



Renewables 2020

Heymi Bahar

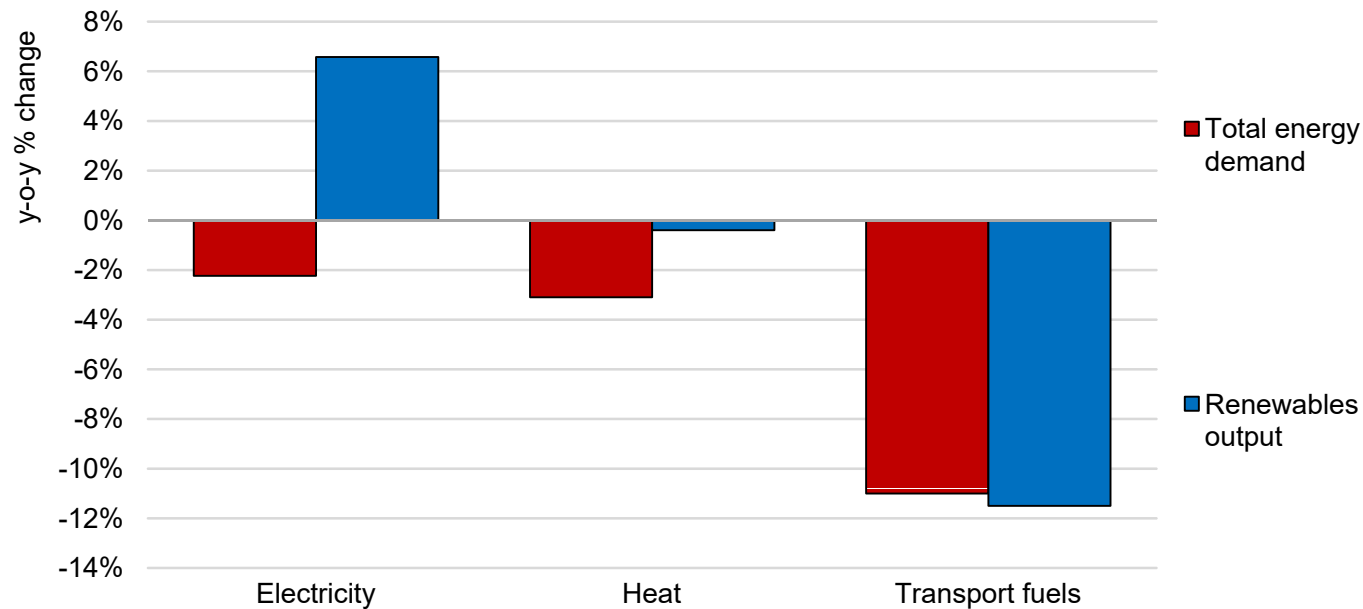
Spanish Energy Club

14 December 2020

Renewables are resilient in electricity but demand shock hits heat & transport

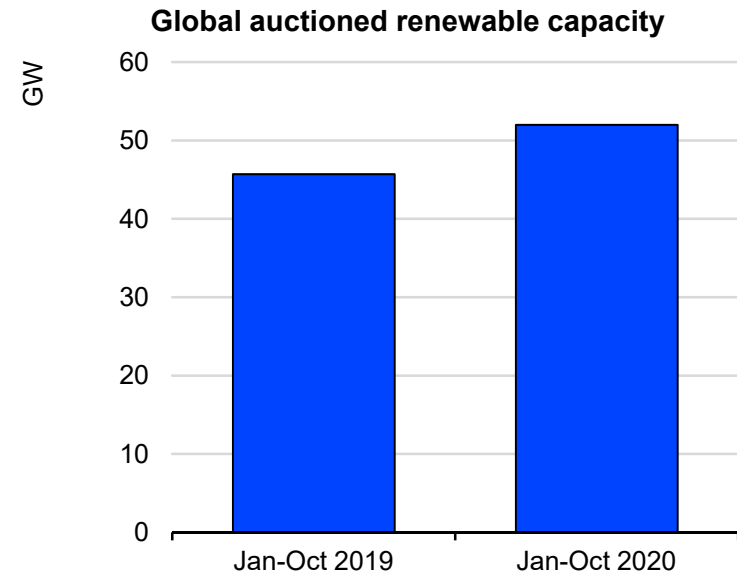
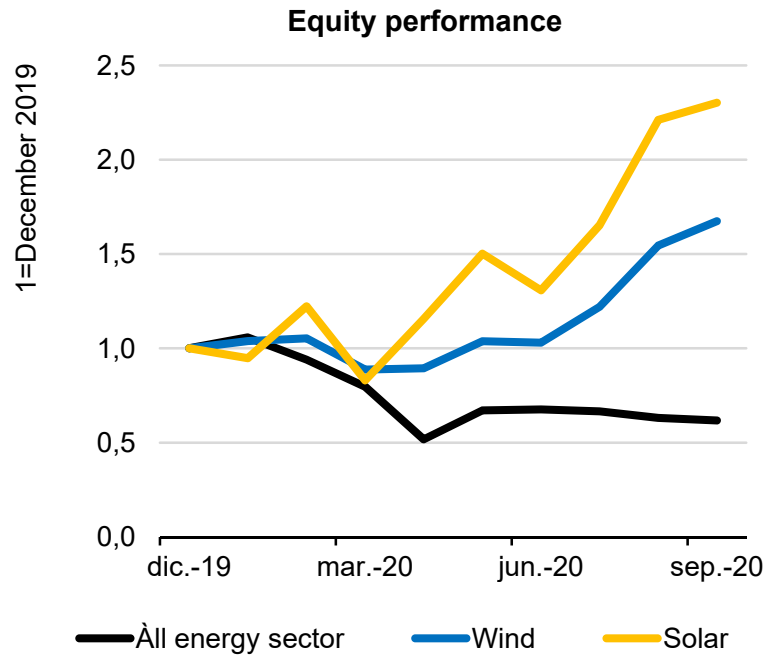


Change in energy demand and renewables output in electricity, heat and transport between 2019 to 2020



Global energy demand is set to decline by 5% while renewables demand will increase by 1%, thanks to almost 7% growth in electricity generation. Bioenergy use in industry and transport gets the biggest hit

