

IMPACT OF COVID – 19 ON INDIAN SOLAR INDUSTRY

COL. A. S. RATHORE

Ph.D.
asrathore67@gmail.com

DR VIVEK S. KUSHWAHA

Director
Institute of Business Management&Research,IPS Academy,Indore,MP
director.ibmr@ipsacademy.org

ABSTRACT

COVID-19 pandemic has severely hit solar industry like other aviation and tourism industry. The import restrictions and lockdowns have squelched the Indian economy. The issue was further aggravated by the migration of labor from their place of work to their villages due to fear of COVID-19 virus. The manufacturing of solar panels and other equipment came to a grinding halt due to lockdowns and the installation and commissioning projects slipped their schedules planned in June to Aug 2020. **Purpose** of this paper is to analyze the impact of COVID-19 on manufacturing of solar panels and components as well as impact on installation and commissioning of solar plants in India. This paper also studies the impact on financial issues in the Indian solar industry. **In Research Methodology**, the secondary data about the manufacturers of solar panels and companies that install and commission the solar plant has been studied. Due to COVID-19 pandemic scenario, the study is on secondary data. Various articles and data related to solar energy published on internet have been studied, compared and analyzed over the period of two months from 20 Aug to 20 Nov 2020. **Practical implications**, The views expressed by the solar industry experts if implemented by Govt. agencies and various stakeholders will help Indian solar industry to face the challenges posed by COVID-19 pandemic and help in speedily bouncing back. **Opportunity**, The views and comments of various Indian solar industry experts help in better understanding of different facets of the challenges posed by COVID-19. It will help in handling the issues in more efficient and effective way.

Research is analysis of secondary data of Indian Solar Industry.

Keywords: *Solar Industry, manufacturing, Installation and commissioning, Rooftop.*

1. INTRODUCTION

COVID-19 pandemic lockdowns and travel restrictions squelched the economies across the globe, disrupting supply chains, delaying project implementations and creating a shortage of migrant labors. Solar industry has also been severely hit due to lack of availability of parts and equipment, shortage of manpower and postponement of expenditures by users. The power demand also dropped to 50-55% of the capacity due to the lockdown orders. The COVID-19 outbreak came at a time when the solar project executions were at its peak in India in the last quarter of FY 2019-2020. India has ambitions solar energy target of achieving 100 GW by 2022. An Indian analytical company CRISIL reports that about 03GW of Solar project of INR 160 billion will be affected. The demand for solar products across globe has decreased however China has ramped up its production to normal capacity. The prices of solar modules are expected to rise in short-term due to depreciation of India currency. The module shipments from China also got stuck at sea ports and were unable to reach project sites due to movement restrictions and COVID-19 policy guidelines. COVID-19 has therefore forced nations to diversify the import sources and not to concentrate their imports from a particular nation or region. This will give India an opportunity in this eminent reshuffle of the global supply chain in post pandemic phase.

2. REVIEW OF LITERATURE

2.1 **Mr Gagan Vermani (May 2020)** in his article has discussed the ‘The short and long term impact of the Corona Virus (COVID-19) on the solar industry. He has commented on the present scenario of Chinese solar manufacturing sector and its impact on India. He has suggested the medium and long term actions that Indian Govt should take. He has commented on the delays on the installation and commissioning of solar projects due to COVID-19. He has also discussed about the financial burden due to stagnant business activity during the pandemic. He has also commented on the steps taken by ministries and financial institutions.

2.2 **Mr Ashish Khanna, MD&CEO, TATA Power Solar, (April 2020)** in his article on ‘Renewable Energy New Normal and Impact of COVID-19’ has commented on the challenges faced by renewable energy due to COVID-19. He has commented on the impact of ‘Force Majeure’ on the working capital of the companies. He has opined the steps that various Govt agencies like MNRE, SECI and DISCOMS should take to avoid unnecessary litigations and losses to project developers and EPC contractors. He has commented on the constraints in the

liquidity and investment. He has viewed that people who have invested in the technology and digitization, benefitted from remote monitoring and operation.

