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# Greening Post COVID-19 Economic Recovery in India

## A New Virus, A New India

This paper prepared aims to serve the constructivist function of facilitating discussion on the topic of greening post COVID-19 economic recovery so that recovery measures are more aligned with sustainable development. This paper is based on the analysis of more than 160 environmental fiscal measures announced during the 2008 financial crisis, questionnaire responses by stakeholders and perspectives brought forth through a webinar organized by TERI and GGGI. The COVID-19 crisis has shown that growth must be both inclusive and sustainable in the long term. Recently, the Prime Minister announced a special economic package of INR 20 lakh crores for 'Atma Nirbhar Bharat' or a 'self-reliant India' which would better integrate India with the world. Recovery packages provide opportunity to take much awaited steps to green the economy in sectors that have the maximum impact on sustainable development. Both sustenance and sustainability have to be the cornerstones of economic recovery as India responds to this crisis. In this background, professionals from The Energy and Resources Institute (TERI), National Institute of Public Finance and Policy (NIPFP) and Global Green Growth Institute (GGGI) have brought out this discussion paper.

**Keywords**
Green Recovery; COVID-19; Inclusive Green Economy; Fiscal Instruments; Sustainable Development Goals

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*Discussion Paper*
The Energy and Resources Institute
Global Green Growth Institute
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*A New Virus, A New India*

DISCUSSION PAPER
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## Executive Summary

The Prime Minister of India announced a special economic package for 'Atma Nirbhar Bharat' or a 'self-reliant' India which would better integrate India with the world. The package is to the tune of INR 20 lakh crores, which is about 10% of India's gross domestic product[1]. The package has five pillars: (1) Economy; (2) infrastructure; (3) system; (4) vibrant demography; and (5) demand. For future recovery measures in India, it is essential to reflect on the medium- and long-term aspects of sustainability along with revival of the economy. Some transitional shifts will come organically and will need only a supporting environment from the government to grow and flourish; while some transformational shifts will need a direction and nudge from the government. If the gains of a clean environment are to be sustained, greening of the economic recovery can be seen as a means for greater transformational shifts so that the economic systems can be geared towards meeting sustainable development goals (SDGs) and the nationally determined contributions (NDCs). The measures analysed would include both short-term recovery measures and transformational shifts. Recovery packages would mostly constitute the following: cash and food for sustaining life and spurring demand (targeted at farmers, labourers and low income families); cash flow easing and provision of working capital (targeted at manufacturing, trading, service and small businesses); and expenditure for managing COVID-19 in terms of prevention, diagnosis and treatment. While it may seem that short-term measures do not have much scope for greening, international experience shows that for industries, greening of recovery packages can be used as a means to nudge industry players to upgrade technologies, adopt government norms, and inject investments into developing new green products that would have markets. The findings presented in this paper are based on more than 160 measures announced during the 2008 financial crisis, questionnaire responses by stakeholders and perspectives brought forth through a webinar organized by TERI and GGGI.

Lessons from the past: Learning from the lessons of the Great Depression, multiple recovery packages can be expected from the government. Green stimulus packages should be thought of as interventions for the long term. Stimulus measures should look at fundamental changes and not merely rely on market forces. Role of the 'state' is paramount. Self-reliance has to be nuanced and should not imply nationalization, which can be more damaging for the environment as local may not always be good for the environment. Self-reliance should also imply dealing with climate change by not merely relying on international cooperation. To tide over the 2008 financial crisis, governments in many countries used direct fiscal measures in terms of public spending. Presently, the overall spending component of the economic package in India is low, in the range 1–2 per cent.

Increase in public spending and investment in green technology and infrastructure: There should be public pressure for changing technology paths such as fuel use in industry and transportation along with sustainable agricultural practices. For economic measures to be inclusive, resilient and green, it is essential to go beyond liquidity issues and delve into the domain of environmental reforms and changes in decision-making processes. Additional infrastructural and financial investments are needed to ensure the sustainability of the educational sector both in the short and long term. It would be important to upgrade IT infrastructure for remote learning and working in both rural and urban settings. Financial market regulators could also encourage, on a temporary and time-bound basis, extensions of loan maturities. In this context, the Reserve Bank of India (RBI) already has

[1] According to Nayyar (2020), the fiscal stimulus for India in terms of spending is INR 2.66 trillion, which is 1.2 per cent of the GDP. Of this, however, Rs 0.9 trillion, or 0.4 per cent of the GDP, is from a drawdown on the existing funds available with state governments (Rs 0.67 trillion) and existing budget provisions (Rs 0.23 trillion). Thus, the effective fiscal stimulus, in terms of extra resources provided by the government, is Rs 1.76 trillion, or 0.8 per cent of the GDP.

priority sector lending norms which targets environment sectors. These should be pushed by the government through banking sector policies.

Risk based and SDGs-aligned decision-making: The post COVID-19 economic recovery path should consider investing in interventions that can 'reduce risks' from pandemics in the future rather than just aiming at creating higher growth. SDG-aligned budgeting or green budgeting should be used as a framework for better alignment of government spending with environmental objectives and sustainable development goals. This will be a good starting point in eventually moving towards integration of environmental concerns and concepts into development planning and budgeting.

Revenue and resource allocation: In terms of greening the Goods and Service Tax (GST) based on the concepts of environment friendly goods and services and other goods, we need to review the rates and cancel input credit for certain goods and services. The crash in world oil prices can free revenues of the government which can be used to incentivise environmental sustainability measures. If the government does not bring down the market price of oil and continues to tax luxury goods and goods with negative environmental externalities, the revenues generated can be directed towards environmental sustainability measures in industry.

Holistic notion of health: Health needs to be looked at more holistically in terms of both human and environmental health; the concept of ecosystem services can aid in the same. Relief strategy is needed for this sector but also a recovery strategy that would ensure sustainability of healthcare services, first by mitigating the expected increase in demand on the existing system and second, by identifying the ways to minimise the impact of expected decreases in the supply of financial and non-financial resources available to healthcare systems and the disrupted supply chains to ensure green procurement. The government must provide funding for research needed for the safe and environmentally friendly disposal of healthcare and self-care kits like masks, personal protective equipment (PPE) and gloves.

Incentive attached to information instruments: India is yet to formulate a set of concrete measures in the manufacturing sector after the COVID-19 fallout. The government can =boost improvement in processes to existing certifications and labelling schemes like ZED (zero effect, zero defect), Eco-mark and other internationally accepted standards. Conditional incentives can be provided to those companies who have certification or those who commit to possess certification and labelling. Measures related to public procurement should be seen as an opportunity for pushing for sustainable public procurement in India and nudging market players in the right direction.

Micro small and medium enterprises (MSMEs): The banking sector needs to nudge MSMEs towards resource efficiency and circularity concessional and incentive-based credit. Since the notion of 'self-reliance' and 'self-sufficiency' can lead to increased domestic manufacturing in India including in the MSME sector, there perhaps can be daughter funds in existing funds wherein the daughter funds can focus on green activities. For MSMEs, the revival package needs to identify how some of the existing schemes including the Industrial Infrastructure Upgradation Scheme (IIUS), Technology Upgradation Fund Schemes can be made more effective and attractive to MSMEs and facilitates faster adoption of industry 4.0.

Strengthening capacity at state and local levels: The government can provide additional investment and incentives to local bodies and municipal corporations dealing with the additional biomedical waste and municipal solid waste generated as a result of the COVID-19 situation. The argument here is that if this function is given to municipal bodies, it should be ensured that the local bodies have adequate sources of revenue and human resources to undertake it efficiently. This should enable 'self-sufficiency' of local bodies. State governments and local bodies should be allowed to borrow more, either from the RBI or from commercial banks and other primary dealers as they are operating under stricter fiscal constraints. RBI needs to enable loans to the government at a discounted interest rate, for the time being, for the required extra expenditure. Existing processes of decision-making such as resource allocation (including state budgeting and national budgeting) can be transformed into SDGs-linked mapping exercises.

Focus on livelihoods and natural resources: There is a need for capacity building to reap the benefits of existing government schemes such as the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), which can contribute to employment as well as to environmental sustainability. Emphasis on self-reliance approaches to be adopted by the Indian government should result in the creation of durable assets through natural resource management and through agriculture and allied activities. Economic packages should lead to sustainable livelihood outcomes; these outcomes need to enhance natural capital. The packages can cater to rural workforces who can become skilled personnel in the renewable energy sector through the *Suryamitra* programme. Skill India training centres, which currently mostly cater to urban areas, can be expanded to rural areas along with stronger market and industry linkages in terms of the training and course content. The present farm labour situation in states like Punjab can be turned into an opportunity for boosting sustainable agricultural practices such as the use of direct seeding technology as well as sustainable cropping patterns. The COVID-19 economic response must include efforts to transform agro-food systems and must take into account schemes aimed at improving farmers' competitiveness, supporting business growth in the rural economy and incentivising farmers to improve the environment.

Energy investment is a win–win measure: In transport, scrappage programmes within stimulus packages can be implemented to phase out old cars and boost car sales. Tax incentives can be provided for electric vehicles. Infrastructure investment would be needed for public transport including bus and rail transport. As compared to the traditional power sector, damage to the renewable energy sector has been lesser in the COVID-19 times. This implies that the renewable industry is less prone to market disruptions.

Integrating informal knowledge with formal knowledge: Policies should not only be innovative but must emanate from the needs of the common people and the informal sector who are usually not well represented in government decision-making processes. Global institutions should contribute to transforming these processes through which solutions are being looked at. There is a need to proactively create pathways for listening to the ideas of the common people. The central tenet in green recovery transformation is to proactively foster innovation in project and policy formulations by linking the informal sector with the formal sector. Innovative solutions need to be converted into actionable propositions and the role of civil society becomes important for ensuring social justice and building capacities at the local level.