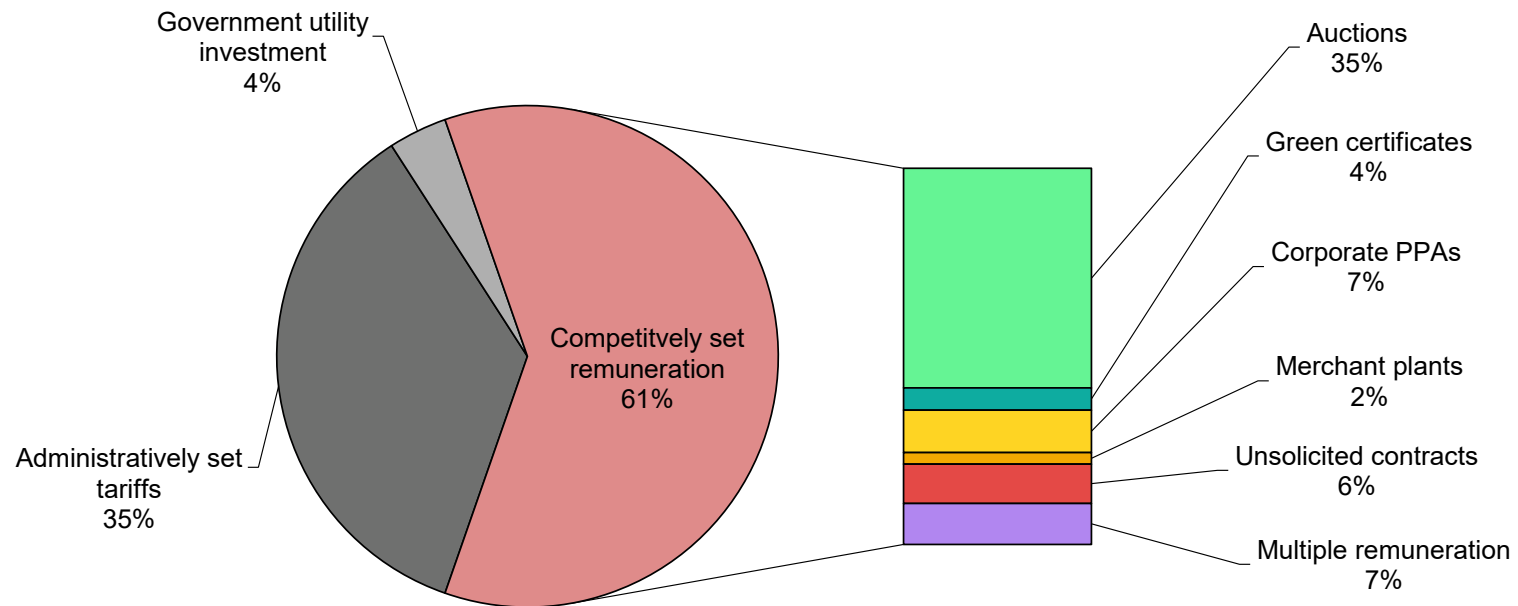
Investor appetite for renewables remains strong



Publicly traded wind and solar companies continued to attract investors and have outperformed the overall energy sector. Countries worldwide have auctioned record levels of capacity, led by China, India and Europe.

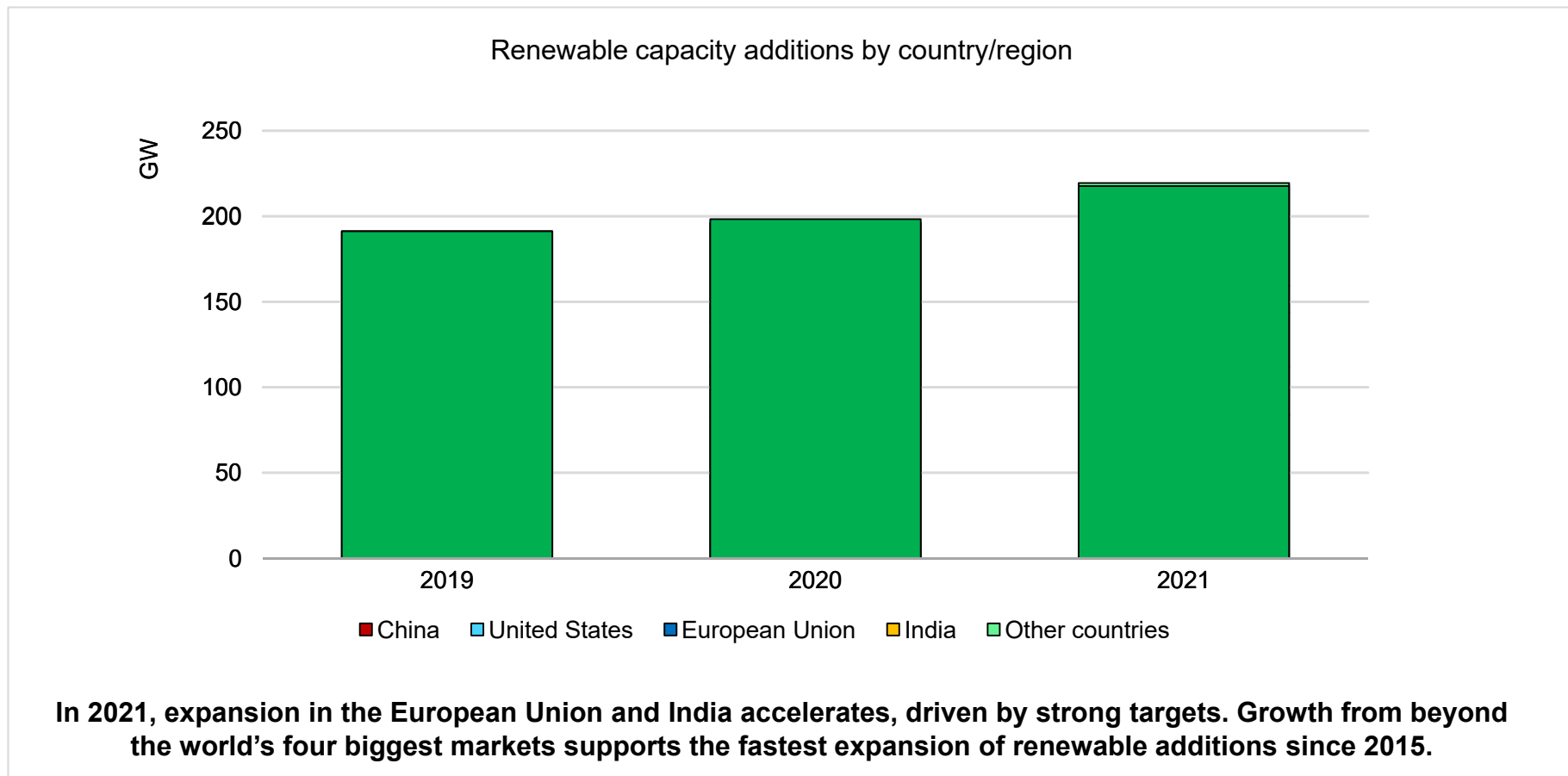
Wind and PV growth emerges beyond common policy schemes