2.3 **Mr. Ameya Pimpal Khare (April 2020)** in his article ‘ COVID-19’s impact on India’s solar Industry’ has highlighted how severely the COVID-19 has impacted the ambitious solar target of 100GW by 2022. He has commented the impact of halted global supply chain and imports from China. He has commented that though force majeure clause will prevent penalties on the developers but deadlines will get shifted and will have impact on the finances. He has expressed that small players will find it difficult to manage their cash flows and might be affected brutally, whereas bigger business may be able to brace through the pandemic. He highlighted that because number of thermal power plants had to be shut, this increased share of intermitted renewable energy generation on the grid.

2.4 **Rakesh Ranjan, (April 2020)** in his article in ‘Implication of COVID-19 lockdown on Indian Solar Industry’ has informed that the power demand dropped to 50-55% capacity. The article comments on the financial issues faced by DISCOMS in U.P, M.P and A.P as they were unable to collect dues from their consumers and claiming recourse under the force majeure clause. Author informed that project construction activities had stopped and only administrative work was done from home. Workers who have gone back to their villages will take 4-6 months to return. Author informed that Indian manufactures, whose business have been hampered are planning to go full speed once situation improves. Author brought out that though the rooftop solar segment has been severely affected but work from home has increased the house electricity bills. Thus the consumers are now more keen to go for rooftop solar systems.

2.5 **Metal Miner (June 2020)**, ‘India’s Solar Power Industry is hurting from COVID-19’ has brought out that India was able to add only about 989MW of solar power capacity in first quarter against expected 1864MW. Though the construction was allowed from April 20, significant slippages in commissioning occurred due to constraint of equipment and labor availability. Rooftop solar projects have been hit badly and only 300MW of capacity was added in Q1 2020.

3. RESEARCH OBJECTIVE

3.1 To analyze the impact of COVID-19 on manufacturing of Solar panels and components.

3.2 To analyze the impact of COVID-19 on Installation & Commissioning of Solar plants.

3.3 To analyze the impact of COVID-19 on finances in solar Industry.

4. METHODOLOGY

The research involves study of impact of COVID- 19 pandemic on the Indian solar industry. The solar industry has various stakeholders from the manufacturers of solar Ingot, solar wafer, Solar panels to companies involved in installation and commissioning. Power DISCOMs are also part of the solar industry as they purchase the electricity from the solar power producing companies/users and distribute it to the consumers. The present study however focuses on the manufacturers of solar panels and companies that install and commission the solar plants. This research has been done during the covid-19 pandemic, hence it is based on the analysis of the secondary data available on various internet portals and websites. Various articles and data related to solar energy published on the internet have been studied, compared and analyzed. The study has been done over a period of two months from 20 Aug to 20 Nov 2020. The references of the articles studied have been given in the bibliography.

5 Hypothesis

H1: COVID-19 has impacted negatively on the manufacturing of Solar panels and components.

H2 :COVID-19 has impacted negatively on Installation & Commissioning of Solar plants.

H3 :COVID-19 has adversely effected the finances in the solar Industry.

6. DATA COLLECTION AND ANALYSIS.

Due to COVID -19 pandemic the secondary data was extracted from the articles published on various solar energy related portals on the internet. The articles have been published by various private companies involved in manufacturing of solar panels and various components, companies involved in Installation and Commissioning (I&C) of solar plants. Analysis of the reports published by the govt agencies including Ministry of New and Renewable Energy (MNRE) and SECI have also been done. The analysis is based on the comments given by various experts of the solar industry. The data has been collected over the period of two months from 20 Aug to 20 Nov 2020. The analysis is more towards subjective being the analysis of the secondary data.

7. FINDINGS OF THE STUDY.

The COVID-19 pandemic has adversely impacted all the stakeholders of the solar industry from the manufactures of solar panels and components, installation & commissioning companies, transportation agencies and financial institutions. For the ease of comprehension, the study has been focused only on the Indian

manufacturing and I&C companies. Finances being important aspect have also been discussed in the study.

7.1. Impact on manufacturing. The manufacturing industry has been severely hit during COVID-19 pandemic due to restriction in import of raw material and lockdown orders. The solar imports of India fell by over 75% year over year (YoY) in Q1 2020. The issue was further aggravated by migration of labors from factories to their villages.