Implications for international cooperation: More projects need to be initiated through bilateral cooperation with other countries. Funding opportunities on SDGs need to be leveraged. The forthcoming EU recovery plan will focus more on creating jobs, tax reforms, fiscal reforms and greening public procurement. There is a need to explore international cooperation opportunities for a circular economy and sustainable water management in the post COVID-19 era. The international climate community has not been able to provide a concrete solution on international finance and market instruments. Timelines of low carbon scenario will need to be revisited in light of the COVID-19 situation keeping in mind the imperatives of sustainable development and poverty eradication.

Some measures that can be taken by the government through fiscal measures in subsequent recovery announcements are summarized below.

**Economy**

- Improve market competitiveness of environmental goods and services
- Become an investment destination by pushing norms related to responsible business conduct and ESG parameters
- Direct revenues freed from crash in world oil prices and taxing luxury goods towards environmental sustainability activities
- Push more investment in environment priority sectors through banking sector policies related to COVID-19 recovery

**Infrastructure**

- Technology upgradation in renewables and industry 4.0
- Strengthening local bodies and municipal corporations dealing with additional biomedical waste and municipal solid waste
- Enhance infrastructure investment for safe public transport and work from home options

**System**

- Reform existing decision-making processes including state budgeting and national budgeting can be transformed into SDGs-linked mapping exercises
- Strengthen adoption and systems of certifications such as ZED (zero effect, zero defect), Eco-mark and other labels and standards
- Increase sustainable public procurement

**Demand**

- Introduce vehicle scrappage programs within stimulus packages to phase out old cars
- Increase awareness related to environmental goods and services

**Demography**

- Create opportunities for green skills in both rural and urban areas
- Enhance IT related infrastructure for education especially in rural areas
- Enhance global citizenship and education for sustainable development

Need for a framework on green recovery measures: A framework is needed to examine green recovery in terms of assessing current actions of the government as well as to suggest actions in the medium- and long-term period. The framework can be based on the five pillars and four 'Ls' of the government vision. As next steps, a comprehensive exercise based on the framework provided in this paper could be undertaken to map measures against implications such as cost, sustainability and risk reduction. The framework can be considered a tool to map economic recovery against outcomes related to SDGs in terms of risk reduction, demand creation, livelihood related outcomes and environmental outcomes. The exercise can identify economic recovery measures and demands created in the backward linked sectors. The potential demand created, costs incurred, labour outcomes in terms of skilled and unskilled jobs, risk reduction, and environmental outcomes (water savings, emissions reduction, and pollution abatement) can also be estimated. The demand created in the economy as well as the impact on SDGs can be estimated.

## 1. Introduction

The COVID-19 pandemic can be considered as the biggest global disruption in recent times with profound impacts on every aspect of our lives. The case in point among many other things is the complete shutdown of economic and social activities of various magnitudes all over the world as a strategy in managing the pandemic. We, in India, are in the middle of the pandemic, so these are still early stages to foresee the complete social, economic and geo-political fallouts of the disruptions caused by the pandemic. However, optimists see a silver lining in that these troubled times can teach important lessons while moving on – which will be both a source of inspiration and the necessary elements in shaping the post pandemic life.

Our Prime Minister announced a special economic package for 'Atma Nirbhar Bharat' or a 'self-reliant' India which would better integrate India with the world. The package is to the tune of INR 20 lakh crores, which is about 10% of India's gross domestic product. The package has five pillars: (1) Economy; (2) infrastructure; (3) system; (4) vibrant demography; and (5) demand. India also announced a USD 2 billion health sector spending programme to expand infrastructure and COVID 19 testing capacity. The country has also launched a USD 23 billion pro-poor package to provide direct cash transfer, basic consumption goods and free cooking gas cylinders to the poor, particularly to women, the old and socially disadvantaged groups (PMO 2020). Direct benefit transfers in the lockdown period amounted to approximately USD 4 billion (MOF 2020).

**Table 1: Details of economic package by the Indian government in response to COVID-19**

| Package | Announcement Date | Quantum |
|---|---|---|
| Tranche 1: Business including MSMEs | 13 May 2020 | • Rs 3 lakh crore collateral free automatic loans for business including MSMEs<br>• Rs 20,000 crore subordinate debt for MSMEs<br>• Rs. 50,000 crores equity infusion through MSME Funds of Funds<br>• Rs 30,000 crores liquidity facility for NBFCs/FCs/MFIs<br>• Rs. 45,000 crores partial credit guarantee schemes for NBFCs<br>• Rs 90,000 crores liquidity injection for Discoms |
| Tranche 2: Poor, including migrants and farmers | 14 May 2020 | • 3 crore farmers with agricultural loans of Rs 4.22 lakhs crores availed the benefit of 3 months loan moratorium<br>• Interest subvention and prompt repayment incentive on crop loans, due from 1 March extended up to 31 May 2020<br>• 25 lakh new Kisan Credit Cards sanctioned with a loan limit of Rs 25 ,000 crores.<br>• Liquidity support provided to farmers post COVID<br>• State governments to utilise (SDRF) for setting up shelter for migrants and providing them food and water etc .<br>• More support will be provided to migrants who are returning home<br>• |
| Tranche 3: Agriculture (May 15, 2020) | 15 May 2020 | • Rs 30,000 crore additional emergency working capital for farmers through NABARD<br>• Rs 2 lakh crore credit boost to 2.5 crore farmers under Kisan Credit Card Scheme<br>• MSP purchases of amount more than Rs 74,300 crores made during lockdown period<br>• Additional support has been provided for animal husbandry and fishery units<br>• Rs 1 lakh crore Agri Infrastructure Fund for farm-gate infrastructure for farmers to be created<br>• Rs 10,000 crores scheme for formalisation of MFE has been announced<br>• Rs 20,000 crores for fishermen through PMMSY<br>• An animal husbandry infrastructure development fund of Rs. 15,000 crores will be set up<br>• NMPB will green 800 hectares area by developing a corridor of medicinal plants along the banks of Ganga. |
| Tranche 4: New horizons of growth | 16 May 2020 | • Introduction of commercial mining in the coal sector through revenue sharing mechanism instead of a regime of fixed rupee/tonne system; liberalisation of entry norms; exploration-cum-production regime for partially explored blocks; production earlier than scheduled will be incentivized through rebate in revenue share<br>• Infrastructure development of Rs. 50,000 crores |
| Tranche 5: Reforms | 17 May 2020 | • 15000 crores announced for protection of healthcare workers |

MSME: Micro, small, medium enterprises; NBFCs/FCs/MIFs: non-bank financial companies, finance companies, micro finance institutes; Discom: Distribution companies; SDRF: State Disaster Response Fund; NABARD: National Bank for Agriculture and Rural Development; MSP: Minimum support price; MFE: Micro Food Enterprises; PMMSY: Pradhan Mantri Matsya Sampada Yojana; NBPB: National Medicinal Plants Board

*Source: Ministry of Finance Announcements*

Table 1 summarizes the various economic packages announced by the Indian government However, most of the measures mentioned in Table 1 pertain to medium- and long-term measures to be undertaken. Apart from these, some of the short-term measures announced by the Indian government include direct cash payments, financial assistance to corporations, payments to employees and loans for small businesses. Table 2 provides a comparative assessment of these relief measures across various economies.

**Table 2: Short term relief measures to combat COVID 19**

| Relief Measure | India | Worldwide |
|---|---|---|
| Direct cash payments | • INR 500 is being provided to each woman Jan Dhan account holder, ₹1,000 for senior citizens, poor widows and the disabled<br>• Payments for MNREGA and front loaded PM-KISAN payments has been hiked<br>• INR 1000 crores from the PM CARES Fund is being used to provide food and accommodation to migrant workers | • Canada is providing CAN$ 2000 for four months (from April 2020) to those who have lost their jobs, are sick or have to stay at home<br>• US is providing a one-time payment of $1,200 to its citizens<br>• Hong Kong is providing a cash handout of HK$ 10,000 for each permanent resident aged 18 and above |
| Financial assistance to corporations | • INR 90,000 crore loan to be provided against state (government) guarantee to power distribution utilities (discoms) to mitigate the liquidity crisis in the power sector<br>• Financial support to NBFCs as mentioned in Table 1 | • US created a $500 billion dollar fund to bailout failing corporates in the aviation and healthcare sectors<br>• The French government has announced that it will provide a bailout of 7 billion euros to Air France-KLM<br>• The French government has earmarked 20 billion euros for bailout |
| Loans for small business | • India to provide a collateral free loan scheme to MSME, loans for critical MSMEs and mega 'fund of funds' to provide liquidity (details mentioned in Table 1) | • Most countries have offered small businesses emergency loans and fast access to credit during this period.<br>• Many nations are also providing tax relief for these businesses.<br>• Japan government have schemes to cover two thirds of the rent of small businesses for up to six months |
| Payments to employees | • TDS/TCS rate has been reduced by 25 per cent which is expected to put Rs 50,000 crore in the hands of people. | • US has announced a Paycheck Protection Programme to help small businesses keep their employees on payroll<br>• UK has a scheme to provide grants covering up to nearly 80 per cent of the salary of workers if companies kept them on their payroll<br>• Denmark also has a similar scheme to pay 75 per cent of employees' salaries to avoid mass layoffs for a time span of three months.<br>• Thailand has allotted $18 billion to provide financial aid to temporary workers, contract workers and the self-employed. |

MGNREGS: Mahatma Gandhi National Rural Employment Guarantee Scheme; PM-KISAN: Pradhan Mantri Kisan Samman Nidhi; PM CARES: Prime Minister's Citizen Assistance and Relief in Emergency Situations; Discom: Distribution companies; NBFCs: Non-bank financial companies; MSME: Micro, small, medium enterprises; TDS: Tax deducted at source; TCS: Tax collected at source

*Source: Business Line, published on 14 May 2020*

India has also extended insurance coverage to frontline health workers engaged in COVID 19 response. The RBI has slashed policy rates, eased asset quality norms, provided loan moratoriums, taken measures to support exporters and allowed states to borrow more to meet their financing requirements. It has also pumped in massive liquidity to support banks, non-banking financial companies, mutual funds as well as taken measures to push the flow of funds to the micro, small, and medium-sized enterprises (MSMEs) and the corporate sector. In terms of external aid, on 28 April 2020, India signed a USD 1.5 billion loan with Asian Development Bank (ADB) to support India's COVID-19 immediate response (PMO 2020).