Renewable electricity capacity remuneration policy types, 2020-25

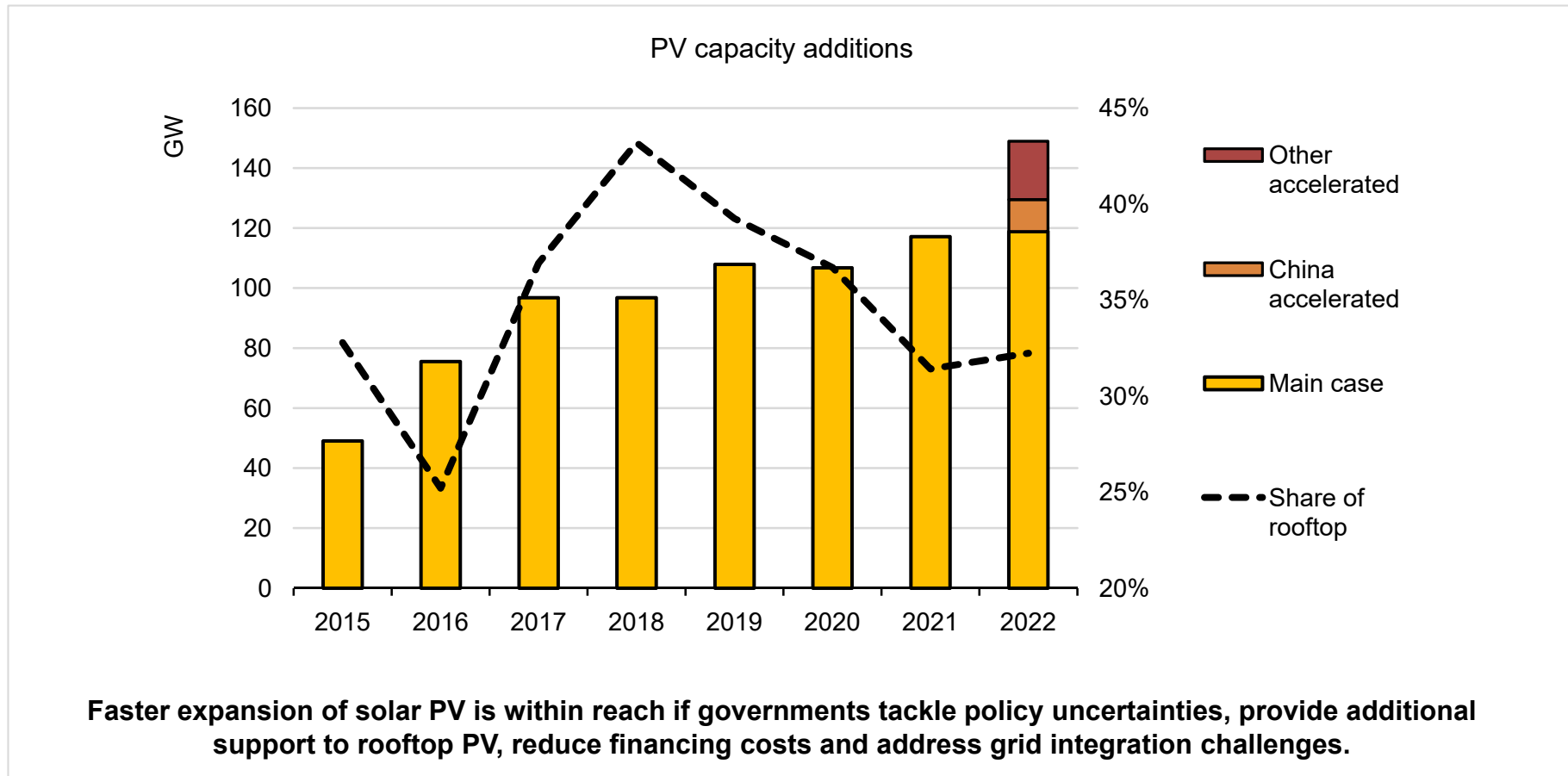


Auctions and administratively set tariffs (mostly in China) drive 70% of renewables expansion over 2020-25 but corporate PPAs, merchant plants and projects receiving multiple revenue streams drive 15% thanks to lower costs.

China and United States drive renewables to record growth in 2020



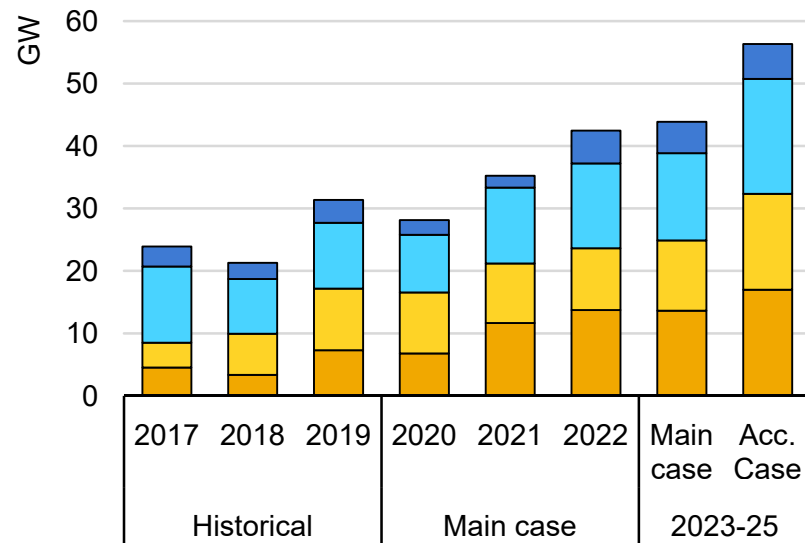
Solar PV additions reach all time high in 2022 driven by large projects