7.1.1 Restrictions on Imports. The COVID-19 pandemic has drastically effected the manufacturing capacity as Indian Solar industry imports 80% of its major solar values from China.Appx 90% of Indian Solar PV modules are imported from China.The ports in China and goods transporting companies from China to other countries including India were stopped during pandemic to prevent spread of COVID-19 virus. Imports of solar powerequipment in January 2020 therefore declined by about 70% as compared to January 2019. The disruption of supply chain and reduction in import of solar products from China has shown India's heavy dependence on many external factors.This crisis should act as mega opportunity for solar sector of India to reduce its reliance on imports and focus more on large scale indigenization. Factories are planning to go full speed as soon as the pandemic is over. Operating at 100% capacity will however take time.

7.1.2 Migration of Labor. The production in many factories reduced drastically as the labor involved in manufacturing of solar panels and components migrated from their place of work to their villages due to fear of COVID-19 virus. Some labors are still in state of fear/ uncertainty hence not yet returned to the place of work. This has prevented factories from performing to its optimal output. Govt needs to declare policies to instill confidence in labor to return to their place of work. Though some state govts like UP, MP and AP have declared creation of jobs in their states, however creation of sufficient jobs in respective states will take time.

7.1.3 Boost Domestic Manufacturing. Lockdown in China caused hindrances in the manufacturing in China. India's solar exports sow a slight YoY growth in first quarter of 2020.The continued restrictions on import from China and with revised Govt policy favoring "Atmanirbhar India", there is hope to boost the domestic manufacturing without compromising on the quality and pricing of solar panels. To reduce such vulnerabilities and to ensure energy security, India needs to develop its own solar equipment manufacturing industry.But this can happen only if India has the necessary technology, which is at par with global

standards. However, post COVID-19 period, developers and contractors may go back to Chinese modules and cells if India is unable to give a good quality and cheaper made in India alternatives. There is also need to have technology transfer agreements with various countries for solar cell Ingot and solar wafer manufacturing.

7.1.4 Long Term Tariff Barriers. The Indian manufacturers need minimum two years to setup new factories or expand the existing manufacturing capacities. Indian govt therefore need to impose long term tariff barriers (of atleast five years) to check the import from China, Vietnam and Thailand.

7.2. Impact on Installation & Commissioning. Solar sector across the globe was estimated to add record capacity of 130-135 GW in 2020. However, the pandemic has caused several operational and financial setbacks bringing down the estimates by 20% to around 105GW. Disruption in equipment supply from China had a direct impact over Q1 2020 installation that witnessed 43% decline in quarter over quarter. Solar capacity addition has been estimated to be the lowest in India since Q4 2016. Though Prime Minister Narendra Modi could solarize 39,000 electrified health sub centers serving 230 million people in rural India. However, appx 2.3 GW of solar plants in India worth 02 billion dollars are running behind schedule as the deadline of commissioning was between June to August as the solar panels have been supplied only in Mar 2020. Projects starting in July for worth over \$2bn are at risk of missing scheduled commissioning. The prices of solar products from other nations like Taiwan or Malaysia may also increase by 15-20% due shortage of products in the international market. COVID-19 pandemic will have a lasting impact on the B2B and B2C consumer buying behavior & choices. The sustainable, cheaper and clean solar energy is likely to be amongst the top priorities in the medium to long term plan of India. The rooftop solar market is expected to gain backed by strong consumer demand. This will also create a huge market for off-grid, hybrid and storage based solar systems and products.

7.2.1 Delay in Delivery of Stores. Timely execution of solar projects due to 'Just In Time' (JIT) delivery of material and involvement of large workforce has not been possible during the COVID-19 pandemic scenario. Project construction activity was stopped and only administrative work was done from home. The solar projects scheduled for implementation in 2020 have been delayed by 4-6 months. The project cost is also expected to get inflated due to delay in installation and commissioning. The force majeure clause by Govt of India

permits project extensions without penalty hence companies are also not very aggressive in execution of projects.

