Chapter 5

Policies on Green Recovery for India

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Chapter 5

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The Energy and Resources Institute

Chapter 5: Policies on Green Recovery for India

1. Setting the Scene

The COVID-19 pandemic has placed before us the unprecedented challenge of controlling the spread of infection without compromising socio-economic growth. Globally, the initial measures undertaken to control the spread of infection in the form of lockdown restrictions soon led to growing concerns of widespread and growing socio-economic challenges across countries. Worldwide, millions of businesses have suffered losses, regional supply chains have been disrupted, and large numbers of planned investments have been affected. Correspondingly, many people across the world have lost their jobs or suffered from wage cuts, pushing millions into poverty. It is estimated that the pandemic has pushed as many as half a billion people into poverty, leading to an increase in global poverty for the first time in 30 years (Sumner, Hoy, and Ortiz-Juarez, 2020).

An estimation of the magnitude of the job losses due to the pandemic by the International Labour Organization (ILO), taking the loss in global working hours as an approximation, suggested a loss of nearly 400 million full-time jobs from April to June 2020. Further, as the lockdown restrictions were expected to ease by the end of the year, in the baseline case, the ILO projected a loss in global working hours equivalent to 140 million full-time jobs in the last quarter of the year, whilst a loss equivalent to 340 million full-time jobs was predicted in the worst event of a second wave (ILO, 2020).

The pandemic has even more serious ramifications for countries like India, where sustained economic growth is critical for meeting development objectives. Rapid and inclusive growth has been highlighted as an overriding development priority in India's nationally determined contribution (NDC).

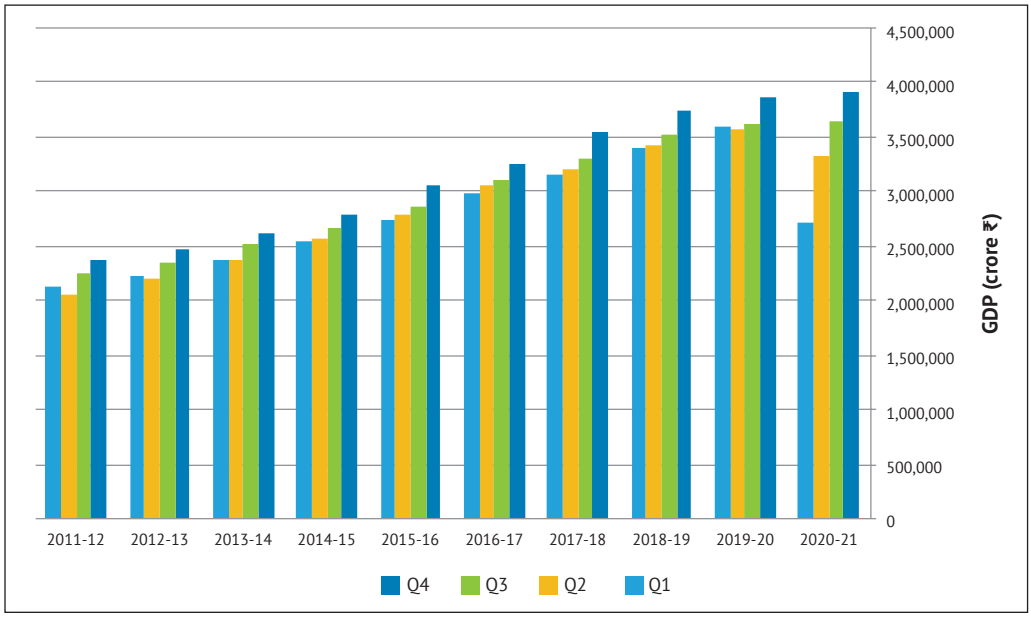
As the global infections are nearing 40 million, India, with around 7.2 million cases (Worldometer), ranks second in the list of worst-hit countries. India had already been witnessing a pre-pandemic slowdown. India's gross domestic product (GDP) grew at 4.2% during 2019–2020 compared to 6.1% during 2018–2019. GDP in Q4 2019–2020 grew at merely 3.1%. The economic impact of the 2020 coronavirus pandemic in India has accordingly been largely disruptive.

The current pandemic has magnified these pre-existing risks to India's economic outlook.

As per the latest statistics,[1] Indian GDP for 2020/21 was estimated at ₹135.13 lakh crore (at constant 2011/12 prices), against ₹145.68 lakh crore in 2019/20. Compared to the previous year's GDP, GDP for 2020/21 showed a 7.25% decline, whereas 2019/20 showed 4.04% growth over the previous year's GDP. Due to the COVID-19 pandemic, GDP declined in the first 2 quarters of 2020/21 compared to the previous year (2019/20). Whilst GDP for Q1 2020/21 declined by 24% (compared to GDP for Q1 2019/20) (as indicated in Figure 5.1), Q2 2020/21 GDP declined by 7% (compared to GDP for Q2 2019/20). In fact, GDP in Q1 2020/21 almost reached the level it was in Q1 2014/15. However, Q4 2020/21 GDP showed growth of 1.6% growth over Q4 GDP of the previous year (as indicated in Figure 5.2).

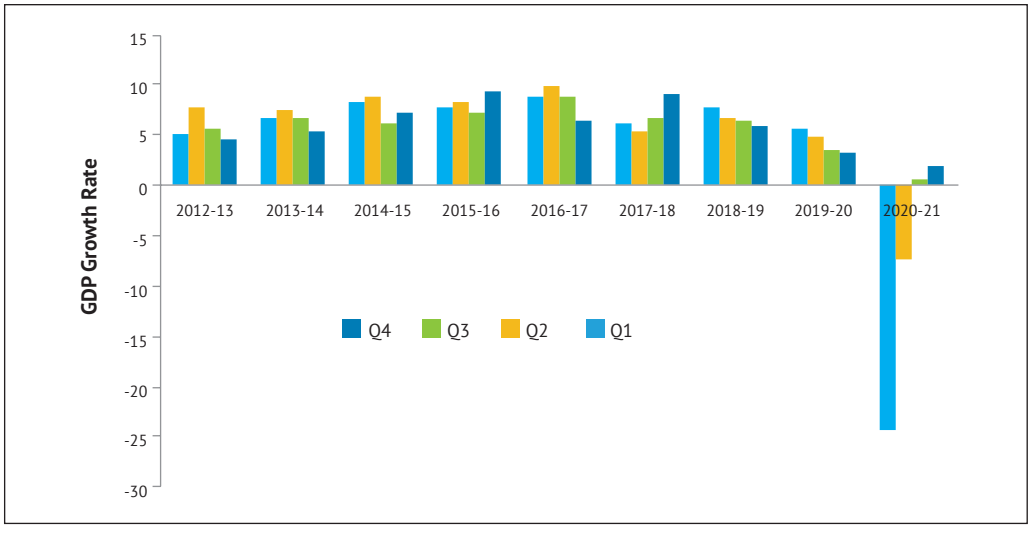
[1] https://statisticstimes.com/economy/country/india-quarterly-gdp-growth.php

Figure 5.1 Recent Trend in India's Quarterly GDP (constant 2011/12 prices)



GDP = gross domestic product.
Source: Statistics Times. Quarterly GDP Growth of India. https://statisticstimes.com/economy/country/india-quarterly-gdp-growth.php (accessed 21 June 2021).

Figure 5.2 Growth in Quarterly GDP in Recent Years (Compared to the Same Quarter of the Previous Year)



GDP = gross domestic product.
Source: Statistics Times. Quarterly GDP Growth of India. https://statisticstimes.com/economy/country/india-quarterly-gdp-growth.php (accessed 21 June 2021).

