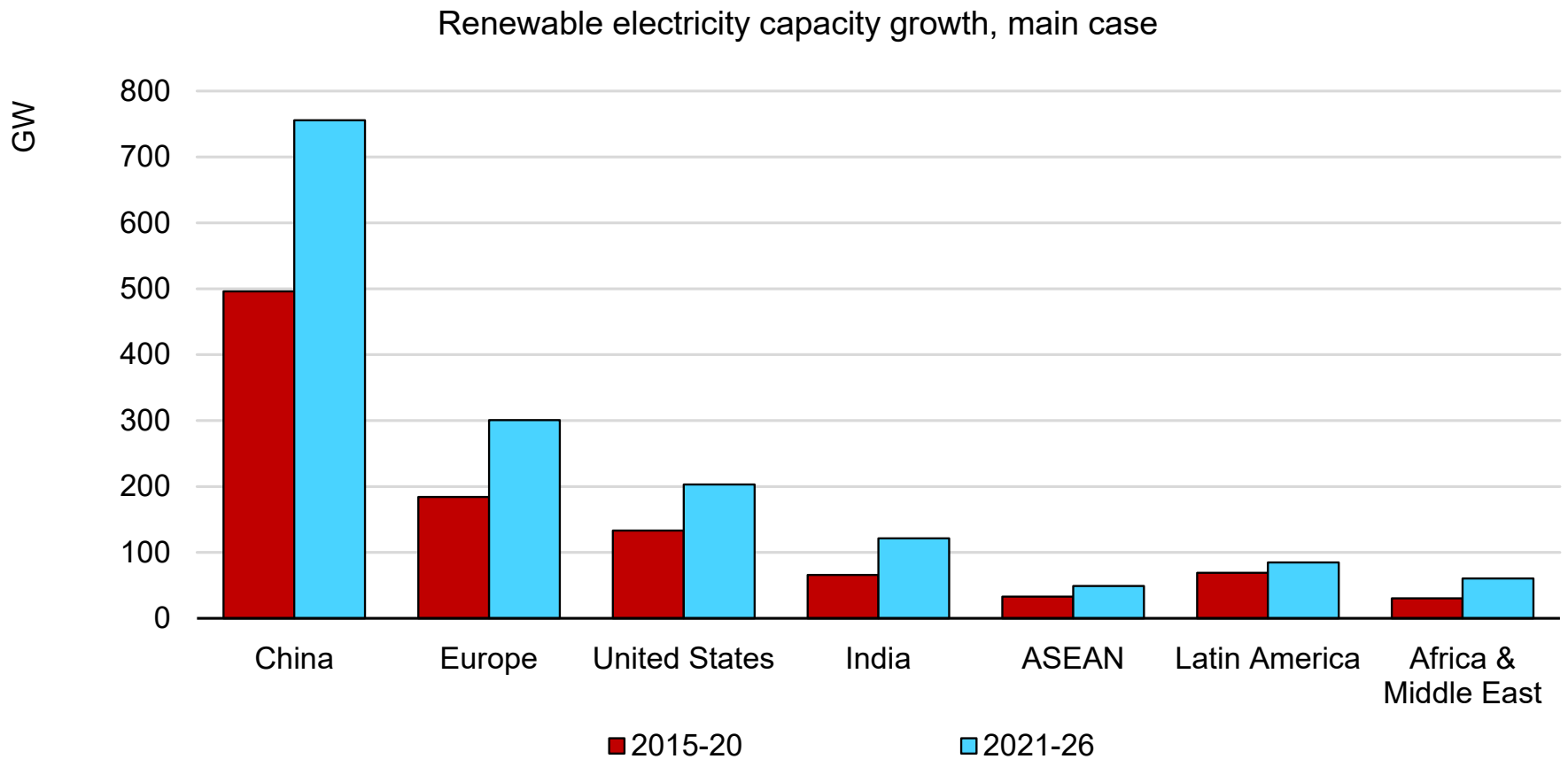
Improved policies & ambitious climate goals leading to COP 26 drive faster renewable electricity growth. Still the expansion could be 25% higher if governments address policy and implementation challenges.

Solar PV and wind drives renewable expansion despite higher prices



Renewables account for almost 95% of the increase in global power capacity over 2021-26. The growth of hydropower, bioenergy, geothermal and CSP that can help integrate wind & PV is slightly slow down due to limited policies.

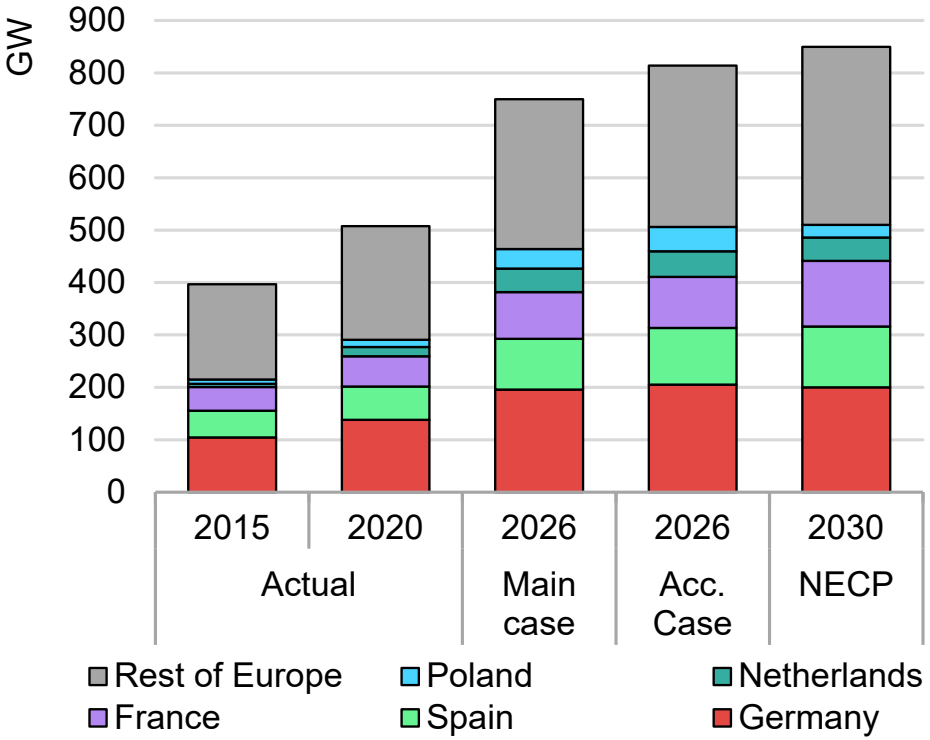
Renewable deployment accelerates in all regions



