

Impact of COVID-19 on Japan and India: Climate, Energy and Economic Stimulus

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Impact of COVID-19 on Japan and India: Climate, Energy and Economic Stimulus

Nandakumar Janardhanan^a Eri Ikeda^b Mariko Ikeda^c

Key messages

- While the COVID-19 lockdown marks some immediate benefits in terms of improving air quality and rejuvenating eco-system, certain short- and medium-term mitigation initiatives such as renewable energy deployment may get affected adversely due to the disruption in technology development and supply chain.
- The resumption of the gradual but the large-scale economic activities in the post-COVID years may put renewed pressure on the environment.
- The COVID-19 provides an opportunity for structural reforms in the climate strategies and could pave way for green recovery and strengthening the NDC commitments of India and Japan.
- The COVID-19 impacts would give impetus to investment in clean technology development.
- Greater policy attention towards green technology and green investment can boost Japan-India ties for co-innovation in technology development and manufacturing.

Abstract

While the initial pieces of evidence indicate that COVID-19 induced economic slowdown and lockdown present short term benefits to air quality and environment, these pose a double-edged challenge to the world in the long term. On one side, the slowing down of the economy can have an adverse impact on countries' ongoing efforts towards climate mitigation, and on the other, the resumption of the gradual but the large-scale economic activities can put renewed pressure on the environment.

This paper highlights the COVID-19 impacts on Japan and India, and discusses the dynamics of climate mitigation initiatives, energy sector and economic recovery.

As a way forward, the paper points out that, greater policy attention by Japan and India on green recovery can facilitate also facilitate greater collaboration between the two in promoting co-innovation of technologies and manufacturing.

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Introduction

The coronavirus pandemic has made a remarkable socio-economic, health, and environmental impacts on the globalised world. The most notable and common impact is the damage to economic activities due to lockdowns, especially in large global players. Businesses suffer from the fall in the demand as well as the suspension of the production and global trade, and value chains will need to potentially undergo remarkable reshaping. On the environmental side, there are divergent perceptions on the lockdown. There are certain immediate positive effects of improving the air quality in countries which have been witnessing high air pollution. A fall in daily global CO₂ emissions of 17% has also been noted in early April 2020 compared with the mean 2019 (Quéré, et al., 2020). However, a report by the UNEP (UNEP, 2020) highlighted that the average concentration of CO₂ has reached the historical high in April.

The year 2020 was thought to bring significant progress in the global climate mitigation initiatives as the expectation was running high about the 26th Conference of Parties (CoP) which was scheduled to be held in Glasgow, the U.K. However, the COVID-19 impact on the individual countries' mitigation actions and the extent of impact to the short term and long-term climate targets are yet to be determined. In reality, COVID-19 poses a double-edged challenge to the world. On one side, the slowing down of the economy can have an adverse

impact on countries' ongoing efforts towards climate mitigation, and on the other, the resumption of the gradual but the large-scale economic activities can put renewed pressure on the environment.

Asian region plays a remarkable role in the global climate mitigation. The COVID-19 presents varying challenges to the region, especially for major democracies, like Japan and India it brings in a multitude of public policy challenges. Moving their respective economy back to normal and streamlining policies on public health and firming up environmental targets demand greater policy attention. Both India and Japan account for a large share of global GHG emissions, 7% and 2.7% respectively (UNEP, 2019). In this backdrop, this paper attempts to discuss the climate targets and environmental sustainability goals of India and Japan and the how COVID-19 impacts lead to a renewed policy thinking to revive the respective national economy and climate mitigation objectives.

Three different aspects have been discussed in this regard. First, the perception of impact on the climate targets, second impact on the energy sector, the third, role of recovery packages. In the way forward, the paper also highlights the potential opportunities for Japan and India to collaborate, especially in the *co-innovation* (Janardhanan, 2019) (Janardhanan, 2020) of manufacturing to enhance the cost-competitiveness and strengthen their technology collaboration towards green recovery.