The government is expected to continue dialogue with development agencies for further possible support for stimulating the economy, backing strong growth recovery, and building resilience to future shocks. More public finance recovery measures are expected in the health sector and for affected industries and entrepreneurs, particularly MSMEs, by facilitating their access to finance through credit guarantee schemes, MSME integration into global and national value chains through enterprise development centres, and a credit enhancement facility for infrastructure projects. Strengthening of public service delivery will continue to be another important agenda.

Green recovery investment packages are seen as a means to push transitions towards green growth, resource efficiency and climate resilience. In a letter titled 'Green Recovery: Reboot and Reboost our Economies for a Sustainable Future' dated 14 April 2020, an alliance of European politicians, business leaders, and environmental activists urged nations to increase green investment in the bloc to develop 'a new model of prosperity' based on sustainability, protection of ecosystems, and transformation of food systems. This paper is based on the analysis of more than 160 fiscal measures announced during the 2008 financial crisis, questionnaire responses by stakeholders and perspectives brought forth through a webinar organized by TERI and GGGI.

## 2. International Experience from the 2008 Economic Shock

The global economic crisis in 2008 had resulted in a massive economic decline in economic activities across most of countries in the world. Nearly all Organization for Economic Co-operation and Development (OECD) countries have suffered a fall in gross domestic product (GDP) and trade flows and increased unemployment rates due to the global economic crisis. In OECD countries, the unemployment rate rose to 8.3 per cent in May 2009. Export volumes of the G-7 (Group of 7 industrialized) countries had fallen by 13.6 per cent in the first quarter of 2009. Compared to 2008 levels, the world trade volumes fell by 16 per cent in 2009. The developing economies were not spared as the crisis spread to the rest of the world through various transmission mechanisms such as the domestic banking sector's exposure to the global financial markets, decline in world trade, and reduction in global aggregate demand. Similarly, in the recent crisis due to COVID 19, there will be a mammoth adverse impact on the Indian economy. As per the World Bank's latest assessment, India is expected to grow at 1.5 per cent to 2.8 per cent. Similarly, the International Monetary Fund (IMF) on 19 May 2020 projected a GDP growth of 1.9 per cent for India in 2020, as the global economy hits the worst recession since the Great Depression in the 1930s. However, a careful assessment and reflection on both the crises can help us to understand that although both the events have led to an economic and financial adversity, there are subtle similarities and differences between the events. The following elaborate upon the same.

***Similarities***

<u>Uncertainties and Unstable Financial Markets:</u> In both the situations there has been an increase in the non-quantifiable risk as the risk cannot be traced easily and hence its probability of occurrence and impact of its effects are largely unmeasured. During the subprime mortgage crisis (the 2008 financial crisis), there was an underlying hidden risk on the mortgage loans provided that was transferred through sound securitized assets and financial vehicles in a manner that nobody knew the magnanimity of the risk. Similarly, in the COVID 19 case, there has been a rise in global uncertainties due to extensive lockdown of economies to reduce the spread of the virus. The global uncertainty indices constructed by IMF reveals that uncertainty has risen due to adverse impacts on financial markets, stock markets in particular. For example, the price to earnings ratio computed on the basis of the S&P (Standard and Poor) Global Ratings was above thirty in both 2020 and 2008,

thereby reflecting the overvaluation in markets while its historical average has been around seventeen since 1881.

Economic Interdependence: In both cases, there have been spill-over effects. In the case of the 2008 crisis, the spill-over effects have been mostly due to the failure of global systematic banks, which had an adverse impact on the financial and banking sector of all economies. Similarly, in the case of the COVID 19 crisis, due to the freezing of international borders, trade activities have been hampered which has resulted in stalling of manufacturing services in several important areas.

***Differences***

Nature of Shocks and Impact on Market Forces: Very clearly, the shocks were endogenous in the 2008 crisis; they first impacted the US financial systems and then had spill-over impacts on other economies. In the COVID 19 crisis case, there were exogenous shocks which had first impacted the Chinese production and manufacturing sectors and then impacted the other economies. In more simple terms, in the first case, the initial contraction was in the demand forces and in the second case, the supply forces were contracted.

Process of Containment: In the case of the 2008 global crisis, all actions were aimed at reviving finance to help the economy recover. The root of the problem was lack of funds in the financial system. However, in the case of the COVID 19 crisis, economic activities were reduced to arrest the spread of the virus and to retain human capital. Hence in the first case, the financial sector was the root of the problem, whereas in the second case, the financial sector is the solution provider.

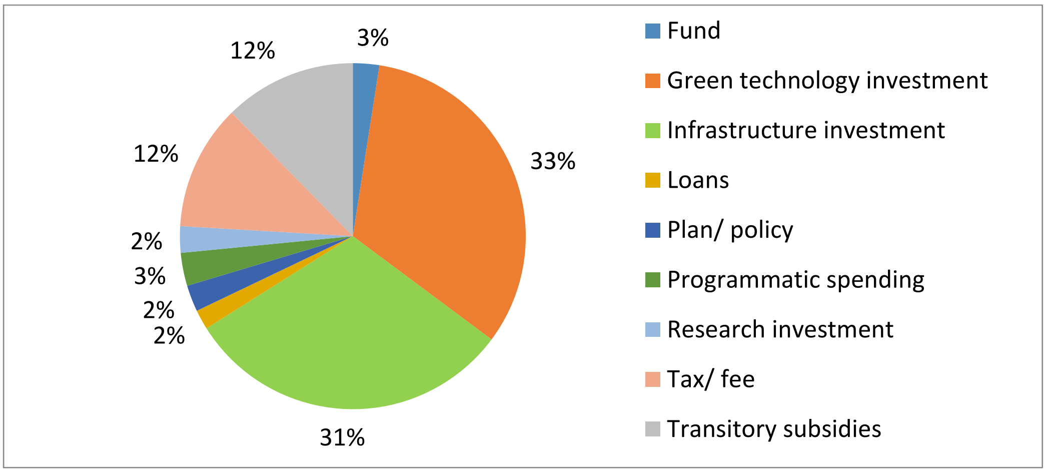
Duration and Recovery: The global crisis of 2008 was brewing much before 2008 and the economic recovery was a very long process with different phases of recovery across various economies. According to the Harvard Business Review, the recovery curve was 'V' shaped in Canada, 'U' shaped in the US and 'L' shaped in Greece. In the case of the COVID 19 crisis, it is difficult to predict the duration of recovery as of now as the event is still continuing in several parts of the world.

## 3. Greening of Economic Recovery

During the 2008 financial crisis, various fiscal and monetary measures were announced. Fiscal measures included direct and indirect green fiscal stimulus measures. Direct green fiscal stimulus measures include direct spending and investments by the government or by the private sector through subsidies and programmes. Indirect green fiscal stimulus measures include instruments like taxes for internalizing environmental externalities. 162 green fiscal stimulus measures as a response to the 2008 financial crisis were analysed, out of which 76 per cent of the measures involved spending in terms of non-liquidity measures (Figure 1; Annexure 1). Most of these were direct spending for infrastructure, green technologies, funds and subsidies.

Green economy as a new policy paradigm was revived following the 2008 financial crisis along with the idea of 'green stimulus packages', where large-scale public investment in specific sectors related to energy and environment could kick-start a green economy. Table 3 shows the economic stimulus package and green investment component in 2009 for various countries. It is seen that the Republic of Korea has the highest share of green component in its fiscal stimulus package followed by the European Union and China. India, at that time, had a relatively small fiscal stimulus and no green component. Countries such as China and the Republic of Korea, which invested more on green technologies, went on to become leaders in these technologies. India, on the other hand, continued with the existing economic model.

**Figure 1: Percentage break-up of types of green fiscal stimulus measures**




*Source: Own Analysis based on GPRC (2009), HSBC (2010), ILO (2010), Strand and Toman (2010)*

**Table 3: Economic stimulus package and green component in countries following the 2008 economic shock**

| Countries | Stimulus Package (USD billion) | Green component (USD billion) | % of green component |
|---|---|---|---|
| Australia | 43.8 | 9.3 | 21.2 |
| Canada | 31.8 | 2.8 | 8.8 |
| China | 647.5 | 216.4 | 33.4 |
| France | 33.7 | 7.1 | 21.1 |
| Germany | 104.8 | 13.8 | 13.2 |
| India | 13.7 | 0 | 0.0 |
| Japan | 639.9 | 36 | 5.6 |
| Mexico | 7.7 | 0.8 | 10.4 |
| South Africa | 7.5 | 0.8 | 10.7 |
| Republic of Korea | 38.1 | 36.3 | 95.3 |
| Britain | 34.9 | 3.7 | 10.6 |
| USA | 787 | 94.1 | 12.0 |
| EU | 38.8 | 22.8 | 58.8 |

*Source: Based on Barbier (2010)*

In case of India, because of robust savings, there were limited interventions needed in terms of economic stimulus in 2008.

