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# IMPACT OF COVID-19 PANDEMIC AND INDIA-CHINA AGGRESSION ON INDIAN RENEWABLE ENERGY GRID: A PRAGMATIC ANALYSIS

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**Abstract**: In early December 2019, an onset of coronavirus disease caused by a (SARS-CoV-2) occurred in Wuhan City of Hubei Province in China. On 30 January'2020, the World Health Organization declared the outbreak as a Public Health Emergency of International Concern. India charts as the second-largest population in the world. The country has a rural-based growing towards-urbanization developing economy is also struggling severely from this COVID-19 direct and indirect effects. Amidst, the Indian Government response in dealing with the Pandemic on 15/16 June news reports of a standoff between Indian and Chinese Forces at Galwan Valley near the Indo-China Border started emerging. This run-in claimed the lives of 20 Indian soldiers and 43 Chinese soldiers. The skirmish resulted in India taking numerous steps that reinforced new rules and trade-sanctions. On 27 June, the Prime Minister of India, Shri Narendra Modi emphasized citizens of India to become a self-reliant nation with the slogan 'Vocal to Local'. This paper sketches how the onset of the Covid-19 Pandemic and the conflict between India-China impacted the 'Indian Renewable Energy Sector'.

## Covid-19 Spread in India

The ongoing COVID-19 pandemic is an international public health crisis. Caused due to novel SARS-CoV-2. It is considered as a novel human-infecting Betacoronavirus. Due to its rapid transmission across nations, precautionary measures, travel advisories, and lockdowns ensued to safeguard its citizens. In India, the first few reported cases was on 30 January 2020 it then reoccurred on 3 February 2020 in Kerala from a person who returned from Wuhan, China.

The unmeasured severity of the disease gave India its first One lakh reported cases on 18th May 2020. Till mid-December 2020, it has crossed 9.74million reported cases and 141 thousand casualties. To curb the Covid-19 spread, India enforced 68 days of four-phased preventive lockdown that started as Phase I from 25 March 2020 to Phase 4 ended on 31 May 2020. This unforeseen resulted in job losses, heavy migration, and deaths of skilled-unskilled laborers, small and medium-sized enterprises. To curb, the Indian government floated a $22.6 billion economic support package for the poor and marginalized. Billion dollars from the World Bank were borrowed. On 3 April 2020, the central government released its first installment of Rs.17, 287 Crores to its states and union territories to help combat coronavirus and its side effects. Further, the Ministry of Home Affairs released Rs.11, 092 Crores as relief from its State Disaster Risk Management Fund. On 10 April 2020, the Asian Development Bank (ADB) assisted India with Rs. 15,800 Crores to sustain through the COVID-19 pandemic.

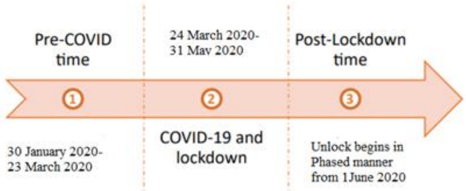


Figure 1. India three stages and timeline to chart Covid-19 situation control

As the medical infrastructure reinstituted itself, the government adopted unlock measures in a phased manner: Unlock 1.0 began from 1 June 2020 to Unlock 7.0 continuing. India GDP contracted to -24% in Q1 (April–June) for financial year 2020 to 2021. An outcome due to a sharp rise in unemployment, stress on supply chains, decreased government earnings, collapsed tourism industry, downsized consumer activity, plunges in fuel consumption, and boost in LPG sales. To add further escalation with its trading neighboring country China.

This review paper subsets as: The present section discusses the measures taken by the Government of India. The next section investigates the variations in demand-supply and its effects due to the pandemic impact on the Indian renewable energy sector. The third section acknowledges the India- China dispute, India- China trade dependencies, and its effects on the Indian renewable industry studied using published findings from IEA, IRENA, BBC, and World Economic Forum. The conclusion shares advices to overcome the impacts that prevail in the power and energy sector, policy implications that can be helpful.

