



GOVERNMENT OF INDIA  
**MINISTRY OF NEW  
AND RENEWABLE ENERGY**



In cooperation with



SolarPower  
Europe



Confederation of Indian Industry

# SOLAR ENERGY

DIVERSIFICATION OF THE GLOBAL SUPPLY CHAIN AND  
EU-INDIA COOPERATION IN THE AREA OF MANUFACTURING

7<sup>th</sup> September, 2022 | 02:00 pm - 06:00 pm

The Leela Palace, Chanakyapuri, New Delhi

## Event summary by CECP-project

**Disclaimer:** This report is made under the Clean Energy Climate Partnership project and aims at summarizing as accurate as possible the interventions and discussions during the event. The report reflects the understanding of the note takers under the CECP project and can in no way be taken to reflect the views of the European Union or the EU Delegation.

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## Diversification of the global solar supply chain and EU-India cooperation in the area of manufacturing

**The European Union (EU) Energy Commissioner, H.E. Ms. Kadri Simson, visited India on 7<sup>th</sup> and 8<sup>th</sup> September 2022.** The Commissioner's travel to India aimed at giving a further boost to the EU-India clean energy and climate energy dialogue, which has been intensified since the adoption of the EU- India Clean Energy and Climate Partnership (CECP), which was launched in 2016. The cooperation with India in the area of the clean energy transition and implementation of the Paris Agreement is a key priority for the EU.

On 7<sup>th</sup> September 2022, the Commissioner opened the event on “Diversification of the global supply chain and EU-India cooperation in the area of manufacturing” together with H.E. Mr. Bhagwanth Khuba, Hon'ble Minister of State for New & Renewable Energy & Chemical & Fertilizer, Government of India. The event was co-organized by the EU and the Ministry of New and Renewable Energy (MNRE), Government of India, in close cooperation with the Confederation of Indian Industry (CII) and SolarPower Europe. In the event, high-level speakers from Europe and India discussed the ways to ensure a more diversified global supply chain, as well as opportunities for stronger EU-India cooperation in the area of manufacturing, required for this diversification.

The event was attended by over 100 participants from the EU, EU Member States, representatives from central and state governments in India, International Solar Alliance, SolarPower Europe, Solar project developers, financial institutions, research bodies, academia, not for profit agencies, etc. This was followed by business-to-business networking between EU and Indian companies.

### 1.1. Welcome remarks & keynote address

**Mr Sameer Gupta**, Chairman, CII Aatmanirbhar Bharat- RE Manufacturing and Chairman & Managing Director, Jakson Group welcomed H.E. Mr. Bhagwanth Khuba and H.E. Ms. Kadri Simson along with other dignitaries, speakers, participants and members of the media on behalf of CII. He mentioned that covid-19 might have brought the collective strength of all nations of the world to a standstill, but the biggest beneficiary of COVID-19 was the push to the climate change movement. As leaders globally are committed to carbon neutrality, there is clearly consensus on two things: need to adopt renewable energy and need to have a shock resilient supply chain infrastructure across the world. He also discussed the impact of global warming across the world and expressed satisfaction that carbon neutrality agenda has gathered momentum. He mentioned that in 2018, only 25% of the countries across the world had a decarbonization horizon and today it is close to 90%.

He also discussed the impact of this pandemic on the global supply chain and steps taken by countries across the world to rework on their long-term supply chain strategies. Today, India is the third largest renewable energy producer in the world and offers the best skilled talent, research and development (R&D) expertise and world-class engineering solutions. With the adoption of hydrogen and ammonia as fuel over the long term, India aims to be a net exporter of energy. The EU also has an ambitious aim to undertake leadership in promoting sustainability goal on green energy. The goal is to provide affordable, reliable and modern energy to all. He highlighted that together EU and India have all the resources and ingredients which are required to fast track training, agenda and partnerships between government institutions to make the carbon neutrality dream come true.

**H.E. Ms Kadri Simson**, European Commissioner for Energy thanked the organizers, speakers and participants. She highlighted the importance of solar energy and the value it entails for both the EU and India. She mentioned that both regions have a clear ambition when it comes to decarbonizing the world and there is a need to proceed together on this agenda. This year has experienced the hottest March in over 120 years, and Europe is also experiencing historic draught in the southern EU countries. The role of renewables has become even more significant because of Russia's war against Ukraine. There was a time

when people thought that renewables were less reliable than fossil fuels, but the past six months have reflected that being dependent on fossil fuels may affect the energy needs. Moving to renewables is not just a good idea for the environment but is also a continuous strategic investment in security.