## 4. Economic Recovery Responses to the COVID-19 Situation

***International Responses***

Central banks have taken a series of measures to provide liquidity to banks and markets, including through additional longer-term refinancing operations or a reduction of minimum reserve requirements.

- The US Federal Reserve has reactivated commercial paper funding facility to facilitate the flow of funding to corporates through short-term funding markets and established two facilities to support credit to large employers through loan and bond purchases in primary and secondary markets; it has also set up another facility to support lending to small businesses.

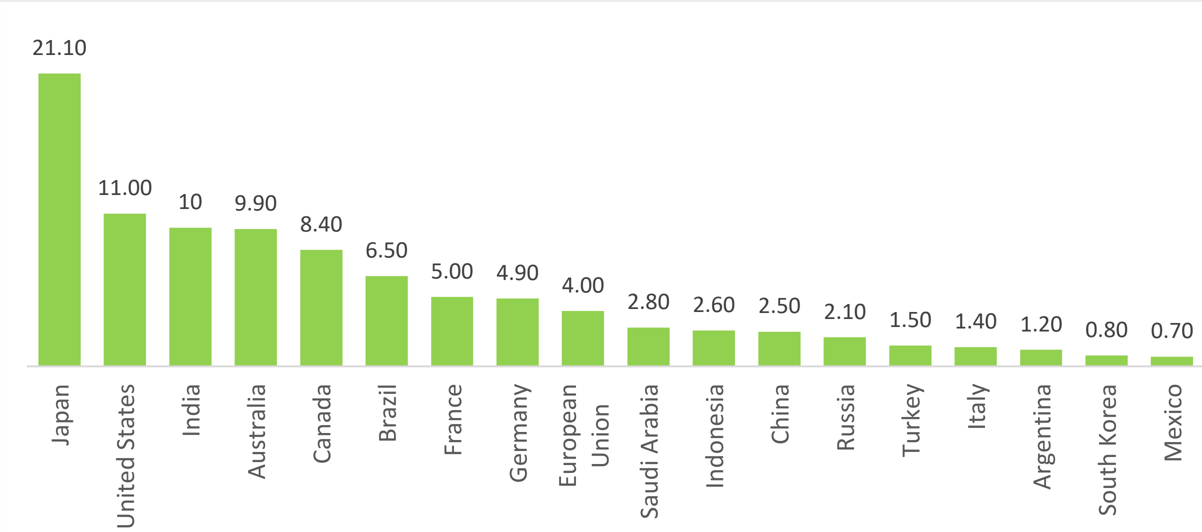
- In order to safeguard the smooth transmission of monetary policy within the euro area, the European Central Bank (ECB) has launched the Pandemic Emergency Purchase Program (PEPP), a temporary asset purchase programme for private and public sector securities.
- The Bank of England has launched a term funding scheme to support SME (small and medium enterprises) lending, a Covid Corporate Financing Facility to support liquidity among larger firms, and is providing liquidity to the banking sector through expanding its liquidity facilities.

***India Responses***

- India's Prime Minister has announced an economic package of INR 20 lakh crores.
- Major rate cuts by RBI such as policy lending rates, cash reserve ratio (CRR) and liquidity coverage ratio for providing cheaper cash to banks have been instigated.
- Loan freeze for a period of three months on term loans has been permitted.
- Provision of special windows for corporate borrowers and rural industries.
- To infuse more money in the monetary systems, the RBI has been injecting additional liquidity in the banking system to keep down bond yields.
- To attract foreign investors, India has opened up a wide swath of its sovereign bond market to overseas investors and to secure access to global indexes.
- To ease the fiscal deficit of state governments, state administrations have been permitted to borrow more for the present year.
- To stabilize the capital market, all capital and debt market services have been exempted from the lockdown.

Figure 2 shows the value of COVID-19 stimulus packages in G20 countries.

**Figure 2: Value of COVID-19 stimulus packages in key economies as percentage share of GDP 2020**




Note: According to Nayyar (2020), the fiscal stimulus for India in terms of spending is INR 2.66 trillion, which is 1.2 per cent of the GDP. Of this, however, Rs 0.9 trillion, or 0.4 per cent of the GDP, is from a drawdown on the existing funds available with state governments (Rs 0.67 trillion) and existing budget provisions (Rs 0.23 trillion). Thus, the effective fiscal stimulus, in terms of extra resources provided by the government, is Rs 1.76 trillion, or 0.8 per cent of the GDP.

*Source: IMF (2020) and GOI (2020)*

## 5. Green Recovery Plan of the European Union

Germany has called for economic recovery programmes to invest in jobs that are future-proof in terms of environmental implications as well jobs. According to a proposal floated by the Netherlands, EU (European Union) recovery funds should be guided by a regional ‘green finance taxonomy’ which should aim at rewarding investments in clean technologies.

Box 1 shows the EU green recovery taxonomy.

**Box 1: EU green finance taxonomy**

The EU green finance taxonomy is designed as a tool to help investors, companies, issuers and project developers to design their initiatives to transit to a resource-efficient, greener and cleaner economy. According to EU (2020: 2), the green finance taxonomy sets performance thresholds (referred to as ‘technical screening criteria’) for economic activities which have the following attributes:

- make a substantive contribution to one of six environmental objectives
- do no significant harm (DNSH) to the other five, where relevant
- meet minimum safeguards (for example, adhering to international norms and guidelines such as the OECD Guidelines on Multinational Enterprises and the UN Guiding Principles on Business and Human Rights)

<table>
<tr><td>Climate change mitigation</td><td>Climate change adaptation</td><td>Sustainable protection of water and marine resources</td><td>Transition to a circular economy</td><td>Pollution prevention and control</td><td>Protection and restoration of biodiversity and ecosystems</td></tr>
<tr><td colspan="6">← Substantially contribute to at least one of the six environmental objectives as defined in the Regulation →</td></tr>
<tr><td colspan="6">← Do no significant harm to any of the other five environmental objectives as defined in the proposed Regulation →</td></tr>
<tr><td colspan="6">← Comply with minimum safeguards →</td></tr>
</table>

*Source: Based on EU (2020)*

## 6. Elements for Greening Economic Recovery while Dealing with COVID-19 in India

The past couple of months have been a time of great learning, and in many ways, they are pointers to the inevitable transformational shifts – both permanent and temporary – towards some of which India may have already set  sail, and many more will follow. For instance, now we know to differentiate between necessary and avoidable work related travel; we have tested that the work from home model works well for many sectors without compromising on the productivity; we have felt the need for newer models for delivery of many health and education related, and other services. We now know the importance of technology (Arogya Setu App) in nationwide quick communication and surveillance. There is a long list of new technology, governance and other initiatives with human connect which sprung up at tremendous speed. We need to build on these as they make perfect economic sense as well as have huge positive implications for climate change and SDGs. However, these are all responses to emergencies and troubled times.

The other important lessons which have deeply touched our lives are the notions of compassion (empathy with both humanity and nature), co-existence, and self-reliance (Speech of PM Modi). We need to build on this momentum. Newly learnt empathy must carry itself to deeply human ways of social and economic activities. These concepts may, on the face of it, sound philosophical with little commercial sense, because they have not been explored for building up efficient and scalable businesses, service delivery systems, and governance models which are also resilient and just.

One of the ways to achieve this is to develop measurable indicators of these concepts and integrate them into our education systems as well as in performance indicators of economic agents (manufacturing, social, financial, services, governance etc.).

In guiding the process experience of the past few months, in India and other parts of the world, it will be immensely useful in addressing the following broad based questions:

- Fundamental shifts to encourage values: What fundamental shifts are needed in terms of reforms in market, fiscal and monetary policies to support, encourage, catalyse and reward the transitions (including through notions of compassion and empathy for humans and nature, co-existence, and self-reliance)?
- Prioritizing measures: How will the government prioritize measures? What should be the parameters against which government actions can be assessed? How can manufacturing systems be built that have an ability to quickly adapt to similar disruptions?
- Technological response to disruptions: How will the energy demand and supply vary? What is the necessary level of travel to achieve a target productivity level? Can we build manufacturing systems with the ability to quickly adapt to similar disruptions? What are the optimal levels of use of digitization tools to enable remote access to health, education, and services?
- Enabling participatory decision-making across all governance levels: What policy frameworks and participatory decision-making models are required to promote risk reduction to pandemics and aid risk reduction, self-reliance at the constitutionally recognized levels/ units of governance? A top down approach will not be prudent and will hurt the Indian growth story more than it will help since actions have to align across all the three tiers of governance. The present pandemic has brought out the need for stronger institutions at the third tier of governance so that essential services are not disrupted. It is also essential to address concerns and ideas coming from the grassroots, from those most impacted by the COVID-19 pandemic situation. What policies are needed to encourage the value addition at the local level as an incentive for resource efficiency, conservation and equitable sharing?
- New research agendas and systems: What is needed to renew focus on inter-disciplinary research on environment and pandemics? What policy support is required to enable such an inter-disciplinary research agenda involving all disciplines such as sciences, applied sciences, social sciences, arts and communication?
- Models of communication: What would be required models of communication and monitoring that aim at providing a healthy environment, social security and safety to all irrespective of their locations in these extraordinary times?
- Natural resources and sustainable consumption and production: What regulatory and fiscal and monetary policy changes are required to protect the environment in terms of conservation as well as sustainable consumption and production?

