

Powering the World

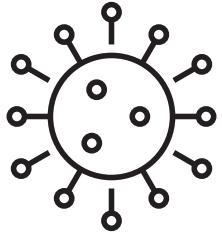
Global capex expectations across energy sector

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Energy industry challenges in the last three years and beyond



Pandemic

- Supply chain dislocation
- Commodity price volatility



Energy security

- Rising role in government calculations which exacerbates geopolitical tensions
- Different definitions between countries



Extreme weather events

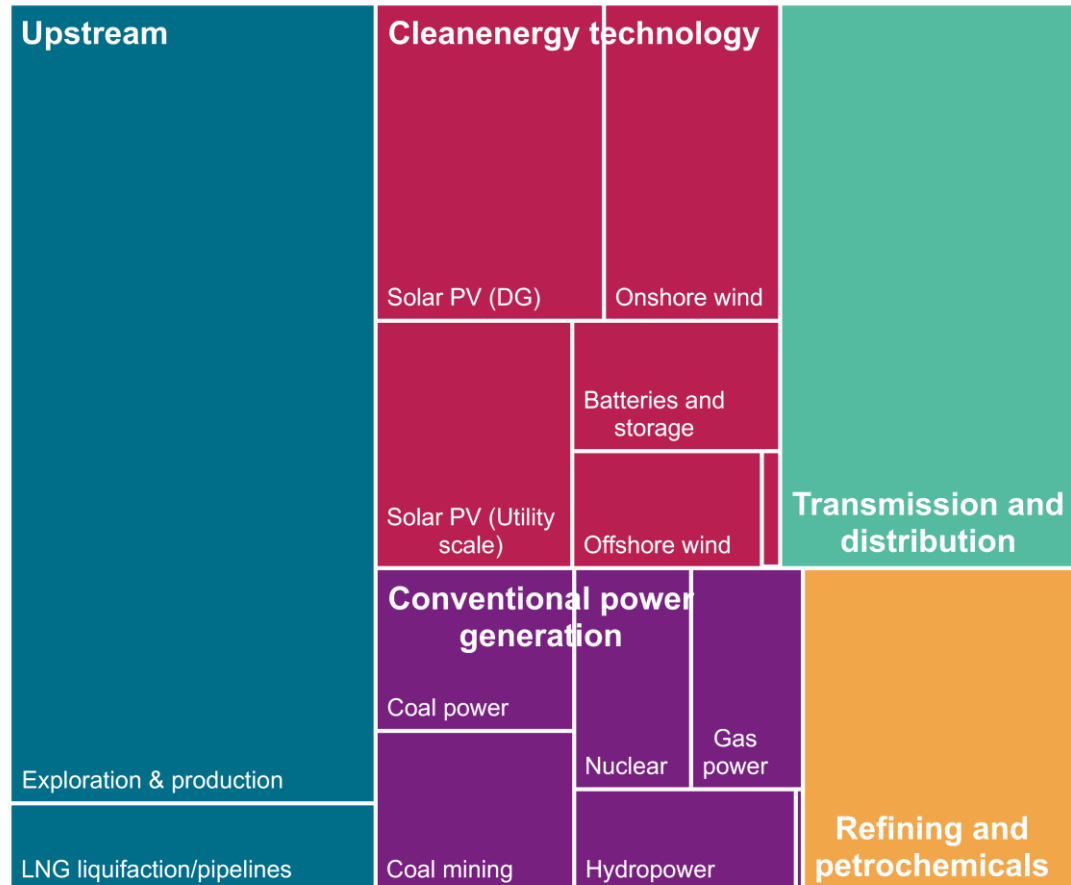
- Reducing emissions is a key consideration for governments, companies, and the financial community

The result is a rapidly changing landscape and multidimensional energy transition marked by differing timelines and goals, fuel mixes, and technologies

Source: S&P Global Commodity Insights

Nearly \$2 trillion was invested in energy supply in 2023, with upstream and cleantech leading

Global energy spend by segment 2023



- Bottom-up analysis of the supply side of the energy sector
- Upstream includes exploration and production capital spending on projects
- Clean energy technology (Cleantech) includes all forms of renewable power generation, energy storage, low-carbon hydrogen production, and Carbon Capture and Storage (CCUS)
- These numbers do not include investments on the demand side, such as energy efficiency, electric vehicles (EVs), and end-use electrification
- Operating expenses and decommissioning are not included

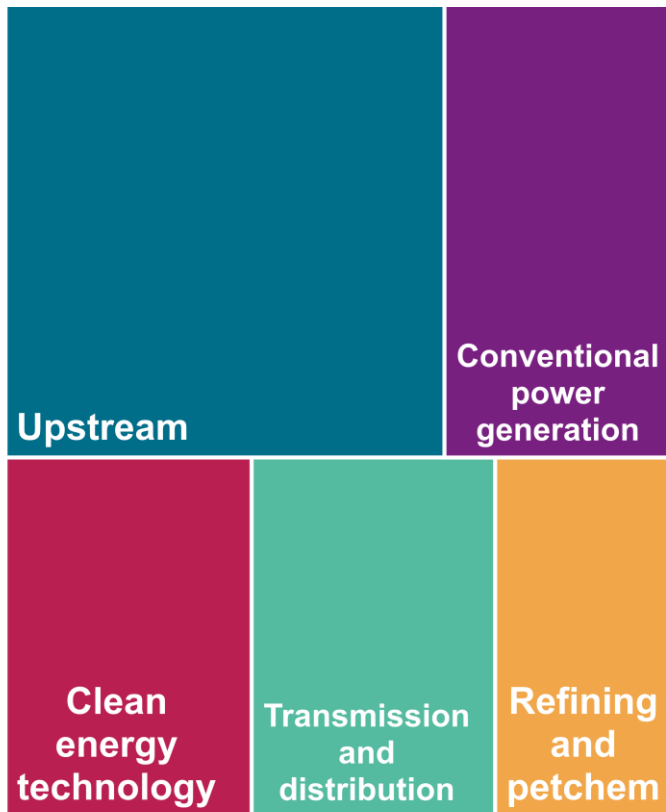
Data compiled March 2024

DG = distributed solar PV; refers to installations smaller than 5 MW.