The countrywide lockdown imposed in India in March 2020 and the sudden closing of almost all manufacturing and commercial units (except a few under emergency services) led to an unexpected economic demise. All sectors excluding agriculture were adversely affected by the COVID-19 pandemic. During this period (as indicated in Table 5.1), agriculture showed growth of 3.5% and 3% in the first 2 quarters (vis-à-vis the similar quarters of the previous year). In Q1 2020/21, whilst the industry sector observed a 36% decline, a 3% decline was observed in Q2 compared to the same quarter of the previous year. In the same period, the service sector observed a 21.5% decline in Q1 and an 11.4% decline in Q2. In Q1 2020/21, the sector that suffered the most adverse impact was construction (49.5% decline), followed by trade, travel, transport, and communication services (48% decline) and manufacturing sectors (36% decline). However, in Q2, the electricity, gas, and water supply sector observed negligible (2.3%) growth. All other sectors were just able to manage to reduce the rate of decline in Q2 2020/21. In Q2, the trade, travel, transport, and communication services sector was the sector with the highest adverse impact (16.1%). Even though the countrywide strict lockdown ended after Q1, due to various internal and external restrictions (movement across areas, health and hygiene, etc.), the sector failed to recover like other sectors did. Within this sector, travel and tourism was the most important component that faced the most severe impact of the pandemic (see Section 2.6). However, after the strict lockdown period, the economy recovered slowly (as indicated in Figure 5.2). In fact, the overall GDP decline was 7.25% in 2020/21, which was slightly better than the expected decline of 8%.[2] However, the breakout of the second wave of the pandemic was another blow to the economic recovery of the country. To control the second wave, various states imposed partial/strict lockdowns in various phases during April–May 2021. According to the Reserve Bank of India (RBI), the impact of the second wave is expected to be temporary and likely to affect the first two quarters of 2021/22 only. Recent RBI estimates have revised the 2021/22 GDP growth to 9.5% from its previous estimate of 10.5% and also revised the quarterly GDP growth as indicated in Figure 5.3. On the other hand, as per recent World Bank estimates, GDP growth for India in 2021 (financial year 2021/22) could be as high as 12.5% (as indicated in Figure 5.4), which would be the highest growth amongst neighbouring countries. However, observation reveals that India was the most affected country by the COVID-19 pandemic amongst its neighbours[3] in 2020. Thus, even normal economic recovery would look high when compared with 2020 GDP data. Based on India's actual GDP and the forecast by the World Bank's World Economic Outlook, compared to the average GDP for 2017–2019, the forecasted GDP for 2021 is estimated to show only 2.2% growth. Again, as per WEO estimates, India could maintain 7% GDP growth until 2026, which is only comparable with the economic progress of Bangladesh. Consecutive GDP forecast comparisons (forecast by World Bank) indicate that the GDP forecast was revised downward for India as well as all its neighbours as a result of the COVID-19 pandemic.

2 https://www.hindustantimes.com/business/rbi-cuts-2021-22-gdp-growth-forecast-to-95-101622833373551.html

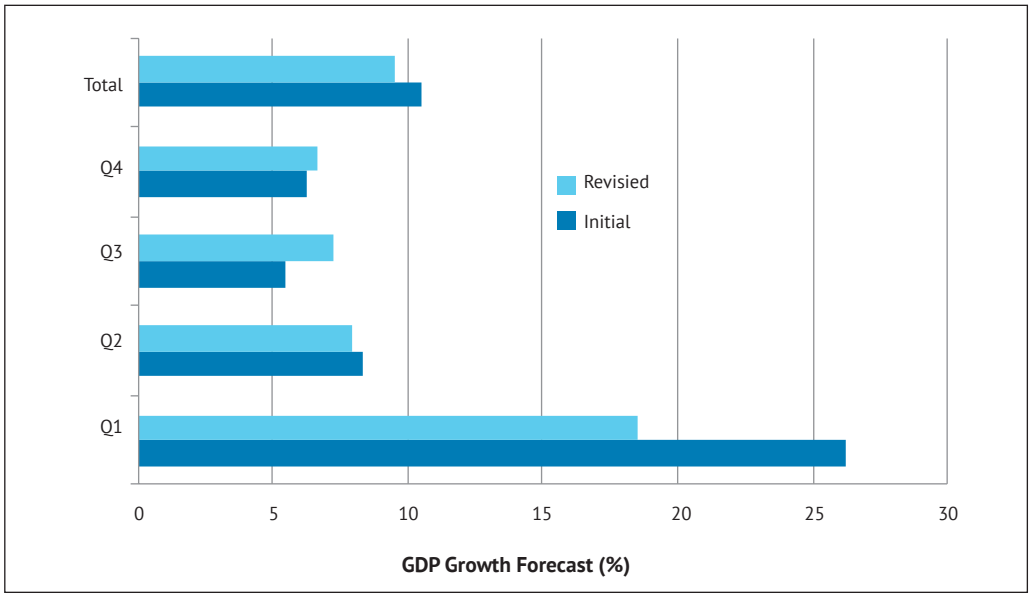
3 https://thewire.in/health/covid-19-data-in-south-asia-shows-india-is-doing-worse-than-its-neighbours

Table 5.1 Sector-wise Quarterly GDP Growth for 2020/21 vis-à-vis 2019/20 (%)

		Q1	Q2	Q3	Q4
1	Agriculture, forestry, and fishing	3.54	3.04	4.53	3.1
2	Industry Sector	-35.83	-2.99	2.91	7.93
2.1	Mining and quarrying	-17.17	-6.52	-4.44	-5.75
2.2	Manufacturing	-35.96	-1.51	1.7	6.93
2.3	Electricity, gas, water supply, and other utility services	-9.86	2.29	7.29	9.14
2.4	Construction	-49.47	-7.22	6.48	14.53
3	Service Sector	-21.46	-11.43	-1.21	1.5
3.1	Trade, hotels, transport, communications, and services related to broadcasting	-48.05	-16.12	-7.9	-2.31
3.2	Financial, real estate, and professional services	-5.04	-9.1	6.67	5.38
3.3	Public administration, defence, and other Services	-10.22	-9.22	-2.18	2.27
	Gross value added	-22.37	-7.31	1.04	3.72

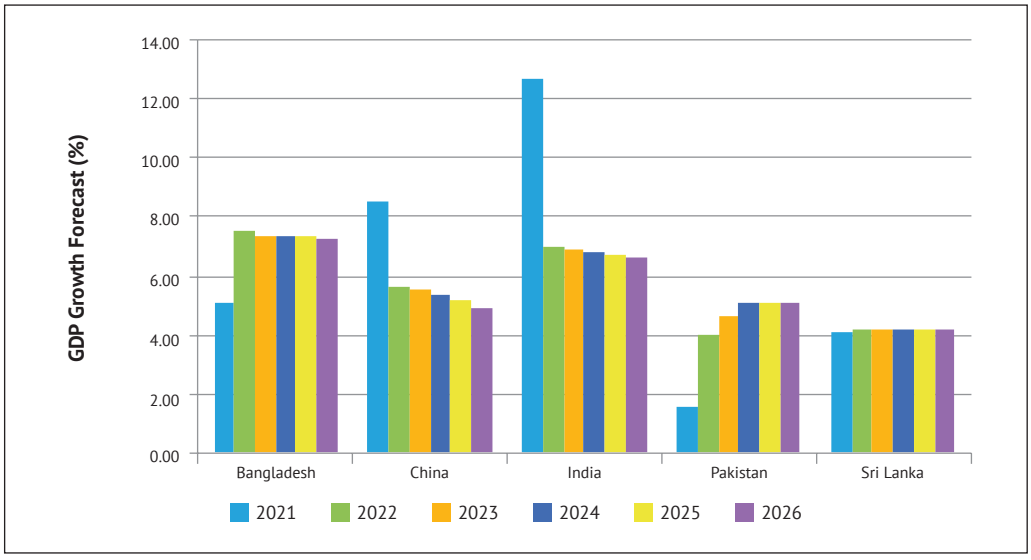
GDP = gross domestic product.
Source: Statistics Times. Quarterly GDP Growth of India. https://statisticstimes.com/economy/country/india-quarterly-gdp-growth.php (accessed 21 June 2021).

Figure 5.3 GDP Forecast for 2021/22



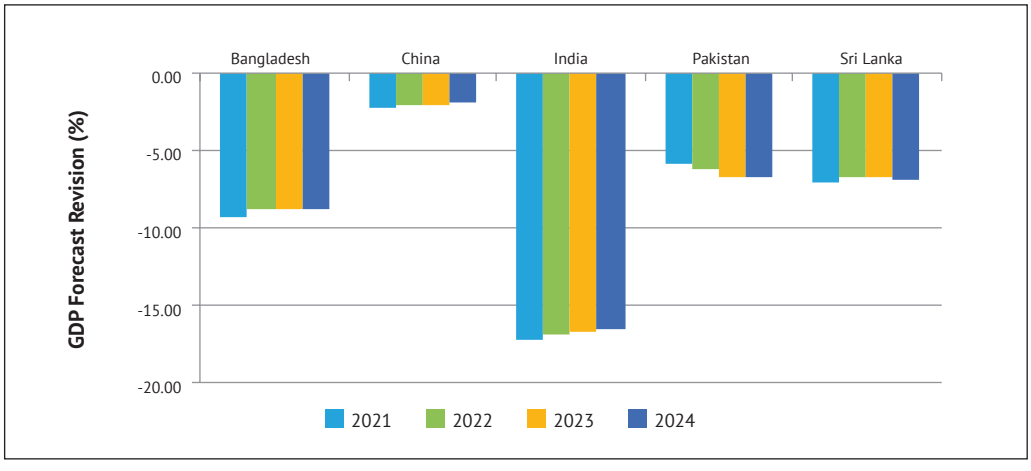
GDP = gross domestic product.
Source: Hindustan Times (2021), 'RBI Cuts 2021-22 GDP Growth Forecast to 9.5%', Hindustan Times, 5 June 2021. https://www.hindustantimes.com/business/rbi-cuts-2021-22-gdp-growth-forecast-to-95-101622833373551.html (accessed 1 June 2021).

Figure 5.4 Comparison of GDP Growth Forecasts for Major South Asian Countries



GDP = gross domestic product.
Note: GDP growth is measured by the year-to-year change in GDP (measured in constant prices).
Source: World Bank, World Economic Outlook database April 2021 (accessed 21 June 2021).