She discussed that India's target to reach net zero by 2070 is now the common interest of EU and India to move to newer and cleaner sources of energy. EU has from the beginning been a strong supporter of the International Solar Alliance launched by India and France at COP 21 in Paris. She set out the EU plans for solar taking big leaps from 136 GW in 2020 to 600 GW of installed capacity by 2030. The strategy focuses on four key areas:

- promoting quick and massive photovoltaic (PV) deployment on buildings through European solar rooftop initiative;
- making procedures for solar installation shorter and simpler;
- ensuring the availability of an abundant and skilled workforce for producing and deploying solar energy all across Europe;
- launching a European solar PV industry alliance for a resilient industrial value chain especially in the PV manufacturing sector.

She stressed that until now the dominance has been of one country in terms of manufacturing solar PV, however going forward, EU and India can learn from each other especially when it comes to diversifying the global supply chain and developing an open competitive and rules-based market for solar.

**H.E. Mr Bhagwanth Khuba**, Minister of State for New & Renewable Energy & Chemical & Fertilizer, Government of India welcomed the speakers and participants and discussed that EU-India CECF partnership has been strengthening over the past several years and focuses on India's key priority areas including solar, offshore wind, hydrogen, joint research and innovation, and energy efficiency.

Under solar energy, EU and India have agreed to exchange insights and experiences on resilience of the complete value chain for PV. This event is an excellent platform to synchronize plans and chart the way forward. He also discussed that the world has witnessed some major supply chain disruptions in the recent past and in order to avoid such disruptions in the future, the international community has rightly identified the need to diversify supply chains to make them more resilient and responsive. India has ambitious plans to tap solar energy to meet its electricity needs and many developing countries are looking forward to solar power to fuel their transitions. He also highlighted the fact that in order to streamline the supply chain, electronics and hardware have to be an integral part of the cooperation in this area as it has the potential to disrupt these supply chains. India has been in the process of ramping up its domestic manufacturing capacity across the entire solar PV value chain and a Performance Linked Incentive (PLI) scheme of INR 24,000 crores for solar manufacturing has been announced.

## 1.2. Session 1 - Diversification of the global supply chain (Moderator: Ms Sonja van Renssen, Editor-in-Chief, Energy Monitor)

**Dr Ajay Mathur**, Director General, International Solar Alliance (ISA) delivered the special address. He shared that ISA has been looking at creating solar as the energy source of choice across the world and as it is looked at, there are a number of challenges. ISA is looking into these challenges and hope to bring out a formal report on this subject by end of September 2022. He shared some of the findings from the report such as the global demand for PV will rise to ~ 8,000 giga watt (GW) by 2030, making the supply chain really important subject. The disruption in supply chain and increasing demand for solar PV had led to rise in solar panel price from US 22 cents in 2020 to about US 35 cents now. There are three different strands of thought that are emerging:

- The technologies themselves are changing as there is progress towards batteries for storage;
- There is a varying degrees of economies of scale along the entire cycle of manufacturing and that should be backed by innovation;
- Along with solar panels, supply chain of balance of system components also needs to be streamlined.

**Mr Heymi Bahar**, International Energy Agency, delivered a presentation focusing on “Solar PV Global Supply Chains Special Report” published in July 2022. He discussed that two important developments recently have changed the way supply chain operates globally - COVID-19 and Russia's war on Ukraine. There has been an important shift in the global supply chain over the last decade and there is a situation where one country accounts for 95% of the most critical segment of the global solar PV supply chain. China introduced a very comprehensive policy for 15 years to support an industry which is right now one of the largest in the world. However, there are some implications of this as highlighted below:

- Traded goods and solar PV trade accounts for about USD 50 billion today;
- In the coming years, solar PV will account for 95% of the two major segments of polysilicon and wafers manufacturing and the concentration of manufacturing is at only one place.

India is well placed to be a major manufacturer of solar PV products and its demand is now about eight percent of the global demand but the expectation is that the annual demand will double very quickly. Knowledge sharing on manufacturing will play an important role when EU and India come together, which reflects a huge opportunity.

