



13th India-U.S. Track II Dialogue on Climate Change and Energy

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WORKING GROUP PAPER: TRADE, FINANCE, AND CLIMATE

Executive summary

Insufficient climate finance remains one of the primary hurdles to clean energy transitions in developing countries and emerging economies. However, while adequate direct financing is needed, there are additional avenues that can support the deployment of clean energy technologies. India and the United States both have significant manufacturing bases and technological expertise and needs to mutually aid and reinforce the clean energy transition. By implementing the finance and green trade recommendations below, the United States and India can advance clean energy transitions in both countries, as other avenues for climate finance are pursued:

- Coordinate to strengthen supply chains through data sharing and transparency.
- Utilize the Quadrilateral Security Dialogue (Quad) to improve economic cooperation.
- Increase collaboration on industrial decarbonization through tech exchange, joint investment, and establishing best practices.
- Enable co-development of technologies and innovation by formalizing and operationalizing collaborations between technology-development labs.
- Share best practices on public procurement models which scale up advanced technologies.
- Facilitate development of globally acceptable standards and certification.
- Share U.S. clean subsidy incentives to strengthen India-U.S. economic ties.

State of Play - International Climate Finance

The climate finance gap remains a persistent issue. The financing need for India is ~USD 10 trillion on green energy infrastructure till 2070, or USD 214 billion each year; of this, [India attracts only 2.9 per cent of global clean energy investment](#). The global goal of \$100 billion per year in international climate finance by 2020 was extended at COP21 to 2025 after it became evident developed nations would miss that deadline. This goal was [likely achieved](#) in 2022,

according to preliminary OECD data. This year at COP29 in Azerbaijan, a new collective quantified goal [will be adopted](#) to replace the \$100 billion annual climate finance target. In addition to these finance targets, the loss and damage fund was operationalized at COP28 and currently holds [\\$700 million](#), estimated to be equivalent to only [0.2%](#) of irreversible economic and non-economic losses from climate change in developing countries. The U.S. contributed [\\$17.5 million](#) to the fund - a number that was widely criticized and seen as woefully insufficient.

Internal estimates by the U.S. State Department project that President Biden's goal of deploying [\\$11.4 billion](#) in international climate financing by 2024 will be achieved - [\\$5.8 billion](#) was deployed in 2022, and preliminary estimates put 2023 spending at [\\$9.5 billion](#). Despite being zeroed out by Congress, the Biden administration made a \$1 billion contribution to the GCF in April 2023. This brings the U.S. contribution to the GCF to \$2 billion, meaning \$1 billion is still outstanding on the 2014 pledge made under President Obama. At COP28 in 2023, Vice President Harris announced a second \$3 billion pledge to the GCF.

At a bilateral level, the U.S. and India have identified key areas for cooperation on international climate finance. The U.S. Development Finance Corporation, which alone spent [\\$3.7 billion](#) on climate finance in 2023, provided a [\\$500 million](#) loan to support the establishment of First Solar's new solar panel manufacturing facility in Tamil Nadu, with the aim of diversifying the supply chain and driving economic growth. This is one of [multiple](#) clean energy investments the U.S. has made in India. During Prime Minister Modi's U.S. [state visit](#) in June 2023, the two countries committed to create innovative investment platforms to lower the cost of capital and attract international private finance at scale to accelerate the deployment of greenfield renewable energy, battery storage, and emerging green technology projects in India. They also reaffirmed their desire to reform multilateral development banks in order to evolve their vision, incentive structure, operational approaches, and financial capacity so that they are better equipped to address a wide range of SDGs and trans-boundary challenges including climate change, pandemics, conflicts, and fragility.

State of Play - U.S. Trade

Climate, once largely absent from global trade rules and agreements, is increasingly discussed by U.S. trade and international economic policy officials and integrated into U.S. trade priorities. By contrast, market access, long considered the fulcrum of trade deals, is absent from the Biden administration's signature trade initiatives in the Indo-Pacific and is being deployed selectively in a sectoral arrangement with the European Union involving steel and aluminum. These agreements also lack binding commitments with trade partners and focus on high labor standards per President Biden's worker-centric trade policies. These new policy directions are occurring against several major shifts in domestic economic policy and global economic

governance: 1) a pivot toward industrial policy in the United States driven by three major pieces of legislation—the Inflation Reduction Act, the CHIPS and Science Act, and the Infrastructure Investment and Jobs Act; 2) a dramatic turnabout in global attitudes toward supply chain management and the balance between efficiency, resilience, and security in cross-border trade; and 3) the obsolescence of the World Trade Organization (WTO) as a forum for resolving trade disputes and setting global norms and rules around trade.

