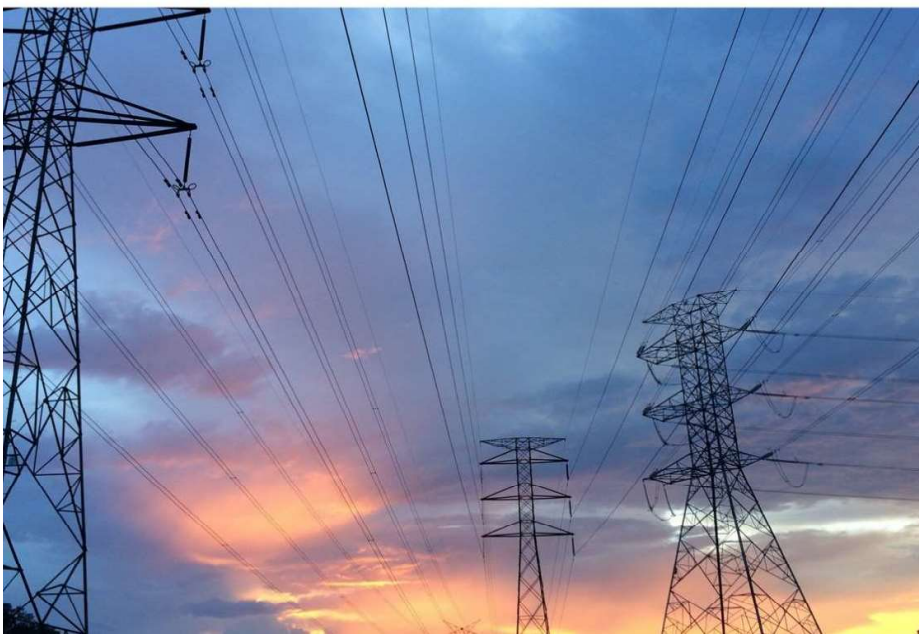


New Energy Outlook Grids



BloombergNEF



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Executive Summary

\$21.4 trillion

Global grid investment
between 2022-50 for net zero

24%

Digital's share of global grid
investment between 2020 and
2050

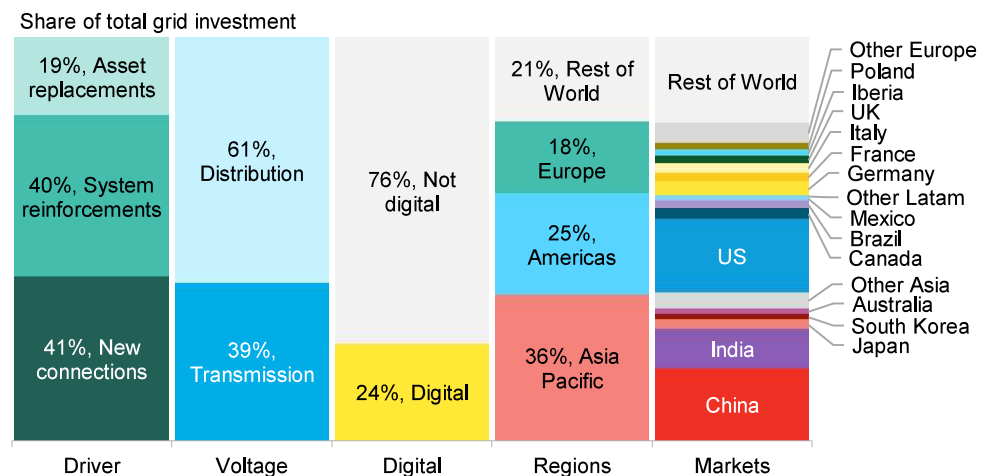
9 million km

Global additions to
transmission network
between 2020 and 2050

At least \$21.4 trillion needs to be invested in electricity grids by 2050 to support a global net zero trajectory. Yet grid investment has fallen short in recent years, resulting in bottlenecks that slow the deployment of renewables and electrification. This report provides a more detailed breakdown of the grid analysis presented in BloombergNEF's New Energy Outlook Net Zero Scenario.

- Some \$274 billion was invested in the power grid in 2022. This annual spend needs to rise to nearly \$1 trillion by 2050 for a net zero trajectory that supports more power generation capacity, serves new demand and replaces existing infrastructure.
- Digitalization, which helps improve and extend the utilization of the grid infrastructure, represents 24%, or \$5.1 trillion, of total investment to 2050. Most of this goes toward implementing automation and control of the power system (30%) or to increasing monitoring and situation awareness (31%). China accounts for a quarter of global spend on digital grids.
- Power lines also expand tremendously. We estimate 80 million kilometers in grid growth between 2022-50, more than enough to replace the entire global grid today. This breaks down to about 68 million kilometers of above-ground lines, 12 million kilometers of underground cables and 0.2 million kilometers of submarine cables.
- Supply chains come under strain as annual copper demand from the power grid rises from 16% of all demand to 37% in 2050. Power grids will be the top consumer of copper among energy transition technologies in 2022-50 under the net zero scenario.
- Record-breaking investment continues through the decade in China, the world's largest grid. Through 2050, the country will spend a staggering \$3.8 trillion on the electricity grid, a figure only matched by the US. Annual investments in China peak at \$217 billion in 2030.
- (The Transmission figure in Figure 1 was corrected to 39% on March 3, 2023.)

Figure 1: Breakdown of global grid investment in net zero scenario 2022-50



Source: BloombergNEF

About us

Contact details

Client enquiries:

- Bloomberg Terminal: press <Help> key twice
- Email: support.bnef@bloomberg.net

Amanda Ahl	Associate, Grids & Utilities
Amanda Welch	Analyst, Grids & Utilities
Sanjeet Sanghera	Head, Grids & Utilities

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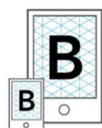
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