This is by no means a comprehensive list of questions or issues that need wider discussion and debate in a transparent manner. The notion of recovery is more to do with two types of broad interventions.

One is to do with measures of coping and management of the pandemic and mainly include short-term relief measures. These will comprise the following:

- Humanitarian aid: This includes provision of food, shelter, cash transfer, livelihood social safety nets such as MGNREGS, safe transit to native places and subsistence allowance.
- Strengthening pandemic related health measures: These include health resources, supplies, facilities, equipment, and research on efficient testing, drug and vaccine.
- General management: These include surveillance, guidelines, taskforce, creating facilities, ensuring essential services and evacuation.

Two is to do with addressing the unprecedented simultaneous pressures on demand and supply due to the shutdown of economic and social activities as per government directions. Strategic easing of restrictions has already started and more is to follow based on the review of the situation. This is expected to be dynamic and based largely on the number of new cases. A number of fiscal and monetary measures have already been announced and more are expected to follow. All these measures are expected to be short term (excepting aviation and hospitality and leisure industry) to address the liquidity and working capital issues of the businesses of all types and scales. Opening up of the manufacturing, trading and other services will address the unemployment issue to some extent. Once migrant labour reaches the villages, agriculture (late harvesting of Rabi and sowing of Kharif crops) and MGNREGS can help address the demand side.

Some transitional shifts will come organically and will need only a supporting environment from the government to grow and flourish; while other transitional and some transformational shifts will need a direction and nudge from the government. The rationale for greening economic packages (both short-term relief packages and medium- and long-terms revival packages) in India comes from the rationale of government interventions required to nudge practices from ‘business as usual’ development to more sustainable development path. The sustainability agenda must not be seen as a ‘disruptor’ but as a ‘corrector’. According to the responses to the questionnaire sent by TERI, industry is also in favour of ‘environmental recovery’ along with ‘economic recovery’.

The elements for a greening of the recovery package for India should include the following:

- <u>Federalism</u>: An important aspect of green public finance measures in India is that any the recovery package should contribute towards fiscal federalism along with stronger local institutions. In a recent interaction with the Sarpanchs of Gram Panchayats, the Prime Minister emphasised that, ‘Every village has to be self-sufficient enough to provide for its basic needs. Similarly, every district has to be self-sufficient at its level, every state has to be self-reliant at its level and the whole country has to be self-reliant at its level’. Thus, any green finance package should thus also contribute towards the state and the third tier of government being able to provide public services in crucial areas such as transport, energy, nutrition, food delivery, health, biodiversity, agriculture, waste management as well as water and sanitation.
- <u>Environmental sustainability</u>: According to the Finance Commission, green growth involves ‘rethinking growth strategies with regard to their impact(s) on environmental sustainability and the environmental resources available to poor and vulnerable groups’ (para 3.15, FC 2009). Greening recovery package in India would require the protection of ecosystems and also provisioning of clean air, water, climate change measures, clean energy and resource efficiency.

- Focus on poor and vulnerable groups: In the Indian context, green growth is articulated from the point of view of 'environment sustainability' as well as 'addressing the needs of poor and vulnerable groups'.

## 7. Greening of Recovery Measures: Sectoral Overview

***Public Goods***

Finance: Facilitating investment to renewable energy projects is crucial as investing in renewable energy would deliver global GDP gains of USD 98 in an above the business-as-usual scenario by 2050 by returning between USD 3 and USD 8 on every dollar invested as indicated in a study by the International Renewable Energy Agency. Investments need to be channelized more to energy efficient programmes such as electric vehicles as these are long-term propositions.

According to IMF recommendations on monetary policy, central governments need to provide ample liquidity to banks and non-bank finance companies (particularly to those lending to small- and medium-sized enterprises, which may be less prepared to withstand a sharp disruption) at this stage. Governments could also offer temporary and targeted credit guarantees for the near-term liquidity needs of these firms. Similarly, financial market regulators and supervisors could also encourage, on a temporary and time-bound basis, extensions of loan maturities. In this context, RBI already has priority sector lending norms which target environment sectors. These should be pushed by government through stimulus.

State governments and local bodies should be allowed to borrow more, either from RBI or from commercial banks and other primary dealers, as they are operating under stricter fiscal constraints. RBI needs to enable loans to the government at a discounted interest rate, for the time being, for the required extra expenditure. Existing processes of decision-making such as resource allocation (including state budgeting and national budgeting) can be transformed into SDGs-linked mapping exercises. States like Bihar and Punjab have already initiated this exercise.

Health***:*** The COVID-19 pandemic has created a mounting pressure on the existing healthcare infrastructure of the country; this is expected to continue through 2020 and 2021. In response to this, proactive strategies need to be made and investments to be done to alleviate future pressures on health systems and ensure that services remain high quality, accessible and sustainable. At 3.5 per cent of GDP in 2017 and 1.18 per cent in 2016 (MOHFW 2019), India's overall health spending is among the lowest compared with peer and advanced economies; healthcare needs more robust investment and spending to deal with the current pandemic. Though COVID-19 testing and treatment have been included in the existing Ayushman Bharat scheme which aims to provide free health coverage to the bottom 40 per cent poor and vulnerable population, about 65 per cent of all healthcare expenditure is borne privately by households (OECD 2019). In such a case, the overall spending on health care should increase which has to be supported by strategic stimulus packages.

Moreover, the gaps that will be created in care of patients of other ailments, especially chronic diseases in the short-term can lead to long-term burden on healthcare. Thus, probably, there exists an unprecedented demand for healthcare services both in the long run and short run that would need increased infrastructure investment. On the other hand, the sector will also suffer from the supply side due to the redeployment of healthcare service resources which will be followed by a short-term reduction in the availability of human resources for health, due to disease risks and fatality.

Though the healthcare sector is in need of increased spending in the short term, it is also likely that absolute government spending on healthcare services may fall in the medium term due to the inevitable decrease in government tax revenues associated with economic disruption and increased debt service requirements associated with the use of unprecedented economic support measures. Therefore, not just relief strategy is needed for this sector but also a recovery strategy that would ensure sustainability of healthcare services, first by mitigating the expected increase in demand on the existing system and second, by identifying the ways to minimise the impact of expected decreases in the supply of financial and non-financial resources available to healthcare systems and the disrupted supply chains to ensure green procurement. Research is also needed for the safer and environmentally friendly disposal of healthcare and self-care kits like masks, PPE and gloves.

Waste management: Waste audits conducted by TERI in 2019 revealed that in East Delhi, South Delhi and North Delhi, around 88 per cent, 89 per cent and 95 per cent of households, respectively, were handing over domestic hazardous waste with general municipal solid waste (MSW) (Pandey and Manuja 2020). Biomedical waste (BMW) quantities, which was approximately 559 tonnes per day in 2017, is expected to increase substantially with the COVID-19 outbreak. The city of Wuhan in China witnessed a six-fold increase in BMW quantities during the peak of the COVID-19 outbreak. Household waste is mixed with domestic hazardous waste such as used needles, masks, gloves, bandages etc., and recyclables like plastics and cardboards, all of which may be contaminated with COVID-19. This poses a serious risk to the frontline sanitation workforce and needs to be addressed with the help of government intervention. The government can provide additional investment and incentives to local bodies and municipal corporations dealing with the additional biomedical waste and municipal solid waste generated as a result of the COVID-19 situation.

Education: The Economic Survey 2018–19 highlights the importance of investing in social infrastructure, especially education and health, as a key priority in the development strategy to achieve inclusive growth. As a response, the expenditure on social services (as a per cent of GDP) registered an increase of more than 1 per cent in the period from 2014–15 to 2018–19, from 6.2 per cent in 2014–15 to 7.3 per cent in 2018–19 and the expenditure on education increased from 2.8 per cent to 3 per cent between 2014–15 and 2018–19 (MOF 2019). However, during any economic crisis, similar to other sectors, the education sector also witnesses economic impacts that need to be supported by stimulus packages. Since education is among one of the basic necessities, expenditure spending for this sector usually has not seen any budgetary cuts during any past economic crisis; even if a country suffered budget constraints in the sector during the crisis, they subsequently increased investment through stimulus packages (UNESCO 2009).

During the existing recession caused by COVID 19, though the education centres have been forced to close down, most of them are still operating remotely. Because of the pandemic, the mode of education has been forced to change and adapt as soon as possible to keep the economic wheel of the sector running. However, the infrastructure in terms of technology in India has not achieved a state of both quantity and quality to ensure sound delivery of online education to students across the country. There still exists many technical challenges, for instance, inadequate power supply and ineffective internet connectivity across the country (especially in rural areas) that need to be addressed through additional infrastructural and financial investments to ensure the sustainability of the educational sector both in the short and long term. Online teaching has become essential in the time of this pandemic. Sufficient infrastructure in terms of both hardware and software is required especially in rural areas or else this could increase inequality though the 'digital divide' (Kundu 2020).

***Agriculture***

The world food crisis in 2008–09 resulted in increased food prices and higher volatility in the international markets due to trade restrictions by major exporters (FAO 2011). Due to complex, inter-connected and often global supply chains, restrictions on movement, economic activities and trade because of the containment measures that many countries are adopting due to COVID-19 have already caused major disruptions in food systems. Targeted supports to farmers have been provided to help tide over the COVID-19 crisis. The EU Executive has adopted a temporary framework for state aid increasing public support to agriculture, with farmers now benefiting from up to 100,000 euros per farm. Canada is increasing Farm Credit Canada by USD 5 billion.