COVID-19 Responses from Japan and India

The COVID-19 outbreak has led to a significant level of casualties in several countries. As of 20th of May, 2020 around 4 Million worldwide, with 1, 06,750 infected people in India. Japan, which has approximately one-tenth of the Indian population has 16,385 confirmed cases. The count of fatalities shows that 4.70 % of the total confirmed cases lost lives in Japan whereas India witnessed a relatively smaller casualty of 3.09 % of the total confirmed cases (WHO, 2020). While India has been undergoing the strict nation-wide lockdown since 24th March, Japan implemented a *softer lockdown* where the citizens were *only* advised to minimise public exposure rather than completely restricting their mobility. The latter eventually declared nationwide State of Emergency on 16th April. The lockdown and national emergency in Japan and India have been planned for the period up to the end of May and India are currently starting a phased relaxation of lockdowns.

The COVID-19 outbreak evinces three-fold impacts on climate mitigation and emission reduction plans in Japan and India. First, there was an immediate fall in air pollution and improved water quality across India, thanks to the decline in energy consumption, especially for transportation and industry, and stalling industrial activities due to the restrictions. The International Energy Agency ([IEA, 2020a]) notes that the usage of coal and oil will witness a demand decline in this period, and emissions will decline by 8% in 2020. However, the fall in air pollution could be short-lived as there is a

chance of rebounding emissions as the economy recovers and the society gets back to normal activities. Hence one cannot consider this temporary fall in emissions could make any substantial contribution to the global warming front.

Second, the paralysed economic activities also lead to a fall in productive activities, use of transportation sector as well as the flow of goods, and services. This has a direct implication on the industrial activities that are aimed at manufacturing low carbon equipment and machinery for meeting emission reduction goals in both India and Japan. These industries include renewable energy sector equipment and machine manufacturing, electric vehicle manufacturing and procurement. The health concerns of the labourers employed in these facilities and the economic losses associated with supply disruption of the global value chain (GVC), etc. are expected to have implications for key sectors that have been playing a major role in the greenhouse gas emission reduction. Considering the fact that businesses will focus on the revival of the production activities as recovery begins, the post-COVID period will find emission increasing substantially unless countries are ready to make a new investment in industries to support green recovery.

Third, as the fossil fuel import bill remains to be one of the major expenses, the current low oil price is in favour of import-dependent countries like Japan. In India, regardless of the continuous devaluation of Indian Rupees, the government expects to narrow down the current account deficit in the year ahead due to the benefit from the falling crude prices (Economic Times,

2020a). This also helps the countries plan to heavily invest in the industries and manufacturing which in turn can have certain levels of impact on the emission trajectory.

Impact on climate mitigation goals of India and Japan

The climate mitigation initiatives have been gaining remarkable policy attention in the past several years in both India and Japan. Specific policy targets addressing emission reduction, improvement in the transportation sector, changes concerning industrial energy efficiency and several other economy-wide mechanisms have been supporting the countries' fight against climate change.

India has put forward an ambitious target on renewable energy generation. One of the main questions before India has been about the country meeting the NDC targets of achieving 40% electricity supply from non-fossil fuel. India kept an initial target of achieving 175 GW of renewable installed capacity by 2022 which catapults the demand for machinery and equipment supply critical for building the infrastructure. As the 2022 targets of 175 GW has been closely linked to the 2030 targets of achieving 40% of non-fossil fuel share in the electricity mix, this has been raising concern about the preparedness of India in responding to the COVID-19 induced impact on the renewable deployment. India's dependence on the supply chain from China for meeting majority of the equipment and machinery demand has been a critical challenge for the former. According to the Indian government

sources, India imports about 85 % of the solar cells and modules from abroad ([PIB, 2020a]), of which a significant share comes from China. Though India imposed *Safeguards duty* on imports from China and Malaysia in 2018, the dependency continues as the former has an ambitious target for renewable deployment. On the other hand, India's overall emission targets are in line with its commitments to NDC commitments. As per NDC, India targets to achieve 33-35% of emission intensity reduction. The country has proactively pursued mitigation and adaptation activities and achieved a reduction in emission intensity of GDP by 21% over the period 2005-2014. While the country is confident in achieving the emission intensity reduction target planned for 2030, major challenges will be faced by the short term and medium-term targets like expanding renewable energy development and deployment.

