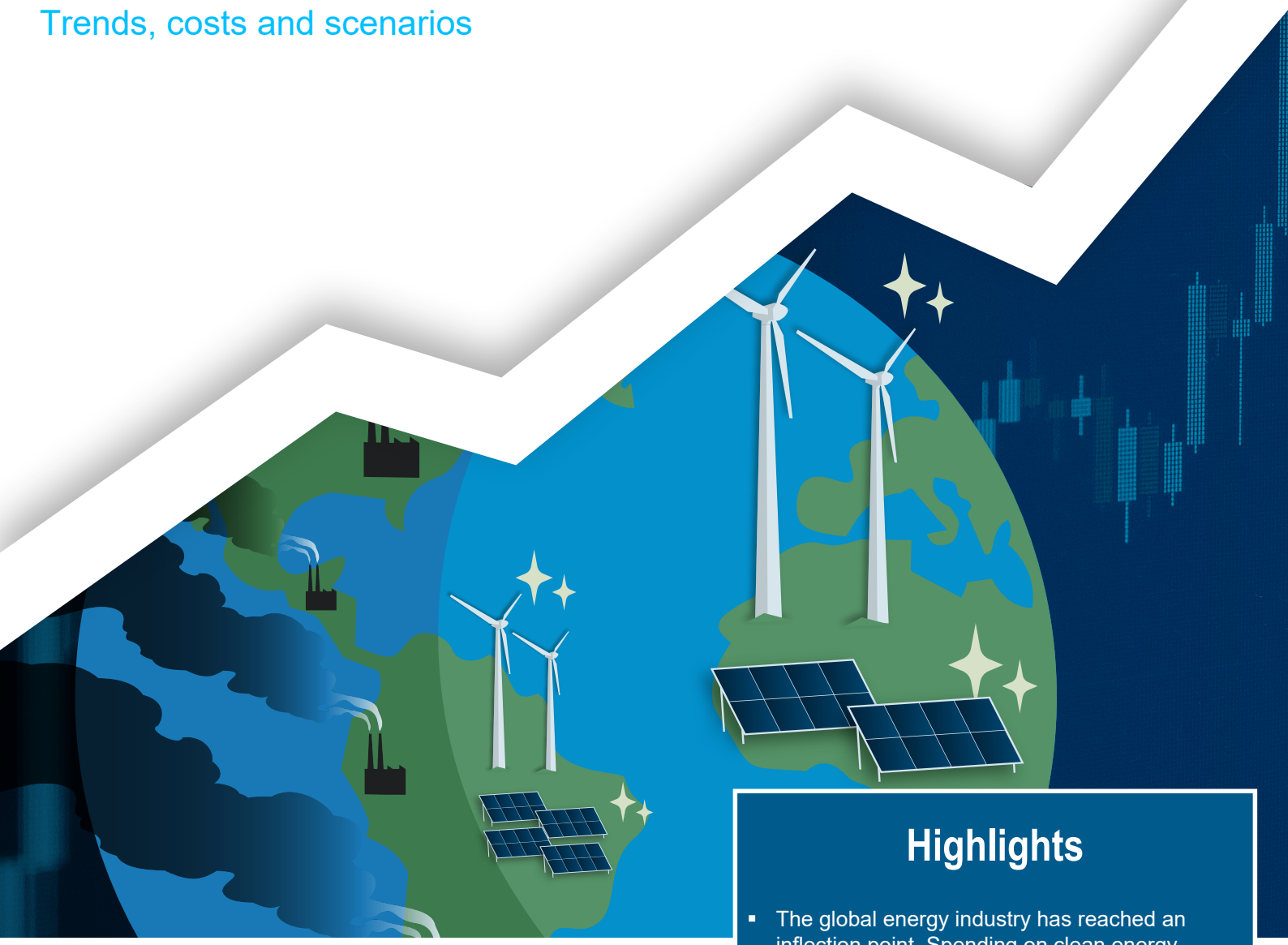
Sustainable Stock Exchanges Initiative

S&P Global Energy

Clean Energy Investment

Trends, costs and scenarios



Highlights

- The global energy industry has reached an inflection point. Spending on clean energy generation has surpassed upstream oil and gas development.
- Clean energy generation is now the primary driver of global capital spending growth, driven by efforts to electrify and decarbonize power systems.
- The trend is set to continue in the coming years as cleantech becomes increasingly economically competitive, underpinning continued capacity growth, with global spending projected to pass $1 trillion annually by 2030.

