

Capacity expansion in International Electricity Market Module (IEMM)



For

Clean Power Investment Workshop

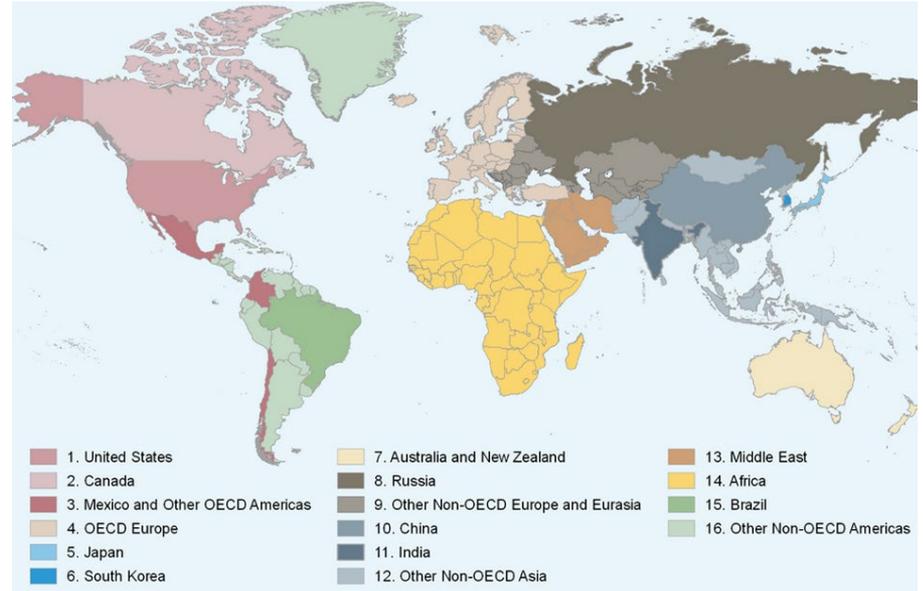
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By

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International Energy Outlook (IEO)

- International Energy Outlook (IEO) presents an assessment of long-term world energy markets, through 2050 in the most recent IEO2021.
- Projections are provided for 16 world regions, divided according to Organization for Economic Cooperation and Development (OECD) members and nonmembers (non-OECD).



World Energy Projection System (WEPS)

- WEPS is an integrated model that aims to capture various interactions of economic changes and energy supply, demand, and prices across regional markets.
- Core set of WEPS modules

Demand Modules

- Residential
- Commercial
- Industrial
- Transportation

Transformation Modules

- Electricity
- District heating

Supply Modules

- Coal
- Oil and natural gas

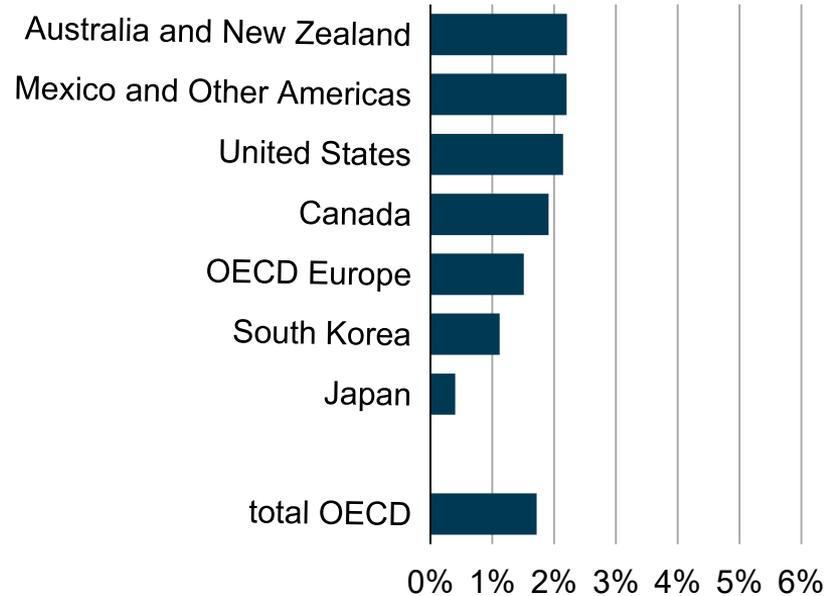
- Global Activity Module
- Greenhouse Gas Module
- Convergence Module

International Electricity Market Module (IEMM)

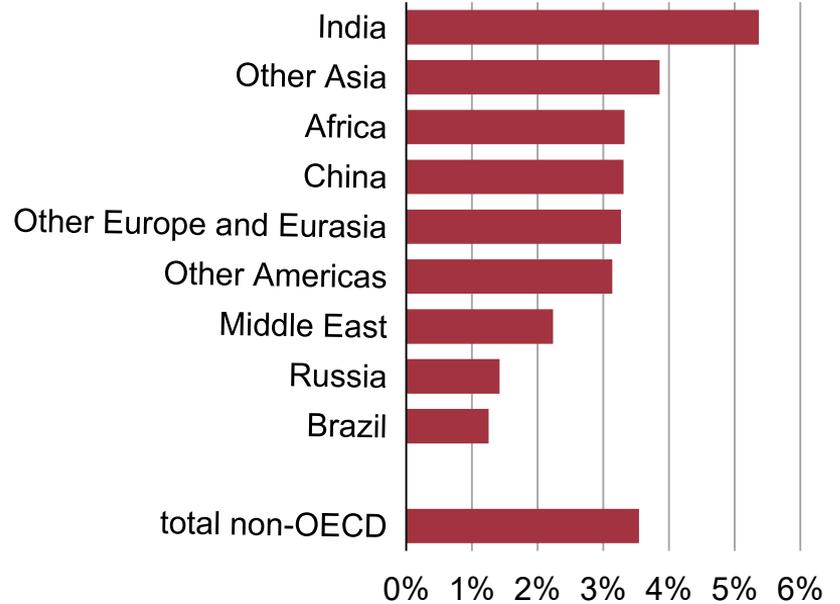
- For each of the 16 WEPS regions, IEMM projects:
 - Electricity generating capacity additions and retirements
 - Electricity generation
 - Electricity added to and removed from storage
 - Electricity sold and purchased
 - Electricity delivered to consumers
 - Fuel consumed in electricity generation
 - Carbon dioxide emissions
 - Electricity prices
- Least-cost optimization, subject to constraints (emission caps, “renewable portfolio standards”)
- Limited in resolution in terms of other market details aside from weighted average cost of capital (WACC)