The United States’ decision not to join the Trans-Pacific Partnership it negotiated under the Obama administration—now the Comprehensive and Progressive Agreement for Trans-Pacific Partnership—highlighted the skepticism towards traditional trade agreements that exists among policymakers across the political spectrum, as well as the American public. This skepticism has persisted into the present day, as reflected in the lack of new free trade agreements under a Biden Administration and a maintenance of some tariffs instituted under the Trump Administration. But this reluctance does not mean that the United States should or will step back from multilateral engagement and even direct trade negotiations that could lead to enhanced access to the U.S. market; rather, the Biden Administration has sought to reimagine what economic engagement looks like. Four examples of this under the Biden administration include: 1) the Indo-Pacific Economic Framework for Prosperity (IPEF), 2) the Americas Partnership for Economic Prosperity (APEP), 3) the U.S.- Taiwan Initiative on 21st- Century Trade, and 4) the U.S.-EU Trade and Technology Council (TTC). Under a potential Republican administration, it is expected that trade agreements could be rolled back or renegotiated, as was done with NAFTA during the Trump administration. Competition with China would likely eclipse all other priorities, with Section 301 tariffs under Trump serving as an example of anti-China policy; relations with former adversaries could be normalized; and the White House could adopt an [anti-trade](#) attitude.

In addition to multilateral negotiations, the Biden administration has pursued initiatives aimed at shifting manufacturing methods and protecting against unfair trade practices in key sectors. These initiatives can take into account the global competitiveness of those industries while building up both domestic industries and economic ties across nations. In 2021, the U.S. and the EU began negotiations around increasing trade in green steel and aluminum. This agreement, if finalized would be called the Global Arrangement on Sustainable Steel and Aluminum and would have the potential to reshape global supply chains toward greater sustainability, protect the livelihoods of U.S. workers, and significantly contribute to industrial decarbonization. As of late 2023, however, these negotiations have stalled.

State of Play - India Trade and Technology

International trade

India has preferential access, economic cooperation and FTAs with over 50 countries. Recent FTAs signed by India include the [India-United Arab Emirates Comprehensive Economic Partnership Agreement](#) and the [Australia-India Comprehensive Economic Cooperation Agreement](#). India is also currently negotiating FTAs with several economies, including [Peru](#), the [UK](#), the [EU](#), and the [European Free Trade Area](#), which includes Switzerland, Norway, Iceland and Liechtenstein.

India did not sign the Regional Comprehensive Economic Partnership Agreement ([RCEP](#)) despite having participated in negotiations. Its non-participation is likely to be driven by the fear that the rapid dismantling of tariff barriers could financially disadvantage Indian industrial enterprises that are not yet globally competitive and pose significant disadvantages to the agriculture sector, which consists of small family-owned farmers.

India's engagement on trade goes beyond FTAs to include initiatives such as the EU-India Trade and Technology Council (TTC) and the IPEF. Launched in 2023, the [EU-India TTC](#) aims to address trade, trusted technology and security challenges with a focus on strategic technologies, digital governance and digital connectivity, green and clean energy technology and trade, investment and resilient value chains. India has joined [IPEF's](#) Pillar II on supply chains and Pillar IV on the fair economy, while it is an observer of Pillar I on trade and has not joined Pillar III on clean economy.

At the WTO, India has been an active participant in various committees, including the Committee on Trade and Environment. However, India has strongly opposed plurilateral discussions and negotiations at the WTO, including those on the environment, such as the Trade and Environment Sustainability Structured Discussions (TESSD), Dialogue on Plastics Pollution and Environmentally Sustainable Plastics Trade and the Fossil Fuel Subsidy Reform (FFSR) on the [basis](#) that such discussions erode the integrity of and fragment the rules-based multilateral trading system. According to India, plurilateral negotiations lead to the marginalization of issues such as agriculture and development, that are difficult but remain critical for the multilateral trading system.