Figure 5.5 Revisions to GDP Forecasts in the Pre-pandemic and Post-pandemic Situations



GDP = gross domestic product.
Source: World Bank, World Economic Outlook database April 2021 (accessed 21 June 2021)..

However, amongst major South Asian countries, the downward revision of the GDP forecast was highest for India (as indicated in Figure 5.5), which also validates the fact that India was one of the worst-hit economies in the world.[4] Compared to the pre-pandemic (October 2019) GDP forecast, the post-pandemic (October 2020) forecast for India was reduced by more than 15% (as indicated in Figure 5.5), whereas the downward revision was only 2% for China and 6%–7% for Pakistan and Sri Lanka.

Unemployment and poverty are the two most crucial aspects of the COVID-19 pandemic other than the health issue for all economies. Across the world, almost all sectors have been affected by the recent pandemic. Due to the imposition of the countrywide lockdown, the complete closure of manufacturing and commercial units (except a few under emergency services), and various restrictions (travel and hygiene-related), India become one of the most vulnerable victims of the recent pandemic. Due to the significant share of the unorganised sector in the Indian manufacturing and service sector, estimating the job losses is difficult and varies across studies. As per the Centre for Monitoring Indian Economy (CMIE) economic outlook, the unemployment rate in India was 7.8% and 8.8% in February 2020 and March 2020, respectively (as indicated in Figure 5.6). Due to the imposition of the lockdown and the sudden closure of industries, unemployment suddenly increased and was the highest in April 2020 (23.5%) followed by May 2020 (21.7%). After the strict lockdown period, as the economy was opening its industries, the unemployment rate declined and reached 6.5% in November 2020.

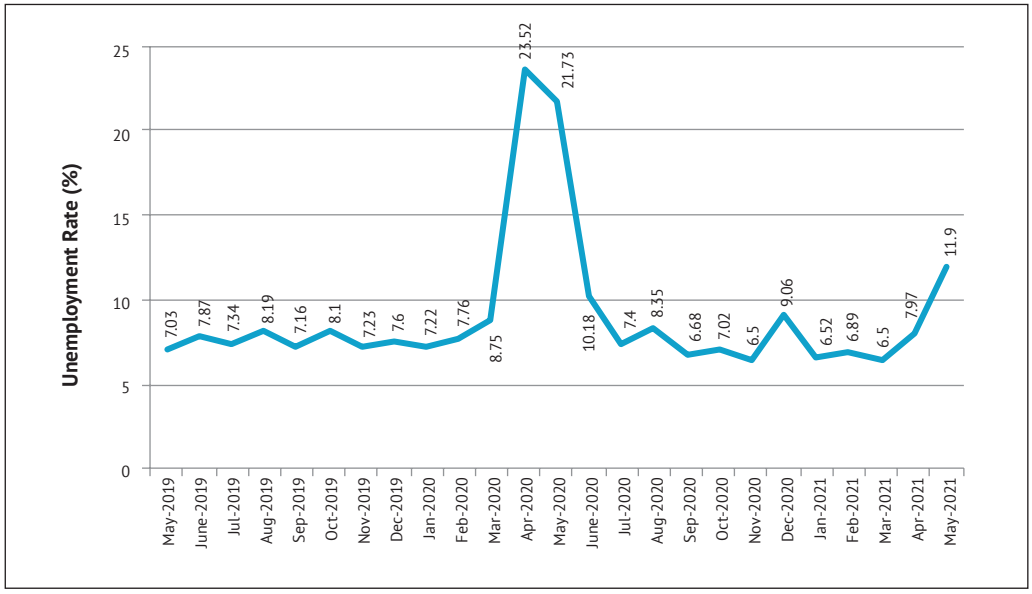
However, because of the economic slowdown, unemployment started to increase again and reached 11.8% in May 2021 due to the second-phase lockdown (COVID-19 second wave) in many states.

As per an ILO-ADB (2020) study, 41 lakh youth lost their job in India due to the COVID-19 pandemic. According to this report, youth (aged 15–24 years) were hit hardest compared to adults (aged 25 years and above) immediately after the crisis. The report also highlighted that approximately two-thirds of firm-level apprenticeships and three-fourths of internships were wiped out due to the pandemic situation in India. According to another estimate, youths in the age groups 20–29 (8.9%) and 30–39 (8.7%) were mostly affected by the job losses.[5] However, people in the age group of 40 years and above were in a relatively better position in terms of job opportunities. The cumulated job experience and/or various skills acquired by this group might play an important role in this context. Moreover, a CMIE (2021) unemployment report confirmed that the unemployment rate is highest amongst young people (15–24 years of age) as well as for persons with educational qualifications at the graduate level and above.

[4] Other badly affected countries across the world (in terms of the decline in real GDP) include Mexico, Argentina, France, the United Kingdom, and Spain, as indicated by International Monetary Fund as well as World Bank GDP estimates.

[5] https://www.statista.com/statistics/1125798/india-covid-19-impact-on-job-loss-by-age-group/

Figure 5.6 India's Monthly Unemployment Rate in the Recent Period



Source: CMIE Economic Outlook.

The same report also highlighted that the female unemployment rate is more than double the male unemployment rate, whilst the urban unemployment rate is significantly higher than the rural rate. A report by Naukri (2021) compared job vacancies (in the white-collar, urban, organised corporate sector with a focus on service industries) in January 2020 and January 2021 and observed that job opportunities declined by 26% in January 2021 (compared to January 2020) for candidates with 0–3 years of experience and 19% for 4–7 years of experience. The study found that job opportunities declined for other groups of candidates also, but the impact was relatively less. The same study also analysed the loss of job opportunities across various sectors. As per the report, the sector with the highest impact from COVID-19 (measured by a decline in job opportunities) was the hotel/restaurant/airlines/travel sector (61% decline), followed by the oil and gas sector (52% decline), telecom/internet service providers (34% decline), and retail (29% decline). Pharma/biotech (9% decline) and medical/healthcare (12% decline) were the least affected industries due to their growing importance in this pandemic and the aftermath situation. IT/software (11% decline) was another industry segment where the impact was relatively less, due to its growing importance in the new-normal world with greater preferences for 'work from home' and 'distance work' environments.

The COVID-19 pandemic also highlighted the stark inequalities within society and brought back into focus the already critical issues of poverty, inequality, and the environment and ecological linkages. The worst affected during the lockdown were the daily wage earners and the migrant labourers, whose livelihoods saw a complete disruption, and with no means to survive in the cities, large masses of migrants were forced to return to their villages and hometowns under extremely trying

conditions. Governments will need to introduce long-term legislation directed at improving social welfare in order to address the vulnerabilities of these most economically disadvantaged sections of society.

Whilst several offices and businesses were able to make use of IT to continue work-from-home arrangements, it was again the more vulnerable groups that had no such option. At the same time, several businesses related to travel and tourism, entertainment, etc. also closed down or were forced to let go of their workforce, at least partially, rendering several jobless at the end of the lockdown.

The role of digital technologies/IT saw an upswing, with education in particular shifting to a completely online mode since the lockdown. Similarly, there was a marked shift towards e-commerce during this period. However, there is considerable uncertainty regarding how long these trends might last.

One of the upsides of the lockdown was the stark improvement in the local environment. Environmental consciousness increased during this time with sudden reductions in pollution and an evident improvement in the local environment. Cities across India saw clear blue skies, the return of several species of flora and fauna, and clear sparkling water in rivers and streams that had degraded over the years. This was an eye-opener in some sense, which helped bring the realisation that a slowdown in human activities could in fact bring about such massive transformations in the surrounding environment rather quickly (Karnad, 2020). The decrease in fossil fuel consumption due to reduced activities across sectors has contributed to India's greenhouse gas emissions falling for the first time in 4 decades (Carbon Brief, 2020). Whether the learnings of behavioural changes will have long-lasting effects will depend on a multiplicity of factors. If the behavioural changes are to be maintained, efforts will need to be directed by providing appropriate cues and nudges.

India has been seen as one of the few countries with an NDC that is compatible with the Paris Agreement goals and as a global front-runner through the International Solar Alliance. With several policies and programmes directed at moving towards a low-carbon economy, India at this juncture needs to ensure a 'green recovery' as it puts in place economic, social, and environmental measures to emerge from the impacts of COVID-19. The economic slowdown has created new challenges for India's clean energy transition, including liquidity and financing constraints, supply-chain shortages, shifting priorities in the public and private sectors, a reduced workforce, and job losses. The impact of COVID-19 on India's clean energy transition will therefore need to be managed in order to keep up the momentum of policies and measures in the pre-COVID era.

2. Impacts of the Pandemic

With the lockdown in place during the initial months of the pandemic, India witnessed several impacts across the various economic sectors and activities. Some of the key impacts were witnessed in terms of a slowdown in economic growth, reduction in energy demand (specifically power demand), disruption in supply chains, reduced travel demand, and shutdowns/partial closures of industrial units.

