

4 countries exported more than 70% of the world's key solar, wind and battery components & products in 2021: CEEW

- *The number of countries with concentrated RE tech and component imports has marginally increased or remained constant in the last 10 years*
- *Highly concentrated RE manufacturing and trade flows pose risk to the global energy transition*

Gandhinagar, 3 April 2023: Only four countries – China, Japan, Malaysia and Germany – supplied 70 per cent of the global exports in solar photo-voltaic cells/modules in 2021, according to an independent study released today by the Council on Energy, Environment and Water (CEEW). Similarly, four countries – China, Germany, Denmark and Spain – exported more than 80 per cent of wind-powered generators, a key component of wind turbines. Further, China, Poland, the Republic of Korea and Japan supplied over 70 per cent of the world's lithium-ion batteries.

The study was released at a side event of the second Energy Transition Working Group meeting of India's G20 Presidency in Gandhinagar, Gujarat. It illustrates the skewed concentration of the manufacturing capacities of renewable energy (RE) technologies and their sub-components in a few geographies.

The CEEW study 'Developing Resilient Renewable Energy Supply Chains for the Energy Transition' also highlighted that despite a significant decrease in prices, the traded values of solar modules, lithium-ion batteries, and wind generators have increased steadily over the last decade (2012-2021). But many countries, particularly middle-income countries, have a highly concentrated import mix of these technologies and components, and the concentration has only increased with time. This means that only a handful of countries are exporting RE components.

Dr Arunabha Ghosh, CEO, CEEW, said, "A speedy, resilient and inclusive transition to RE will only be possible if countries can secure access to uninterrupted and affordable supply chains of key technologies. The concentration of global exports is particularly worrying for developing countries in the Global South as they progress towards their net-zero targets. Through its G20 Presidency, India could promote comprehensive tracking of global RE manufacturing capacity and trade flows to inform expansion and diversification strategies and foster competition in trade. This should be backed by co-development of green technologies and innovations."

The CEEW study identifies four strategic priorities for the G20 to ensure resilient RE supply chains. These include: tracking trade-flow data with greater accuracy and manufacturing capacity; creating new avenues of supply and enhancing investments across supply chains to meet the increasing demand for clean technologies; developing global standards on infusing circularity in RE supply chains; and finally, facilitating development of globally accepted standards and certification systems for new and emerging RE technologies such as green hydrogen.

Rishabh Jain, Senior Programme Lead, CEEW, said, "To ensure uninterrupted renewable energy deployment, governments across the world are eyeing greater control over supply chains by diversifying, localising and regionalising their procurement policies. Through proactive interventions, India is aiming to reduce import dependence and increase the export competitiveness of renewable energy equipment. India is also presenting itself as an alternative source for countries that are looking to diversify their imports. Led by India, this decade is an opportunity for developing countries to build renewable supply chains that aid their economic growth, create new jobs and move towards sustainability."

During the G20 side event, CEEW, International Energy Agency (IEA), Institute of Transportation Studies UC Davis and World Resources Institute India (WRII), launched another study ‘Addressing Vulnerabilities in the Supply Chain of Critical Minerals’. Clean energy products require a large amount of minerals. Many of these minerals are considered critical by countries, as they are geographically concentrated in their production and limited in their supply. The study identifies seven minerals that are vital to manufacturing clean technologies: cobalt, copper, graphite, lithium, manganese, nickel and rare earth elements. A group of 15 countries produce 70 to 90 per cent of each of these minerals. Countries such as Australia, China, DR Congo and Indonesia have seen a significant increase in mining of these minerals in recent years, while other countries are yet to exploit their reserves. The study recommends increasing the supply of critical minerals by periodically tracking the critical mineral value chain, co-developing technologies for exploration and mining and a common approach for creating a strategic stockpile. Additionally, the study suggests scaling up circularity by recycling used products and supporting alternative technologies with reduced mineral intensity.

Read the full studies ‘Developing Resilient Renewable Energy Supply Chains for the Energy Transition’ and ‘Addressing Vulnerabilities in the Supply Chain of Critical Minerals’. The studies are part of a series of independent technical reports commissioned by the Government of India to inform its G20 Presidency Working Groups.

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About CEEW

The Council on Energy, Environment and Water (CEEW) is one of Asia’s leading not-for-profit policy research institutions. The Council uses data, integrated analysis, and strategic outreach to explain – and change – the use, reuse, and misuse of resources. It prides itself on the independence of its high-quality research, develops partnerships with public and private institutions, and engages with wider public. In 2021, CEEW once again featured extensively across ten categories in the 2020 Global Go To Think Tank Index Report. The Council has also been consistently ranked among the world’s top climate change think tanks. Follow us on Twitter [@CEEWIndia](https://twitter.com/CEEWIndia) for the latest updates.