Farming makes up over 46% of the Indian landscape and contributes to about 15 percent of India's gross domestic product (GDP). Agriculture is the primary source of livelihood for about 58 per cent of India's population; 85 per cent of farmers (117 million) are smallholder farmers and cultivate in less than 2 hectares of land. Clear guidelines have been issued and support provided by the government of India to ensure local-level production and that markets can operate safely, delivering food to vulnerable communities. Under the PM-KISAN scheme, income support is provided to all small and marginal farmer families across the country, in three equal instalments, to help them purchase inputs for their agricultural crops. Up to 800 million low-income or deprived individuals are being provided with double their current monthly entitlement of 5 kg wheat or rice at subsidised rates over three months, at no extra cost. To ensure adequate availability of protein, 1 kg of pulses per family are being provided free of cost for three months. The recovery package for the agri-food sector in the context of on-going health crisis should support local and national food security and informal and formal food-related small and medium enterprises. Government investment and support should focus on strengthening and shortening food supply chains, reinforcing regional food systems, agriculture resilience, food processing, food safety, and sustainable sourcing (World Bank 2020). It is essential that efforts to transform agri-food systems to bring about greater contribution to the 2030 Agenda for Sustainable Development are included in recovery packages. A green recovery investment package for the agri-food sector must take into account schemes aimed at improving farmers' competitiveness, supporting business growth in the rural economy and incentivising farmers to improve the environment. COVID-19 economic response scenario must include these imperatives for sustainable agri-food systems transformation in India: soil management (organic farming, zero tillage, retention of agricultural residues); crop diversification, cropping system optimization, and management; water management (extending the coverage of irrigation and improving water use efficiency); sustainable land management (agroforestry, conservation agriculture); risk sharing (co-investment, community engagement), risk transfer (crop/livestock insurance), and improved forecasting and agro-advisory (localised weather forecasting).

***Industry***

There was considerable impact on the heavy engineering sector comprising capital goods, transport equipment and other machinery goods post the 2008 global financial crises. The immediate adverse impacts were witnessed in the developed economies of US and several European economies which had gradually trickled down to the developing economies via spill-over effects. One of the most disastrous consequences was job losses and increase in poverty. Post 2008 economic crisis, USA had extensively laid the work for manufacturing resurgence and fostered competitiveness through launching 'Manufacturing USA' consisting of thirteen manufacturing hubs that bring together industry, academia and government partners to bridge the gap between applied research and product development, leading the way to new advanced manufacturing capabilities.

<u>MSMEs</u>: Micro, small and medium enterprises form the backbone of India's manufacturing sector. Share of MSME in India's gross value added in 2016–17 was estimated at 31.8 per cent, while share of MSME related products in total exports was 48.10 per cent. The estimated number of workers in unincorporated non-agriculture MSMEs in the country in 2015 was 11.10 crores. However, the

COVID -19 pandemic is anticipated to affect India's vibrant MSME, risking product development, investments and employments.

The COVID-19 situation can be used as an opportunity not only to help the sector regain momentum but also ensure that the recovery is environmentally sustainable and socially responsible. Unlike the aftermath of the 2008 financial crisis, when the emphasis was primarily to revive the manufacturing sector without providing much emphasis on green growth options, today, green investment options are plentiful. Renewable energy is now cheaper than coal. There is greater availability of cleaner fuels gas. Hence, any revival package for the sector needs to emphasize the renewable energy transition in the sector.

Adoption of Industry 4.0 is increasingly considered as a way of leap frogging efficiency and quality standardization. It is characterized by digitization and interconnection of products, value chains and business models. This will help in achieving transparency in production processes, reduced inventories, improvements in the health and safety of workers, maintenance process standardization, energy-efficient and environmentally sustainable production and systems, effective use of human and material resources, and 100% traceability. The revival package needs to identify how some of the existing schemes including Industrial Infrastructure Upgradation Scheme (IIUS) and Technology Upgradation Fund Schemes can be made more effective and attractive to MSMEs and facilitate faster adoption of Industry 4.0. This is also an opportunity to revive the ZED (zero effect, zero defect) certification scheme for MSMEs and the Eco-mark schemes. Green bonds also offer a range of options for MSME financing, including that issued by banks that can aggregate MSME loans, the securitization of MSME loans into asset-backed securities and the issuance of mini-bonds by medium-sized enterprises.

Manufacturing: An United Nations Conference on Trade and Development (UNCTAD) study in 2020 has estimated that the most impacted sectors in the EU, US, Japan, Taiwan and Korea due to COVID 19 include machinery, automotive, communication equipment and chemicals sectors resulting in shrinking of global foreign direct investment (FDI) by 5–15 per cent, due to the downfall in the manufacturing sector coupled with factory shutdown. The Central Bank of Nigeria (CBN) has provided N2 trillion to the manufacturing sector. Indonesia announced a USD 725 million stimulus package last month to support its tourism, aviation and real estate industries, followed by a second stimulus package of USD 8 billion. This includes corporate tax cuts for select manufacturing sectors. Indonesia had provided exemptions in value added tax (VAT) and import duties on raw materials and capital goods. Canada had provided tax reliefs in capital goods and machinery. India is yet to formulate a set of concrete measures in manufacturing after the COVID-19 fall-out.

*Automotive*: The auto component industry forms the backbone of India's burgeoning automobile sector with three fourths of the total sales being generated in the Indian market. The auto-components industry accounts for 2.3 per cent of India's GDP and employs as many as 1.5 million people directly and indirectly each. In recent months, the auto industry had been witnessing multiple disruptions, due to the transition from BS IV to BS VI as well as increase in demand from mobility services and electric vehicles. The post COVID-19 pandemic recovery can be used as an opportunity to adopt and promote resource efficient and environmentally positive transition in the automotive sector. In particular, the original equipment manufacturers (OEM) need to explore how they can constructively engage with component manufacturers in catching up with the transition to greener fuel. Opportunity for fleet modernization particularly in the commercial segment, with possible GST incentives can be considered as a key element of the recovery package for the sector which will not only help in retiring old and polluting commercial vehicles but also encourage increased production of BSVI compliant vehicles, thereby promoting investments, income and employment. It is also an appropriate time to formally announce India's much awaited vehicle scrappage policy which can further help in the retirement of old vehicles, as well as provide new business opportunities for component manufacturers through sale of certified components in the domestic market. Revival packages can also prioritize support to those component manufacturers who have plans for investing in assembly lines that promote sustainable mobility solutions. Priorities can also be provided based on adoption of Industry 4.0 that can leap frog efficiency and quality standardization, promote energy-efficient and environmentally sustainable production and systems, and support effective use of human and material resources.

*Chemicals*: India has seen an increase in the imports of chemicals and petrochemicals during the last five years (MOCF 2020). In recent times, the petrochemical industry is a critical sector in terms of helping with masks or sanitizers (Reuters 2020). In terms of cost advantage, import might be a more economic option. India can push the existing petrochemical sector to take greener measures and provide fiscal incentives to the firms who have put in place air filtration systems for the removal of PM2.5 (particulate matter that have a diameter less than 2.5 micrometres) , VOCs (volatile organic compounds) and malodorous gas released from petrochemical processes. Following the 2008 economic crisis, South Korea, through fiscal stimulus, pushed for air filtration systems in the petrochemical industry in the country (GGBP 2013). India too can give a boost to environmental performance in the petrochemical industry through recovery packages by providing incentives to companies with good sustainability performance as well as through spending for promoting R&D for green technologies, biodegradable or reusable petrochemical products and pilot projects. In terms of air purity, air filtration measures such as scrubbers and/or systems that can simultaneously remove PM2.5, VOCs and malodorous gas released from petrochemical processes can be promoted. Resource efficiency needs a major boost in the petrochemical sector; recycling industrial by-products and optimization of resource and energy use have to be promoted. The petrochemical sector also produces a lot of plastic and hence, circular economy models needs to be promoted. In this sector, the government can give a boost to existing certifications and labelling schemes like ZED, Eco-mark and other internationally accepted standards. Conditional incentives can be provided to those companies who have certification or those who commit to have the certification and labelling.

*Metals and mining*: Three inherent elements of the metals and mining sector are energy use, resource use, and carbon emissions. Being a hard to abate sector, the focus should be on managing and optimizing these elements. Demand for metals has been linked to fixed capital investments, and the tighter conditions due to economic turmoil may lead to decline in infrastructural and other related activities that will face production cuts and major layoffs. The sector has faced plunges in prices of metal and mineral commodities following the crisis of 2008, and also in 2015; however, it strongly recovered in one year and six months respectively. India can leverage this opportunity to build sustainable practices and improve the efficiency of unsustainable practices. Appropriate enablers that can encourage shift from linear to circular economy, material efficiency and recycling need to be introduced. The Indian government is formulating green practices in metals and mineral sector; it has also recently issued the steel scrap recycling policy. India is rich in resources and can explore the export potential through R&D support and incentives on exploration activities which can attract private investors and also state of the art technology development. The star rating of mines and existing labels can also help the government provide fiscal incentives for the better performing mines.

*Textile and leather*: Within the industry sector, there are a few industries such as textile and leather that are highly labour intensive and largely export oriented. These industries will have severe adverse impact due to the COVID-19 pandemic. Both the demand and supply side have been gravely affected and these sectors are also facing serious challenge on the labour front. Not only is a sizeable proportion of the labour force in these sectors in the migrant category but the work environment is also highly congested and unhealthy making the workforce prone to COVID-19 which is highly contagious. Hence, even after the end of the lockdown period, the work schedule in these sectors will be hampered significantly.