In this paper, we focus mainly on the power, transport, and industry sectors, which hold the most relevance from a green recovery viewpoint.

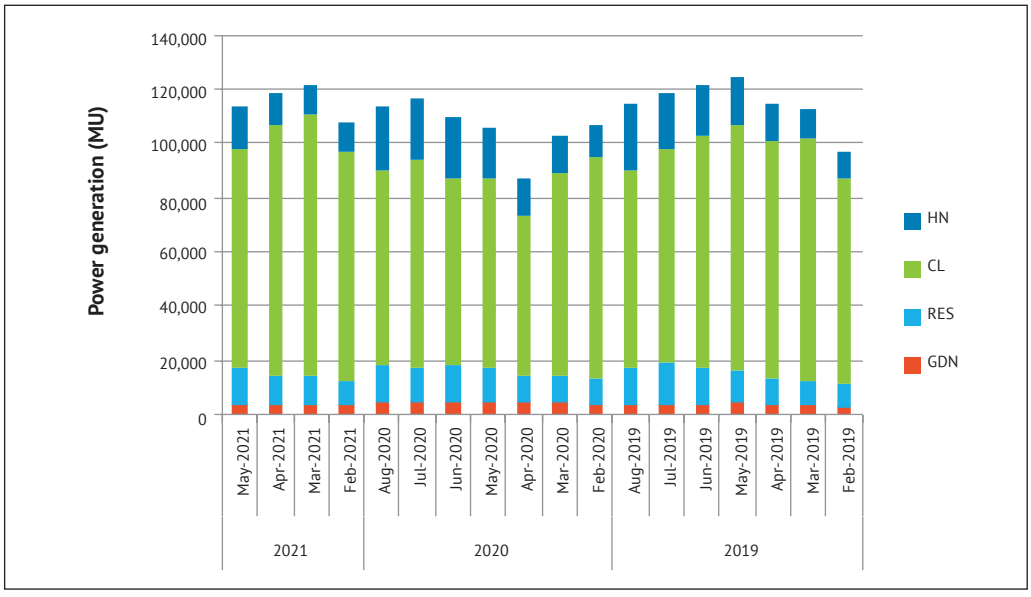
2.1. Impact of COVID-19 on the power sector and current measures for recovery

During the pandemic, as a strict lockdown was imposed in the last week of March 2020, almost all commercial and industrial units (except a few to serve essential services) were closed. This led to a significant reduction in power demand. Compared to the same month of 2019, monthly power generation was reduced in 2020 until August 2020, with the biggest dip in April 2020. When the strict lockdown ended, power demand increased with economic recovery. From September 2020 onwards, monthly power generation in 2020 started to surpass the monthly generation of 2019. However, during this pandemic period, the fuel mix for power generation also changed significantly (as indicated in Figure 5.7). The share of non-fossil (i.e. from renewable energy sources (RES), nuclear, and hydro) generation increased from March 2020 to August 2020 compared to the same months of 2019. A detailed analysis of fuel-wise generation reveals that during March–August 2020, monthly generation from gas and diesel was even higher than the monthly generation from these sources during 2019. During April, less than a 1% reduction in the total generation was on account of less generation from non-fossil fuels, whilst 99% of the reduction was on account of lower production from fossil fuels. In fact, the reduction in generation from coal was even higher than the reduction in total generation. Also, whilst the lower demand was mostly on account of the shutdown of coal plants, leading to a higher share of non-fossil generation during the pandemic period, this was largely due to the nature of renewable generation ('must run' and relatively low running costs) rather than a disruption in the coal supply[6]. Within non-fossil generation, generation from RES, nuclear, and hydro increased during the period. However, June–July 2020 witnessed above average rainfall in India. Thus, during these 2 months, due to the high rainfall and low sunlight availability, RES generation was reduced and compensated for by significant higher generation from hydro. From August 2020 onwards, in spite of the declining share of non-fossil generation, the monthly generation of RES increased, but hydro generation was lower compared to the similar month's generation in 2019. As the economy recovered, higher energy demand was mostly met by increasing generation from fossil fuels (coal, lignite, gas, and diesel). This might indicate a lack of reliability on renewable generation. Import dependency on modules and storage technology and the relatively higher prices (generation + storage) of renewables could play an important role in this regard. The incidence of a high share of renewables with declining shares of coal in the case of low demand was reconfirmed by data for the period of the lockdown phase in various states during second the COVID-19 wave in 2021 (April-May 2021).

Distribution companies (discoms) experienced demand reductions of almost 25% versus the 2019 levels since the beginning of the lockdown, facing

[6] https://prsindia.org/theprsblog/impact-of-covid-19-on-the-power-sector (accessed 21 June 2021).

Figure 5.7 Monthly Power Generation by Source



CL = coal and lignite , GDN = gas, diesel and naphtha, HN = hydro and nuclear , RES = renewable energy sources (solar, wind, biomass and others).
Source: Carboncopy. https://power.carboncopy.info/ (accessed 9 June 2021).

potential revenue losses of around 8%–10%. The power distribution companies in India had been facing financial challenges even in the past, but these may be expected to have increased manifold in the period due to erosion in their revenue collection from industrial and commercial consumers due to the closure of these units, the availability of cross-subsidies from these customers, and the non-availability of payments (moratorium on payment or equated monthly instalments as announced by state governments) (Beaton, Viswamohanan, and Aggarwal, 2020) from residential customers despite the increasing demand in this category. India has achieved 100% household electrification through the Saubhagya scheme, with a plan for 24/7 power for all households, but with the poor health of discoms and tariffs remaining partially unrationalised as the subsidies to the rural customer base continue to expand, discoms have been experiencing worsening financial health. Further, upgrading and the digitisation of the grid will be necessary to optimally integrate high levels of renewable energy at a low cost. Therefore, discom health is a critical leverage point for the decarbonisation of India's power sector. Moving ahead with recovery, India needs to ensure that it is able to keep up the momentum of renewable energy growth. Along with managing the structural issues, such as high losses, over-reliance on subsidies and distorted tariff structures, the poor health of the discoms is also a big concern that needs to be managed.

2.2. Current recovery measures in the power sector

The government has provided various intermediary measures under the Atma Nirbhar Bharat (ANB) programme to mitigate the bleak impact of COVID-19 on the solvency of the sector. The measures under the ANB include financial support in the form of a recovery package worth US$12 billion (₹90,000 crore), in addition to other measures like the lowering of the credit requirement for discoms, the allowance of a deposit letter of credit, and the announcement of a power sector reform through the draft electricity (amendment) bill 2020. The stimulus package from the central government includes conditional loans to discoms to pay off generating companies, given the condition that discoms along with state governments will undertake various reform measures. The entire loan amount needs to be guaranteed by the state government in addition to ensuring regular subsidies for discoms. The installation of smart meters or prepaid meters at state government departments for the timely payment of dues to discoms is also required for this loan transfer.[7] These measures were considered to be steps towards electricity sector reform for future benefit. However, there were a few concerns, like the higher rate of interest compared to that available in the market, and the stress on the state exchequer due to other COVID-19 control measures. Along with this financial package, an expansion of the state government borrowing limit was also proposed and permitted as a complementary policy measure.

However, as per the International Energy Agency (IEA), over and above the financial package by the government, the adoption of appropriate structural measures is very important for the improvement of the Indian power sector, which includes electricity tariff reforms, ensuring power quality and reliability, and improving the billing and support of digital payments. In a recent study,[8] Niti Aayog also identified that green recovery in the power sector can bring opportunities, including improvement in electricity distribution and operations and the promotion of the local manufacturing of renewable energy and energy storage technologies. According to a recent Greenpeace study,[9] measures like emphasising the promotion of decentralised models of renewable energy, employment with ecology, and the strict enforcement of new emission standards for coal power plants are also important for the healthy development of the Indian power industry.

Under the ANB, ₹50,000 crore was proposed by the Indian government to be spent on infrastructure development for the development of the coal sector. Within this proposed infrastructural development, ₹18,000 crore in investment was allocated for the mechanised transfer of coal from mines to railway sidings. By passing the Mineral Laws (Amendment) Bill in March 2020, the government has decided to open up the coal sector for commercial mining. The government has shown interest in offering coal blocks immediately through auction, and entry norms will be liberalised for easier participation of various entities

[7] https://www.iisd.org/articles/how-can-indias-energy-sector-recover-sustainably-covid-19

[8] https://niti.gov.in/sites/default/files/2020-06/India_Green_Stimulus_Report_NITI_VF_June_29.pdf

[9] https://www.greenpeace.org/india/en/towards-a-green-recovery-post-covid-19/

in coal block bids. These measures are expected to reduce import dependency (for coal) as well as offer better prices for coal-based power generators.

The ANB has also proposed an amendment of the Electricity Act 2003 for the reduction of cross-subsidies across various groups of consumers in the power sector. Eligible consumers can receive subsidies through Direct Benefit Transfer. Other than that, for the development of the power sector, the ANB also proposed the elimination of regulatory assets and the privatisation of utilities in union territories.