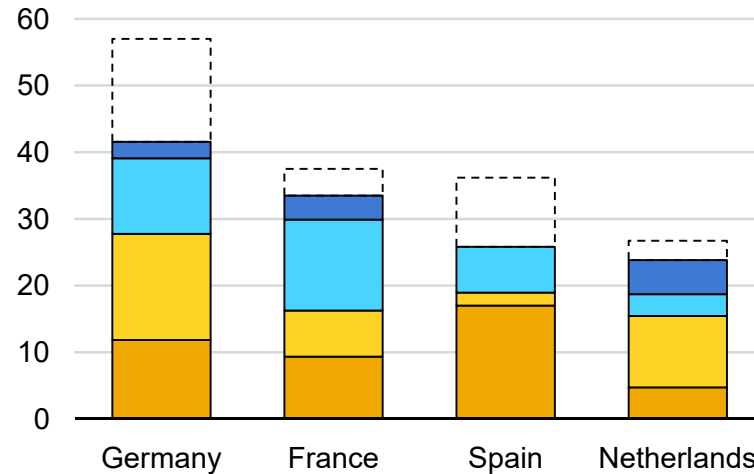
Europe's 2030 targets trigger increasing growth



Europe solar PV and wind capacity additions 2017-22 and average annual additions 2023-25



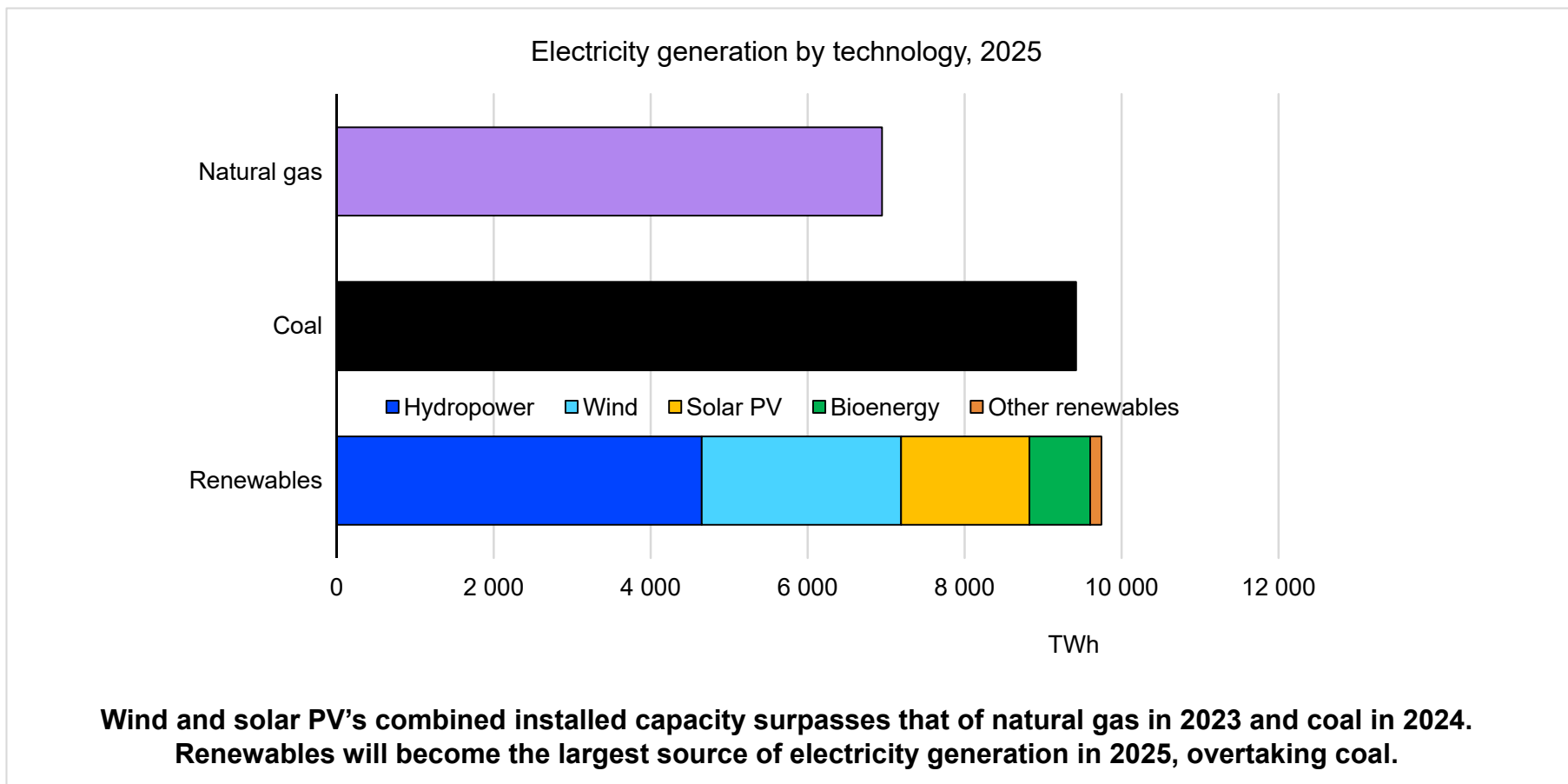
Europe cumulative growth (2020-25) by country



 Upside potential
 ■ Offshore wind
 ■ Onshore wind
 ■ PV-distributed
 ■ PV-utility

Higher 2030 targets supported by auctions drive a majority of the utility-scale PV and wind growth. Additions could be 30% higher with less permitting challenges for onshore wind and more corporate and utility procurement for PV.