In Japan, one may note a lack of vibrant debate on the COVID-19 impact on climate targets, both short-term and long-term goals. This is partly because of the lack of any interim target before 2030, unlike India. Additionally, the long-term strategy and the 2nd NDC submitted to the UNFCCC by Japan in 2019 and on 30th March 2020 respectively state that the country will stick to the committed plans of 2030 targets. The most notable observation is that 2nd NDC did not raise the GHG emission reduction target after the 1st NDC submission in 2016, which was to achieve 26% of GHG reduction in FY2030 relative to FY2013. It appears that there is hardly any possibility of revising the target in the wake of the COVID-19 crisis. Further, Japan has reduced its GHG emissions for five consecutive

years and by 12% compared to the level in FY2013 (METI, 2020). The regular review of the Plan for Global warming countermeasures, developed in line with that of NDC, is also scheduled for this year; however, there is no clear indication yet that the review could alter Japan's climate target.

The changing policies and approaches by the different governments towards the post-COVID period will play a major role in reshaping their climate mitigation goals. Yet, the focus of many economies appear to be giving significant importance to immediate economic recovery without a specific consideration to environment and climate change issues. Mainstreaming and promoting investment in low carbon arena will be critical to ensure that emissions are in tune with the global objective of 1.5 degree Celsius. India's plans to boost the Micro Small and Medium Enterprises (MSMEs) and Japan's plans for promoting the relocation of its manufacturing from China to other Southeast Asian countries should provide an avenue for accelerating the new investment as well as and meeting emission reduction targets.

Impact on Energy Sector

India and Japan are fossil fuel dependent economies, with lion's share of the petroleum demand met by imports. In commercially traded primary energy mix, fossil fuels (oil, gas and coal) account for 74% and 81% in India and Japan respectively, and renewables and hydropower together filling in 7.3% and 9.6% (British Petroleum, 2019). In particular, for fossil fuels, the dependency for coal is the largest (55%) in India followed by oil (29%), and for Japan, coal is

25% after followed by oil which constitutes 40%. While Japan has nearly no significant domestic production of petroleum and that depends nearly 100% on imports, India imports around two-thirds of the total petroleum consumed.

Specifically with regard to various energy resources, the COVID-19 impact the energy sector directly and indirectly. After the lockdown and the state of emergency declaration in respective countries, India's energy demand has fallen 26% within 10 days, and that of Japan is estimated to be about 25% if the activities in the cities are to be limited [Energy World, 2020b] (電気新聞, 2020). These estimated figures are much larger than the global reduction in demand of 6% [IEA, 2020a] reported by IEA.

As the energy sector in both countries is depending heavily on petroleum imports from overseas regions, the global fall demand for petroleum and the corresponding slump in prices will be beneficial for India and Japan. In India, import bill reduced 9% in the fiscal year 2019-20 though there is no substantial decline in the quantity of import of oil (Economic Times, 2020). This also highlights the resilience of the energy sector in the countries. Though the renewable energy sector is affected temporarily due to the dent in the supply chain, the dependency on fossil fuels will also ensure the quicker revival of the industrial activities in the post-COVID period, offering the cheaper cost for domestic transportation and industry. The rise in emissions due to the surge in fossil fuels can be a concern, however, this would potentially help cushion the impact on the economy.