Approximately, one third of India's textile production is export oriented. In 2018–19, the textile industry contributed to seven per cent of the country's industrial output (in value terms) and 15 per cent to the export earnings (IBEF 2020). In a macroeconomic perspective, about two per cent of the Indian GDP in 2018–19 was contributed by the textile sector; the industry employed more than 45 million people in 2018–19 (IBEF 2020). During the financial crisis of 2008, the textile unit was the most affected and received stimulus from respective governments to ensure recovery of the sector (Forstater 2009). Internationally, the Chinese textile industry received increased export tax rebates while 10 per cent government subsidy was provided by the Bangladesh government to their knitwear manufacturers. In Cambodia, profit tax was exempted for garment factories while a cash subsidy on cotton was provided by the Egyptian government. In the current context of COVID-19, the Clothing Manufacturers Association of India has already estimated that garment manufacturers in the country could face up to one third drop in their sales. Recently, the Synthetic and Rayon Textiles Export Promotion Council has requested the Indian government for a recovery package which includes immediate measures like special export incentive, reduction of freight charges, waiver of interest charges on loans other than long terms measures like enhancement of working capital limit and provision of working capital without collateral and margin money (TVC 2020).

In terms of textile sector, the government of India is already formulating a 'New Textile Policy' for overall development of the textile sector. The new policy will address issues and challenges faced by the textile sector across the value chain including exports (MOT 2020). Since the New Textile Policy is also expected to have a strong component of foreign direct investors to source materials from within the Indian textile clusters, a strong certification and labelling push is recommended as more international brands are becoming eco-conscious. Presently, India already has a ZED certification scheme for MSMEs and the Eco-mark which also includes textiles. The Eco-mark scheme for textiles is in line with international standards for the textile sector (MOEFCC 2010). According to the Ministry of Micro Small and Medium Enterprises, only 5 MSMEs have the ZED certification (MOMSME 2020). The COVID-19 situation can be used as an opportunity to push the textile sector so as to not only make it more sustainable but also more competitive keeping in line with international norms and standards. Through any recovery measure for the textile sector, the government should encourage the adoption of sustainable labels (Eco-mark, ZED and other internationally accepted labels). New funding through stimulus to support opportunities for low-income women to pursue advanced training and new sustainable technologies will further boost cooperative businesses in women's traditional industries related to textile and apparel (GSP 2020). For the textile sector in general, stimulus measures can include early release of TUFS (Technology Upgradation Funds Scheme) subsidies and RoSL (rebate of state levies)/RoSCTL (rebate of state and central tax levies) arrears, MSMEs' debt restructuring, e-auctioning of CCI (Cotton Corporation of India) procured cotton, and extension of exports credit. Support to traders will also have to be made available through digitized options and through local institutions in the time to come.

In the leather industry, there are 4.42 million people employed (CLE 2019); it accounts for approximately 13 per cent of the world's leather production of hides and skins. India is the second largest leather garments exporter in the world. In 2018–19, Indian export earning was USD 5.69 billion from export of footwear, leather and leather products. As a response to COVID-19, the

Indonesian government has announced a second stimulus package for 19 industries including textile and leather. The package includes fiscal incentives like 30 per cent reduction of income tax for six months, deferral of import tax payment, VAT refund relaxation and income tax exemption for workers within selected income bracket as well as non-fiscal incentives like simplification of export–import activities (ASEAN Briefing 2020). In the Indian context, the Council of Leather Exports (CLE) has claimed that due to the COVID-19 pandemic, shipment order of INR 76,000 crores has been cancelled already (KNN 2020). The council has requested the Indian government to provide a comprehensive stimulus package which includes improvement of liquidity and cash flow, faster tax refund and measures to enhance export competitiveness along with increase in working capital loan, wage subsidy and interest subventions (Simhan 2020).

<u>IT and telecom sector</u>: With the 'stay at home and stay safe' motto underpinning the COVID-19 crisis, the role of information technology (IT) and the telecom sector became essential to strengthen and smoothen economic and social functions, globally and in India as well. The COVID-19 crisis has led to massive digitisation of financial services, health care (tele-medicine), provision of essential services such as online delivery and E-education among others. Due to the COVID-19 crisis, there has been a surge of 10 per cent in web traffic. The IT industry in India which was expected to grow at 7.7% in the financial year (FY) 2020 is set to have a muted growth due to COVID-19. The demand for telecom services may be affected due to slow growth in developed economies. As one of the largest global provider of IT services including human resources, travel restrictions would impact the movement of IT professionals across the globe. According to the Investment Information and Credit Rating Agency, ICRA (2020), large scale digital transformations are envisaged with a focus on modernising older systems requiring significant financial resources. Due to the crisis, intra circle roaming rates has been initiated for day to day operations; the mounting debt of around 90 thousand crores (adjusted gross revenues, AGR) and the closure of factories (mobile phones) have also led to negative impact on the workers in each manufacturing facility. The recovery package could look at reducing the future payment towards AGR debt; providing a specific relief package for the manufacturing sector would be essential. The green recovery package could focus on the construction and preparation of solar rooftops and water harvesting for mobile towers and efficient air cooling systems for server rooms among others. The industry could also make an attempt to establish an app and software that would be useful to track COVID-19 patients. With the future highly uncertain in context to normalcy, there would be a strong need for the IT and telecom sector to provide faster services that would be beneficial for work from home employees and work from home students among others.

The telecom industry/IT industry has been one of the sectors which have been functioning even during the lockdown (Sharma 2020). With companies like Tata Consultancy services (TCS) envisaging a work model where 75% of the company's workforce will work from home by 2025, the role of high-end ultra-fast communications industry will be a fundamental step to achieving such practices (Khetarpal 2020). Increasing work from home options would require telecom industry to fulfil demands for high speed and high quality communication services. This demand needs to be fulfilled with a continuous supply of optical fibre cables and other IT equipment. With increasing demand for IT services and facilities, the role of this sector will be critical for reviving India's economy. Greening the IT/telecom industry could include the use of photo-voltaic installations in telecom towers that largely run on diesel generators.

***Energy and transport***

<u>Power</u>: With regard to electricity generation, the Indian government has set out ambitious targets for the year 2022 and under the overall energy sector planning. While energy enables the growth of

economy, it also poses a threat to the environment in the form of air pollution and green-house gas emissions. Looking at the current scenario, a little more than half of the total installed capacity of 370 GW and 74 per cent of electricity generation in India are based on a single source, i.e., coal which continues to remain the issue for sustainable development of the energy sector. The impact of the 2008 financial crisis led to the decline in flow of debt from banks to renewable energy developers and resulted in rise of capital costs; access to credit became more difficult. The on-going economic stimulus will give India a chance to reset its energy policies and increase focus on renewable energy through interventions by analysing the impact of crisis on the demand scenarios and the short- and medium-term investment plans and potential financing needs for existing and future clean energy projects. There has been a collapse in the demand for electricity during the COVID-19 pandemic, which has led to an increased share of renewable generation penetration due to the 'flexibilisation of coal', whereby coal-based thermal power plants supply power only to fill the gaps left by solar and wind energy units. There will also be an opportunity for clean energy transition as part of coping strategies and support measures. Furthermore, the crash in world oil prices can free up revenues to help tackle the crisis by promoting greener technologies for which incentives can be provided. Subsidies provided for green energy in FY19 were INR 11,604 crores compared to the subsidies for oil, gas and coal, which amounted to INR 83,134 crores.

Transport: Although it is yet to be evaluated, the economic impact of COVID-19 on the transport systems is severe; disruption in the supply chain will also affect freight movement. There is a high likelihood that the COVID-19 outbreak will have a long-term impact in the way we travel and this would affect the revenue streams and create financial pressure across the sector.

*Tax instruments and subsidies*: Tax instruments including tax cuts and exemptions, tax credits, subsidies and new environmental taxes were also employed. However, most of the tax provisions aimed to promote greater fuel efficiency in vehicles. Provisional motor tax exemptions were offered in Germany and Denmark for procuring a new vehicle between November 2008 and June 2009 and this was applicable for electric vehicles (EVs) and vehicles in conformity with Euro 5 and Euro 6 standards (ILO 2010). China slashed the sales tax for cars with smaller engines in January 2009 by 10–5 per cent to promoting sales in the auto sector (Anderson 2012). It also has provisions for allowances to rural citizens to upgrade vehicles and increase subsidies for scrappage. Many EU nations like Italy, France and Germany have implemented scrappage programmes within their stimulus packages which have seen success in raising car sales in Japan and Germany. For example, a scrappage bonus of EUR 2500 is offered for swapping an old vehicle, which is more than nine years old, with a new vehicle. Japan launched a scrappage programme called the 'Eco-Friendly Vehicle Purchase Program' in April 2009 which provides payment to procure green efficient vehicles (JAMA 2009; EIA 2010). Green tax schemes were introduced in 2009 in Japan and Korea for consumers trading old vehicles. Tax cuts on small vehicles in Brazil helped to stabilize sales in 2008–2009 (OECD 2009).

*Tax exemptions*: In order to promote EVs, EU member states such as Denmark, Austria, Germany, Finland, Portugal and Spain have policy measures in place. For instance, Denmark stretched its tax exemption till 2015 end. In Austria, the Austrian Climate and Energy Fund Initiative reinforces tax incentives for EVs, for example, traffic restriction exemptions and charging stations. The 'Green Economy and Social Reform' stimulus plan of Japan emphasized hybrid vehicles. The Republic of Korea allocated USD 1.8 billion as stimulus for low carbon vehicles (World Bank 2009). Similarly, USD 4 billion was invested in advanced batteries and income tax credits for plug-in hybrids to compensate for the slowdown in the US economy under the American Recovery and Reinvestment Act (Idaho National Laboratory 2015).