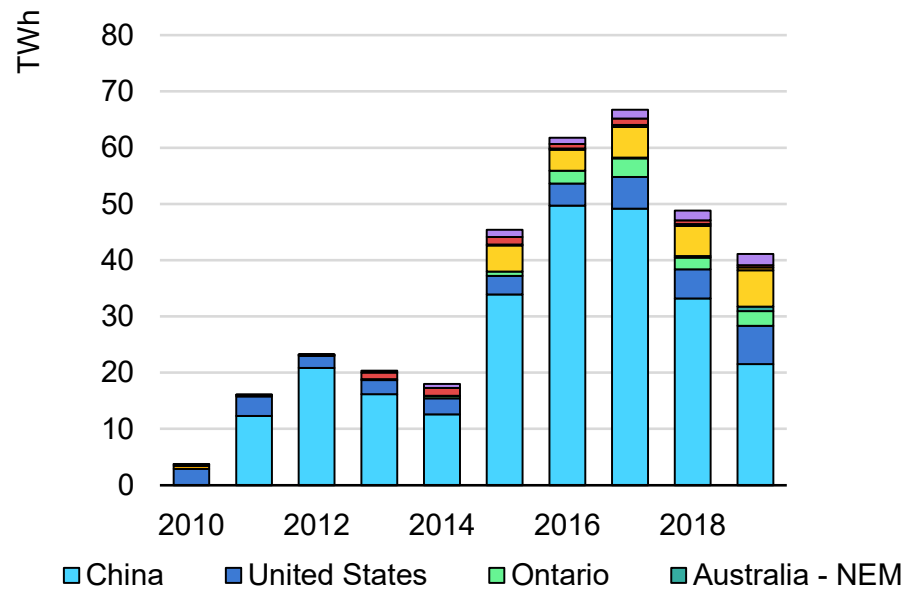
A major shift in global electricity generation in 2025



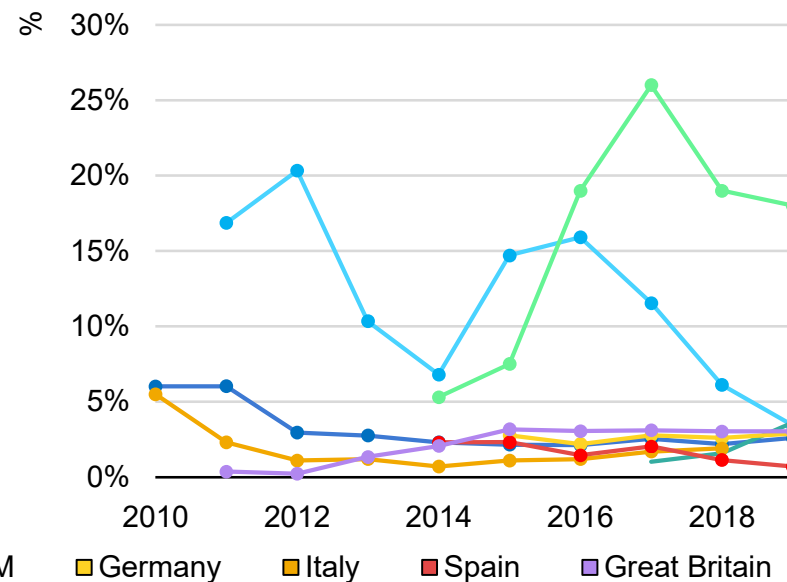
Systems adapt to VRE increase, keeping curtailment shares stable