## Covid-19 Impact Analysis on Indian Renewable Energy Market

### A. Electricity: Supply and Demand Trends

In India several lockdown restrictions were imposed which brought down the socio-economic activities to halt only activities directly related to essential goods and services were unimpeded this influcended the consumption pattern of the electricity. We searched and complied the information to assess the Market Clearing Price (MCP) which represents the least price at the point of junction between aggregated supply and demand curves. We found that In March and April 2020 the average MCP was Rs.2456/MWh and Rs.2448/MWh, respectively, whereas in March, 2019 it was reported to be Rs. 3118/ MWh and Rs.3221/MWh in April 2019 respectively. Fig: 1.2 representshow the restriction measures imparted contrived the daily power demands, and how these adjustments affected in decisive aspects. For example: managing the grid, balancing the generation mix, to outlay plan for new electricity generation owing due to lockdown to meet demand profile not found in previous situations. Even after unlock introduced growth is still slow.The paper examines the comparative advantage of India in textile exports.


Figure 2: All-India Maximum Demand and Energy Met during Management of COVID -19 in comparison to 2019 Data sets.

### B. Extension of Renewable Energy Projects

On 17th April 2020, the Ministry of New & Renewable Energy (MNRE) (MNRE) under the government of India issued a circular to treat lockdown due to COVID-19 as Force Majeure to all its implementing agencies: State Renewable Energy Departments, agencies under Power/ Energy Departments dealing in renewable energy. The agency granted an extension to ongoing renewable energy projects covering the lockdown period with an added thirty days to substitute till normalcy returns. The order was in a general form. In other words, it absolutes extension to all ongoing projects. The force majure also acknowledged the issues related to the transportation of goods and services due to the disruption of the supply chain caused by lockdown restrictions. On 13th May 2020 to address the liquidity issues faced by the contractors. The Department of Expenditure (DoE) under the Ministry of Finance issued a circular. According to the circular, the bank guarantees can be allowed to be to solar project developers provided they do not owe defaults in their contractual obligations and to those who file for relief under the force majure clause. On 30th June 2020, MNRE released another circular related to renewable energy projects under implementation. It gave an additional time extension for five months: 25th March 2020 to 24th August 2020. Further on19th August 2020, the MNRE issued a notice for partial release of Performance Security/ Bank Guarantees (PBGs) to contracts that have reached partial completion.

## C. Future of Renewable Energy Projects

The progress of India's renewable energy projects could witness a delay. As the government shifted its focus to reduce the impact of the coronavirus on public health, saving lives, and reviving the economy as its top priority.

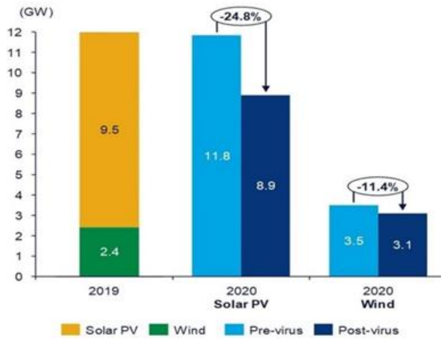


Figure 3: Annual- Added installation: 2019 Vs Pre-and Post Virus 2020: India (source: Wood Mackenziie)

As reported by the Niti Ayog that targeted the year 2022 to achieve the energy of 175 GW from renewable energy and 450 GW energy from non-fossil sources by 2030 could be deferred. As per Wood Mackenzie, the research firm is actively evaluating the power and renewables projects worldwide across. They analyzed a 3 GW of solar photovoltaic and wind project installation cut-off due to the initial 21-day lockdown. They revised their full-year solar projection down to 25 % to around 8.9 GW of solar PV installations for the year. They also redacted the wind projection down by 11 % to 3.1 GW for the year 2020 as depicted in fig: 1.3. These forecasts will be downgraded further as the lockdown extension kept on increasing.