Despite the significant reliance on thermal generation, a focus on renewable generation in the power sector is mandatory for long-term sustainable energy security and access. Recently, India has announced its ambitious target of achieving 450 gigawatts (GW) in installed capacity for renewables only by 2030. Currently out of the total 370 GW of power generation installed capacity, renewables contribute only about a quarter (approximately 88 GW[10]). Thus, India needs to focus on a proper implementation strategy, including an attractive incentive structure, other than the modification of the necessary regulatory arrangements. In spite of the initial distress and lots of adverse impacts, the pandemic has provided a golden opportunity to channelise the growth path of the Indian economy towards sustainable energy solutions, if green recovery measures are strategically and effectively implemented at this juncture.

Two major barriers against complete dependency on renewables are import dependency on modules[11] as well as storage[12] technologies. As part of the green recovery from the COVID-19 pandemic, India has decided to increase its customs duty to 40% [13] (along with 25% on solar cells) effective from 1 April 2022. This policy measure is expected to incentivise local manufacturers. To promote and incentivise domestic storage technology, the ANB programme has introduced a structured framework[14] to ensure efficient risk allocation (through the effective bankability of projects) as well as proposes the ease of doing business for new investors in storage battery manufacturing in India. The ANB programme will help the prospective battery manufacturing firms to receive additional financial incentives, like cash subsidies, through a transparent mechanism. The cash benefit will help firms to overcome various infrastructural deficiencies and are not available to their global competitors. Moreover, under the ANB, the benefits will be available to firms on the basis of their performance specifications and output irrespective of their technology specifications.

[10] https://energy.economictimes.indiatimes.com/news/power/a-framework-for-a-comprehensive-energy-storage-policy-in-india/80312012

[11] https://www.businesstoday.in/current/economy-politics/india-to-impose-20-customs-duty-on-solar-equipment-more-riders-on-imports-from-neighbouring-nations/story/407809.html

[12] http://niti.gov.in/making-india-atma-nirbhar-advance-battery-storage

[13] https://www.livemint.com/industry/energy/solar-module-imports-to-face-40-customs-duty-cells-25-11607911934283.html

[14] http://niti.gov.in/making-india-atma-nirbhar-advance-battery-storagev

2.3. Impact of COVID-19 on the transport sector and current measures

In the case of the transport sector, despite the pandemic and economic crisis, India has continued its journey towards meeting the deadline for Bharat Stage Emission Standards VI (BS-VI) emissions standards for all internal combustion (IC) engines in April 2020. Simultaneously, India has been preparing for zero emissions electric mobility as a path towards the clean air and low-carbon mobility targets in urban India.

However, the pandemic has brought forth significant changes across many dimensions in the transport sector as well. Monthly registrations (which are a proxy for the sales of new vehicles) of both total vehicles and electric vehicles (EVs) declined during the pandemic period (February–September in 2020) compared to those in the previous year, as indicated in Figure 5.8. With economic recovery, registrations increased, but again they declined due to the outbreak of the second wave of the pandemic (April–May 2021). The average monthly registrations of total vehicles declined from 17 lakh in 2019 to 13.45 lakh in 2020 and 13.1 lakh in 2021. However, monthly average EV registrations declined from 13,400 in 2019 to 9,800 in 2020, but increased to 15,800 in 2021 (until May). This led to the highest share of monthly EV registrations (amongst all vehicle registrations) in 2021 (11.2% in 2021 compared to 8.2% in 2019 and 6.9% in 2020). In addition to the increasing environmental awareness[15] and the impact of government initiatives[16] (to promote EVs), the recent steady increase[17] in petrol-diesel prices in India plays an important role in this context.

As per a recent survey by ITDP India (Urbanlogue, 2019), due to the pandemic, people's choices and behaviour towards transport have changed significantly. Compared to the pre-pandemic period, preference for cycling (4.5% pre-pandemic to 6.7% in the post-pandemic period), private cars (19.9% to 23.6%), motorised two-wheelers (20.9% to 22.8%), and walking (8.5% to 9.2%) have increased for work/education purposes, whilst preferences for auto-rickshaws (11.8% to 7.2%), public transport (20.1% to 15.3%), and taxis (marginal) have declined.

The same survey also identified that for all other trips, preferences for cycling (3.5% to 5.8%), private cars (21.9% to 24.9%), walking (10.7% to 11.9%), and motorised two-wheelers (19.9% to 21.2%%) have increased at the cost of a decline in preference for taxis (15.9% to 11.5%), auto-rickshaws (10.2% to 8%), and public transport (16.2% to 12.9%) in the post-pandemic period vis-à-vis the pre-pandemic period.

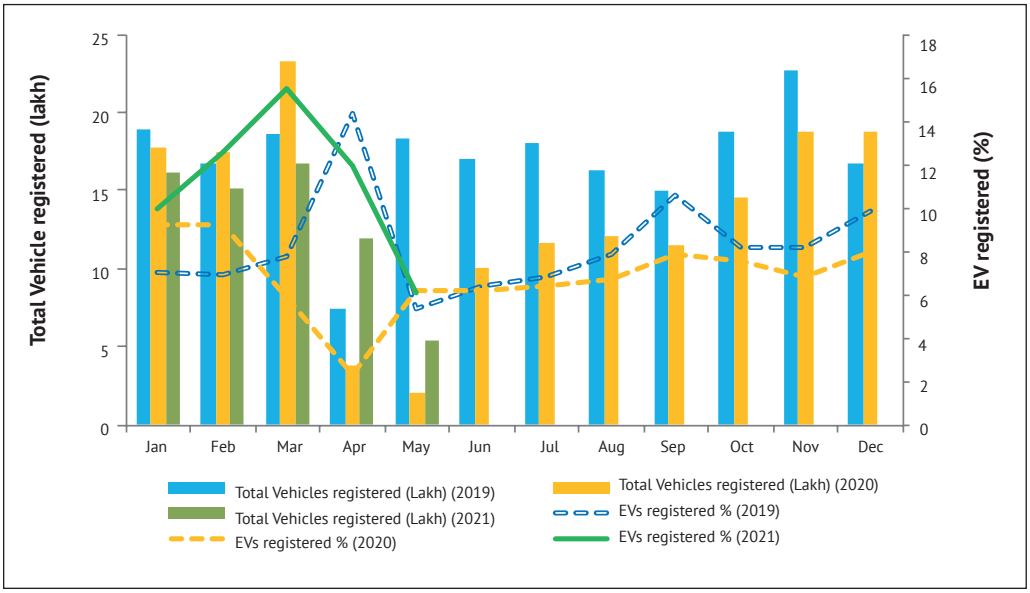
Based on a perception survey, a recent study by TERI (Thakur et al., 2020) found that in urban India, preferences for the metro (9%), buses (4%), and local trains (1%) have declined, whilst preferences for private vehicles (both four-wheelers and two-wheelers) (10%) and public taxis (2%) have increased in the post-pandemic time period as compared to the pre-pandemic time.

[15] https://auto.hindustantimes.com/auto/news/evs-may-play-greater-role-post-lockdown-as-environmental-consciousness-grows-41588653697236.html

[16] FAME India Phase II notification, GoI. 8 March 2019. https://fame2.heavyindustry.gov.in/WriteReadData/userfiles/8th%20March%

[17] https://www.newindianexpress.com/business/2021/may/27/electric-vehicle-sales-rise-amid-skyrocketing-petrol-diesel-rates-2308135.html

Figure 5.8 Monthly Vehicle Registrations in Selected Months of 2019, 2020, and 2021



EV = electric vehicle.
Source: Vahan Dashboard. https://vahan.parivahan.gov.in/vahan4dashboard/ (accessed 9 June 2021)..

The same survey also indicated that the preference for shared taxis has marginally declined, whilst car-pooling and the use of company vehicles has marginally increased in the post-pandemic situation. The preference for 'work from home' and the use of non-motorised transport (walking and cycling together by 3%) has also increased after the pandemic.

Both the ITDP and TERI survey indicate that because of the pandemic, people are preferring to avoid public transport and use either non-motorised (for shorter distances) or privately-owned vehicles (for longer travel). If this trend continues in the new normal, the increased preference for private vehicles could result in adverse environmental impacts.

The TERI (2020) survey also indicated a higher preference for online shopping after the pandemic situation. It revealed that 46% of the sample was already using online grocery shopping even in the pre-pandemic situation, whilst 54% were not comfortable with online shopping. Amongst the share who were familiar with online grocery shopping, 45% reported that they would increase online grocery shopping after the pandemic. On the other hand, amongst those who were not familiar with online grocery shopping, 24% reported that they would start online grocery shopping after the pandemic.

2.4. Banking and finance

The banking and finance sector is the backbone of any economy. The banking and finance sector needs to play a pivotal role during the post-COVID-19 recovery period.