### **High Level Panel Discussion:**

**Question: What roles do you see or do you think India could play in the global solar supply chain going forward?**

**Response: Mr Máté Heisz**, Director of Global Affairs, SolarPower Europe: India is already one of the biggest markets in terms of deployment but when it comes to manufacturing and diversification of the supply chain, we do believe that India should play a key role in the diversification of the of the supply chain. India has a target of going net zero by 2070 and this ambition is really well aligned with the ambition and the objectives of the European Union, including the objective to achieve 20 GW manufacturing by 2025. These shared objectives will make India and the EU ideal partners to cooperate and to help each other to reinforce their roles as leaders in the global renewable energy transition.

**Question: With the enormous concentration of solar manufacturing in China, can India provide an alternative to China going forward?**

**Response: Mr Subrahmanyam Pulipaka**, CEO, NSEFI was very optimistic about India manufacturing capacity and elaborated that India already has ambitious set of targets especially in terms of manufacturing and will be home to 60 GW of solar manufacturing in the next three to four years. EU has also been looking at 20 GW manufacturing that is one third of the total demand and maybe the remaining two-thirds can come from India. India has matured from nascent developing solar market to much mature developing market. From a government driven demand, we moved to a market driven demand. If everything goes right India will be home to one out of every three solar modules installed in the world by 2030.

**Question: What kind of solar related investments have you made in India so far and why? What does your future business look like?**



**Response: Mr Manoj Gupta**, Vice President, Renewable Energy, Business-Asia, Fortum: Fortum started their operation in India in 2013 with a very small size of 5 MW solar plant and with 10 years they have a portfolio of about 2 GW. Also, Fortum has entered India because of the clear vision of government to install 100 GW solar by 2022 and ~300 GW by 2030. Business models such as pureplay solar and wind to hybrid solar and wind and now storage are adding to the huge market opportunities.

**Question: How do you see the role of solar getting India on track to net zero and what challenges are there for European businesses who aren't investing in this country?**

**Response: Mr Sandy Khera**, Country Manager & CEO, Enel Green Power India: When we look at India's net zero ambitions and the energy transition we also need to consider it in the context of India's economic growth and development path. India will soon be the most populous country in the world and will be home to probably the youngest population around the world. If you look from a growth standpoint, we are years away from reaching our peak of economic growth which means per capita income, energy consumption and emissions will rise. India is trying to meet the requirements of affordable and reliable power without affecting the energy crisis in certain ways and here solar will play a key role given its cost competitiveness and adaptability. The next few decades will be the decades of electrification of energy and again there solar will play a huge role.

The main challenges are the financial health of the distribution companies, divergence between policies at the central level and at the state level. There are issues around land acquisition, land policies that need to be aligned and then a lot of transmission infrastructure needs to be put in place.

**Question: When you are looking at the European market as well as the Indian market, can you provide the products that everyone wants since everyone wants high quality & cheap products?**

**Response: Mr. Vish Iyer**, Chief Commercial officer, Jakson Group: The Indian supply chain today is much more robust in every aspect and every area that we can think of but it still needs to be further strengthened when compared to China. Also, India is working on price to quality aspects of the manufacturing and will achieve that in about five years.

### 1.3. Session 2 - EU-India cooperation in the area of manufacturing (Moderator: Ms. Jyoti Mukul, Principal, CII)

**Ms Jyoti Mukul**, Principal, CII, thanked the participants and speakers and mentioned that India ranked third in renewable energy installations in 2021 and globally the renewable energy power capacity addition grew about 17% last year and this year the overall capacity installation increase was 11%. Nonetheless, India was the second largest market in Asia for new solar PV capacity and it ranked third in solar PV capacity addition in terms of overall solar installations. There have been reports of power outages across China's one of the provinces which is posing a new clean energy supply chain challenge. At the same time, the cost of raw material has increased due to the Ukraine war and there are disruptions in the manufacturing hubs in China. Combining the two, the renewable energy sector is likely to be impacted in the future, while it has already been impacted for last few years due to COVID-19. In order to address this, India came out with production incentives and related programmes to promote domestic manufacturing.