**D. Effect on the Indian Electricity Market**

Presently the Indian Power sector has two power exchanges, 1) Indian Energy Exchange (IEX) and 2) Power Exchange India Limited (PXIL). The National Load Dispatch Centre (NLDC) under Central Electricity Regulatory Commission (CERC) reported a decrease in 3% of its total demand during the 2nd and 3rd week of March 2020 from the data collected. As a result, the IEX reported a Rs. 2 decrease in spot market price as the demand-supply curve mismatched. The average price of March was Rs. 2.49 per unit. The IEX observed the consumption rate in northern and western regions dropped to 30 % and a drop of 19% in southern regions. The Power Exchange India Limited (PXIL), provided services and support and services to its members and clients to ease the difficulties due to the pandemic. On 6th April 2020, it issued a circular no.290 to reprive the yearly fees to be deposited by its members and clients which was further extended till 31st May 2020. During this period the Members and Clients were given the provision to remain active in its real-time monitoring trading platform 'PRATYAY'. In April 2020, the Indian solar market reported a decrease in its trade volume.

The non-solar clearing price witnessed a steep decrease to Rs 1000 on both IEX and PXIL exchange portals. For solar Renewable Energy Certificate (REC) price was Rs.2400 in IEX exchange and Rs. 2000 in PXIL exchange. For both IEX and PXIL, the aggregate sum was Rs.20842 for solar RECs. Whereas for March 2020 it was an aggregate sum of Rs. 39299 on IEX and PXIL respectively. The IEX trade volume of solar RECs in April 2020 slipped to 59% compared to March 2020. The trade volume on PXIL dropped by 48%. Thus the total trade volume fell to 57% compared to March 2020. As shown in fig: 1.4 the data sets when compared to April 2019 trading sessions there was a 75% reported drop compared to April 2020. The two main reasons behind this fall are lockdown due to covid-19 which led to less participation of distribution companies and introduction to new forbearance prices by the Central Electricity Regulatory Commission (CERC).

**Solar REC Market Trading**

| Exchange | Buy Bid | Sale Bid | Trade Volume | | | | Price Discovered | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Apr-20 | | Mar-20 | | % of Change MoM | % of Change YoY |
| | | | Apr-20 | Mar-20 | % of Change MoM | % of Change YoY | ₹/REC | ~$/REC | ₹/REC | ~$/REC | | |
| IEX | 38,176 | 15,991 | 15,991 | 39,299 | -59% | -75% | 2,400 | 34 | 2,400 | 34 | - | 20% |
| PXIL | 4,851 | 10,127 | 4,851 | 9,383 | -48% | -76% | 2,000 | 28 | 2,400 | 34 | -17% | 11% |
| Total | 43,027 | 26,118 | 20,842 | 48,682 | -57% | -75% | | | | | | |

Data: IEX, PXIL

Mercom India Research

Figure 4: IEX and PXIL Solar REC Market Trading

In September 2020, the IEX reported a decline of 9% in its concatenate net profit for the year 2020-2021. As the unlock measures are being introduced: Industries and offices are returning to work. Energy consumption levels will keep on increasing. The question is how long will it take to reach the pre-lockdown scenario? To speed up the process the immediate challenge is to aggregate resources/ options, introduce business models that will help lift the economy but also ensure its long-term sustainable growth.

## India- China Aggression-2020

### A. India -China Conflict Escalation

For years the two nuclear-armed armies have been engaged across its 3440km shared border area with protruding territorial allegations. On multiple occasions, this conflict resulted in a physical scuffle. The bilateral agreements signed between the countries in 1993, 1996, and 2013 have helped sustain peace and tranquility on the disputed Line of Actual Control (LAC) with no single bullet fired in the last 40 years. On 15/16 June 2020, the military tension escalated near the Ladakh region that claimed the loss of 20 Indian soldiers and 43 Chinese soldiers. However, the Chinese government foreign ministry spokesman Lijian Zhao alleged that the Indian patrolling troops crossed LAC while India referred to Chinese actions as a step towards expansionism. Anti-China sentiment has been on the rise prompted the Indian government to take important decisions to make the country less dependable to Chinese markets.