To support the pandemic-hit economy and increase liquidity in the market, the RBI has adopted many important financial measures, including a reduction in the cash reserve ratio by 1% to enhance liquidity of ₹1.37 lakh crore in the economy, cuts in the repo and reverse repo rates to reduce the cost of borrowing, the allowance of moratoria by 3 months on term loans through all subsidiary banks and non-banking financial companies (NBFCs) to safeguard middle-class households, deferment of the Net Stable Funding Ratio (NSFR) until 1 October 2020, an increase in the Marginal Standing Facility, and an ease in working capital financing. As per the RBI governor, all these measures are expected to inject approximately 3.2% of GDP (ETBFSI, 2020) into the economy. However, the pandemic has led to further worsening of the debt status of most banks. As per a recent study (Hindustan Times, 2020), 70% of the banking debt is expected to be affected by the pandemic. Other than the above measures, as per a central government directive, the RBI has increased the advance limit (by 60%) for resource-crunched state governments and also enhanced the overdraft duration limits. Moreover, banks and NBFCs are expected to play an important role in implementing the measures adopted under the Aatmanirbhar Bharat package. For example, proposed loan schemes for micro, small and medium-sized enterprises (MSMEs) or street vendors will be disbursed through banks. NBFCs are also given the additional responsibility to contribute to the economic recovery process.

2.5. Current recovery measures for industries (especially MSMEs)

Within the current recovery package, MSMEs are allowed access to ₹3 lakh crore of collateral-free loans, and ₹20,000 crore of subordinate debt. They have been provided with concessions and moratoria on loans, provided cash refunds of goods and services tax (GST) credit, and 3 months of Employees' Provident Fund (EPF) contributions by the government for some specified sections.

Moreover, some other measures, such as providing access to Information Technology Enabled Services (ITES) at an affordable cost to compete with big players, and the technological upgrading of MSMEs by encouraging innovation and corporatisation are envisaged.

Longer-term measures that are largely directed at increasing indigenous production with a view to increasing employment opportunities include the introduction and promotion of the Smart Industrial Village policy, defining and introducing the Indian Quality Standard & Certification system to address non-tariff barriers for indigenous products, and the promotion of Swadeshi products by providing incentives for import substitution and indigenous product development.

The definition of MSMEs has also been modified to include more businesses. The auto component manufacturing industry will be covered under the MSME domain and can make labour payments once the funds are disbursed. MSMEs would also have access to ₹3 lakh crore of collateral-free loans and ₹20,000 crore of subordinate debt.

In the case of industry, central government agencies will also provide contractors with extensions of up to 6 months for construction, public works, and goods and services contracts. In the case of public sector undertakings (PSUs) and the private sector, the government will aim to privatise non-strategic PSUs and suspend new bankruptcy filings against companies.

Some of the other key elements within India's ₹20 lakh crore stimulus package are discussed below. In the agriculture sector, ₹30,000 crore of additional working capital is proposed to be made available through the National Bank for Agriculture and Rural Development, along with a ₹40,000 crore increase in allocation for the Mahatma Gandhi National Rural Employment Guarantee Act to create employment opportunities. Migrant workers will receive free food grain for 2 months. Industries and governments will set up affordable housing rental complexes, and the housing subsidy scheme for middle-income families will be extended until March 2021. A ₹5,000 crore special credit facility for street vendors and incentives for accepting digital payments will also be made available.

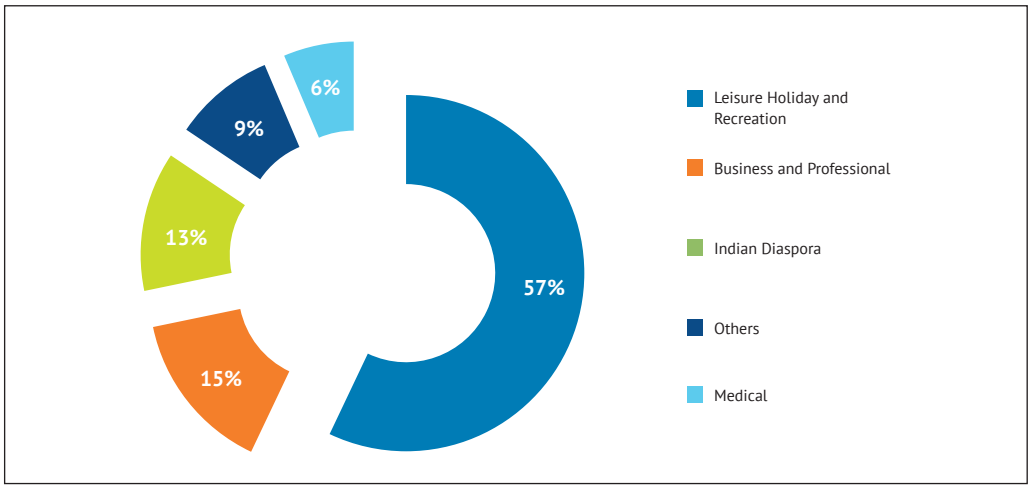
States' borrowing limits will be increased from 3% to 5% for 2020–2021, with the likelihood of granting extra resources of ₹4.28 lakh crore.

2.6. Tourism sector

As per recent Ministry of Tourism, Government of India (2020) data, 17.9 million international tourists arrived in India in 2019, which was 0.5 million higher than the 2018 estimate. In terms of international tourist arrivals, India was ranked 23rd in terms of tourist arrivals in the world and 8_{th} in the Asia-Pacific region in 2019. Various tourism-related activities (travel expenditures, boarding and lodging, monument/site-seeing entry fees, expenditure on various tourist activities) are important sources of foreign exchange earnings for India, and the country received US$30 billion in 2019 from international tourists. In terms of foreign exchange earnings, India was ranked 12th in the world (with 2.03% of global foreign exchange earnings from the tourism industry) and 6th (6.78% share) in the Asia-Pacific region. Out of 17.91 million international tourists that arrived in India, 10.93 million were foreign tourists, whilst 6.98 million were non-resident Indians (as indicated in Table 5.2). Amongst the foreign tourists that arrived in India in 2019, 57% came for leisure holidays and recreation, 14.7% for business and professional purposes, and 6.4% for medical reasons (as indicated in Figure 5.9). Other than these international tourists, 2.32 billion domestic tourists travelled across various Indian states in 2019 for travel and tourism purposes. This was 25% higher than the 2018 domestic tourist estimate (1.85 billion). Despite the fact that the affordability and expenditure patterns of domestic tourists were significantly less than international tourists, this gives an idea of the size of the Indian tourism industry. Whilst the number of domestic tourists was 130 times that of international tourists in 2019,[18]

[18] India Tourism Statistics at a Glance, 2020, Ministry of Tourism, GoI.

Figure 5.9 Foreign Tourist Arrivals by Purpose, 2019



Source: Ministry of Tourism, Government of India (2020).

about 83% of the tourism expenditure came from domestic tourists in 2019.[19] Including direct and indirect employment, the tourism industry provided 35 million jobs in 2017[20] and 42 million jobs in 2018.[21] The industry itself contributed to 9.2% of GDP and 8.1% of total employment in the Indian economy in 2018.[22] However, due to the COVID-19 pandemic, the countrywide lockdown was imposed, and international entry was strictly controlled. This had a severe adverse impact on the travel and tourism industry in India. The tourism sector has significant unorganised components and intensive linkages with other sectors (the handicraft market, etc.). Thus, the influence of the pandemic on the tourism industry has multiplicative implications on the overall economy through direct, indirect, and induced effects. Many studies have indicated significant job losses in the travel and tourism industry. Dogra (2019) estimated 38 million[23] job losses in the tourism industry, including direct and indirect employment. Another study estimated job losses of 70% of the total workforce[24] of the tourism industry, whilst 40 million job losses[25] were estimated by the Federation of Associations in Indian Tourism and Hospitality (FAITH), including organised and unorganised components of the industry. As per the estimate of FAITH, the financial loss in the industry could touch ₹15 trillion.[26] After the strict lockdown period, all other industries were recovering at their own pace, but due to various

[19] Tourism and Hospitality, IBEF, 2020
[20] https://www.statista.com/statistics/1012056/india-employment-number-in-the-tourism-industry-by-sector/
[21] https://www.journalijar.com/article/35360/impact-of-covid-19-on-the-tourism-industry-in-india/
[22] https://www.journalijar.com/article/35360/impact-of-covid-19-on-the-tourism-industry-in-india/
[23] https://www.journalijar.com/article/35360/impact-of-covid-19-on-the-tourism-industry-in-india/
[24] https://www.peoplematters.in/article/talent-management/how-the-pandemic-has-contributed-to-job-loss-in-the-travel-and-tourism-industry-27347
[25] https://www.livemint.com/news/india/tourism-body-estimates-rs-15-trillion-losses-due-to-covid-19-11595837800122.html
[26] https://www.livemint.com/news/india/tourism-body-estimates-rs-15-trillion-losses-due-to-covid-19-11595837800122.html

Table 5.2 International and Domestic Tourists (millions) and Fees from Tourism (US$ million)

Year	Foreign Tourist Arrivals (FTAs)	Arrivals of Non-Residents Indians (NRIs)	International Tourist Arrivals (ITAs)	Domestic Tourists (millions)	Fees from Tourism (US$)
2015	8.03	5.74	13.77	1431.97	21013
2016	8.8	6.22	15.02	1615.39	22923
2017	10.04	6.77	16.81	1657.55	27310
2018	10.56	6.87	17.43	1853.79	28586
2019	10.93	6.98	17.91	2321.98	30058

Source: Ministry of Tourism, Government of India (2020).

travel, hygiene, and safety-related restrictions, the travel and tourism industry failed to recover like other industries. However, after September–October 2020, as restrictions were withdrawn and the industry arranged various safety and hygiene measures, the situation is slowly improving. Revenge tourism can play an important role in this regard. In this new normal situation, outdoor and nature-related destinations will be preferred, and domestic tourism can recover at a quicker pace. India has the significant potential to recover its tourism industry compared to many other tourism-centric economies due to its diversified tourist attractions (including nature-related destinations) and large opportunities for domestic tourism. However, the outbreak of the COVID-19 second wave and the resultant lockdown and travel restrictions in various states have placed further challenges[27] on the revival of the tourism sector in India.

