Palikir clean electricity

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IEA (2024), Clean energy is boosting economic growth, IEA, Paris https://, Licence: CC BY 4.0

Clean electricity accounted for around 80% of new capacity additions to the world"s electricity system in 2023, and electric vehicles for around one out of five cars sold globally. At the same time, global investment in clean energy manufacturing is booming, driven by industrial policies and market demand. Employment in clean energy jobs exceeded that of fossil fuels in 2021 and continues to grow.

Quantifying the expanding role of clean energy in the economy is therefore essential to fully understand the stakes and momentum behind energy transitions.

Our new country-by-country and sector-by-sector analysis finds that in 2023, clean energy added around USD 320 billion to the world economy. This represented 10% of global GDP growth - equivalent to more than the value added by the global aerospace industry in 2023, or to addingan economy the size of the Czech Republic to global output.

This assessment is based on a first-of-its-kind analysis of three categories of activity in the clean energy sector:

It is based on detailed project-by-project data gathered and processed by the International Energy Agency (IEA) from primary and secondary sources. We conducted this analysis at the country level, and present here the in-depth results for four of the largest economies: the United States, the European Union, China and India, which together account for two-thirds of global GDP.1

GDP in the United States grew by a robust 2.5% in 2023. Clean energy was an important contributor: The Inflation Reduction Act and the Bipartisan Infrastructure Law drove a surge in investment in clean energy manufacturing, and sales of EVs also grew strongly. Consequently, clean energy growth accounted for around 6% of GDP growth in the world"s largest economy in 2023. This is comparable in scale to the contribution to GDP growth in 2023 from the United States" booming, artificial-intelligence-driven digital economy.2

Clean energy accounted for around one-fifth of China"s 5.2% GDP growth in 2023. Each of the three categories assessed grew strongly, with the largest increase coming from investment in clean power capacity, followed by clean equipment sales, particularly EVs. Expansion in clean energy manufacturing accounted for around 5% of China"s GDP growth in 2023, although the country"s surplus production capacity in technologies such as batteries (utilisation rates were around 30% in 2023) may limit the scope of this growth driver going forward. Similar assessments have come to comparable conclusions, albeit with slightly different boundaries.

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In the European Union, clean energy accounted for nearly one-third of GDP growth in 2023, the highest share of any region assessed, although its share is inflated by weak overall GDP growth of around 0.5%. Nonetheless, the EU"s strong climate targets and policies, such as the Fit for 55 package and the proposed Net Zero Industry Act, are supporting investments in clean energy manufacturing, which more than doubled between 2022 and 2023, driven in particular by battery manufacturing.

India was the fastest growing large economy in 2023, with GDP increasing by around 7.7%. Clean energy contributed slightly less than 5% of GDP growth in 2023, predominantly from investment in new solar power capacity. Meanwhile, policies such as the Production Linked Incentive are attracting investment in new clean energy manufacturing capacity. In 2023, this remained relatively small as a portion of India"s overall economy, but interest from businesses and investors is increasing.

Assessing the extent to which different sectors of the clean energy economy contribute to GDP growth from year to year helps show the direction of travel. Yet looking at their share of GDP in a single year is also useful in understanding their economic importance. In 2023, clean energy investment and sales accounted for between 1% and 4% of total GDP in the four major regions assessed - substantial shares in the context of these large and diversified economies. The chemicals industry accounts for about 3% of value added in India and China.Clean energy technologies therefore already provide a sizable contribution to GDP in these economies today.

The clean energy sector also drove a substantial share of total investment growth across the economy in these regions in 2023. In the case of China, it contributed 50% of the growth in total investment in 2023, and 20% in the United States. At the global level, we estimate that around USD 200 billion was invested in clean energy technology manufacturing in 2023, an increase of 75% over the previous year. This compares with global capital investment in semiconductor manufacturing of around USD 170 billion to 250 billion per year in recent years.