### B. Change in FDI Policy

Amidst the pandemic, with the hude decline in global share prices, it was observed that multiple Chinese firms participated in hostile takeovers worldwide. On March 25, 2020, the North Atlantic Treaty Organization (NATO) issued guidance that warned against such acquisitions especially in healthcare sectors and industries related to research establishments via Foreign Direct Investment (FDI). On 18 April 2020, the Department of Promotion for Industry and Internal Trade (DPIIT) under the Indian Government released a press note highlighting mended in FDI policy. Now the countries sharing Indian borders will need compulsory government approval for investing in any sector. Experts assume this will give the government ten weeks to complete the approval process and security check-ins.

**C. Vocal for Local**

On 15 August 2020, the Prime Minister of India Shri. Narendra Modi while delivering his Independence Day speech appealed to citizens towards "vocal for local" and stressed his government's outline for Atma Nirbhar Bharat Abhiyan (ANBA). The ANBA was flagged on 12 May 2020 by the Prime Minister. He emphasized seeing business opportunities trapped at the time of the coronavirus crisis. Ongoing increasing tension across India-China borders, the government reiterated citizens to use domestic products to achieve economic self-reliance. The government announced a stimulus package of Rs 29.8 Lakh crore for Atmanirbhar Bharat 3.0. But the question is not the investment but intention? As among thousands of startups lined for investments at par, a few stay afloat. The challenge before the government is how to take out the ones that lack skills and devotions. As the clash between India-China grew further with china refusing to step back from the proclaimed Indian site. India blocked 118 mobile apps with suspicion of Chinese association citing data privacy concerns that could target national security. Is India in a position to boycott Chinese investments/products/services? If we study, China investments are deep-seated at around $6.2 billion invested in the Indian economy. Chinese investment giants like Alibaba, Tencent, Steadview Capital, and Didi Chuxing are prime investors in Indian startups like Bigbasket, Zomato, Delhivery, Byjus, Flipkart, Make my trip, Paytm, Policy Bazaar, and Swiggy. The self-reliance India concept can be a challenge as India accounts for only 3% of China exports. Due to low-cost labor, China offers low-priced goods and services compared to products and services by their Indian counterparts. Thus indirectly slaying the Indian units.

**D. Boycott Chinese products to achieve Self-Reliance India?**

The trade deficit between the two countries is vast. India imports more than it exports to its competing country. In 2018-19 trade deficit was $53.6 billion. As uploaded in the United Nations COMTRADE database, India imported nuclear reactors and boilers worth $13.87 billion during the year 2019. The exsistant imports from China to India are $75 billion/year which depicts India wide dependency on China. Hence taking a major decision to block all trade routes between the countries is impractical. In August 2020, due to various government measures exports from china to India reduced to 25%. In September 2020, Union Minister Piyush Goyal informed parliament that there was a 27.6% decrease in India's trade import with China from April 2020 to August 2020. Even though on the list, China is still in the most favored nation quo. Imports from China in India fell to Rs. 372.24 Billion in August 2020 to Rs. 418.69 Billion in July 2020. Electrical machinery Imports from China for the year 2019 was 34%.