3. Discussion and Analysis of India's Recovery Package

The COVID-19 and its associated lockdowns caused multiple detrimental socio-economic repercussions that require measures to provide immediate relief, actions to support recovery, and long-term planning of subsequent recovery. The ₹20,000 lakh crore economic stimulus package announced by the government attempts to redress these damages through emergency measures, exit policies, and policies that shape the new normal of living with the pandemic. The stimulus supports some of the most affected social groups like migrant labourers and street vendors, and hard-hit industries like agriculture, power utilities, and MSMEs. Furthermore, the stimulus also supports a recovery plan that targets interventions like attaining self-sufficiency and fostering economic, infrastructure, and healthcare development.

[27] https://www.livemint.com/news/india/fresh-surge-in-covid-19-cases-poses-a-challenge-to-tourism-airline-recovery-11616675136926.html

The emergency measures aim to provide temporary relief to the affected individuals, industries, and institutions. The exit policies target strategies to overcome the negative consequences caused by the pandemic. The policies for the new normal aim to create an adaptive and resilient environment that can handle any such future disruptions. Table 5.3 categorises the summarised measures announced under the economic stimulus package into emergency measures, exit policies, and policies for establishing the new normal.

3.1. Recovery package after the second wave

India was severely affected by the second wave of COVID-19. After the first wave hit, when various sectors of the economy were starting to recover, the second wave made the situation more challenging. Other than the economic effects, the second wave clearly revealed the backwardness and limitations of the health infrastructure in India. As a response to the second-wave pandemic impacts, the Indian

Table 5.3 Summary of Measures Under the Economic Stimulus Package Announced by the Government of India

MFF Components /Programmes	Emergency measures	Exit Policies	Policies for establishing New Normal
1. Government Reforms			
Increase in borrowing limits	X		
Privatisation of Public Sector Enterprise (PSEs)			X
2. Measures for businesses (including MSMEs)			
Collateral free loans for businesses	X		
Corpus for MSMEs		X	
Subordinate debt for MSMEs		X	
Schemes for NBFCs		X	
Employee Provident Fund (EPF)	X		
Statutory PF contribution	X		
Street vendors		X	
Expediting payment of dues to MSMEs	X		
Insolvency resolution			X
Disallowing global tenders			X
Reduction in TDS and TCS rates	X		
Ease of doing business for corporates			X
Definition of MSME			X
Initiation of insolvency proceedings			X
Amendments to Companies Act, 2013			X
3. Agriculture and Allied sectors			
Concessional Credit Boost to farmers		X	
Agri Infrastructure Fund		X	
Emergency working capital for farmers	X		

MFF Components /Programmes	Emergency measures	Exit Policies	Policies for establishing New Normal
Support to fishermen		X	
Animal Husbandry infrastructure development		X	
Employment push using CAMPA funds			X
Amendments to the Essential Commodities Act			X
Agriculture marketing reforms			X
Agriculture Produce Pricing and Quality Assurance			X
4. Migrant Worker			
One Nation One Card			X
Free food grain Supply to migrants	X		
Affordable Rental Housing Complexes (ARHC) for Migrant Workers / Urban Poor		X	
5. Civil Aviation			
Efficient airspace management			X
Public Private Partnership (PPP) model for airports			X
6. Defence			
Enhanced FDI limit in defence manufacturing			X
Promotion of Make in India initiative in defence sector			X
7. Energy			
Liquidity support for distribution companies (discoms)		X	
Coal evacuation		X	
Safeguarding consumer rights			X
Regulatory assets			X
Privatisation of power distribution			X
Commercial coal mining			X
Reduction in cross-subsidy			X
8. Housing			
Credit Linked Subsidy Scheme for Middle Income Group (MIG)	X		
Support to real estate sector	X		
9. Social Sector			
Public Health			X
Allocation for MGNREGS	X		
Viability Gap Funding		X	
Technology driven education			X
10. Key Measures Taken by Reserve Bank of India (RBI)			
Reduction in Cash Reserve Ratio		X	
Increase in Banks' limits for borrowing under the marginal standing facility (MSF)		X	
Targeted Long Term Repo Operations (TLTRO) planned for investment in investment grade bonds		X	
Special Liquidity Facility (SLF) announced for mutual funds to provide liquidity support			

MSME = micro-, small, and medium-sized enterprise.

Source: PRS India and TERI Analysis (2020).

government announced a fresh economic recovery package of ₹6.28 Lakh crore in the last week of June 2021.

The new package is mostly focused on extending loan guarantees and concessional credit for COVID-affected sectors along with investment for improving health infrastructure. The major components of the package include:

1. Improvement in healthcare infrastructure

₹23,220 crore has been allocated for healthcare infrastructure expansion, especially for an increase in the number of intensive care unit facilities and the availability of medical equipment and medical oxygen. Special focus was given to infrastructure improvement for child and paediatric care.

2. Extension of the loan guarantee scheme and an increase in the credit guarantee cap

₹1.1 lakh crore has been announced for a loan guarantee scheme to support COVID-hit sectors. Within this allocation, ₹50,000 crore was specially allocated to the health sector. Approximately 25 lakh borrowers can benefit by borrowing ₹1.25 lakh under this scheme through micro-finance institutions. Moreover, the Emergency Credit Line Guarantee Scheme cap was increased by ₹1.5 lakh crore from its previous limit of ₹3 lakh crore.

3. Support for exporters and the tourism sector

₹33,000 crore was allocated for the National Export Insurance Account, which facilitates exporters by providing credit. Other than the huge shock to exporting units, the tourism sector was one of the most affected sectors due to the pandemic. To promote international tourism, the government has announced free visas for the first 5 lakh tourists. The government has also announced a loan guarantee scheme for travel agencies (100% guarantee up to ₹10 lakh) and regional tourist guides (100% guarantee up to ₹1 lakh).

4.Extension of Atmanirbhar Bharat Rozgar Yojana from 30 June 2021 to 31 March 2022.

5.Support for discoms and BharatNet

The Government of India has announced ₹3.03 lakh crore to upgrade the existing system and enhance the capacity of discoms along with ₹19,041 crore to BharatNet for the improvement of broadband networks in villages.

6. Support for the agriculture sector through subsidies for fertilisers

A ₹14,775 crore subsidy was announced for di-ammonium phosphate (DAP) and nitrogen phosphorus potassium (NPK)-based fertilisers along with ₹77.45 crore to enhance agriculture-related activities in Northeast India.

An analysis of the policy and regulatory support measures announced under these packages indicates that India's stimulus packages are well-balanced in terms of their temporal vision. A high thrust on establishing the new normal can be seen. Shaping the new normal is advocated to offer one of the most promising opportunities to push for a green recovery towards building sustainable and resilient societies. However, in the economic stimulus

packages, no specific emphasis is placed on incentivising green technologies or solutions.

Only a very few measures in the stimulus packages, like efficient airspace management, place stress on energy sustainability. Airspace, however, in the overall energy system is a small contributor in energy use and emissions; whereas the power, industry, and transport sectors are major energy-consuming sectors and also the highest emitters. Post-COVID-19, the markets for renewables and EVs, amongst the major players to support a green recovery in India, are plagued by financial stress at various levels of the supply chain due to a lack of liquidity support.

Therefore, whilst the stimulus packages do not talk about retracting any of the green policies or targets, as of now, they also do not provide any impetus or support to strengthen their penetration as a means to achieve a green recovery.

4. The Need for a Green Recovery in the Indian Context

As India moves forward with additional strategies, we must be cautious not to reverse past gains made in protecting the natural environment and inadvertently end up supporting growth in fossil fuel or carbon-intensive investments leading away from the Paris Agreement's target trajectory. At this juncture, with careful and deliberated planning, the country has a window of opportunity to re-orient the growth path of the economy and build back better towards a new normal.