7.2.2 Shortage of Labor. 85% of the labor in solar parks are migrants, who have migrated back to their villages due to fear of Corona virus. These migrant labors will take time to return as neither the herd immunity has been achieved in the country nor the vaccine is available so far. Non availability of labor has delayed the installation and commissioning of large number of solar projects.

7.2.3 Slow Economic Recovery. Even though the Chinese factories have restarted the production of solar products but private players are not booking further orders as future economic situation in the country is not clear. Implementation of govt policies are also slow due to lockdowns and work from home directions. This is also delaying the installation and commissioning. EPC players are however hopeful and have started talking about the future and how they are going to deal with the market when it opens post pandemic.

7.2.4 Force Majeure Clause and extensions. Indian govt has permitted utilization of force majeure clause for projects developers keeping in mind the deadlines and related penalties. Ministry of New and Renewable Energy (MNRE) is granting extensions to companies on case to case basis, based on the documents submitted by the companies.

7.2.5 Decline in Power Demand. The steep decline of power demand during the pandemic was due to substantial reduction in commercial and industrial activities. The wide scale suspension of economic activity, supply chain distribution and employee health concerns have delayed the installation and commissioning of solar projects. According to ET Energy World, India was able to add only about 989 megawatt (MW) of solar power in the first quarter of 2020, compared to expected 1,864 MW. The flip side is that people working from home are seeing their electricity bills shoot up substantially [with] air-conditioners running, electricity to run computers. This is driving lot of demand from rooftop customer segment.

7.3 Impact on finances. COVID-19 pandemic shifted focus of govt expenditures across the globe into healthcare services to save lives of their citizens. The total lockdowns halted the economic activities resulting in huge revenue losses to the Govt. The govt was therefore forced to minimize the govt expenditure in other sectors and reduce the subsidies on solar projects. Indian govt has also been forced to prioritize the expenditure and consider other innovative revenue models. Rupee depreciation is expected to affect module and

other imported component prices. On the other hand, inventory build-up in China and low demand in major world markets could mean a decline in module and component prices.

7.3.1 Liquidity Crunch. The lockdowns and travel restrictions severely disrupted the economy. This led to loss of jobs and evaporated the purchasing power of consumers. Reduction in sales and availability of finished products has forced liquidity constraints in the companies as the business cycle has come to almost a halt. Govt of India has taken various incentives to speed up the recovery of economy. Due to movement restrictions during COVID-19 pandemic, DISCOMs were also unable to collect dues from their consumers. DISCOM in UP, MP and AP have therefore written letters showing their inability to pay to the power generators and have also claimed recourse under the force majeure clause. MNRE has though clarified that all DISCOMS must make timely payments. Solar Energy Corporation of India (SECI) has also clarified that not paying under force majeure clause is not acceptable.

7.3.2 Drying up of Investments. Restricted business activities during pandemic has put large investments on hold, raising the challenges for the rooftop solar market because of delaying the decision by users to go solar. Ministries and financial institutions have been regularly pushing reforms and packages to keep the financial activities rolling. The solar industry like other sectors is also looking for additional financial support to deal with working capital and forex hedging cost, moratoriums in installment payments.

7.3.3 Loan Availability. RBI has also announced three months of moratorium on the payment of installment for all term loans and working capital. This has helped reduce the stress to a great extent. Many more such steps need to be taken by the government to help the industry to thrive and potentially even bounce back stronger when this crisis gets over. Smaller players in the solar sector will find it difficult to manage their cash flows and might be affected severely. Bigger business may however be able to brace through this and bounce back sooner. Rooftop solar segment is adversely affected as there are small size firms that lack the economic capacity to absorb the losses.

7.3.4 Enhance Subsidies. The Indian govt subsidies for renewable power generation have grown three fold over 05 years from Rs 3,224 Cr in 2014 to Rs 9,930 Cr in 2019 due to India's climate promise for deploying 100 GW of solar power by 2022. India spent Rs 83,134 Cr in 2018-19 on subsidies to Coal, Oil

and Gas. This is seven times subsidies than renewable. Recommended that Govt of India to transfer some of the massive subsidies currently given to fossil fuels to renewable energy to shift the focus from fossil fuels to clean energy.