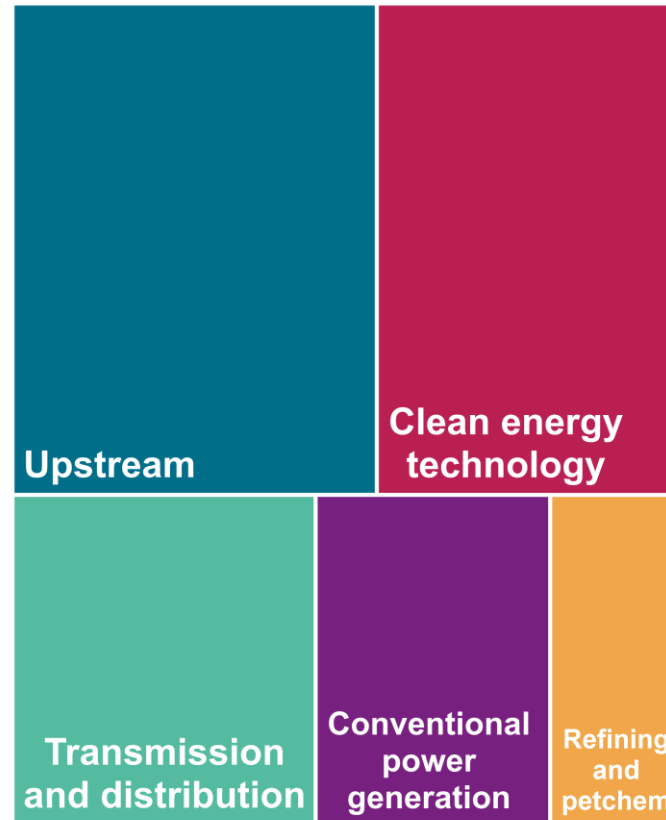
Source: S&P Global Commodity Insights

Global energy spend continues to increase in real dollars driven by investment in clean energy

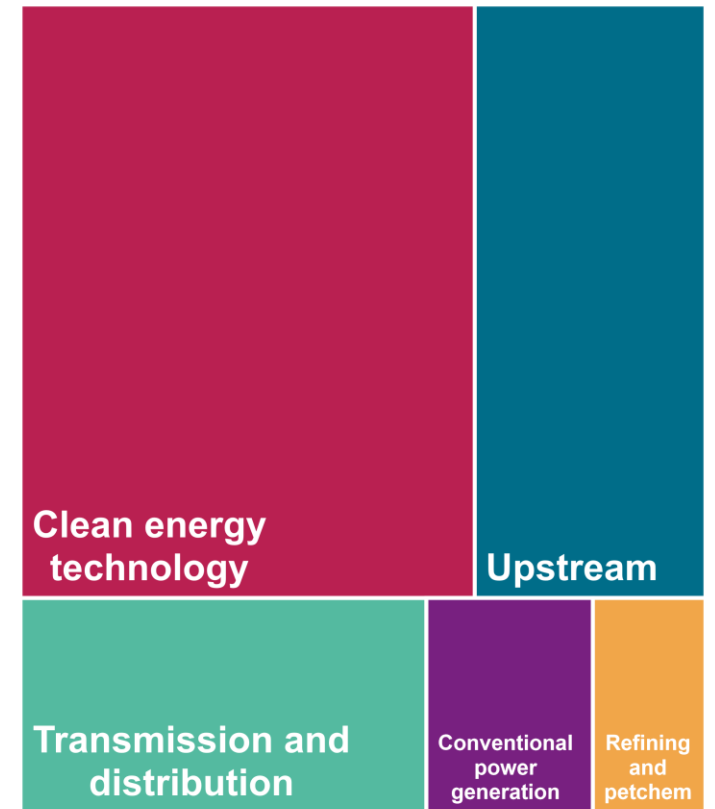
Global energy spend 2016-2020
US\$ 8.1trillion



Global energy spend 2021-2025
US\$ 9.4 trillion



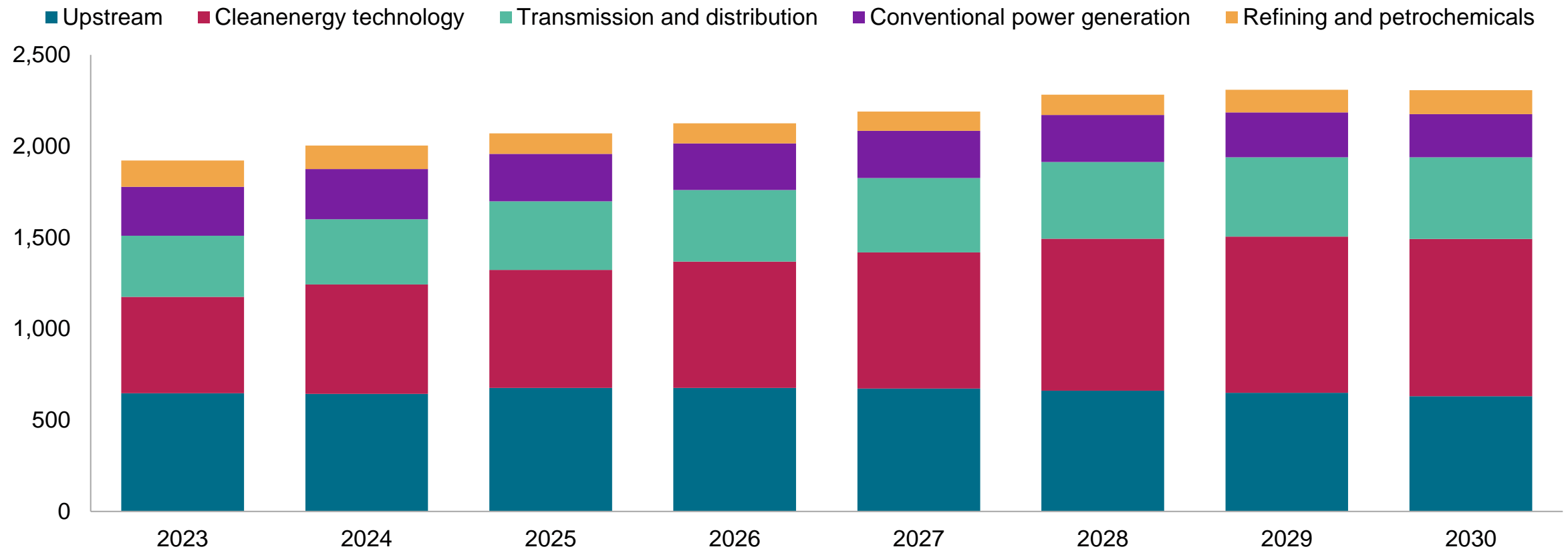
Global energy spend 2026-2030
US\$ 11.2 trillion



Data compiled March 2024
Source: S&P Global Commodity Insights..