**Mr Indu Shekhar Chaturvedi**, Secretary, MNRE, began by stating that solar manufacturing across the world is likely to see major shifts in the coming months and years. Today about 650 GW of solar PV module manufacturing capacity exists globally and about 75 to 80 percent of this comes from one country. There is a need to diversify the solar supplies. He also added that EU and India can together work effectively towards diversification of the solar supply chains and India already has ambitious plans in solar manufacturing. To support domestic solar manufacturing, India has policies like domestic content requirement imposing

barriers on imports such as basic customs duty of 40% on solar modules and 25% on solar cells and government schemes like KUSUM and solar rooftop and the central public sector undertaking (CPSU) scheme. As a result of the measures, India's module manufacturing capacity has increased to 20 GW from 10 GW slightly more than a year back and the cell manufacturing capacity has also increased to ~five GW from about three GW per year earlier. He also highlighted that the solar PV supply chain is one of the most geographically concentrated supply chains in the world and India is trying to reach a position to not only be self-sufficient but also to be able to export.

**Mr Frank Viault**, Minister Counsellor, Head of Cooperation, EU Delegation to India stated that the commissioner visit highlights the importance of the EU and India working together on the clean energy transition. He referred to the announcements made by the Hon'ble Prime Minister of India on India being energy independent before it celebrates its 100 years of independence in 2047. In order to meet this, there is a need to act now with ambition and pace in decisions. EU is guided by the European Green Deal and the climate law which makes our commitment legally binding. Renewables are the cheapest and cleanest energy available and can be generated domestically reducing dependence on other countries. He mentioned EU's ambitious solar energy strategy of reaching 600 GW by 2030 from 136 GW installed capacity in 2020. He said that EU will be interested in exploring with India on ways for both to work together and contribute to broadening the manufacturing market and establishing a more resilient industrial infrastructure.

### **High Level Panel Discussion:**

**Question: What is the availability of financing currently for the manufacturing sector? How far the government's production link incentive program promotes efficiency? Does it also promote technological tie up between various countries and various companies of different nationalities?**

**Response: Mr Pradip Kumar Das**, Chairman and Managing Director, Indian Renewable Energy Development Agency (IREDA) said that the total gross domestic product (GDP) of India is shifting towards manufacturing due to COVID-19 and Russia-Ukraine conflict. In order to flourish, lenders and developers need to have a very close and transparent relationship probably which was not available earlier. Due to the quality of governance and commitment and the accountability in place, these are becoming easier in India. The government focus on PLI scheme is creating a push on efficient solar modules being manufactured domestically.

**Question: What is the scope of financial opportunities in India and what financial tie-ups are you looking in this space?**

**Response: Mr Edvardas Bumsteinas**, Head of Asia and Pacific Division, Global Partners Department, European Investment Bank (EIB) shared that IREDA is one of the key EIB partners and in India and as on date, EIB has total commitment of five billion euros of which 90 percent is pure climate action and of this amount 1.5 billion euros are for renewable energy split evenly between wind and grid connected solar. EIB has allocated their second credit line earlier this year for 150 million euros and was allocated exclusively to solar projects and the previous credit line of 200 million euros was allocated already some time ago. They have also worked with the State Bank of India and are ready to continue supporting the development of solar industry both the generation and production side.

**Q: What are the trends that you are seeing as far as the demand side is concerned on the rooftop solar, floating solar and grid connected solar?**

**A: Mr. Sanjay Sharma**, Director (Solar), Solar Energy Corporation of India (SECI) shared that SECI is the only agency which carries out the bids and came out with the reverse auction that was appreciated by United Nations (UN) Secretary General Mr. Antonio Gutierrez. Due to covid, the demand has gone down in the

states because the manufacturing and other support mechanisms were not in position and factories were not running. So, SECI was not able to sell their already concluded bids and had accumulated approximately 20GW of capacities which they were not able to sell out to the state. For rooftop sector, SECI has signed a memorandum of understanding (MoU) with the Ministry of Home Affairs, Government of India wherein military forces are ready to set up their setup rooftop plants in their premises.

**Question: How India and EU can collaborate in manufacturing?**

**Response: Mr Eliano Russo**, Head of the 3Sun Gigafactory, Enel Green Power SpA mentioned that the EU and India need to continue investing heavily in the innovation and on the R&D part. To move much faster we also need to increase the scale of the support that we want to provide. Acceleration is absolutely a must.

**Question: How are you looking at the Indian market as far as these supply chain efforts are concerned?**

**Response: Mr Jan Enno Bicker**, CEO, REC, said that the supply chain is a hot topic in the industry and REC has 2 GW of cell production capacity at present. They have significant capacity up and running are also a hundred percent owned subsidiary of Reliance Industries Limited here in India. Solar supply chain is a very important point because if you cannot make a module as long as you are missing one component. The opportunity for the EU and India is massive to build that supply chain between the two regions.