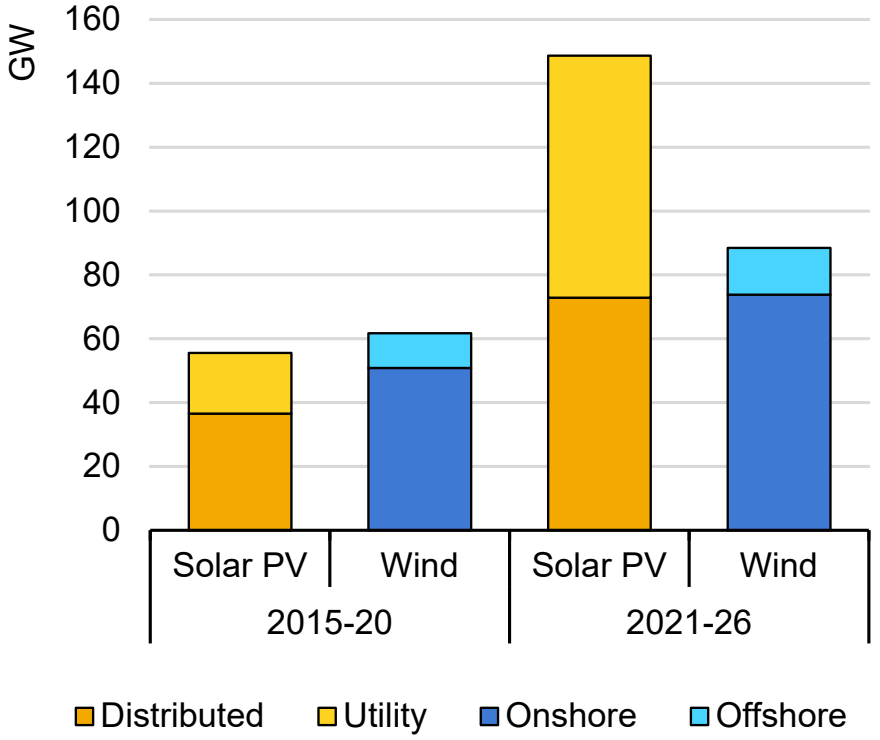
China accounts for 43% of global growth. The EU is set to overshoot its current targets. India records fastest relative growth versus last five years while improving economics and policy support accelerates expansion in the USA

European Union: rapid expansion supports higher ambition

Renewable capacity by country, 2015-2026 and NECP targets



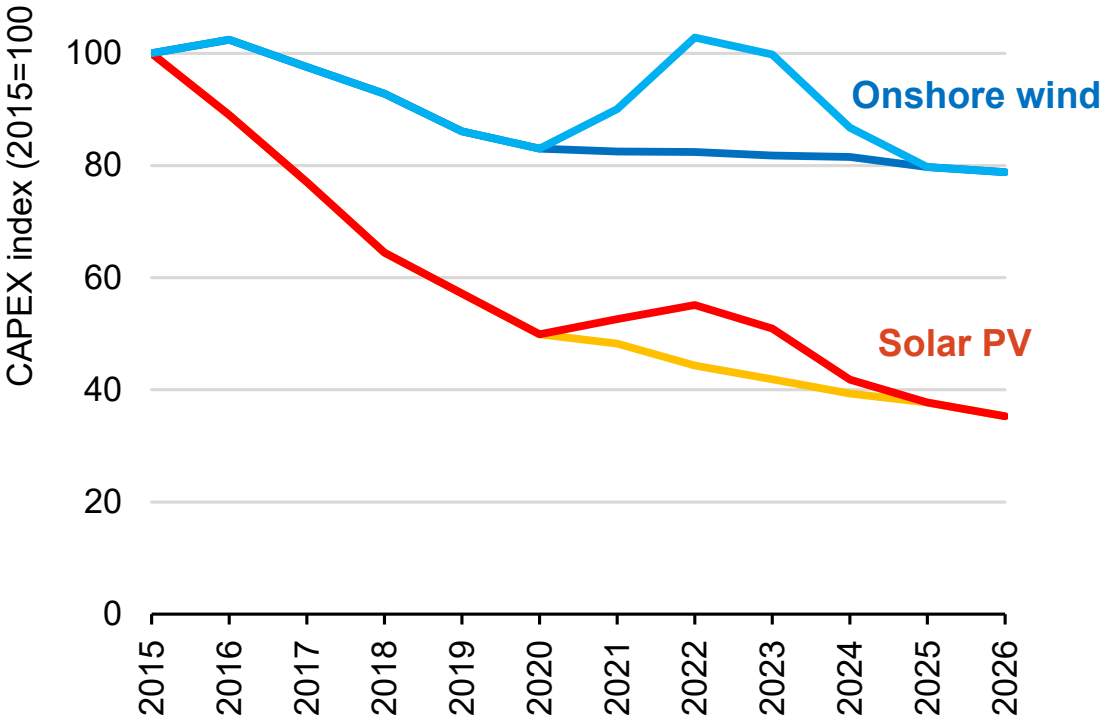
Capacity additions by technology, 2015-2026