On the domestic front, in keeping with India's ambition to become "Atmanirbhar" (economically self-reliant), the Government of India announced the [Production Linked Incentive Scheme](#) (PLI Scheme) for 14 key sectors, which includes automobiles and auto-components, including electric vehicles, high-efficiency solar PV modules, and Advanced Chemistry Cell (ACC) battery. The purpose of this scheme is to attract investments in key sectors and cutting-edge technology, ensure efficiency, bring economies of size and scale, and make Indian companies globally competitive. Other examples of government initiatives include the [Faster Adoption and](#)

[Manufacturing of \(Hybrid &\) Electric Vehicles in India Scheme](#) (FAME) to encourage electric and hybrid vehicle purchase via financial support. The Government of India, in its [2024 Interim Budget](#), has allocated \$1.2 billion for up to 300 units of free electricity every month through rooftop solar for 10 million households. The 2024 Interim Budget also allocated \$112 million for wind projects and \$72.2 million for the National Green Hydrogen Mission.

Clean technology

Driven by urbanization and industrialisation, India's energy demand growth is set to be the largest in the world from 2021 to 2030 – [over 3 per cent annually](#). India's 2030 target is to deploy [500,000 MW](#) worth of non-fossil electricity infrastructure, before achieving net-zero by 2070. Renewable energy (RE) capacity in India has increased from [16786.98 megawatts](#) (MW) (excluding large hydro) in 2010 to [135116 MW](#) (excluding large hydro) in January 2024. However, India's RE goals are vulnerable to the concentration of global supply chains, which is likely to increase price volatility and impact the diffusion of technologies, and in turn affect the scale of climate ambitions and the speed of low-carbon transition. Paired with RE, hydrogen is primed to be a game-changer for India's energy transition and energy security. India has set the second-highest national target globally, surpassed only by the U.S. However, of the [1982](#) total hydrogen projects underway, only [~4.5 per cent](#) are in India, out of which, only [0.16 per cent](#) of total project capacity is in the FID, construction or operational stages, as of date.

To meet its climate ambition, India has also prioritized the electric mobility sector, stating targets for 2030. India's overall EV sales have grown [eight times](#) between 2019 to 2023, and India was responsible for the single largest e-bus procurement, globally, at USD ~12 billion. Government support for this sector is also evident through initiatives like FAME.

While the new technologies are not fuel-hungry, they are critical mineral-hungry. The concentration of critical minerals supply chains, which is evident from where critical minerals are found, mined and beneficiated, is, therefore, a hurdle in India's net-zero transition. For instance, in the last 10 years, [70 percent](#) of the global solar cells and module exports have come from only four countries. The number of countries supplying solar cells and modules to the world has remained [nearly constant](#) despite the increase in their export value. In fact, [15 countries](#) are home to at least [55 percent](#) of cobalt, copper, graphite, lithium, manganese, nickel, and rare earth elements (REE). A small number of countries produce more than [70 percent](#) of the mine production of the same minerals. The processing of critical minerals is highly concentrated. For example, China refines around [35 percent](#) for nickel, [60-70 percent](#) for lithium and cobalt, and nearly [90 percent](#) for REE. India also needs to develop its innovation capacity in relation to environmental technologies. For instance, of the [28,924](#) environmental

technology patents granted in 2022, India only accounted for [151](#) environmental technology patents, while the U.S. accounted for [2613](#) patents.

India's climate ambitions, coupled with the state of India's clean technology industry, point to the need for financial support via increased investment and focus on innovation and technological access. Resilient supply chains are also critical to ensure the sustainable growth of the clean technology industry. Leveraging American expertise and resources through increased engagement will allow India to advance its clean technology industry.