Dispatched-down wind and solar PV generation

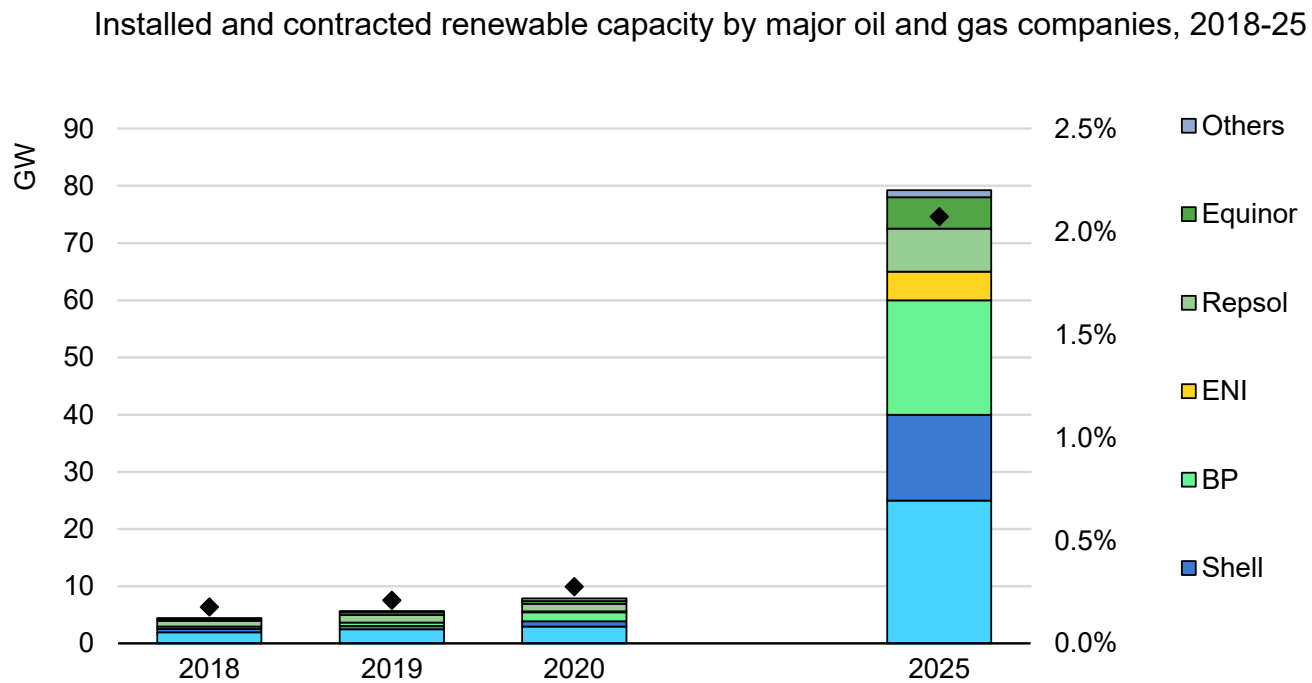


Share of dispatched down generation



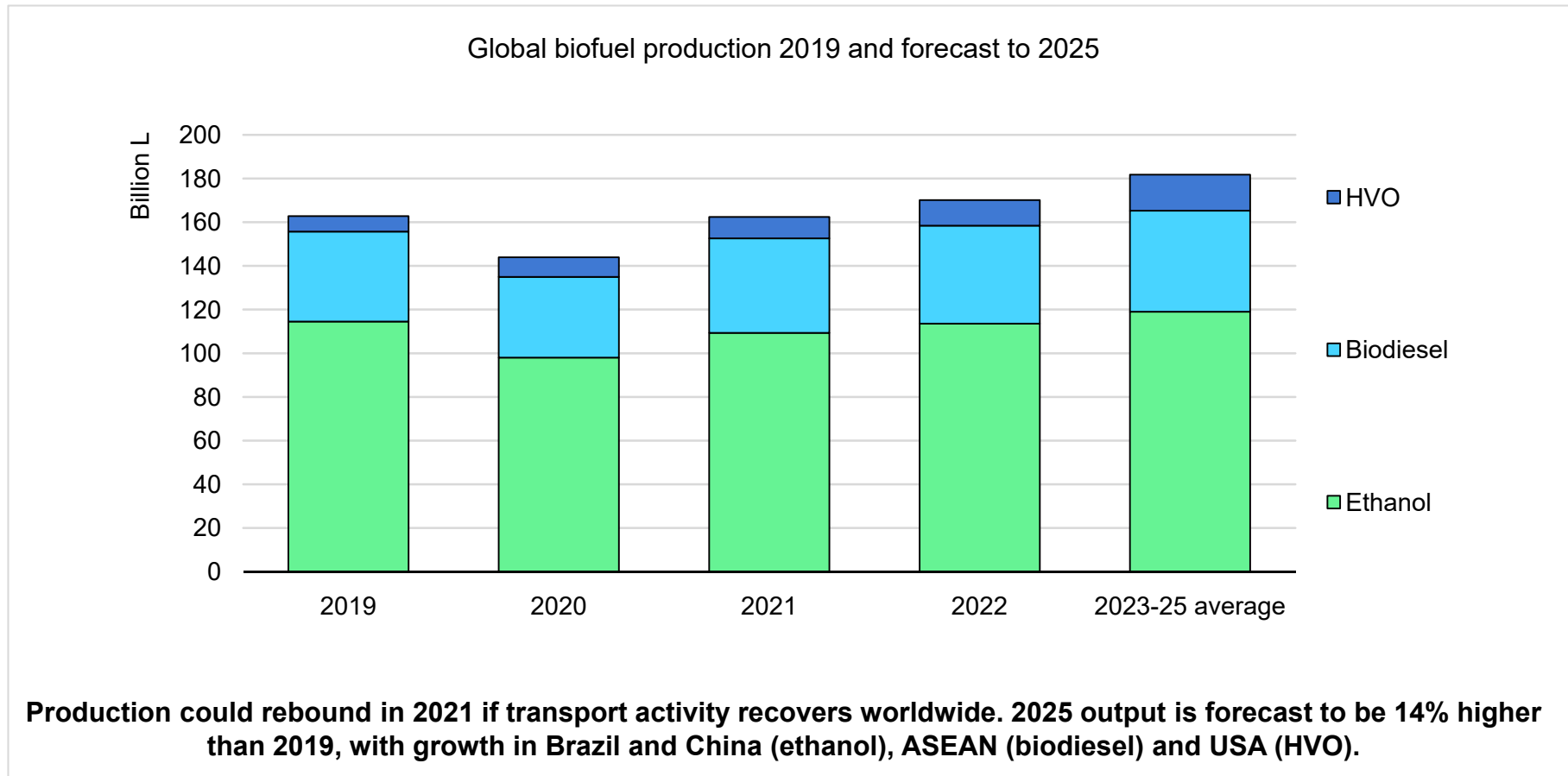
As levels of absolute curtailed VRE rise, appropriate market designs; changes to the grid and to market operations; better forecasting; and efficient co-ordination and operation of interconnectors will cost-effectively reduce it.

Will oil and gas businesses become major investors in renewables?