The imports of coal for both countries also show the decline. India's coal import has fallen 29% in April (News 18, 2020) and Japan's import from Australia as the biggest trader marked a 3% drop in the 1st quarter of 2020 (IEEFA, 2020). In the wake of the COVID-19 outbreak, India appears to take this opportunity to reduce the coal import further, aiming to bring the avoidable coal import to zero by 2023-24 (Energy World, 2020a). However, it is expected that the energy demand will return to the pre-COVID level or more once the economic activities are fully recovered in these two countries. Notably, the revival of the coal sector by the government also indicates that the coal sector will be more active in the years ahead which can point to the potential increase in emissions from its usage (PIB, 2020b). Though some analysis indicated that India's emissions have been reduced by about 1% for the fiscal year 2019-20 and in March alone the emission has fallen 15% (Myllyvirta & Dahiya, 2020). This could be a short term impact as the national lockdown has drastically reduced power sector demand, which is dominated by the coal power generation. This may change in the coming years as the Indian government liberalises the coal sector further as part of the economic stimulus package (Live Mint, 2020b). Under the liberalisation, India plans to offer 50 coal blocks for exploration-cum-production without needing any eligibility conditions for mining sector players, which will allow private sector participation (PIB, 2020b). The impact of this plan by the government on the emission trajectory needs further in-depth analysis.

The other notable outcome of the COVID-19 is that, according to the most recent report by IEA (IEA, 2020b), renewable energy has shown the strongest resilience among the different energy sources, in increasing 5% supply regardless of the disruption in the supply chain globally. Yet, as is seen in the energy mix, for both India and Japan, renewables account for relatively smaller share hence the decline in energy demand that the impact on renewable production seems to be limited. In Japan, the spot price of electricity has been near zero, especially in the daytime on weekends, reflecting the oversupply of photovoltaic power generation [日経新聞, 2020]. In Japan, the solar power sector is largely dependent on the import from China, whose production and procurement of the input materials have been largely disrupted [Solar Depot, 2020] due to the supply shortage from China.

In the case of India, due to the COVID-19 impacts, a delay of at least 3 GW installation with regard to the planned target of 2022 is expected (Energy World, 2020c). The aggressive shift to renewables, lack of adequate supplies of equipment and machinery will be one of the critical reasons behind the potential fall in achieving the 2022 goal. For the past several years, due to the highly ambitious renewable energy target, India depends heavily on the overseas supplies of equipment and machinery. As indicated earlier, a significant share of the supplies for solar energy installation is from China (Economic Times, 2020d). However, the concerns about the quality of this equipment (Live Mint, 2017) and the dent the imports make on the domestic manufacturing has been

pressurizing the government to reconsider the long term continued dependence (Mehrotra, 2019). There have been indications that boosting the domestic industry can help in developing cost-effective renewable energy equipment manufacturing. The current disruption is opening up the opportunity for domestic companies to consider manufacturing locally or diversify imports. The post-COVID policies of the Indian government will also be directed towards encouraging the domestic industry following the call to support the local economy by the Prime Minister (Prime Minister of India, 2020).

With regard to the nuclear power sector, the Indian government has already declared its intention to help the atomic energy sector with stimulus (Live Mint, 2020c) package. Though currently the reform targets only medical, technology and research fields, the importance of nuclear power generation would also generate public interest as the economy revives. For Japan, the demand for energy has fallen by 83000 tons of oil equivalent per day (Suehiro, 2020). Experts also observe that there is a need to monitor the loss of electricity demand as a result of the declaration of a state of emergency (Shibata, 2020). Though the petroleum sector has been witnessing a slump in demand currently, the demand for oil, gas and LNG could be turn out to be more than normal times by 2021, if the impact of Pandemic can be controlled (Koyama & Suehiro, 2020).

With regard, renewable energy sources as well as nuclear, the Japanese government has been targeting to achieve 22% each out of the total energy mix. The country also is having an

ambitious target of developing hydrogen fuel. It seeks to commercialize hydrogen power generation as well as international hydrogen supply chains and cut the unit hydrogen power generation cost to 17 yen/kWh around 2030 (METI, 2017). With regard to the domestic energy mix, the pandemic has not made any dent, nor did it ignite any notable debate to alter energy policy in any significant way.