7.4. Critical challenges to Solar Sector. The unprecedented COVID-19 pandemic has thrown various challenges to the solar industry. Some of them are as given below.

- (a) Uncertainty over future power demand due to diminished global growth prospects.
- (b) Higher risks including delayed payments, PPA renegotiation and curtailment.
- (c) Slowdown in distributed solar market due to loss of capacity and /or suspension in aid program.
- (d) Risk of growing trade barriers and disputes due to emphasis on local manufacturing in various countries.
- (e) Lack of competitive financing solutions.

8. Recommendations

8.1 Financial Relief. Ministry of Finance has already announced number of financial relief packages. RBI has also announced moratorium period for payment of installments. More innovative relief packages in lines with the tourism and aviation sector should be given to the solar energy sector also. The government also needs to provide support to solar power producers with liquidity via financial incentives so that the solarization of the power sector is in line with the long-term goals.

8.2 Labor Migration. More migrant labor favorable policies and health initiatives be taken by Govt for migration of labor back from their villages to the place of work.

8.3 Carbon Credit and Priority to Clean Energy. The pandemic will have lasting impact on B2B and B2C consumer buying behavior. The choice for sustainable, cheaper and cleaner solar energy should be among the top priorities in the medium to long term. Govt to consider permitting the carbon credit facility to private as well as govt companies to promote power generation from solar .

8.4 Indigenous Manufacturing. Indian Govt should continue the restrictions on imports of solar products from China, Vietnam and Thailand and focus more on the indigenous production. Recommended to hike the tariffs barriers so that domestic companies are able to enhance the manufacturing capacity. The financial crunch and delay in decision by users to go solar will force / give rise to innovative business models backed by technology and financing.

8.5 Hike Tariffs. Recommended that MNRE should appoint independent agency like CERC to determine the impact of price rise on tariff and advise DISCOMS, NTPC, SECI etc to increase tariff accordingly for projects commissioning in FY 2021. This will avoid unnecessary litigations and losses to project develop and EPC contractors as delay are beyond their control.

8.6 Technology Transfers. Most of the solar cells are presently being imported from China, Vietnam or Taiwan. Recommended to have technology transfer agreements for manufacturing of Solar cell Ingots and solar cells within India. This will enable adequate availability of solar cells in India.

8.7 Public Private Partnership. Recommended policy changes to reduce the solar tariff and increased private public partnership model for quicker technology transfer and ultimately removal of the import to negligent portion over 3-5 years horizon.

8.8 Skill Development. The target of achieving 100 GW of solar power by 2022 can be possible only if India has adequate number of skilled manpower. Though large number of training institutes are presently training ‘Surya Mitra’ however lot more needs to be done to have skilled manpower available to achieve the targets of National Solar Mission.

9. CONCLUSION

COVID-19 pandemic has severely impacted the growth of solar industry like other aviation and tourism industry. The economic activities slowed down due to import restrictions, lockdowns, labor migration and liquidity crunch. Large number of steps have been taken by Indian Govt from declaring financial package, easy loans, moratorium to pay installments. Phase wise unlocking has also been done to revive the slowed economy to reduce the hardships to citizens. Direct money transfers have also been done in the bank account of economically weaker sections of the society. Some areas where Govt can still take some more steps are :-

- (a) Cheaper loans to revive the solar industry.
- (b) Tax rebates and incentives to revive solar companies.
- (c) Capacity enhancement for manufacturing of solar cells and solar panels.
- (d) Technology transfer agreements for manufacturing of ingots and solar cells.
- (e) Protect domestic manufacturing by raising tariff barriers.
- (f) Skill development for installation and commissioning of solar plants.

To ensure the sustainability, robust growth and safeguards in future for Indian solar industry, new measures need to be taken for the now import reliant solar

industry to move to a self-sustained exports model. A strong and strategic revival plan is very critical for the industry to help achieve its targets on time. It might also need more targeted policy introductions to support decentralized projects. Government of India need to lead by example and create a stimulus plan which is green, efficient, and progressive. Indian solar industry has performed exceedingly well in the past. Hope that the Indian solar industry will be able to overcome the challenges posed by the COVID-19 pandemic and will bounce back stronger to achieve new heights in future.

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