Global energy investment increases by 20% in real terms by 2030, cleantech and grid capture all the growth, upstream spend remains stable

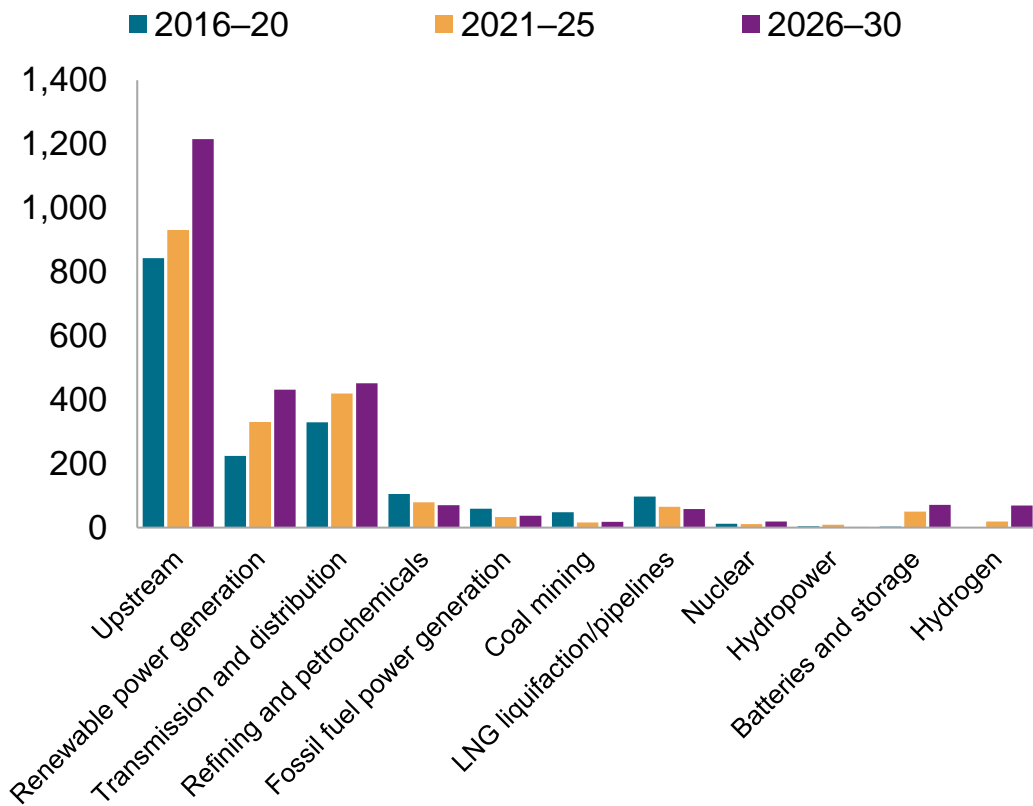
Global energy spend US\$B (2023 real)



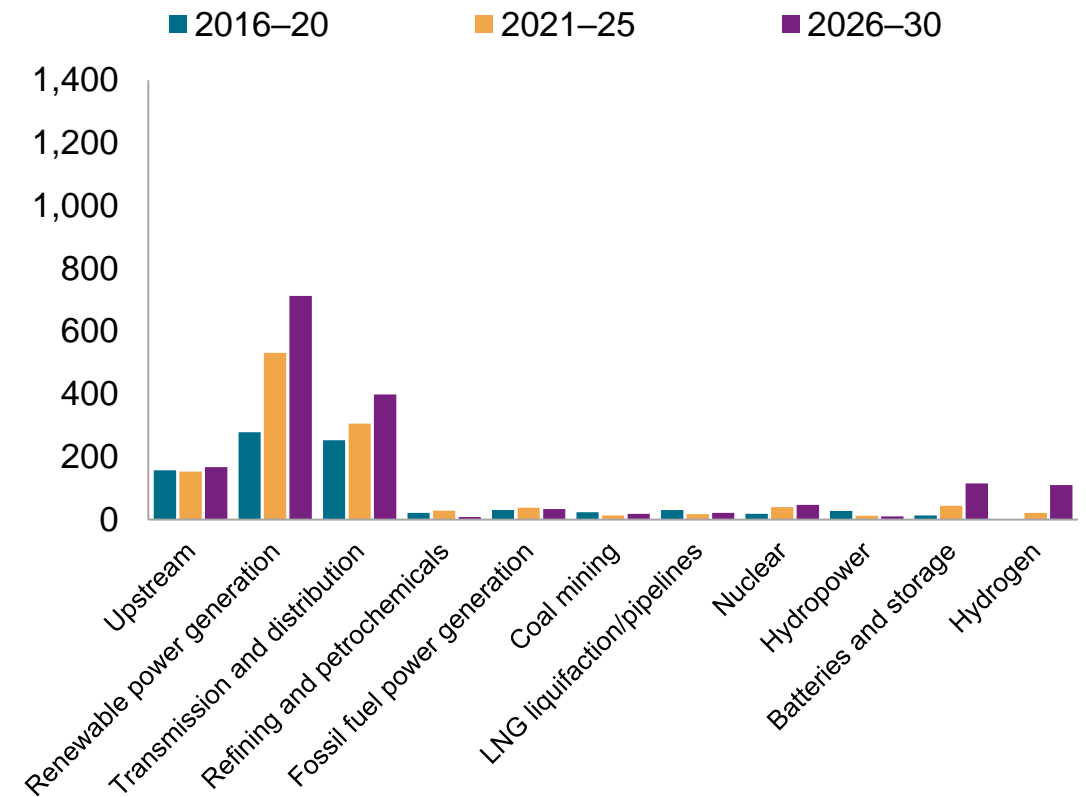
Data compiled March 2024
Source: S&P Global Commodity Insights