#### 1.4. Concluding remarks and vote of thanks

**Dr Seshadri Chari**, Distinguished Member of Governing Council, Research and Information Systems (RIS) thanked the panellists, speakers and participants. He highlighted the need for an alternative to fossil fuel as a source of energy as it has always remained a priority for a developed and developing economies. When it comes to EU, almost 40 percent of its natural gas requirements are from one country and this dependence is even very uneven. This dependence on one country leads to disruption in supply chain during situations like COVID-19 and Russia-Ukraine war. Hence, there is a need for EU and India to learn from each other especially when it comes to diversifying supply chain and developing an open competitive and rules-based market for solar.



## Agenda- Solar Energy - Diversification of the global supply chain and EU-India cooperation in the area of manufacturing

**Date:** 7 September 2022 (Wednesday)

**Time:** 14.00 hrs -18.00 hrs IST

**Location:** Grand Ball Room, Leela Palace, Delhi

Inaugural	
14.00-14.30	Registration
14.30-14.35	<i>Welcome remarks</i> Mr. Sameer Gupta, Chairman, CII Aatmanirbhar Bharat – RE Manufacturing and, Chairman & Managing Director, Jakson Group
14.35-14.47	<i>Keynote address</i> H.E. Ms. Kadri Simson, European Commissioner for Energy
14.47-14.59	<i>Keynote address</i> H.E. Mr. Bhagwanth Khuba, Minister of State for New & Renewable Energy & Chemical & Fertilizer, Government of India
Session 1 - Diversification of the global supply chain	
14.59-15.07	<i>Special address</i> Dr Ajay Mathur, Director General, International Solar Alliance
15.07-15.15	<i>Special address</i> Mr. Heymi Bahar, International Energy Agency ( <i>presentation focusing on Solar PV Global Supply Chains Special Report; published July 2022</i> )
15.15-15.40	<i>High Level Panel Discussion</i>  Moderator: Ms. Sonja van Renssen, Editor-in-Chief, Energy Monitor  From EU: <ul style="list-style-type: none"><li>- Mr. Máté Heisz, Director of Global Affairs, SolarPower Europe</li><li>- Mr. Manoj Gupta, Vice President, Renewable Energy, Business-Asia, Fortum</li><li>- Mr. Sandy Khera, Country Manager &amp; CEO, Enel Green Power, India</li></ul> From India: <ul style="list-style-type: none"><li>- Mr. Subrahmanyam Pulipaka, CEO, NSEFI</li><li>- Mr. Ashish Khanna, President (Renewables), Tata Power Solar</li></ul>
Session 2 - EU-India cooperation in the area of manufacturing	
15.40-15.45	<i>Introductory remarks by the moderator</i> <ul style="list-style-type: none"><li>- Ms. Jyoti Mukul, Principal, CII</li></ul>
15.45-15.53	<i>Special address</i> <ul style="list-style-type: none"><li>- Mr. Indu Shekhar Chaturvedi, Secretary, Ministry of New and Renewable Energy, Government of India</li></ul>
15.53-16.01	<i>Special address:</i> <ul style="list-style-type: none"><li>- Mr. Franck Vialt, Minister Counsellor, Head of Cooperation, Delegation of the European Union to India</li></ul>
16:01-16.26	<i>High Level Panel Discussion</i>  Moderator: Ms Jyoti Mukul, Principal, CII

	<p>From India:</p> <ul style="list-style-type: none"> <li>- Mr. Pradip Kumar Das, Chairman and MD, IREDA</li> <li>- Mr. Sanjay Sharma, Director (Solar), SECI</li> </ul> <p>From EU:</p> <ul style="list-style-type: none"> <li>- Mr. Edvardas Bumsteinas, Head of Asia and Pacific Division, Global Partners Department, European Investment Bank (EIB)</li> <li>- Mr. Jan Enno Bicker, CEO, REC</li> <li>- Mr. Eliano Russo, Head, 3Sun Gigafactory, Enel Green Power SpA</li> <li>- Mr. Sujoy Ghosh, VP and Country Manager, India First Solar</li> </ul>
16.26-16.31	<p><i>Concluding remarks and vote of thanks</i></p> <p>Dr Seshadri Chari, Distinguished Member of Governing Council, RIS</p>
<b><i>High tea – with possibilities for B2B networking</i></b>	
16.31-18.00	Available for all