Economic growth is anticipated to be highest in non-OECD regions

Average annual percentage change in GDP for OECD regions, 2020–50



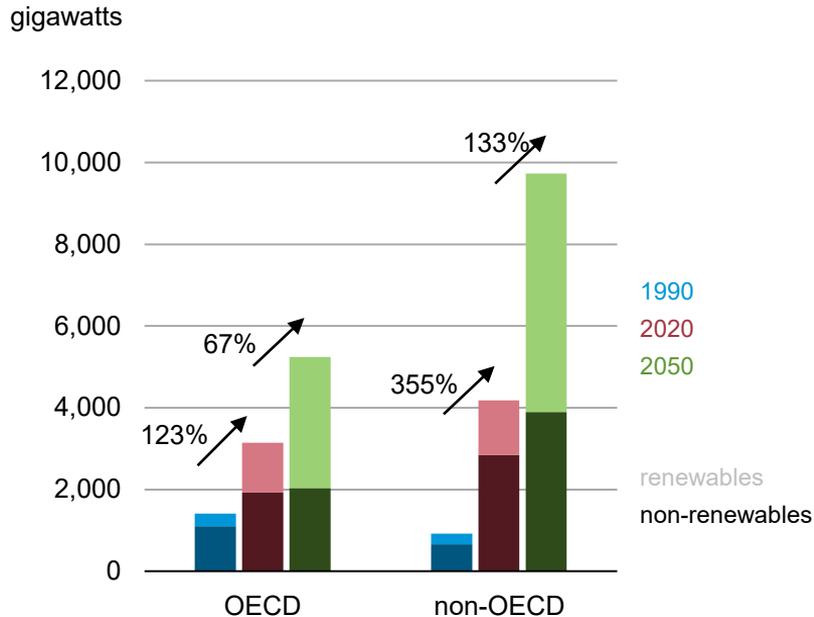
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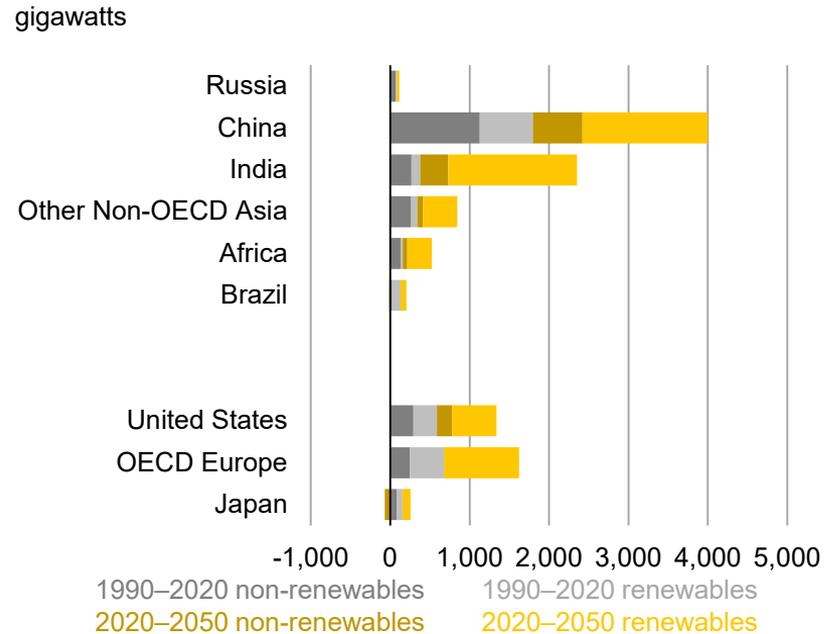
Source: U.S. Energy Information Administration, [International Energy Outlook 2021](#)

Strong growth in energy demand is expected in non-OECD countries, but it implies unprecedented investment for some regions

Total generating capacity for OECD and non-OECD regions by technology, 1990, 2020, and 2050



Net generating capacity additions between 1990–2020 and 2020–2050 for selected regions



Source: U.S. Energy Information Administration, [International Energy Outlook 2021](#), and [International Energy Statistics](#)

Q: “What factors influence investment decisions in the electric power sector around the world, as it transitions to a low-carbon future?”



Contact and additional information

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U.S. Energy Information Administration | <https://www.eia.gov/>

International Energy Outlook | <https://www.eia.gov/outlooks/ieo/>

Annual Energy Outlook | <https://www.eia.gov/outlooks/ieo/>

Short-Term Energy Outlook | <https://www.eia.gov/outlooks/steo/>

Levelized Cost and Levelized Avoided Costs of New Generation Resources in the Annual Energy Outlook 2022 |

https://www.eia.gov/outlooks/aeo/electricity_generation.php