Regional differences are stark as governments intercede in the market

North America energy spend (US\$B real 2023)



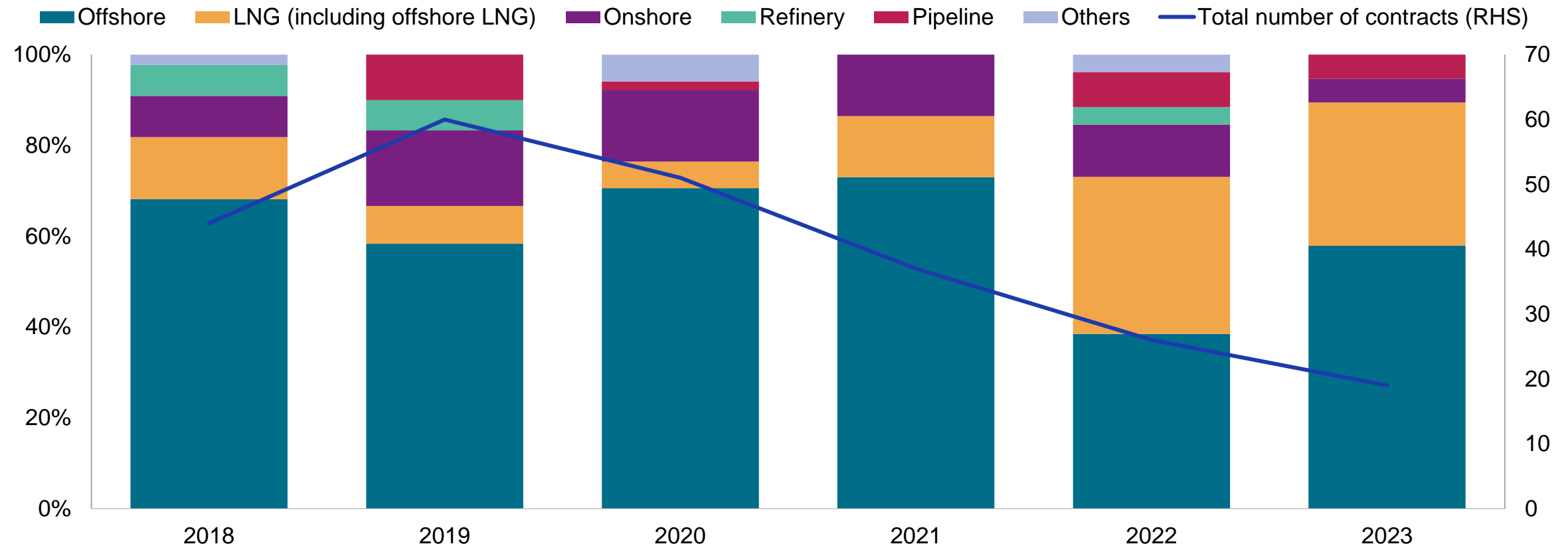
Europe energy spend (US\$B real 2023)



Data compiled February 2023.
Source: S&P Global Commodity Insights.

Fewer upstream E&P front-end engineering and design contracts have been recorded in recent years

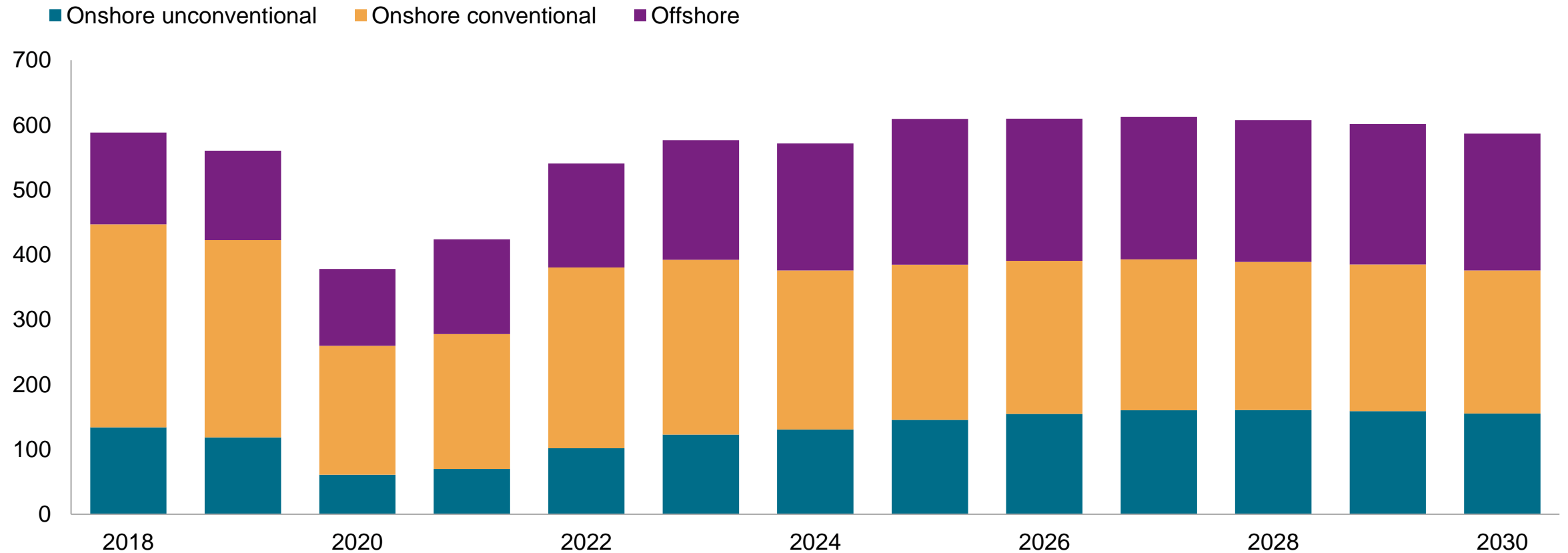
Breakdown of visible E&P FEED contracts, by percentage of total awards



Data compiled Nov. 14, 2023.
Source: S&P Global Commodity Insights.