India-U.S. Trade Relationship

There is currently [no trade agreement](#) between the U.S. and India. The United States revoked India's General System of Preferences (GSP) status in 2019, which removed special duty treatment for USD [5.6 billion](#) of Indian exports to the United States, affecting India's export-oriented sectors. However, there has been a consistent dialogue between the two countries on trade and technology, especially over the last year: in 2023, the U.S.-India relationship saw the [resolution of 7 WTO](#) trade disputes and the removal of retaliatory tariffs, which it had imposed in response to the U.S. Section 232 national security measures on steel and aluminum, agricultural products, among others. India also joined the Mineral Security Partnership in June 2023 after Prime Minister Modi's U.S. State Visit. This indicates a powerful willingness by both countries to effectively collaborate on matters of trade, finance, and clean technology.

In [June 2023](#), India and the U.S. pledged to foster closer technological collaboration between the countries, with the collective goal of creating a conducive environment for knowledge exchange, innovation, and strategic cooperation in advanced technologies. They promoted policies and adopted regulations to encourage greater technology sharing, co-development, and co-production among the two nations, especially concerning cutting-edge renewable energy sources that have significant potential to decarbonize various sectors. India and the US also launched the interagency-led Strategic Trade Dialogue to address export control issues, explore methods to boost high-technology trade, and facilitate technology transfers and supported the launch of a U.S.-India Global Digital Development Partnership to enable the development and deployment of digital solutions in clean energy.

Building upon the earlier engagements such as the Implementation Arrangement between the U.S. National Science Foundation (NSF) and India's Department of Biotechnology and MoU between the Council of Indian Institutes of Technology and the Association of American Universities to establish the India-U.S. Global Challenges Institute, in [September 2023](#) India and the United States noted that they are creating investment platforms to lower the cost of capital

and accelerate the deployment of greenfield renewable energy, battery storage, and emerging green technology projects in India. Letters of interest were exchanged between India's National Investment and Infrastructure Fund and the U.S. Development Finance Corporation, each providing up to USD 500 million to anchor a renewable infrastructure investment fund. During the [Fifth Annual India-U.S. 2+2 Ministerial Dialogue](#) in November 2023, the two countries' alignment on matters of defence, law, science and technology, health, trade, and diplomacy. In the [2024 United States-India Trade Policy Forum](#), India and the United States identified areas for enhanced cooperation, including critical minerals and supply chains and trade in high-tech products and discussed intellectual property and its role in promoting trade and investment.

Climate-Trade Nexus

The issue of trade has now firmly implanted itself into the construct of key climate and clean energy solutions. As has become evident by the passage of the Inflation Reduction Act in the United States, major action on climate change must incorporate efforts to lift up domestic economies – most notably by supporting working people and domestic industries. This version of industrial policy has critics worried that the solutions will only result in winners in the developed world. Establishing a functional trade paradigm that recognizes this tension and seeks to mitigate it by building trust and communication between countries, while directly supporting international development, is foundational to broad climate success.

There are specific areas where collaboration and communication are needed now. To start, there needs to be a deeper understanding between the U.S. and India on how each nation can meet its supply chain and financial needs for clean technologies and if and where there are areas for direct agreements. This includes critical minerals and materials development.

There are different options for how these discussions can take place. In a multilateral context, the U.S. and India are parties to the Indo-Pacific Economic Framework for Prosperity. That negotiation recently resulted in [final text for pillar II](#) on supply chains. This agreement lays out specific coordination guidelines and processes for supply chain development, as well as processes for addressing labor rights throughout supply chains.

The U.S. and India also have much to gain by building out a strong bilateral relationship on technology. This is already underway on issues such as [semiconductors](#). Wide ranging discussions, including [high level agreements](#), have also occurred on broad technology collaboratives between the two nations. This type of strong bilateral relationship will be critical as the U.S. moves forward with additional trade measures that institute climate-based market barriers. These trade measures, such as a border adjustment mechanism and a potential joint

agreement between the U.S. and the EU on a market for sustainable steel and aluminum, may disadvantage some of India's industries for at least the near term. Collaboration on decarbonization and on other industries—like clean tech supply chains—can possibly mitigate a strained situation around steel.