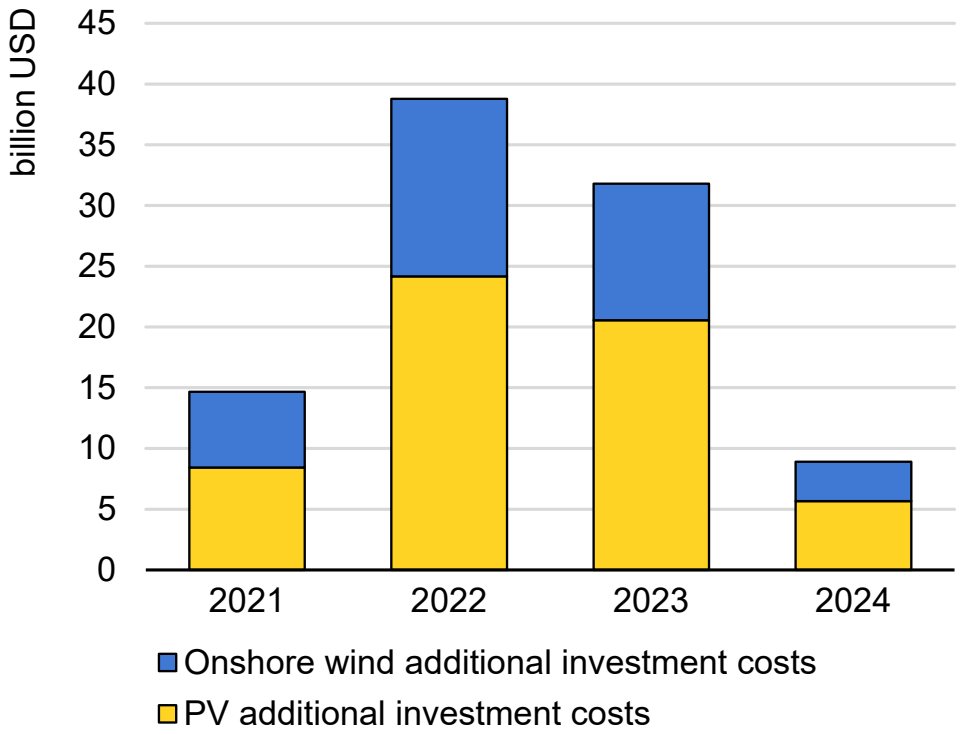
Growth increases by 50% over 2021-2026, with government-held auctions being a key driver. Solar PV growth to surpass wind due to increased policy support under auctions and supportive policies for distributed PV.

High commodity and energy prices bring significant uncertainties

Utility-scale solar PV and onshore wind investment costs



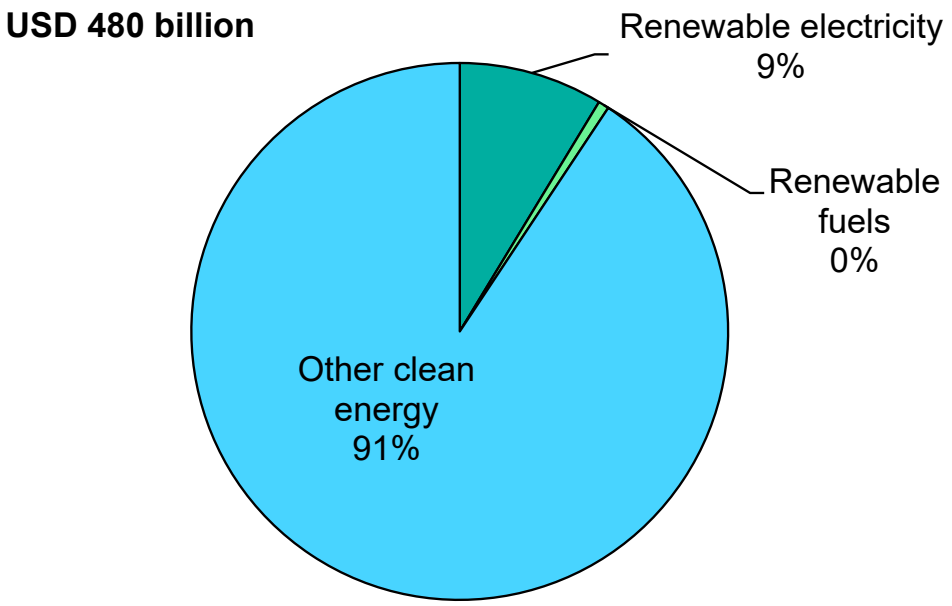
Additional investment needs with high commodity prices



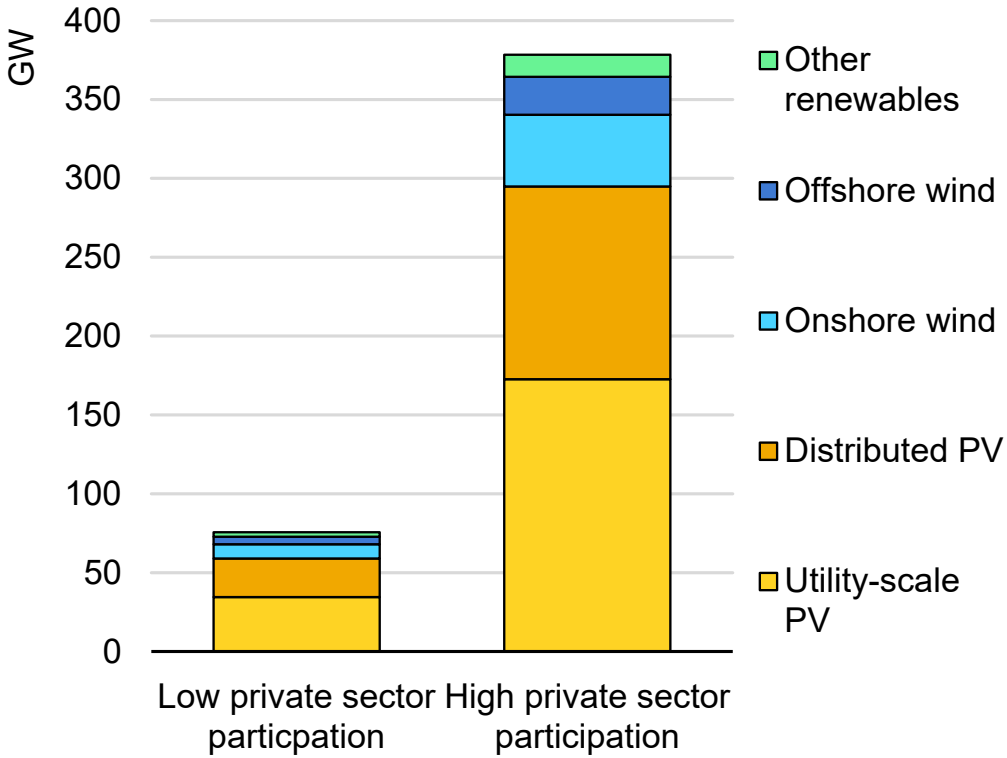
High prices put 100 GW at risk of delays. If prices remain high in 2022, three years of costs reductions for solar and five years for wind would be erased. This would require USD 100 billion additional investment for the same capacity.