E&P capex is on a path to stabilization with an improved cost base after 2020 downturn

Upstream E&P capex by region US\$bn (2023 real)



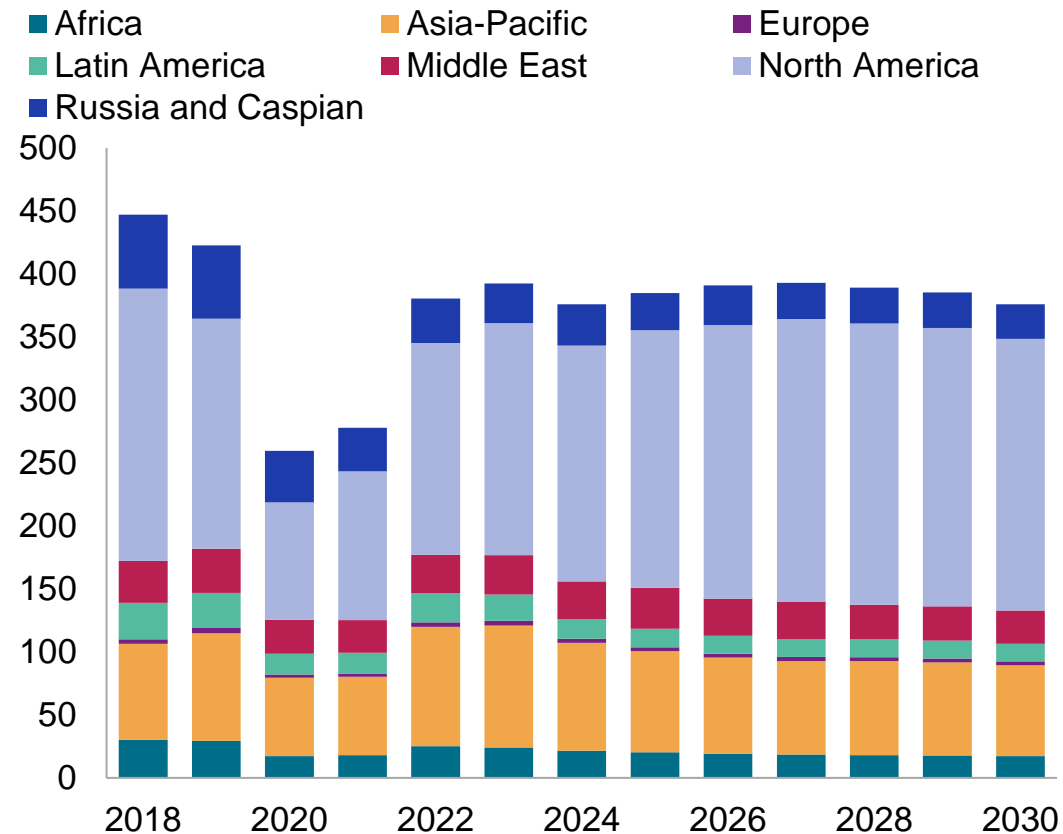
Compiled March 2024.

Onshore unconventional includes North America spending only.

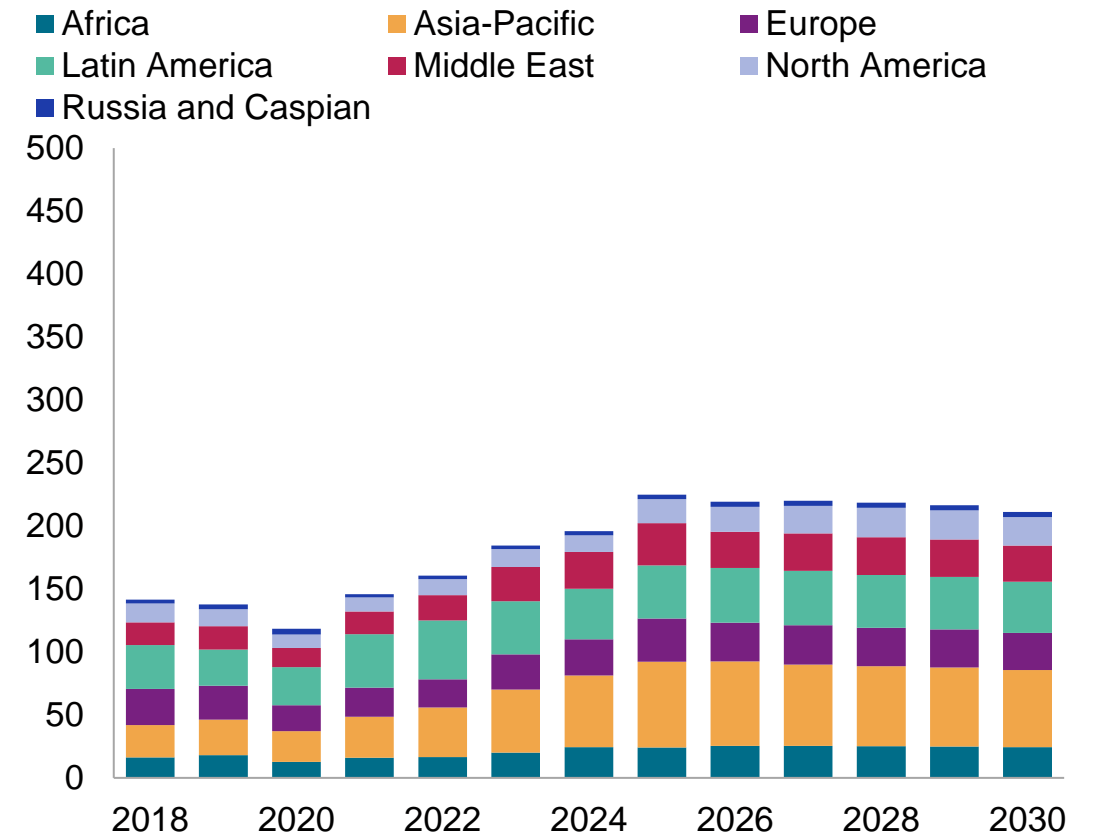
Source: S&P Global Commodity Insights.