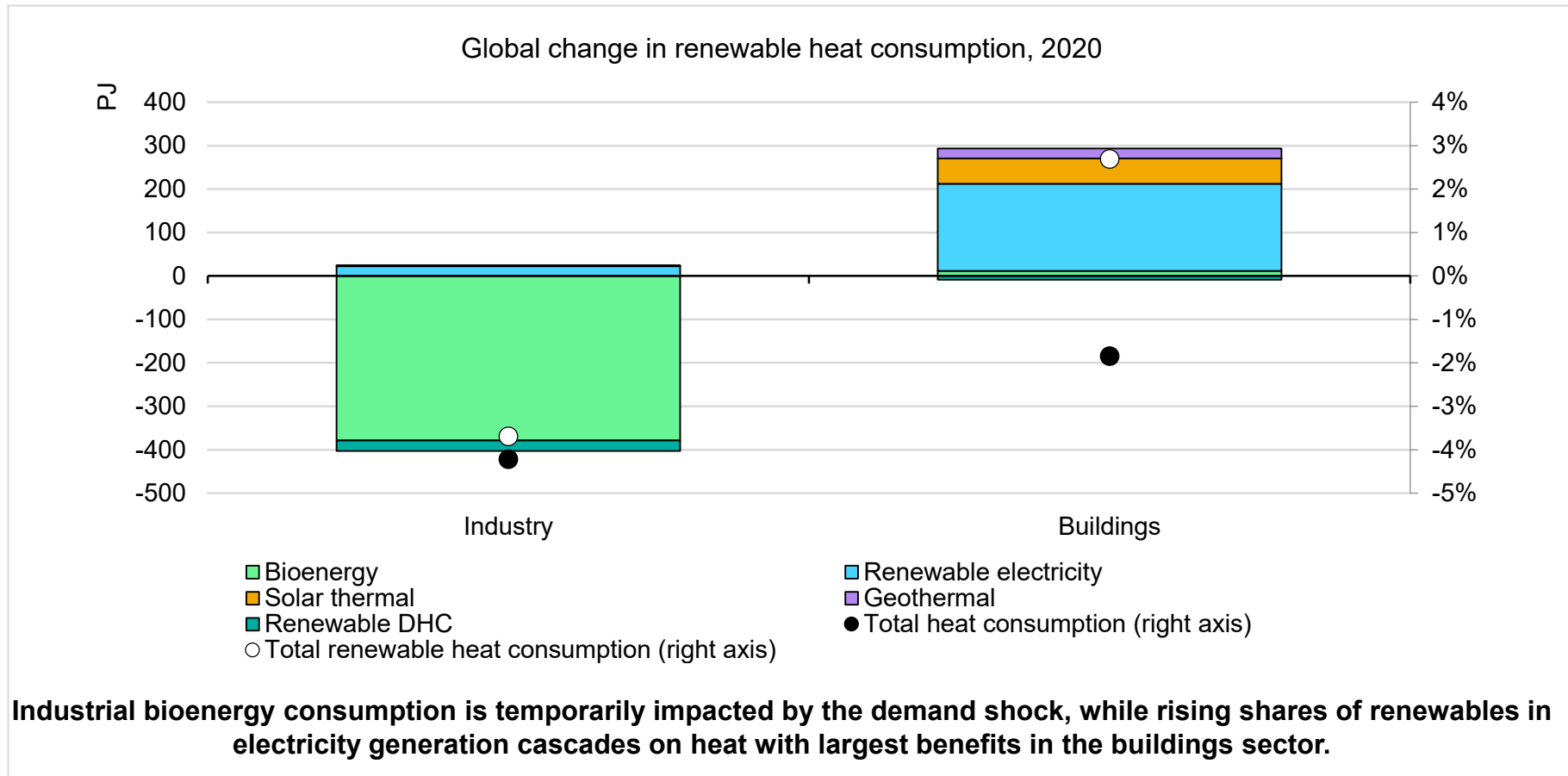


Oil and gas majors' investment in renewable electricity is expected to increase tenfold between 2020-25. European companies account for 95% of this growth through 2025 driven by strong policy targets in place to reduce emissions.

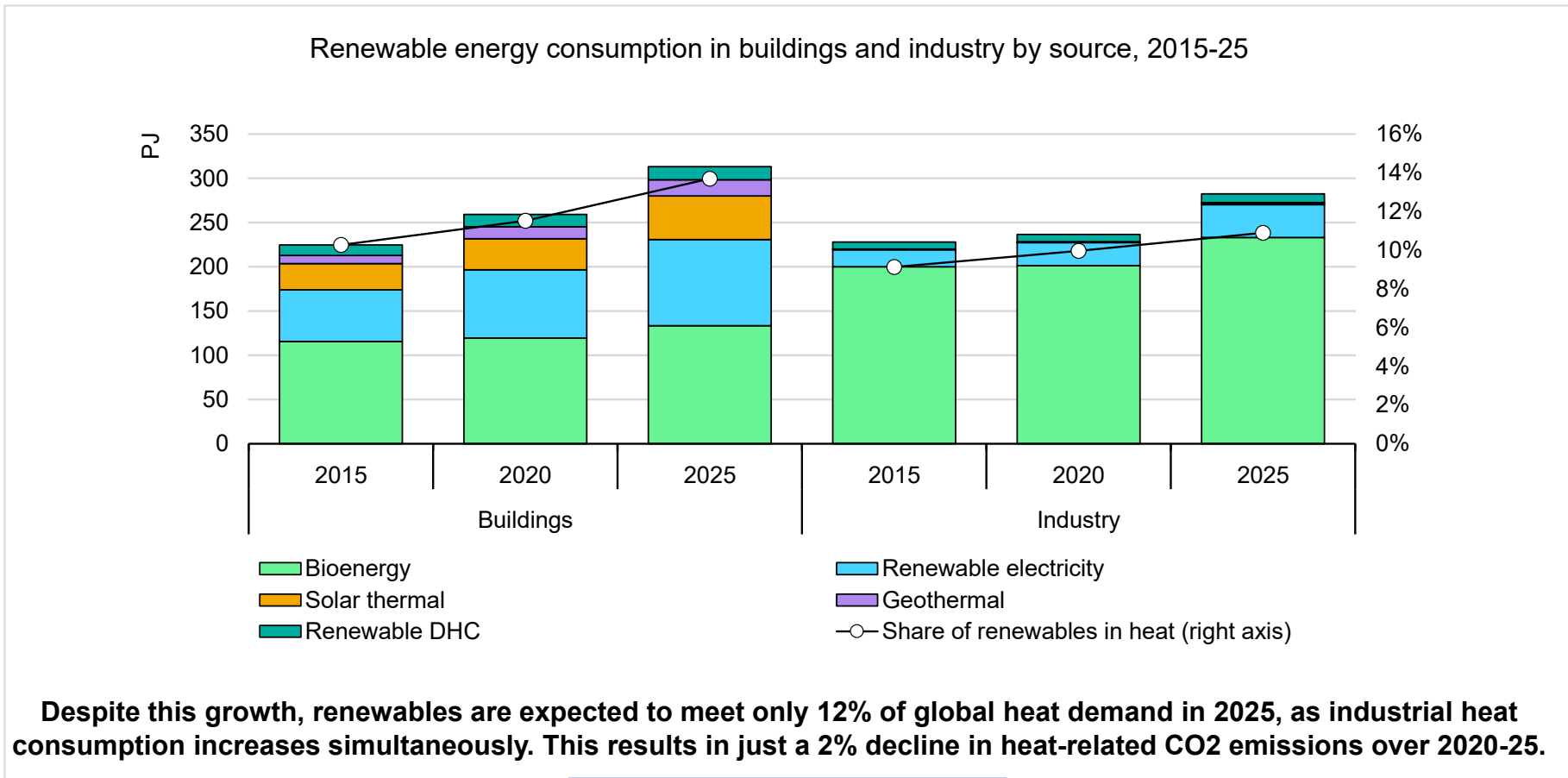
Biofuel output growth after 2020 depends on fuel demand recovery