Renewables stimulus is small but can make many projects bankable

Clean energy public spending and renewables

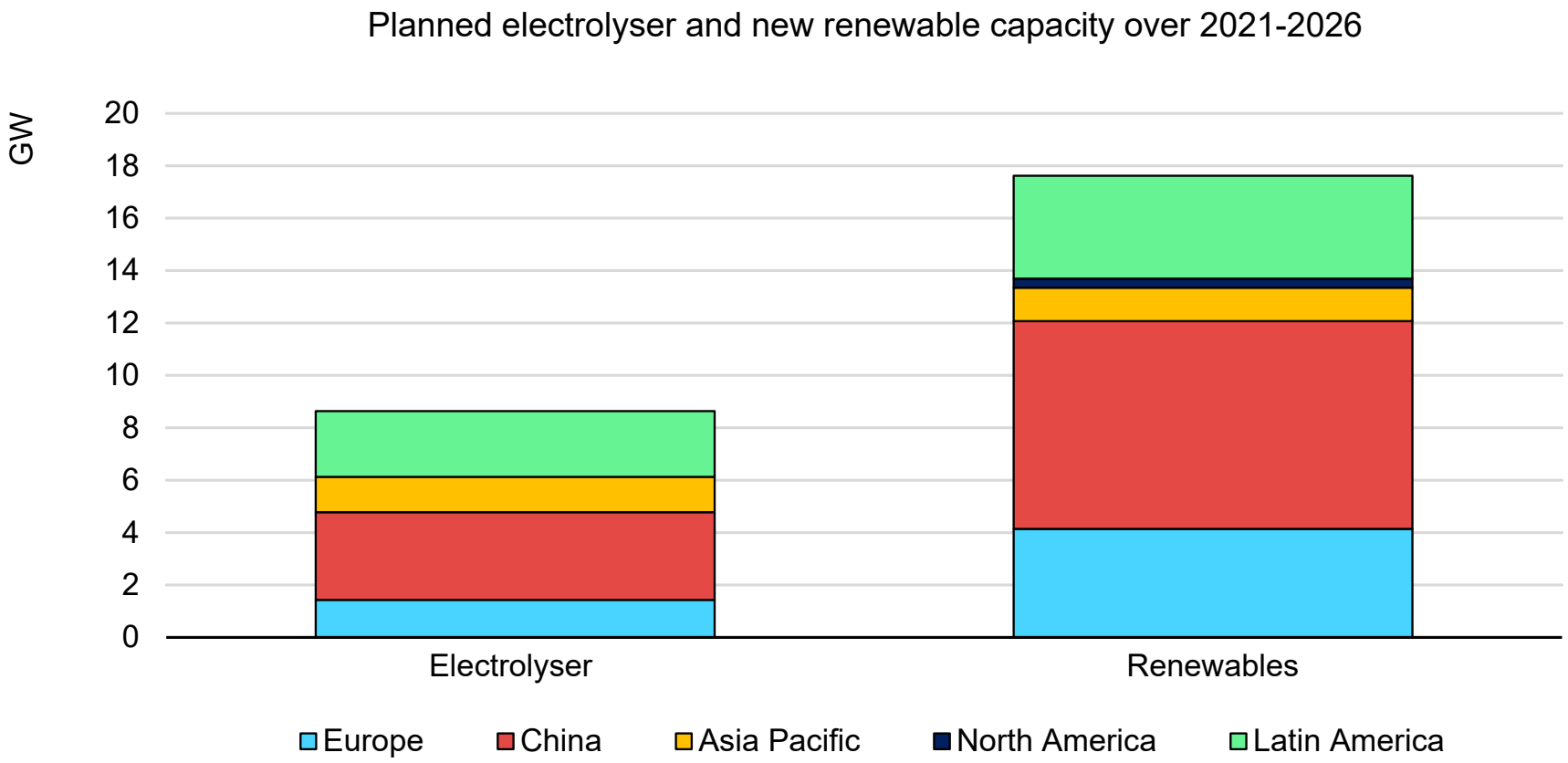


Renewable energy public spending by technology



About USD 42 billion of approved public spending led by solar PV and wind could mobilise almost 400 GW of new additional renewable capacity if right policies are in place to attract private capital needed