Onshore E&P spend continues to outpace offshore

Onshore E&P capex by region US\$bn (2023 real)



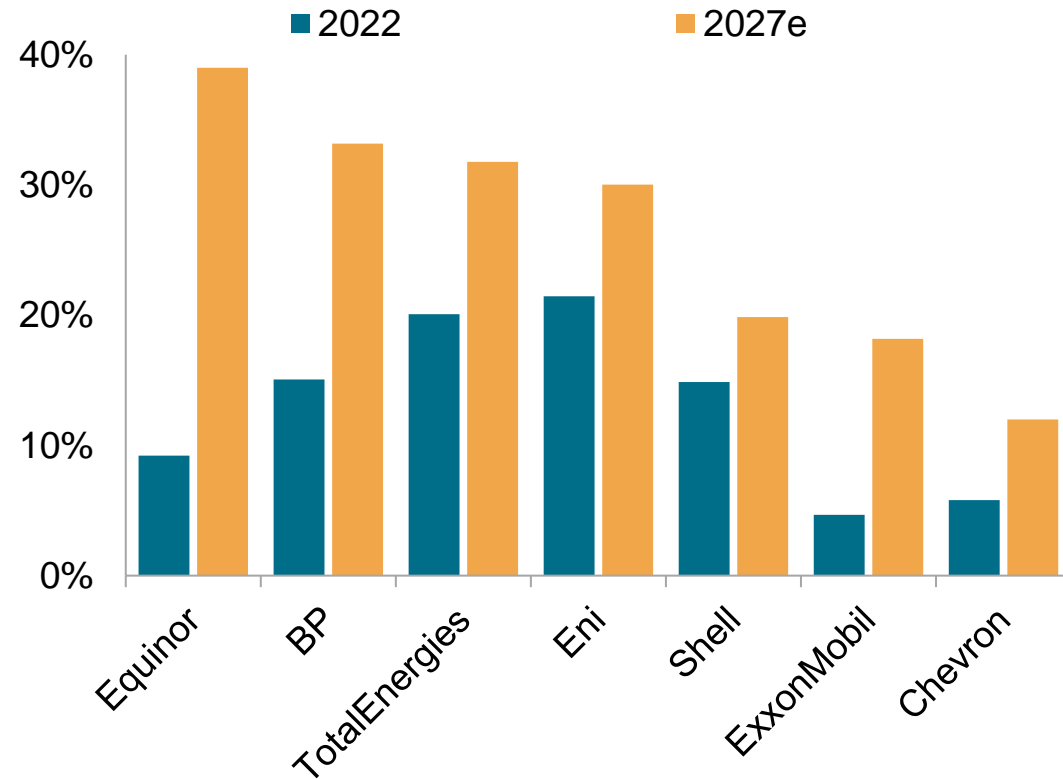
Offshore E&P capex by region US\$bn (2023 real)



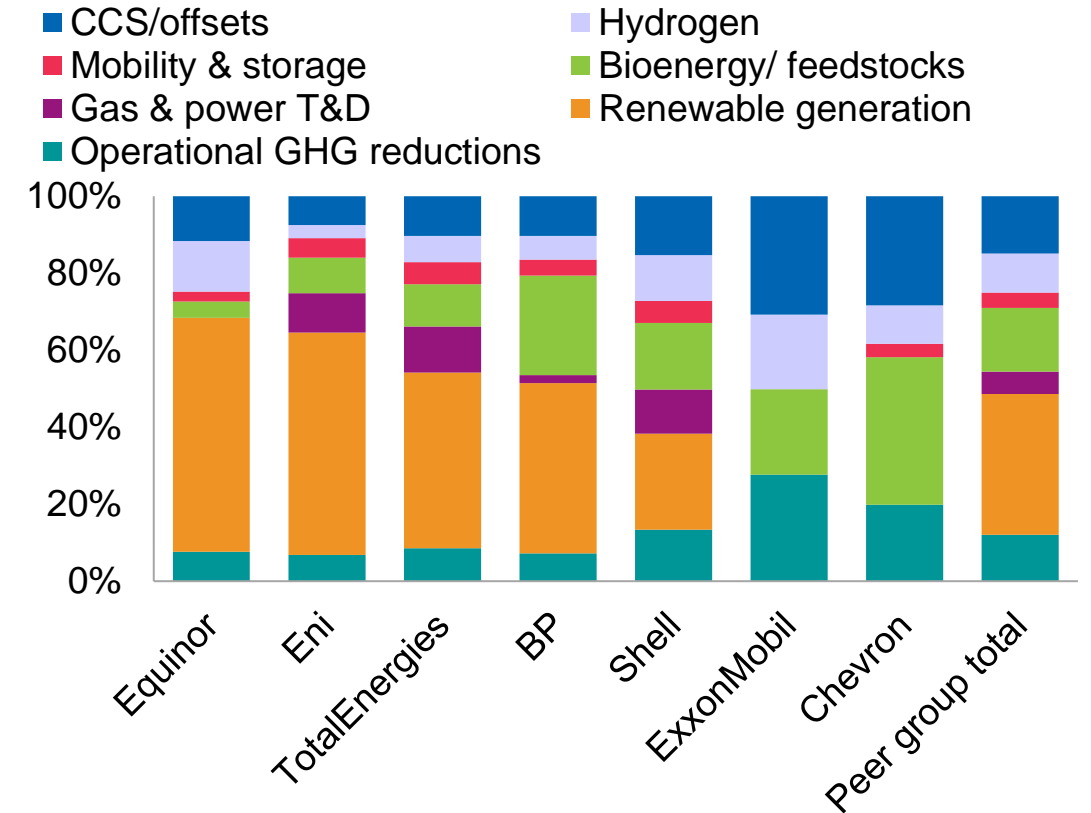
Data compiled March 2024.
 Source: S&P Global Commodity Insights.
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Significant differentiation amongst E&P companies in their low carbon capital allocation and growth strategies

Low-carbon investment as a share of total organic investment: 2022 versus 2027 est.