Several studies have established that strong climate action can bring about several important co-benefits. The Global Commission on the Economy and Climate indicates that strong climate action has the potential to generate over 65 million new low-carbon jobs by 2030, deliver at least US$26 trillion in net global economic benefits, and avoid 700,000 premature deaths from air pollution. Green construction projects are also estimated to deliver higher multipliers. Clean energy infrastructure is generally very labour intensive in the early stages. One model suggests that every US$1 million in spending generates 7.49 full-time jobs in renewable infrastructure and 7.72 in energy efficiency but only 2.65 in fossil fuels. Therefore, in the long run, public investments in clean energy and infrastructure can provide high returns by driving down the costs of the clean energy transition. Adopting clean energy opportunities in a larger way could, therefore, help drive the economy towards a more efficient, innovative, and productive economy, with higher spillovers that benefit the wider economy (Hepburn et al., 2020).

The Global Commission on Adaptation also estimated that investing US$1.8 trillion globally from 2020 to 2030 in resilience-building measures could generate US$7.1 trillion in total new benefits.

Green recovery in the Indian context may be understood to include:

1. Continuation of policies and measures directed at the mitigation of greenhouse gas emissions through efficiency improvements, fuel switches, etc.

2. Additionally, green recovery should ensure that behavioural changes do not end up influencing consumption trends in ways that are more energy or carbon-intensive, e.g. shifts to private vehicles being preferred over public transport and carpools.

3. Finally, a green recovery needs to include the social dimension of ensuring equality, livelihoods, resilience, and inclusive development for all sections of the population.

India can benefit from a green recovery in multiple ways – be it in terms of generating additional employment through green investments, supporting public health by reducing air pollution, or enhancing economic growth and climate resilience and eventually achieving much higher multipliers of growth. Enhancing competitiveness and resource efficiency is another important element that needs to be strongly embedded in India's energy development path. India's future growth will need to be made resilient on multiple fronts, such as energy system design, urban development, transport design, industrial growth and supply-chain management, and the livelihoods of the underprivileged.

The design of recovery interventions will, therefore, be crucial, as decisions made now can have long-term repercussions on future pathways. Moreover, choices made now could have implications for both India's NDC trajectory as well its ability to meet its Sustainable Development Goals.

Accordingly, shifting development pathways towards increased sustainability can broaden the options for recovery by simultaneously addressing climate goals and socio-economic goals, such as eliminating poverty, reducing inequality, and enhancing affordable energy access, etc.

India should, therefore, pay special attention to phased planning to increasingly adopt least-cost solutions (and in certain cases second-best options) based on a holistic assessment of all the choices from a long-term perspective. Particularly important in this respect is the focus on enhancing prospects for jobs, Make in India, and re-skilling, and ensuring high and inclusive GDP growth and innovative schemes for decentralised renewable solutions, etc.

5. Recommendations for Moving Ahead Towards a Green Recovery

In the medium-to-long term, India's energy sector decarbonisation hinges mainly on three key elements, viz. energy efficiency improvements across sectors, the electrification of end uses, and the decarbonisation of electricity generation itself (Mathur and Shekhar, 2020).

It is in India's interest to increasingly continue to focus on these measures since they can also bring in additional benefits in the form of additional jobs and reductions in air pollution, apart from having a multiplier effect on economic growth. Also, keeping resilience in mind, a green transition needs to be centre stage, focusing on green infrastructure, improving productivity, and improved health systems, etc.

Therefore, as policymakers prepare interventions and industries re-evaluate their business models and operations, there is an opportunity to

prioritise efforts that work towards building a clean, resilient, and least-cost energy future for India.

In the subsequent section, we discuss the key areas, especially in the power, transport, and industry sectors, where clean interventions can be accelerated and up-scaled as the nation moves towards recovery.

5.1. Power sector

In the power sector, apart from maintaining an adequate governance structure for protecting the health of the distribution sector, this juncture should be viewed as an opportunity to bring about market reforms and a push for green recovery measures. India should particularly focus on ensuring that the pace of progress of renewables does not slacken.

Given that renewables have the scope for contributing to reduced air pollution, the generation of jobs, and larger multiplier effects, India should use this opportunity to raise its solar power ambition and focus on promoting decentralised models of renewable energy deployment, promoting the local manufacturing of renewable energy (especially solar), and focusing on energy storage technologies (NITI Aayog and Rocky Mountain Institute, 2020) whilst enforcing strict emission standards for coal power plants.

Further, over and above the financial package provided by the government, appropriate structural reform measures towards ensuring appropriate power quality and reliability, electricity tariff reforms, improvements in billing systems, and the enhancement of digital payments can further strengthen the power system (Greenpeace, 2020).

5.2. Transport Sector

In the transport sector, the emerging challenges include a likely rebound in demand, with people preferring to use their own private vehicles rather than public transport. For this, it is important to devise ways to encourage work from home (to the extent possible) in order to contain the rebound in private transport demand. Additionally, it is important to focus on safe and secure public transport and non-motorised and shared transport.

Moreover, in terms of a green recovery, apart from continuing the efforts towards the efficiency improvement of fleets, India should focus on enhancing electric mobility, and the auto manufacturing segment must continue to focus on research and development and efficient supply chains to enable the transition from internal combustion engines to EVs in the long term.

India is still lacking long-term commitments with firm targets or regulations like stringent fuel efficiency standards, except for the FAME incentive scheme. Some states like Delhi (25% of the new fleet to be EVs by 2024) have their own EV programmes. For a green recovery of the transport sector, the important steps that need to be adopted include the tightening of fuel efficiency standards. Other than EVs, focus is also required on promoting public transport. During the pandemic, public transport has been greatly affected due to the perceived risk of hygiene, sanitation, and social distancing issues. Given that users are taxed at a higher rate than private vehicles, the cost differential makes public transport relatively costly vis-à-vis two-wheelers (Roychowdhury et al., 2020).

Providing a fiscal stimulus for public transport, and especially promoting electric buses, can help address both public transport and EV issues and will assist in the green recovery. Accordingly, in the transport sector, several measures like incentivising demand for EVs, developing safer public transport to rebuild trust amongst people, redesigning urban transport to promote low-cost, active, and carbon-neutral transport options like walking and cycling, the enforcement of stricter regulations on air quality, promoting India as an automotive export hub, investment in climate-resilient infrastructure, reducing vehicle kilometres travelled through work-from-home where possible, and providing more affordable public transport can promote green recovery.

Towards this end, in the short term, an injection of liquidity to the auto industry could help the logistics providers, auto dealers, and fleet operators. Issuing guidelines and enforcing the adoption of standard operating procedures for the safe operation of public transport services (buses and metros) could increase the confidence of commuters to move back to public transport.

In the medium term, the implementation of the FAME II scheme should continue, and the introduction of EVs and hybrid vehicles must continue in a phased manner. Whilst compressed natural gas vehicles have been adopted in urban areas over the last few years, the expansion of gas-based infrastructure versus that for EVs will need to be judiciously planned in the coming years. Additionally, in the case of freight movement, focusing on optimising and digitising the freight sector and its supply chain is important. Enhancing rail-based freight movement to the extent possible, especially the shifting of long-haul bulk goods movement from road- to rail-based transport, can bring significant benefits. Encouraging the use of non-motorised mobility through walking and cycling and the use of electric micro-mobility solutions for last-mile connectivity in urban areas are other focus areas.

In the long term, India should focus on developing itself as an automotive manufacturing industry hub, especially for EVs. Towards this end, it is pertinent to promote local, resilient manufacturing and supply chains in the long term through tax incentives, lower land rent, and the promotion of local battery manufacturing.

5.3. Green finance

Whilst green investments can play a role in the pandemic-related recovery, they should be seen as measures designed to assist in the inevitable transition to a greener economy so that investments made now do not contribute to stranded energy assets likely to be obsolete in the next few years.

The need for large capital flows of finance to achieve such targets, whether in renewable energy, nature-based solutions, or other infrastructure sectors, is more critical now, as these can be engines of sustainable growth providing socio-economic benefits. Strategies that catalyse green finance from both the public and private sectors for resilient projects that create sustainable jobs, should be the centrepiece of post-COVID-19 economic recovery packages. Therefore, there is a need for innovative capital market mechanisms, bonds, and de-risking funds, etc. to frame effective green recovery strategies.

Whilst charting out the long-term recovery strategies, the government must try to leverage its resources for attracting capital from private, institutional, and commercial sources (via public-private partnerships, pension funds, and commercial banks, etc.).

Increasingly, concessional funds can be linked to green investment principles at a facility level including certain conditionalities that align with government priorities and will likely include: (i) linkages to clear green impacts; (ii) the number and type of green jobs created; (iii) the ability to attract a minimum of private capital; and (iv) best leveraging or lowest fiscal impact on government budgets.

Strategic international partnerships can further play an important role in helping build towards a green, digital, resilient, and socially just recovery.

The COVID-19 crisis could in fact trigger some long-term structural transformations in the economy that may be largely unpredictable now. For example, the rapid uptake and surge of the digital economy may continue in the post-COVID era and could even be further reinforced.

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