Global industrial heat demand drops 4% in 2020 due to lower activity



Renewable heat consumption expected to increase 20% over 2020-25



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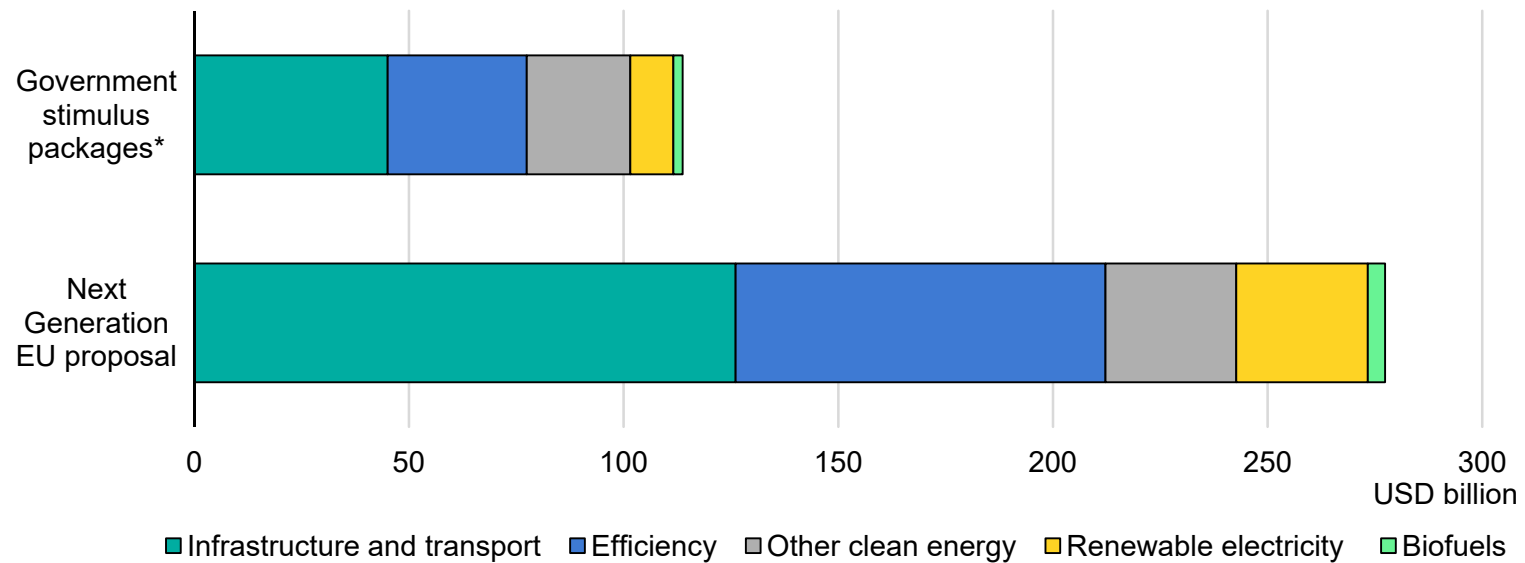
BHI3

BAHAR Heymi, IEA/EMS/RED; 24/11/2020

EU stimulus is a champion of “green” economic recovery



Clean energy spending in economic stimulus packages, governments and EU

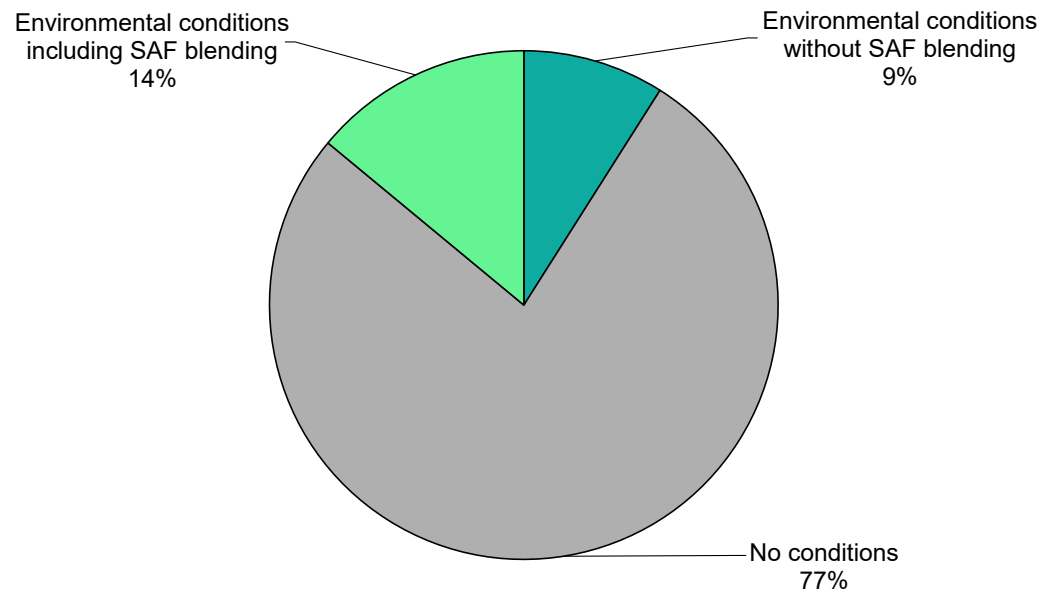


Other clean energy: green hydrogen, CCUS, nuclear and battery storage. * Announced by the end of October 2020.

Infrastructure & transport and energy efficiency take priority in global clean stimulus. The EU has set green recovery at the heart of its USD 840 billion stimulus with 37% planned for climate-related spending.

Bailouts – a missed opportunity for sustainable aviation fuels (SAF)?

Government financial support to the aviation industry by type of conditions attached



Of 30 airlines receiving USD 76 billion worth of stimulus, only 4 were subject to 'green' conditions. Applying a 2% SAF blending requirement to all could have provided a significant boost to SAF capacity investment.

Thank you



Questions?

Online report: <https://www.iea.org/reports/renewables-2020>

Data tool: <https://www.iea.org/articles/renewables-2020-data-explorer?mode=market®ion=World&product=Total>

Data purchase: <https://webstore.iea.org/renewables-2020>