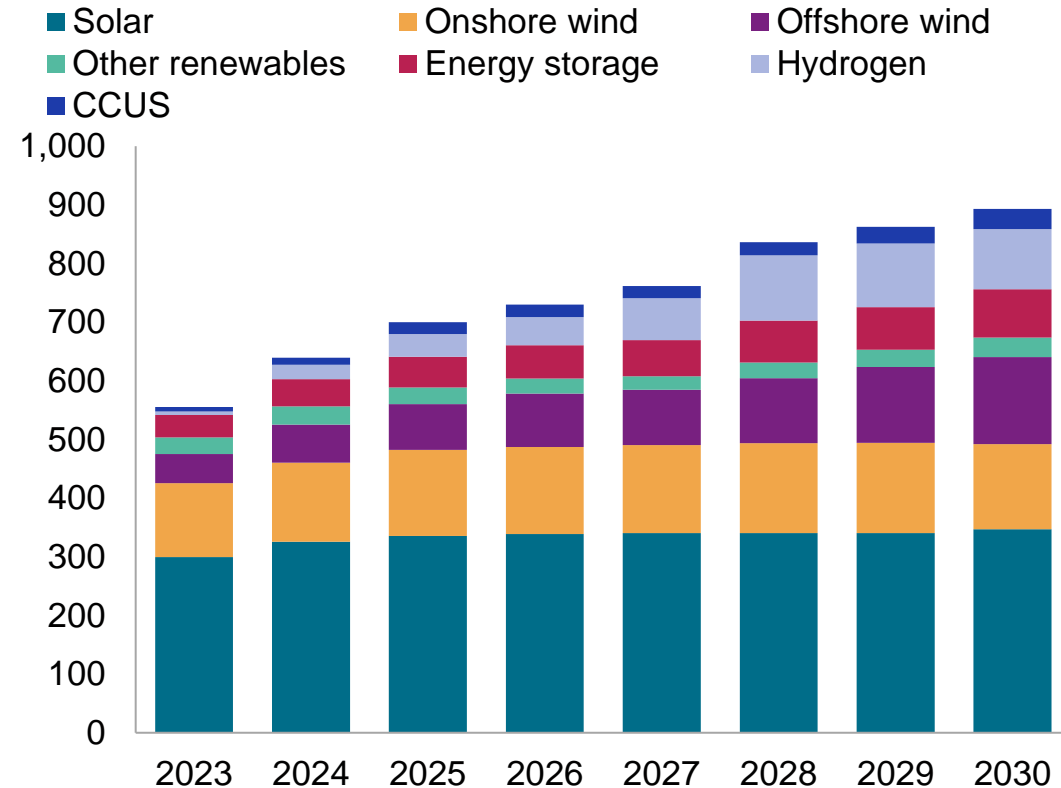
Share of low-carbon spending by segment (2022–27e)



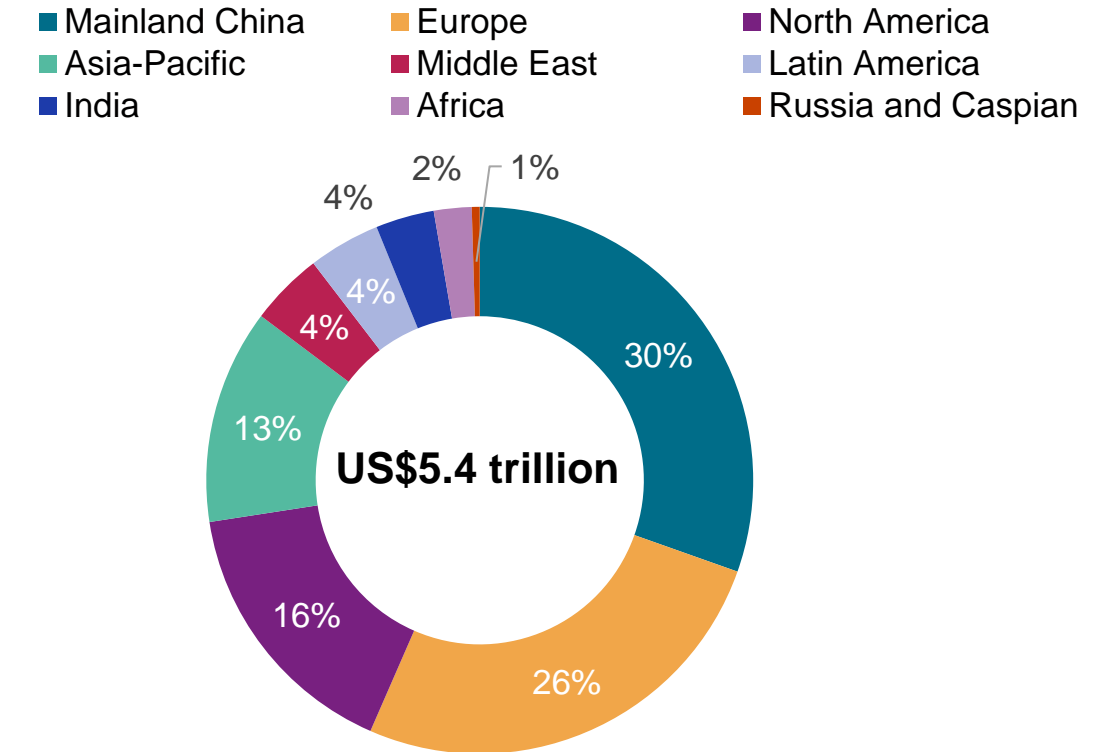
Source: S&P Global Commodity Insights.
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Investments in renewables, storage, green hydrogen production and CCUS expected to hit \$900 billion per year in 2030

Investment in clean energy technology, US\$bn (real 2023)



Cumulative investment in clean energy technology, by region, 2024–30



As of February 2024.

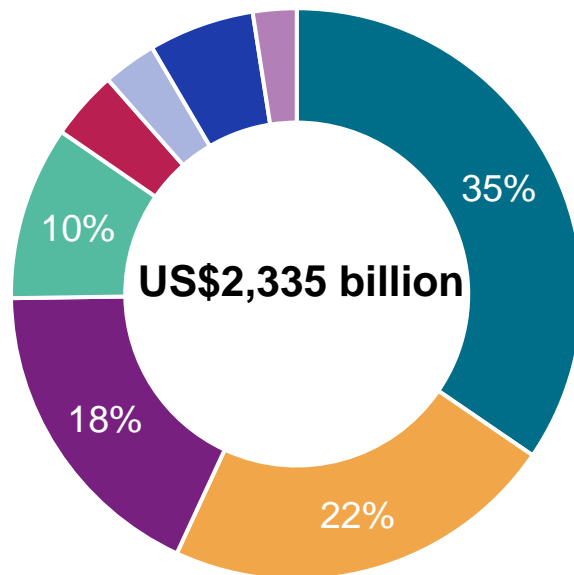
Investment for generating assets. Investments are estimated by multiplying annual gross additions by a benchmark capex. DG = distributed generation, installations <5 MW. Storage includes batteries, does not include pumped hydro. Green hydrogen includes electrolyzer capex. CCUS = Carbon Capture Utilization and Storage, includes power and other sectors.