Economic Slowdown and Stimulus

The major impact of the COVID-19 on the global economy is the unavoidable recession. The decline in economic activity and energy demand caused by the Covid-19 pandemic will far exceed those experienced during the 2008–2009 financial crisis, which was considered at that time to be a once-in-a-century crisis (a fall of 1.0% in oil demand in 2009) (Suehiro, 2020). Both Japan and India have already announced stimulus packages to bail out the economy, with India announcing a total of \$266 billion (₹20 trillion INR), which is roughly 10% of GDP, and Japan announcing \$1.1 trillion. The country also aims to enhance the package by adding another ¥100 trillion (\$928 billion) (Akiyama, 2020). Both the countries' packages are counter-cyclical expansionary policies, with particular focus on the economic revival including the direct cash transfer, providing and/or moratorium of the loans, and increasing the health expenditure. For both countries, the environmental policies are largely shadowed by the economic focus, there is an increasing interest from the

respective governments (METI, 2020) (Prime Minister of India, 2020) as well as the public debate that point to the need for “green recovery” from COVID-19. This is critical as the economic stimulus directed at recovery will need to contribute to the transition toward resilient and decarbonised societies. (Mori, et. al., 2020).

The rebuilding of the supply chain is especially crucial for mitigation policies. The disruption of the supply chain and product access to the market will be detrimental to the energy transition. For the new and renewable energy sector, the economic recovery will bring life. In several countries across the world, the economic recovery has been considering the new and energy sector as one of the major sectors that demand huge stimulus. In the case of India, though the government expects a 3GW shortage in achieving the 2022 target, the later years could witness a remarkable surge in investments.

The domestic manufacturing industry will also benefit from the potential growth of MSME sector and the surging need for the energy sector. The MSME sector is playing a crucial role in India’s economy and accounts for around 30% of the country’s GDP (PIB, 2019). According to estimates, India has about 63.05 million micro industries, 0.33 million small, and roughly 5,000 medium enterprises (ET Rise, 2019). Hence the stimulus package will be contributing to the revival of the industry. As the supplies from China have been affected, domestic industries will slowly fill this gap. Currently, about 27 percent of India’s automotive part imports are from China (ET Markets, 2020). In the case of

India, the country could attract global companies as one of the relocation destinations, which will further support India to progress on renewables manufacturing (Inambar, 2020). The government’s call to boost domestic manufacturing will not only help source a critical share of the production of the automotive components from domestic sources but also facilitate newer industries to be relocated to India.

Another key support from the government is the subsidies and loans for corporations to restructure the supply chain. In Japan, this includes bringing back the production base to Japan from overseas (Japan Times, 2020), and offering financial support for the investment and compensation for the loss of revenues. The government is also considering to diversify the production activities to other countries than depending on China alone to meet the major manufacturing activities. It is estimated that more than half of the total MSMEs are affected by the COVID-19 as many of these MSMEs are the sub-contractor of the large industries. Although the price of solar panels produced in Japan has lost the cost competitiveness to China, if this shift also includes the renewable sector, procurement domestic usage can be easy. Japan has recently issued “Concept paper on climate finance transition” on 30th March, recognising the importance of making finance to flow for de/low carbon activities such as renewables but also transition [METI, 2020] worldwide. Here, one of the topics highlighted is the reduction of GHG emission from the value chain, which could be also an advantage for bringing the industry back to Japan.

