

## Themes from EIA's Clean Power Investment Workshop on June 23, 2022



### Background

The U.S. Energy Information Administration (EIA) held a workshop on June 23, 2022 to explore topics related to energy investment for a low-carbon future, focusing on factors that influence decisions about transitioning electric power capacity around the world. The workshop brought together experts from government entities and investment communities to discuss technical considerations for improving the International Electricity Market Model, the primary model used to provide electricity supply projections for EIA's *International Energy Outlook*. The information in this document represents the views and opinions of the workshop participants and does not necessarily reflect the views or opinions of EIA.

### Theme 1: Amount and timing of investment

Investment in technologies for the energy transition from carbon-intensive fossil fuels to less-carbon intensive fuels continues to grow, reaching US \$1 trillion in 2021. Investment has more than doubled since 2014, and renewable energy projects accounted for the single largest share, about one-third, of total investment in 2021. Other major projects were related to energy efficiency and electric transport.

The amount of global investment required to support the energy transition in the future will depend on the timing and extent of the effort to decarbonize the global electric power system. Estimates call for an annual investment of between \$1.6 trillion and \$2.0 trillion by 2035, rising to a range of \$3.3 trillion to \$4.4 trillion per year by 2050. Developers would need to invest in the high end of the range to meet the Intergovernmental Panel on Climate Change's (IPCC) goal of limiting temperature rise to 1.5°C.

In higher investment cases, a non-EIA model showed renewable energy sources accounting for 80% to 90% of global power generation by 2050.

Although the amount invested in the energy transition has steadily grown, expansion on a year-to-year basis could be uneven. For example, investment in 2022 will likely slow because of a downturn in economic conditions.

However, the pace of investment in energy transition technologies would need to quickly accelerate before 2030 to build momentum for future investment.

### Theme 2: Overcoming regional differences in energy investment

Although large investments have been made, the distribution of those funds has been uneven geographically. The majority of funding is still occurring in developed countries such as in Europe, North America, and China. In contrast, countries in Southeast Asia only have received 8% of the total funds available; Latin America has received 4%, and the Middle East has received 2%.

A number of regional programs are underway to correct the imbalance:

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- At the COP26 climate summit in Glasgow, a number of developing countries managed to secure significant funding from developed countries over the next three to five years in the form of grants, concessional loans, and investment and risk-sharing instruments, including mobilizing private sector funding.
- Another program announced at the COP26 Meeting was the Energy Transition Mechanism (ETM). The ETM is a pilot product of the Asian Development Bank (ADB), and it aims to retire existing coal-fired power plants in Asia on an accelerated schedule and replace them with new, cleaner generating sources. ADB expects multilateral banks, private institutional investors, philanthropic contributions, and long-term investors will provide capital for the ETM. Initial partners in the program, where coal plants will be retired, include Indonesia and the Philippines, later joined by Vietnam. It is estimated that \$2.5 billion will be required to complete initial stages of the ETM.

### Theme 3: Importance of consistent and well-designed government policy

Well-designed policy measures supporting the energy transition are a critical factor. Those policies can direct and incent investment, which, in turn, will offer projects with the best opportunity for success.

Successful completion of new energy projects is usually accompanied by active—and consistent—involvement and support from government policy makers and regulators. Therefore, political stability during the development and operation of a new energy project is critical. Any changes in that support can delay or even cancel the project. As an example, reforms that opened up the electricity sector in Mexico to non-governmental participants beginning in 2013 created a wave of investment in new and cleaner sources of power. However, a reversal of those reforms by a new administration in 2018 has significantly curtailed any new investment.

Developers and financial supporters of power projects strive to partner with governments. Governments often play a major role in backing a new power project, including:

- Providing regulatory support and guidance
- Offering indirect support such as subsidies, infrastructure support, and facilitation of finding purchasers of electricity
- Offering direct support such as loan guarantees, feed-in tariffs, and preferential taxation

Low costs for project development remain key to any new project, both for economic reasons and for lowering risk. Pricing and risk levels are constantly factored into the evaluation of any project. The type of financing must be increasingly flexible enough to handle inflation or political risk in today's market.

Types of financing include:

- Equity funding (public and private)
- Corporate debt (sustainability bonds)
- Project financing

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In addition, governments can help develop new technologies by providing a bridge for pilot projects to move from inception to completion. For example, although proposed hydrogen hubs offer the potential of large amounts of lower-carbon generation, their complex development carries great financial risk.

#### **Theme 4: Key features of a successful new energy project**

Financing new power projects face many challenges, especially in developing countries. Successful projects require the combination of multiple elements, including:

- Bankable documents, especially a Power-Purchase-Agreement (PPA) with a credit-worthy counterparty and an economic tariff
- Government support documents, sovereign guarantee, or letter of support (governments' shifting priorities and uncertain support can be especially challenging)
- Clear land ownership title and leasehold rights (wind projects can be especially problematic given their larger land requirements)
- Management of any potential environmental and social policy problems
- Consistent and unified community support
- Experienced power plant developer
- All of the necessary credit agreements are in place to maintain the financial viability of a project

Energy projects often benefit from having access to reliable energy sector data. In some countries, information on electricity demand, supply, pricing, and fuel availability is unreliable and of poor quality. Developers in those countries can have difficulty ascertaining the cost of debt and equity capital for a power project.

The main indicator used to measure the success of investment in an energy transition project is the extent to which the project expands available energy capacity. If an investment is made but fails to also raise capacity, system-wide costs will have increased. In addition, it's wise to track investment to see if it is being used efficiently (for example, building supporting infrastructure).

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