Areas for Collaboration & Recommendations

Coordinate to strengthen supply chains through data sharing and transparency. Both India and the United States are seeking to develop and play a value-added role in resilient and reliable supply chains to power a green energy transition. Concrete data is important to analyze and understand global renewable energy technology supply chains and identify vulnerabilities. Where data on current and future manufacturing capacity is available, the two governments and their private investors can use it to take proactive steps in building new manufacturing capacities or investing in supply chains that require expansion. Washington and New Delhi should accordingly seek to deepen cooperation around renewable energy supply chain transparency, which should include agreeing to record and report the trade data of the final product and the associated input of raw materials, and well as exchange information on labor and environmental conditions along those supply chains to ensure including high standards in sourcing of key commodities.

Utilize the Quadrilateral Security Dialogue (Quad) to improve economic cooperation. The U.S. and India should consider deepening dialogue and cooperation on economic issues under the Quad with a focus on energy security, technology co-development and investment in and coordination around clean energy technologies such as green hydrogen, EV components, and critical minerals. This could include a Quad-led Minerals Dialogue, either within the Minerals Security Partnership or as a separate process.

Collaboration on the circular economy. India's capacity to recycle minerals essential to green technologies is very limited except for copper and iron, and it will not be able to meet its green technology needs through mining alone. In the short term, India will need to rely on imports of critical minerals, but there is opportunity over a longer time horizon to build greater recycling capacity through the development of reverse supply chains and associated legal and regulatory framework to develop its circular economy. The United States should collaborate with India in building capacity around circularity in general and critical minerals recycling specifically through sharing of best practices, technology transfer, and joint investments recycling infrastructure.

Increase collaboration on industrial decarbonization through tech exchange, joint investment, and establishing best practices. Although India and the United States each face unique

challenges in decarbonizing their heavy industry, they nonetheless seek the same goal of achieving broad adoption of low-carbon manufacturing processes while remaining globally competitive and providing a just transition for affected workers and communities. The two countries should seek to deepen cooperation around key aspects of industrial decarbonization, for example by facilitating technical exchange aimed at achieving interoperability of carbon accounting and environmental product standards, promoting joint investment and technology transfer and technology co-development in critical sectors such as steel and cement, and developing shared principles and best practices around green industrial policy.

Enable co-development of technologies and innovation by formalizing and operationalizing collaborations between technology-development labs. While renewable energy technologies are rapidly undergoing innovation, their development is geographically concentrated. New research and development centers cannot be immediately successful due to a lack of institutional memory. Therefore, collaborations and technology co-development mechanisms must be prioritized for both India and the U.S., and details of previous-generation innovations (IP, patents, etc.) shared in the public domain. This would promote transparency and ensure equity in access, use and monitoring. Especially in the case of India and the U.S., existing initiatives and collaborations must prioritize rapid action and operationalization with a focus on clean technology.

Share best practices on public procurement models which scale up advanced technologies. Public procurement can be used to support and encourage decarbonization and responsible supply chains. Critical mineral supply chains are vulnerable due to their high geographical concentration, and developing new mines and building mineral processing capability is time consuming. Similarly, a sector like the steel industry is vital for economic growth, but has drastically high emissions. Therefore, India and the U.S. must share their best practices on procurement models that can scale up advanced technologies, like those requiring less or no critical minerals and prioritizing decarbonized core materials such as steel and cement.

Facilitate development of globally acceptable standards and certification. Countries often develop country- or climate-specific standards for clean technologies resulting in unaligned regulatory approaches amongst each other. Learnings and best practices from the standard development process should be shared to ensure better quality products with increased life and durability, making the sector more climate resilient. Collaboration in standard-making and mutual recognition of certification can also help avoid regulatory fragmentation, increase interoperability, and therefore, support trade and investment.

Share U.S. clean subsidy incentives to strengthen India-US economic ties. While the US is making significant domestic climate investments in the form of subsidies, tax incentives, and grants through the Inflation Reduction Act (IRA), India lacks the resources to provide similar support to its clean industries. The U.S., through the IRA, has provided USD [~370 billion](#) to improve energy security, accelerate the energy transition, and support domestic industries. In sharp contrast, India's *total* estimated climate finance flows for FY 2020 amounted to USD [~49 billion](#). Considering this contrast, the U.S. and India may develop a sustainable finance pool that can provide concessional loans, project finance, viability-gap funding, and risk- guarantees for strategic green sectors to provide financial support for India's energy transition while also supporting its economic growth.