MARKET MONITOR

SDG 7 - Affordable Energy and Clean Energy

Introduction

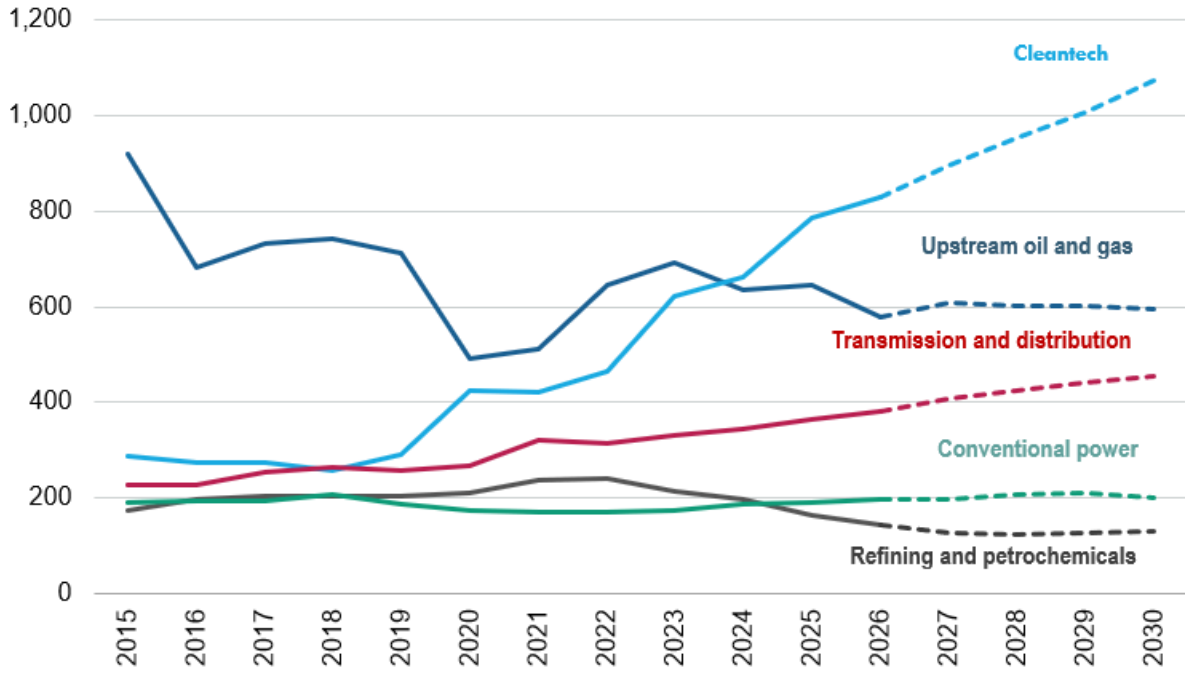
Renewables are the cheapest, fastest, and most secure source of new electricity almost everywhere.

Clean energy has gone from alternative to unstoppable.

— UN Secretary-General António Guterres[1]

The global energy investment landscape has undergone a profound transformation in recent years. Investment in energy supply was historically dominated by conventional oil and gas exploration and production. But the global energy industry has reached an inflection point. Spending on clean energy generation has surpassed upstream oil and gas development. It is now the primary driver of global capital spending growth, driven by efforts to electrify and decarbonize power systems. The trend is set to continue in the coming years as cleantech becomes increasingly economically competitive, underpinning continued capacity growth, with global spending projected to pass $1 trillion annually by 2030.

Figure 1. Global energy supply side spending
(US$ billion, real 2025)



Source: S&P Global Energy

- Investment in clean energy technology is growing dramatically, rising from about $260 billion in 2018 to more than $1 trillion by 2030, driven by the rapid expansion of renewable power generation around the world.
- Clean energy tech spending overtook upstream oil and gas spending around 2024, and has established itself as the primary driver of growth in global energy supply-side investment. The gap in spending between cleantech and upstream oil and gas is projected to widen in the coming years.
- The rise in cleantech spending and broader electrification trend is also driving significant global investment in associated power transmission and distribution infrastructure.