The other key issue is direct finance for renewable projects. The continuous flow of finances has been the backbone for implementing several actions that have direct or indirect mitigation benefits. According to India's NDC, as per the preliminary estimates, the country would need at least USD 2.5 trillion (at 2014-15 prices) for meeting climate change actions between 2014 and 2030 (Government of India, 2015). India has already allotted record-high budget on power and renewables this year and supporting the off-grid solar and on-grid solar pump programmes (MERCOSUR, 2020). There is a consensus that this budget is supportive of the renewable industry. Enhancing the capacity of institutions as well as human resources are key steps towards strengthening India's actions in both mitigation and adaptation. Diffusion of advanced technology, training as well as upgrading the capacity of personnel at national and subnational institutions have been a continuous process. In this regard, the government has already earmarked amount equivalent to 2.5% of the annual 'salary budget' of each ministry to be allotted for capacity building as part of the National Training Policy (Government of India, 2015). International finances set to play a crucial role in the prioritising the climate mitigation actions in the developing world. Developed countries have pledged to mobilise 100 billion USD per year for developing countries. It is yet unknown whether the contributions from advanced countries which are worst hit by the COVID-19 will be affected, or diverted to tackle the domestic crisis. For now, there appears to be no discussion on the change in contributions by Japan.

The way forward: Common Goals, Shared Pathways

While COVID-19 has caused undeniable damage to human life and economy in India and Japan, both the countries have evinced mixed responses to the impacts. As is argued, missing the mitigation target for the short term might be inevitable, but governments need to consider plans for sticking to longer-term plans. In this regard, the COVID-19 crisis provides the opportunity to redraw the strategies on climate change. The crisis has undeniably brought some disruptive policy thinking to create a new pathway, in the direction of strengthening the economy and enhancing the resilience of the society in withstanding crises. This inward-looking policy shift can help address the vulnerability of society and enhance resilience to the disruptions in the global supply chain.

In the wake of the pandemic, two specific policy elements have become visible in both India and Japan. First, both countries are considering to promote diversification of the supply chains and strengthening domestic manufacturing. Japan has called for diversification of supply chains and announced 23.5 billion Yen to meet this plan (Mainichi Japan, 2020). It is also aiming to enhance domestic manufacturing in small and medium-sized companies. To make the manufacturing competitive, some of the industries that have been affected adversely by the outbreak will move out from China to Southeast Asian countries. In the case of India, it has outlined a strategy to reduce dependency on external supply chains and strengthening domestic production facilities through the

Indian Prime Minister Narendra Modi's call for self-reliance (*Atmanirbharta*). This has strong foundations of the Gandhian philosophy of *Gram Swaraj* in which Mahatma Gandhi has called for making the country's villages self-sufficient as a way forward for enhancing resilience and the domestic economy. Although the current recovery package is unclear with the renewable sector manufacturing, the general direction of the governments indicate that promoting domestic manufacturing and having lesser exposure to the global production chain will be critical for the country.

Globally, promoting low-carbon development is estimated to generate \$26 trillion economic benefits, along with the large scale job creation (Mounford, 2020). This opens up an avenue for India and Japan to jointly shape a pathway towards stronger technology collaboration in promoting the competitiveness of the manufacturing and renewable energy sector, as well as meeting the climate targets by accelerating the low carbon development and green recovery.

Although India and Japan have been collaborating on the advanced technology front, several inherent barriers limit the speed and progress. Affordability of the imported technology and adaptability of the technology to the local conditions continue as critical barriers. To overcome these barriers *co-innovation* will be a potential alternative, where India and Japan jointly conceptualise, produce and market equipment and machinery, prioritising cost-competitiveness as well as adaptability to the developing country market. India-Japan joint venture facilities benefiting from the current pro-investment policy environment in India (outlined through policies such as Make-in-India, Invest-in-India and Zero-effect-Zero-defect) can be a stepping stone in this direction. A Japan-India co-innovation initiative can also benefit from the wider acceptance of the latter's technologies in India, as well as the political proximity between the countries. India's plans to enhance self-reliance in manufacturing and Japan's plans for diversification of manufacturing and production chains can catalyse the initial steps towards co-innovation.

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