Source: S&P Global Commodity Insights.

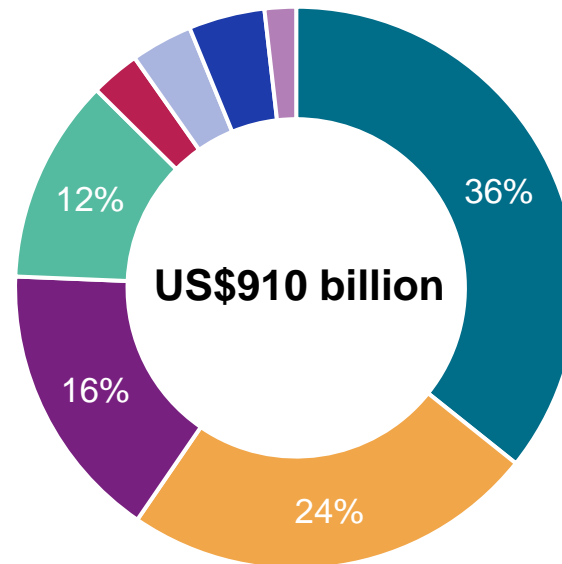
Investment for largest renewable power categories are heavily concentrated

Solar investment, 2024–30

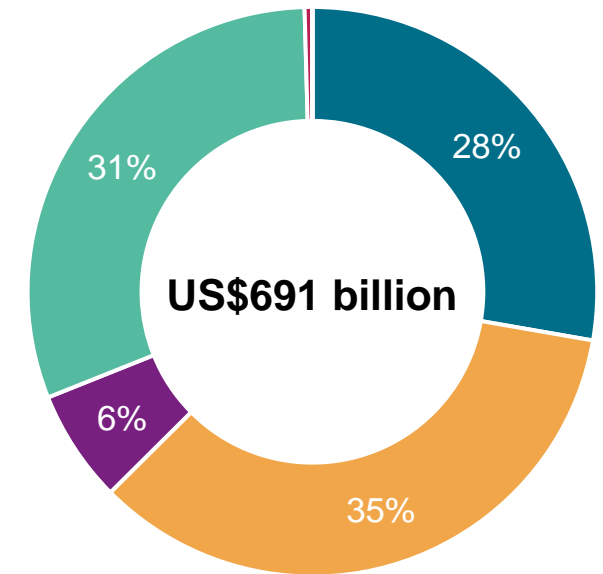
■ Mainland China ■ Europe ■ North America ■ Asia Pacific ■ India ■ Middle East ■ Latin America ■ Africa



Onshore wind investment, 2024–30



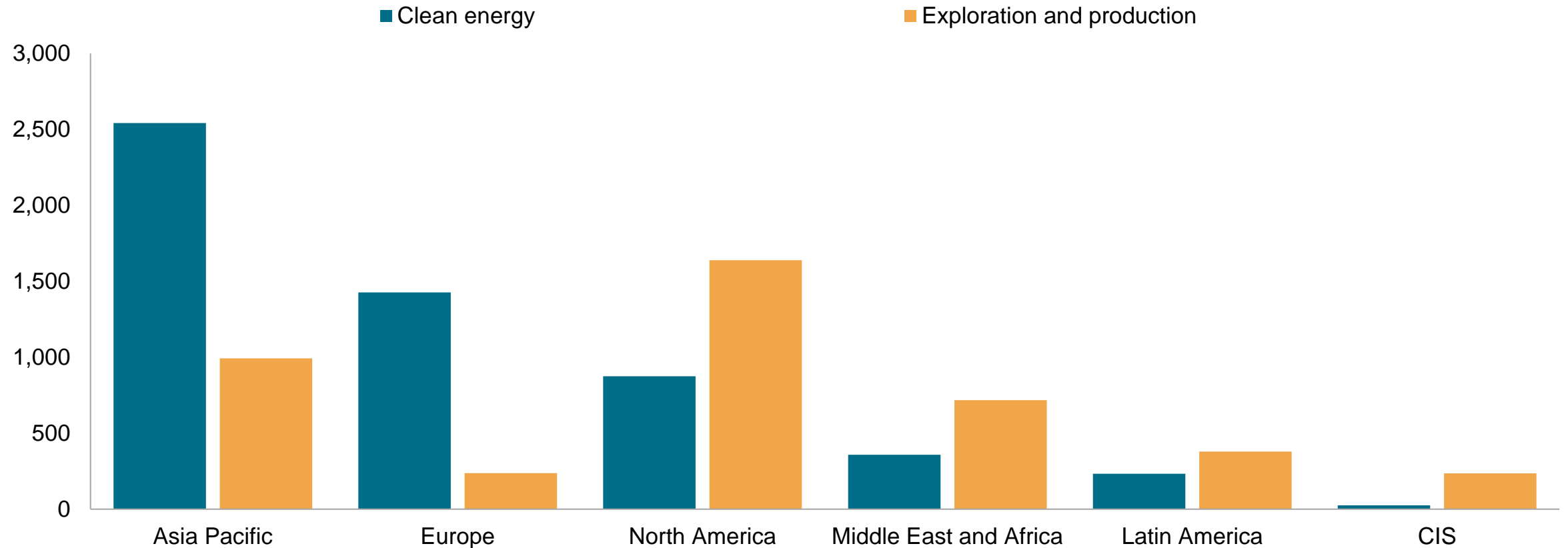
Offshore wind investment, 2024–30



Data compiled February 2024.
Source: S&P Global Commodity Insights.

Spend on clean energy technologies will outpace upstream but there are risks and challenges

Spending by region, 2024–30, US\$bn (2023 real)



Data compiled February 2024.
Source: S&P Global Commodity Insights.

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