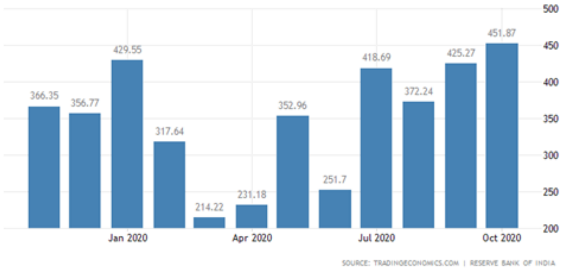

Figure 4: Imports from China in India source: Reserve Bank of India

To support Atmanirbhar Bharat Abhiyan' and 'Make in India' initiative the REC Limited and Indian Renewable Energy Development Agency Limited (IREDA) drew a collective resolution to prefer Indian developers in their projects and to charge low-interest rates to make in India manufactured goods such as solar modules, solar cells, and inverters. Not to import any equipment/materials/goods that have the capacity of domestic production within the country. And if necessary such an order can only be placed after final approval of the Ministry of Power/MNRE. However, the exports to India in China increased from Rs. 425.27 Billion in September 2020 to Rs.451.87 Billion in October 2020. Reportedly, The Union Minister Shri Anurag Singh Thakur MoS Finance shared in Parliament that India took two loans amounting to Rs 9,000 crore from China supported -The Asian Infrastructure Investment Bank (AIIB) and $750-million from Asian Development Bank to assist the government in curbing detrimental concussions of the COVID-19 pandemic on millions of economically weak households. If we compare trade data of past ten years we can interpret China's exports to India is of 2-4% only. They can easily substitute India's alternative with other countries. But for India to substitute China's presence in its trade relations will be arduous. The task of massively excluding Chinese products is feasible only when India has an alternative source that can match the cost, quality and quantity of Chinese products.

The pandemic can be a catalyst for much needed Indian power market reforms. Particularly for Power Distribution Companies (DISCOMS), which are on the lead to combat the pandemic. Despite struggles keeping the power flow continuing. The government needs to set up administrations for the DISCOMS which is capable to harness the defiances and sustain its resiliency. The recovery package plays a critical role, but structural measures are equally essential. Electricity tariff amendments can act as a catalyst to attract renewable energy investments. They can help in boosting small and medium-sized companies, manufacturing units under the Make in India initiatives. For now, the government can continue phasing out china systematically. In recent years China is engaged in trade wars with many countries. This has aggravated nations to look for a Plus One trade strategy to avert spending only in China and to spread business across various nations. The Government of India has put an effort to bring companies that are looking to supplement China. Pro-investment strategies have been developed as well as economic hubs located. The COVID-19 Economic instability shock has induced differences from the previous scenarios. It has led to the alteration of economic forecasts for 2020. For many countries like India, the economic forecast has been revised towards a negative fall downward. With 1.35 billion citizens across India. Reportedly, half of India's total population is young and under the age of 25. The country: 'Make in India' /'Atma Nirbhar Abhiyan'/'Vocal to local' campaign can transform India into an Internationa manufacturing centre facilitating investments, cultivating ideas, and manufacturing innovations. The Government initiatives to create smart cities, encourage renewable integrated power energy, forming trade strategies, and building industrial clusters can increase foreign investments and economic growth.

## Conclusion

The pandemic can be a catalyst for much needed Indian power market reforms. Particularly for Power Distribution Companies (DISCOMS), which are on the lead to combat the pandemic. Despite struggles keeping the power flow continuing. The government needs to set up administrations for the DISCOMS which is capable to harness the defiances and sustain its resiliency. The recovery package plays a critical role, but structural measures are equally essential. Electricity tariff amendments can act as a catalyst to attract renewable energy investments. They can help in boosting small and medium-sized companies, manufacturing units under the Make in India initiatives. For now, the government can continue phasing out china systematically. In recent years China is engaged in trade wars with many countries. This has aggravated nations to look for a Plus One trade strategy to avert spending only in China and to spread business across various nations. The Government of India has put an effort to bring companies that are looking to supplement China. Pro-investment strategies have been developed as well as economic hubs located. The COVID-19 Economic instability shock has induced differences from the previous scenarios. It has led to the alteration of economic forecasts for 2020. For many countries like India, the economic forecast has been revised towards a negative fall downward. With 1.35 billion citizens across India. Reportedly, half of India's total population is young and under the age of 25. The country: 'Make in India' /'Atma Nirbhar Abhiyan'/'Vocal to local' campaign can transform India into an Internationa manufacturing centre facilitating investments, cultivating ideas, and manufacturing innovations. The Government initiatives to create smart cities, encourage renewable integrated power energy, forming trade strategies, and building industrial clusters can increase foreign investments and economic growth.

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