Hydrogen from renewable electricity is emerging

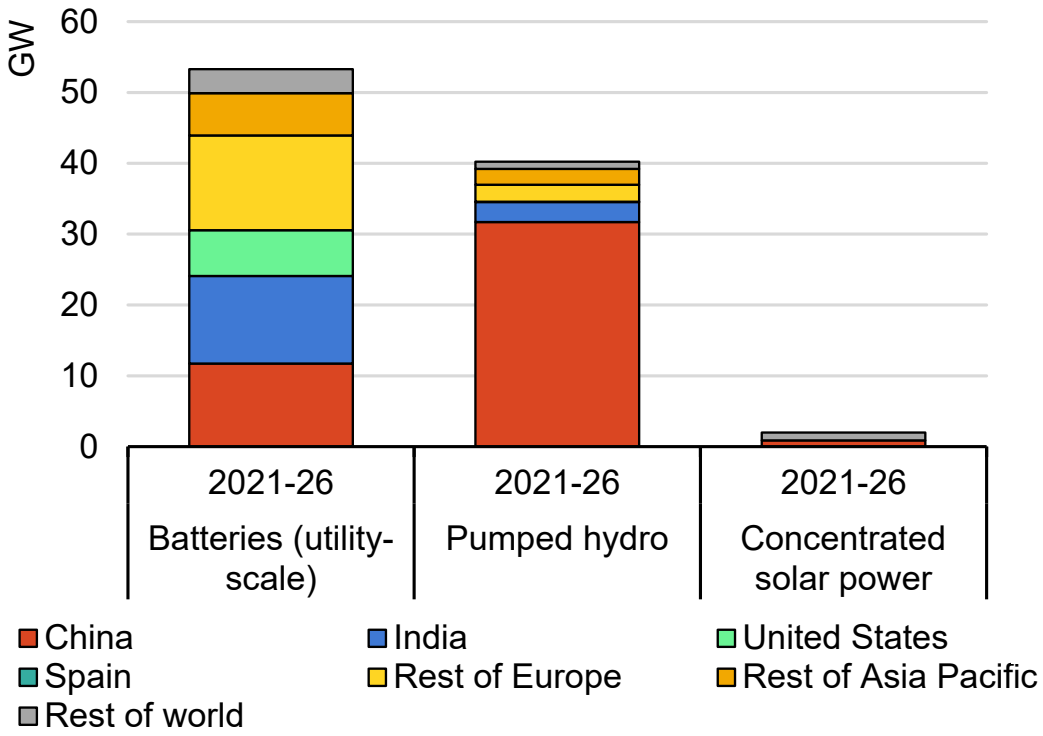


Planned global electrolyser projects are expected to bring 18 GW of additional renewable capacity during 2021-2026 led my China dedicated to the production of hydrogen but only accounting for only 1% of our main case forecast

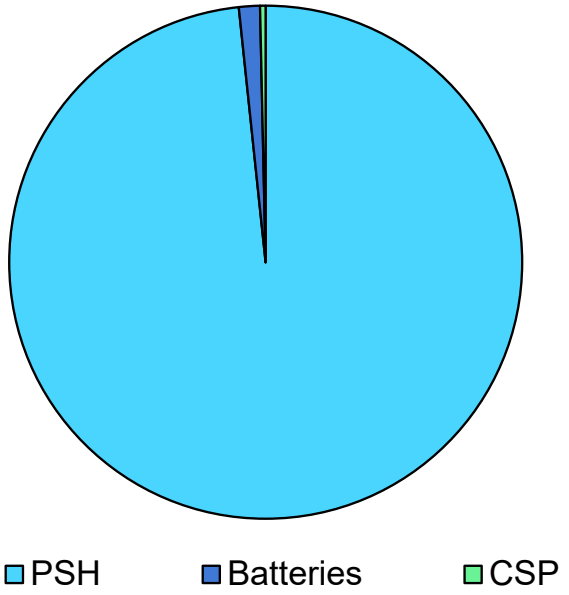
How rapidly will the global electricity storage market grow by 2026?