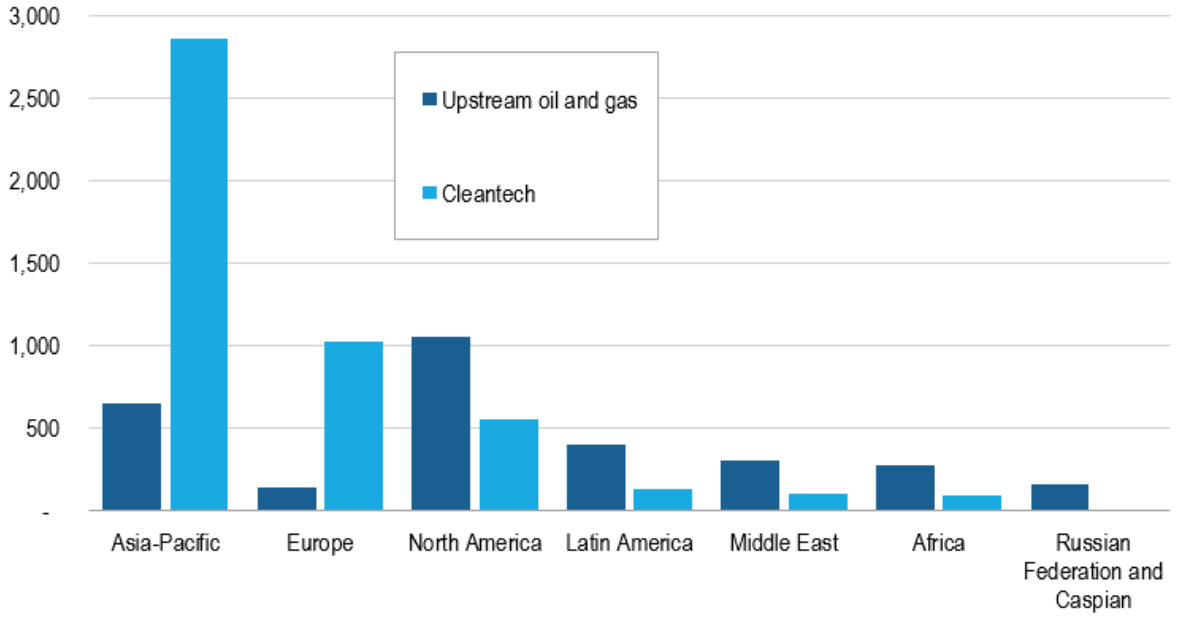
[1] UN Secretary-General(23 September 2026) Remarks at the High-Level Event on Climate Action and the Just Transition.

Transmission and distribution spending is set to nearly double from about $220 billion in 2016 to about $440 billion by 2030 as power grids expand to meet rising demand and modernize to integrate renewable energy generation.

- Investment in traditional power generation fuels is set to hold steady around $200 billion globally. The surge in investment in data centers to support AI development is boosting spending on natural gas power generation in some regions, especially in the United States.

- Upstream oil and gas investment worldwide has fallen from more than $900 billion in 2015 to an estimated $580 billion this year, and is expected to hold around this level through 2030. The upstream spending trend is driven by a combination of slowing global oil demand growth and improved capital efficiency, which has slowed the need for investment in new projects.

Figure 2. Energy spending by type and region
(US$ billion, real 2025)



Source: S&P Global Energy

- While cleantech investment globally is surging well ahead of upstream oil and gas, the trends differ across regions, with upstream spending remaining significant in some resource-rich regions.