Electricity storage market growth

Storage capacity by technology and region

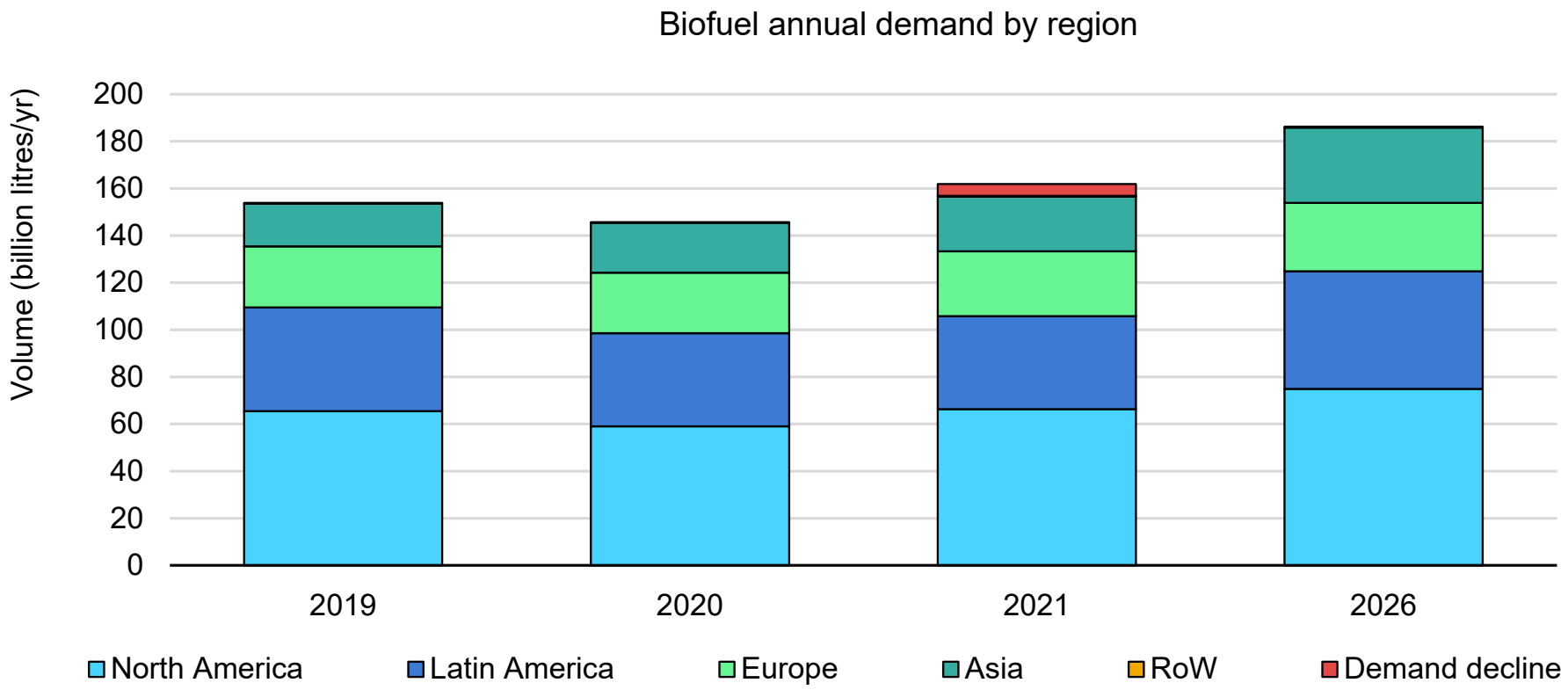


Storage capability by technology in 2026



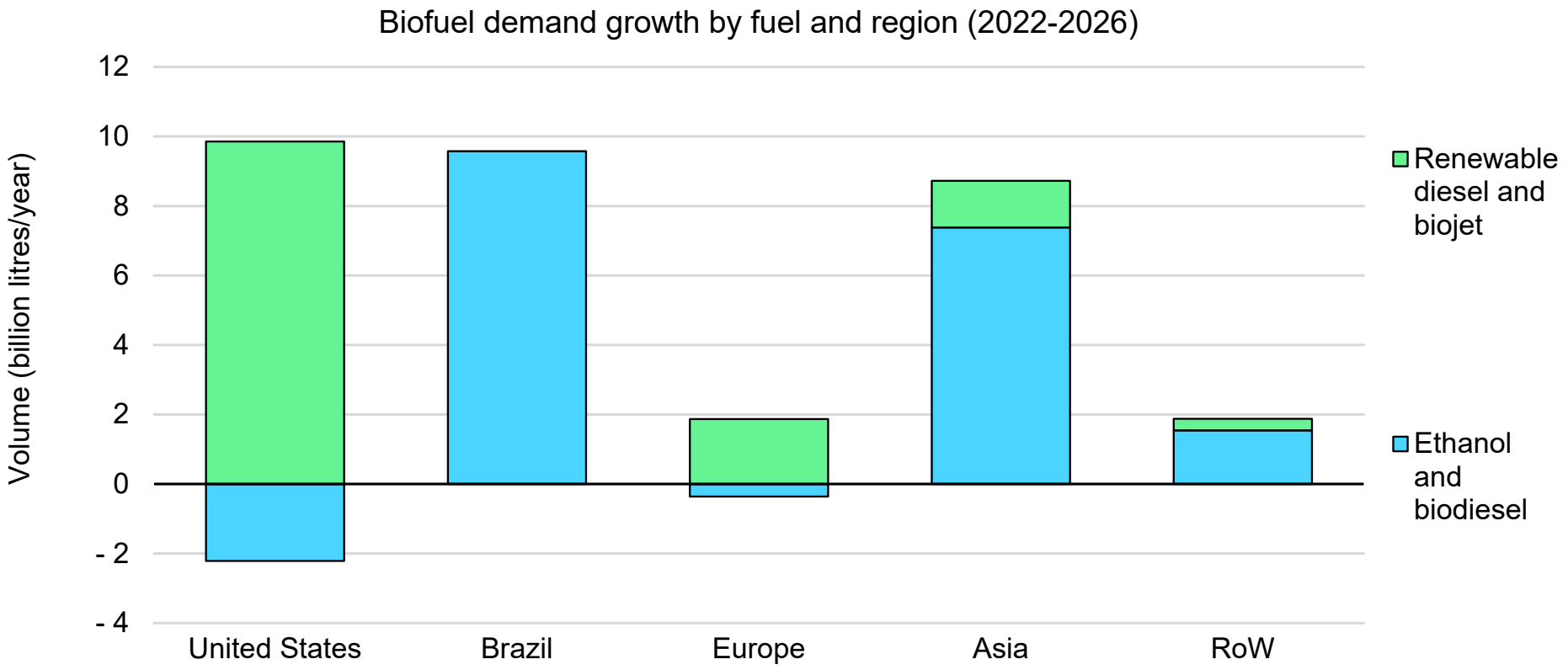
Global storage capacity expands 56% driven by system flexibility needs. China dominates expansion in all technologies due to remuneration schemes and long-term targets. PSH remains largest source of storage capability.

Biofuels recover in 2021 and expand to 2026 despite high costs



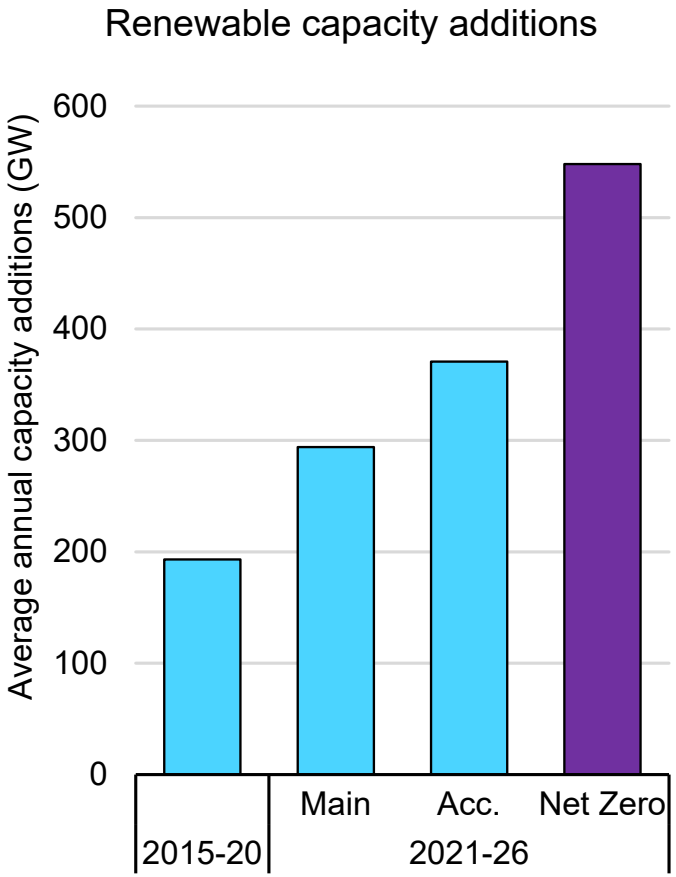
Biofuels grow by 4% by 2021 from 2019 levels. However, some governments have responded to high biofuel prices by reducing blending requirements, slowing the pace of growth.