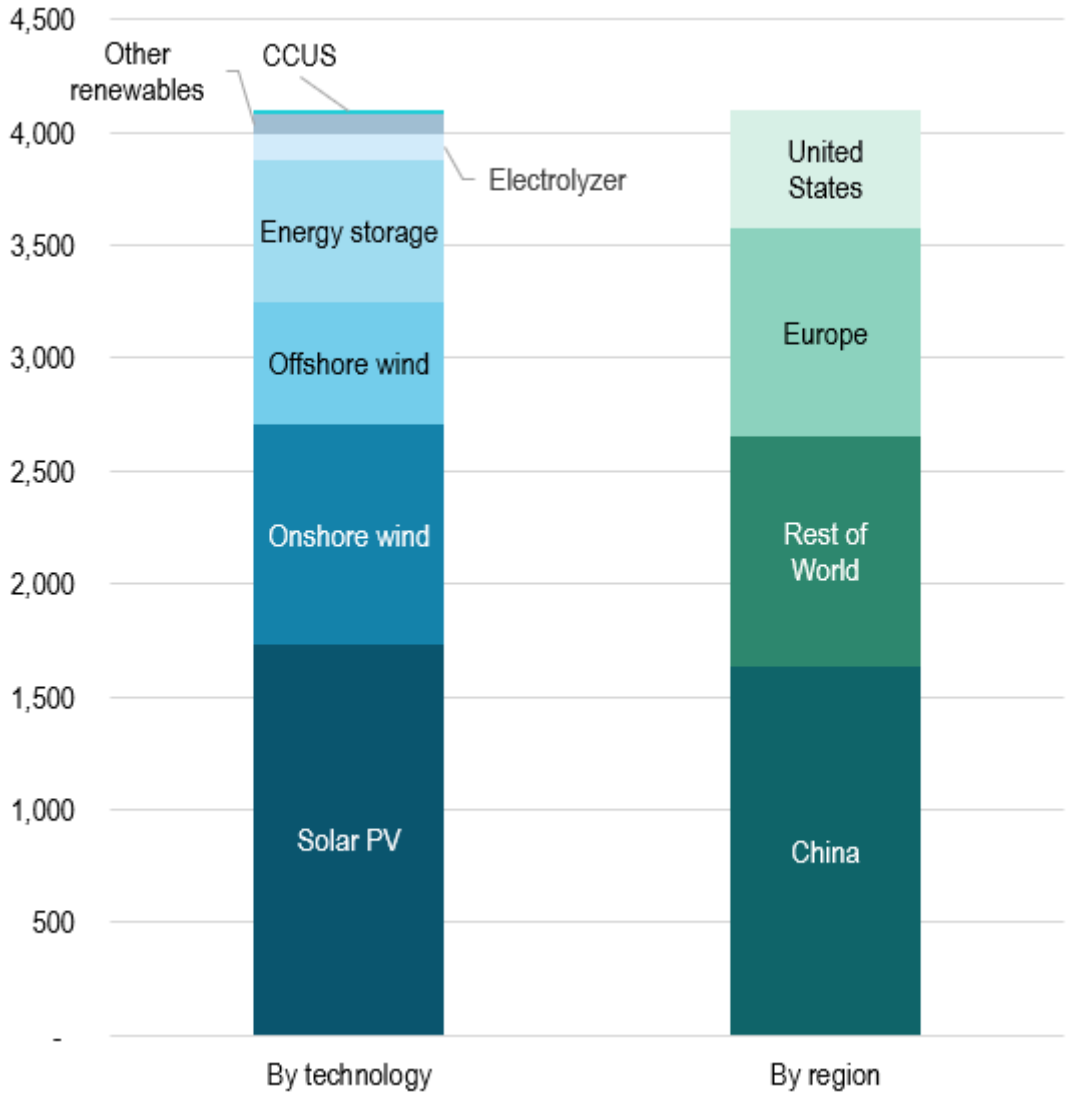
- Asia-Pacific, which has historically been heavily reliant on oil and gas imports, will see by far the most cleantech spending at $2.85 trillion from 2026-2030, led by China, and the largest gap between cleantech and upstream oil and gas spending. Cleantech investment over the period will be more than four times the spending on oil and gas development. Europe, another region historically reliant on oil and gas imports that is prioritizing clean energy development, will also see cleantech investment significantly outpace oil and gas development. The roughly $1 trillion of cleantech investment in Europe will far outpace the $140 billion in upstream oil and gas spending in the period.

- In many resource-rich regions, upstream oil and gas investment remains robust in comparison to cleantech. North America leads all regions in projected upstream oil and gas spending, exceeding $1 trillion from 2026-2030, roughly double cumulative cleantech

investment. Latin America, the Middle East, and Africa all show a similar trend where upstream oil and gas investment continues to outpace cleantech spending.

- The Russian Federation and the Caspian region is projected to have the lowest total energy budget among the listed areas, consisting of about $160 billion for upstream oil and gas and negligible cleantech spending.

Figure 3. Cumulative 2026-2030 cleantech spending by technology and region
(US$ billion, real 2025)



Source: S&P Global Energy

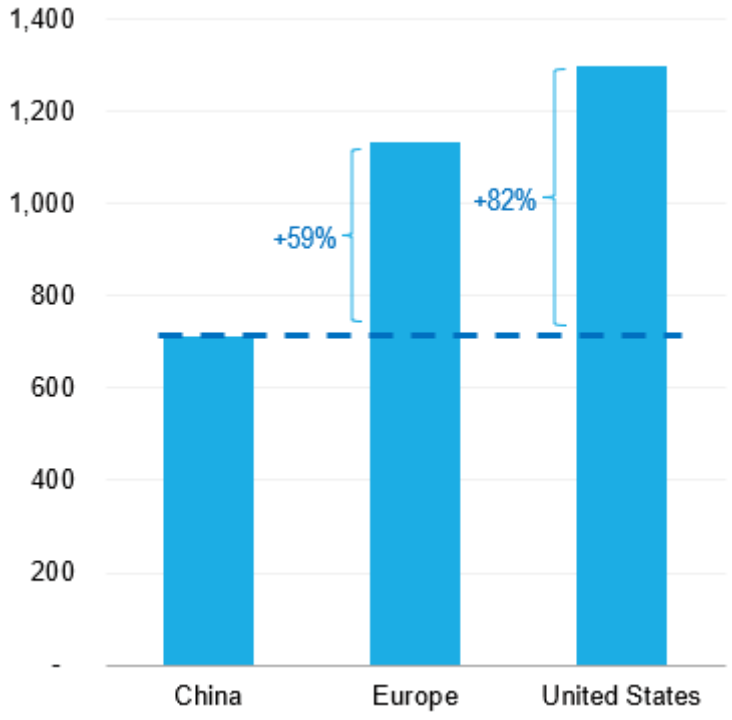
- Total global cleantech spending is projected to reach a cumulative $4 trillion during the 2026–2030 period, led primarily by investment in solar and wind power development
- By technology, Solar PV is the single largest investment area, accounting for nearly $1.75 trillion (about 44%) of the total projected cleantech spend. Wind energy investment will also be significant, spread across onshore and offshore development. Onshore wind investment will total about $970 billion and offshore wind about $546 billion, more than $1.5 trillion combined.

- Battery energy storage is becoming an increasingly important and attractive technology in power systems and is becoming a major driver of cleantech investment. Battery storage offers a number of important benefits, including increasing the reliability and resiliency of power grids and increasing the flexibility and value of intermittent wind and solar generation resources. A total of around $630 billion will be invested in energy storage from 2026-2030, and the technology is seeing the most significant growth in investment within clean tech. Global energy storage spending is projected to reach more than $140 billion annually in 2030, nearly three times the level of investment in 2024.

- By region, China is set to lead global cleantech investment with about $1,550 billion in spending as it pushes to electrify its economy and deploy huge amounts of renewable power generation to help keep up with rapidly rising demand. China's cleantech investment from 2026-2030 will be larger than both Europe (nearly $1 trillion), and the United States ($520 billion).

- Clean energy costs have fallen significantly over the past decade, especially for solar and wind power generation and battery storage, which has enabled rapid growth. However, costs still vary widely around the world.

Figure 4. Average cleantech cost by region
(US$ billion, real 2025)



Source: S&P Global Energy

- China offers the most cost-effective cleantech deployment globally, with the lowest average cost of about $710 million per gigawatt of capacity.

- Cleantech deployment costs are significantly higher in Europe and the United States. Average cleantech costs in Europe ($1,131 million/gigawatts) and the United States ($1,299 million/GW) are about 59% and 82% higher than in China.

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Note

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Methodological Note — S&P Regional Categorization*

Africa	Africa is all of the African continent, including North Africa.
North Africa	Algeria, Egypt, Libya, Morocco, Tunisia
Sub-Saharan Africa	Africa excluding the North Africa countries
Asia-Pacific	Asia-Pacific is east of Iran, excluding Commonwealth of Independent States members, and including Pacific states.
OECD Asia-Pacific	Australia, Japan, New Zealand and South Korea
Non-OECD Asia-Pacific	Asia-Pacific excluding the OECD Asia-Pacific countries
Southeast Asia-Pacific	Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, Vietnam
Commonwealth of Independent States	The Commonwealth of Independent States is the former Soviet Union except Estonia, Latvia and Lithuania.
Europe	Europe is OECD and non-OECD Europe and includes Turkey, Cyprus, Estonia, Latvia, Lithuania and Malta.
European Union (EU) (excl. UK)	Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden
Non-EU	Europe excluding the European Union countries
Latin America	Latin America is Central and South America, excluding Mexico, but including Caribbean states.
Middle East	The Middle East is Asia west of Afghanistan, excluding Commonwealth of Independent States members and Turkey.
North America	North America is Canada, Mexico and the United States, including the US Virgin Islands.
OECD	37 OECD member countries, including Colombia.
Non-OECD	World excluding the OECD countries.

* S&P regional categorization is provided for information purposes to contextualize S&P data and does not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning regional groupings and may differ from the United Nations Standard Country or Area Codes for Statistical Use (the M49 standard) prepared by the Statistics Division of the United Nations Secretariat.

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PRI Principles for Responsible Investment