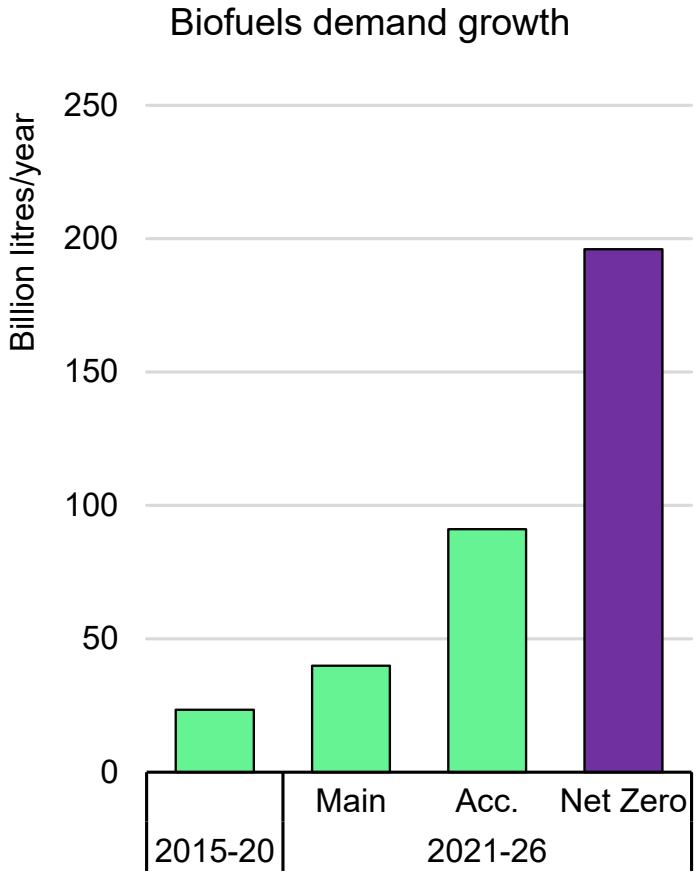
Policies are driving demand for specific fuels

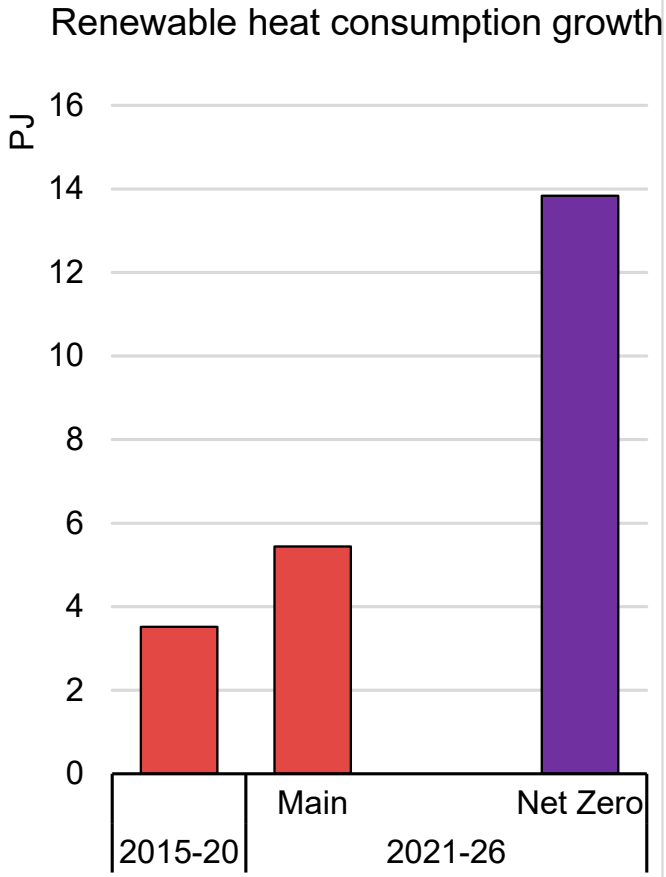


90% of renewable diesel and biojet demand growth is concentrated in Europe and the United States, while 80% of biodiesel and ethanol growth is concentrated in Asia and Brazil.

Reaching Net Zero by 2050 requires increasing policy ambition



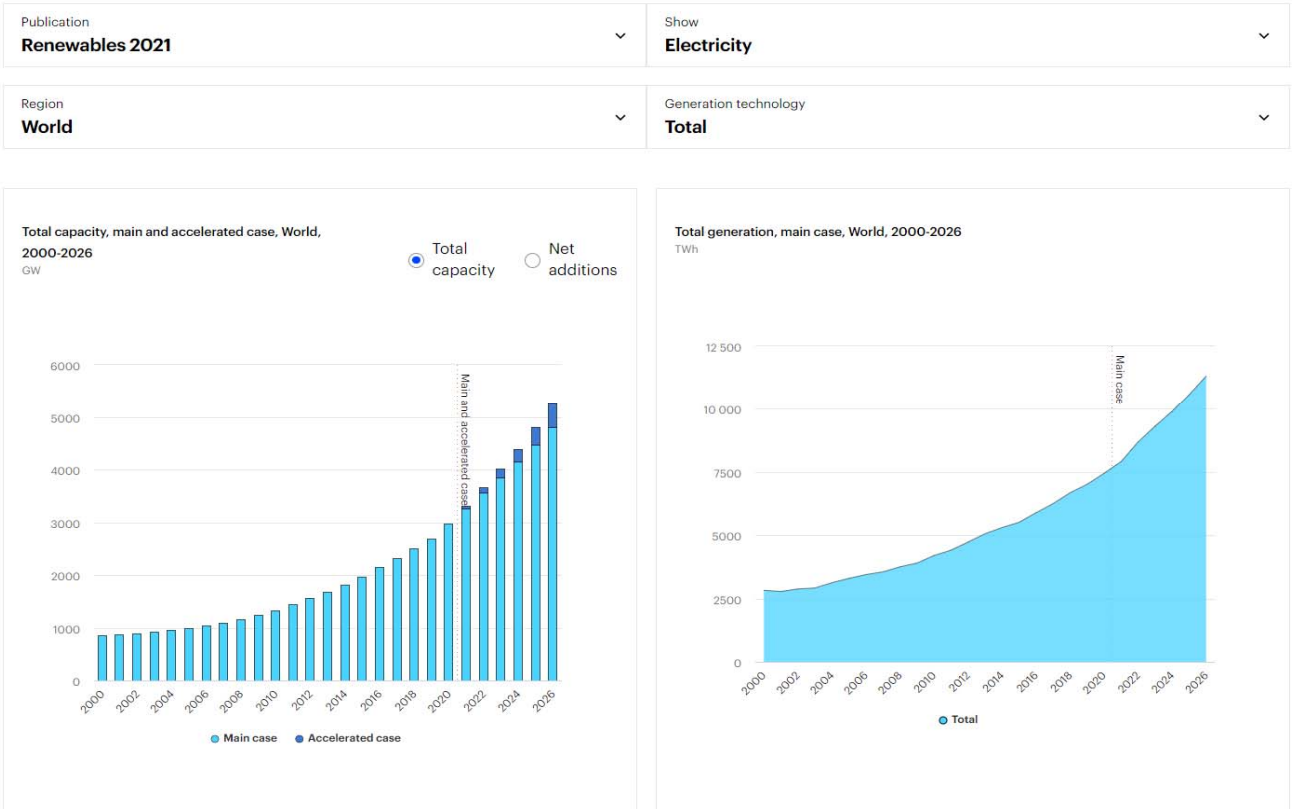




Despite forecast revisions and higher growth potential in accelerated cases, renewables growth in the electricity, transport and heat sectors over 2021-2026 are not on track with IEA's Net Zero by 2050 scenario.

Data visualisation tool

Renewables 2021 Data Explorer



https://www.iea.org/articles/renewables-2021-data-explorer?mode=market&region=World&publication=2021&product=Total

Heat economics tool

Technologies

Air-air heat pump

Technology lifetime	Total investment cost	Annual fixed O&M cost
12 years	8000 USD	175 USD

Air-water heat pump

Technology lifetime	Total investment cost	Annual fixed O&M cost
18 years	11000 USD	190 USD

Gas condensing boiler

Technology lifetime	Total investment cost	Annual fixed O&M cost
15 years	3800 USD	190 USD

Ground-source heat pump

Technology lifetime	Total investment cost	Annual fixed O&M cost
18 years	17000 USD	210 USD

Oil condensing boiler

Technology lifetime	Total investment cost	Annual fixed O&M cost
17 years	6200 USD	210 USD

Pellet Stove

Technology lifetime	Total investment cost	Annual fixed O&M cost
20 years	3500 USD	150 USD

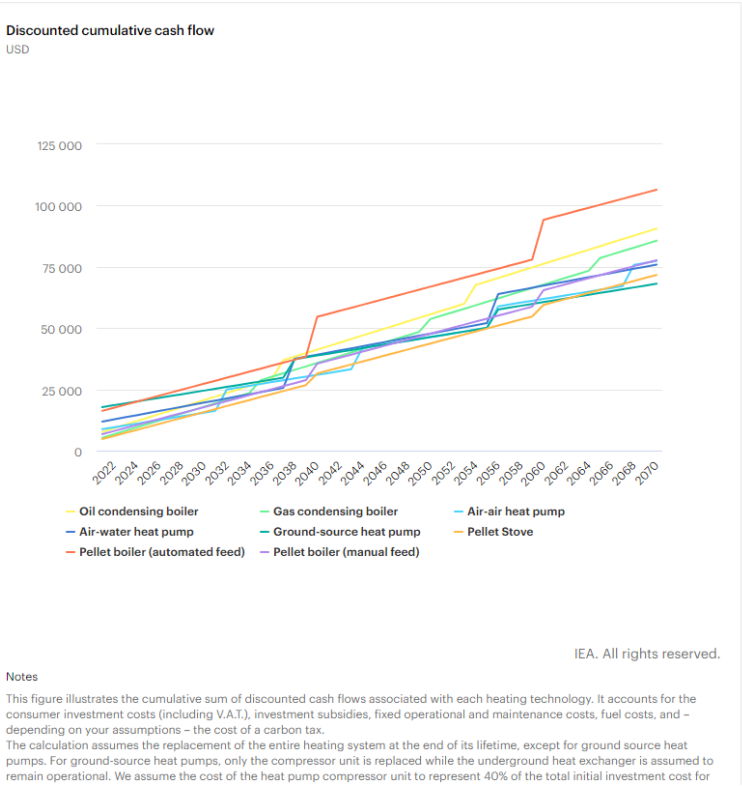
Pellet boiler (automated feed)

Technology lifetime	Total investment cost	Annual fixed O&M cost
20 years	15000 USD	230 USD

Pellet boiler (manual feed)

Technology lifetime	Total investment cost	Annual fixed O&M cost
20 years	5500 USD	200 USD

Discounted cumulative cash flow | Levelized cost of heating | Cumulative CO2 emissions



Notes

This figure illustrates the cumulative sum of discounted cash flows associated with each heating technology. It accounts for the consumer investment costs (including V.A.T.), investment subsidies, fixed operational and maintenance costs, fuel costs, and – depending on your assumptions – the cost of a carbon tax.
The calculation assumes the replacement of the entire heating system at the end of its lifetime, except for ground source heat pumps. For ground-source heat pumps, only the compressor unit is replaced while the underground heat exchanger is assumed to remain operational. We assume the cost of the heat pump compressor unit to represent 40% of the total initial investment cost for

https://www.iea.org/articles/residential-heat-economics-calculator

Thank you