*Government spending*: The European Commission proposed the European Economic Recovery Plan (EERP) in response to the global financial crisis under which the 'European green cars initiative' was launched (EU 2011). Ground-breaking solutions in the field of electro-mobility and logistics led to the development of lower carbon vehicles including hybrids and EVs across EU states. Germany launched the National Platform for Electric Mobility in May 2010 to attain a production of at least one million EVs by 2020 (German Federal Government 2009; NPE 2013). Similarly, Sweden had kept aside EUR 3 billion to invest in R&D for automobiles to give a push to low carbon vehicles (ILO 2010). The National Development and Reform Commission (NDRC) stimulus package helped China invest RMB 300 billion (USD 44 billion) to manufacture 3 million hybrid and 1.5 million pure electric cars by 2015. Stimulus measures also facilitated RMB 10 billion (USD 1.5 billion) in subsidies to manufacture energy efficient cars (ILO 2010).

*Investment in infrastructure*: A number of EU states implemented policies pertaining to endorsement of energy efficiency in the transport infrastructure under the ambit of their respective state energy efficiency strategies and action plans by 2010. For example, the stimulus package for Spain provided eco-driving of private and public vehicles, urban mobility schemes and a competent private car fleet. As per the action plan for electric mobility launched in November 2010, 250000 EVs are to be in circulation of which 85 per cent are utilized for public and company fleets (DowJones 2010). Germany kept aside EUR 2 billion to spend on public transportation during 2009 and 2010 (ILO 2010). Belgium lays emphasis on a transport policy which promotes R&D and reinforces energy efficient options to both road and air traffic (Pasquier and Jollands 2010). Close to USD 8.5 billion was invested in building a green transport system with low carbon high speed rail network and bicycle tracks in the Republic of Korea (Kamal-Chaoui, et al. 2011). Countries like France, Republic of Korea, China and Italy have allocated stimulus packages to erect high speed railway networks with the aim of reallocating travel away from carbon-intensive aviation. China had injected around USD 5 billion fiscal investments in 2010 for rail expansion. France and Italy have both put aside USD 1.3 billion for erecting high speed railway networks (ILO 2010). A study has shown that there is substantial investment of close to 26 per cent of the total green stimulus on energy efficient rail development (HSBC 2010).

***Tourism***

The World Travel and Tourism Council (WTTC) has estimated that the pandemic would lead to the loss of 50 million jobs worldwide in the travel and tourism industry, which contributes 10 per cent of the global GDP (WEF 2020) (WTTC 2020). WTO estimates that the current pandemic scenario will cause a negative impact on the demand and supply aspects of the tourism sector (WTO 2020). The WTTC foresees the pandemic to cost the tourism sector globally at least USD 22 billion in 2020 (Agarwal 2020; KPMG 2020). Tourism in India provides over 87 million jobs which contribute 12.75 per cent to the country's employment (Ministry of Tourism 2019). The present pandemic situation could leave over 38 million people jobless, which is approximately 70 per cent of the total tourism and hospitality sector workforce in India (KPMG 2020).

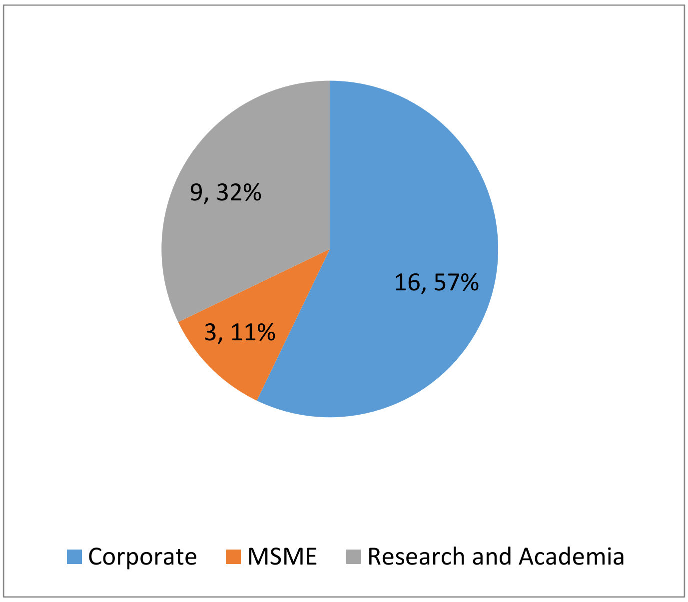
With the objective of propelling the growth of tourism against the COVID-19 impact, countries like France, Singapore, Vietnam, Cambodia, Australia, Philippines, Indonesia have introduced stimulus measures such as deferment of tax deadlines, creating exemptions and creating taskforces to develop strategies to boost the sector (Medina 2020; Pelligana 2020).

In India, some of the measures put forward by the tourist industry before the government include GST holiday for all tourism services with a 12 month waiver for the entire tourism industry with regard to property and excise taxes, postponement of payment of due GST for the Covid-19 period and cutback on electricity tariffs (Agarwal 2020). The industry has also recommended the extension of moratorium to 12 months to facilitate liquidity and help businesses; tourism entities need to be treated as priority sector units and provided with easy lending facilities. Industry bodies have requested for the setting of a taskforce for centre and states to continuously monitor, strategize and execute a recovery and revival plan (FICCI 2020).

## 8. Validation exercise

As a validation, especially from industry (both large and MSMEs) and from peer researchers, the writing team sent out a questionnaire seeking inputs specifically aimed at validating the recommendations of the review done by the team as well as for soliciting inputs on their idea for greening economic recovery measures. With regard to recent announcements as well as the long-term vision, a webinar was also organized to understand the perspectives of stakeholders after the announcement of the economic package of INR 20 lakhs crores by the Indian government in May 2020. The questionnaire was an open ended structured questionnaire. The key question was to determine the type of respondent (large industry, MSME or research). Then, the question was also asked how, in a COVID-19 response, economic activities could be greened. In total, 28 responses were received in a period of five days. Figure 3 provides the breakup of responses received.

**Figure 3: Response**




*Source: Questionnaire, N=28*

There were no conflicting viewpoints among the respondents and all of them felt that the present pandemic situation should be leveraged to realize the SDGs and NDC commitments.

*An opportunity to attract investment*: According to large companies, international investors and financial institutions are becoming conscious of ESG (environment, social and governance) parameters; having industries that are sensitive to ESG requirements would also attract more investors.

*Sustainability reporting*: Respondents from the industry were in favour of self-reporting mechanisms though through a system which can be made more transparent. Data should also be comparable for various parameters.

*Incentive based mechanisms*: Once government takes measures beyond the immediate relief and survival measures, economic recovery measures should incentivise green industries who should receive stronger recognition and differential incentives in the form of concessional credits or subsidies. Non-financial means of stronger market recognition is also important.

*Role of states and markets*: The role of the state or government would be paramount. Policies should be incentive based if governments were to incentivise industry in the direction of environmental sustainability. If a green recovery path has to be pushed, the government will have to stimulate market demand for environmental goods and services.

*Longer-term measures*: It is to be expected that in the first few announcements, the Indian government would prioritize immediate relief measures. However, medium- and long-term measures will be equally important and these will have to factor in environmental aspects. Measures with medium and long time horizon would include stimulus packages. Stimulus packages factoring in environment should have longer time horizons with low interest rates as sectors may take time to reach reasonable capacity utilization due to the pandemic situation.

*Infrastructure investments*: Investment in cold storage facilities for farm produce, locally sourced transport fuel, renewable energy projects, resource efficiency, micro-grids and special economic zones focussing on environmental goods and services would be needed.

*Focus on MSMEs*: There is a need for creating holistic incentive packages for green MSMEs which not only includes financial incentives but also facilitation of intellectual property based resources and marketing support to green MSMEs. There can be talks for daughter funds for greener MSMEs.

*Revenue support*: The government should cap prices of fossil fuels and use the freed revenue for sustainable development related activities. There can be some increase in taxes in luxury sector items and items which deteriorate health and the environment.

*Implementation and support in the federal context*: Economic recovery measures should align policies and actions not only at the national level but also at the state and local level along with strengthened local capability.

## 9. Ways Forward: Towards a Framework for Greening of Recovery Package

The economic packages would include short-term relief measures as well as medium- and long-terms recovery measures for transformational shifts. In terms of relief measures, economic packages would mostly constitute cash and food for sustaining life and spurring demand targeted at sections consisting of farmers, migrant workers and low income households. This would be supplemented by measures for easing cash flow and working capital for manufacturing, trading and services especially for MSMEs. Finally, short-term measures would be aimed at expenditure for managing COVID-19 in terms of prevention, diagnosis and treatment. While short-term measures do not have much scope for greening, stakeholder consultations through the webinar clearly brought out that options such as funds-of-funds or daughter funds and sustainable livelihood opportunities through MGNREGS would need to be explored. International experience shows that in the medium and long term, if recovery packages are targeted well, these can be used as a means to promote environmental sustainability by nudging industry players to upgrade technologies, adopt government norms, and inject investments into developing environmental goods and services which would have markets in the near future. An example of an environmental service is renewable energy based services which is being explored by the Ministry of New and Renewable Energy.

The measures analysed would include both short-term recovery measures and transformational shifts. Recovery packages would mostly constitute: cash and food for sustaining life and spurring demand (farmers, labour, low income); cash flow easing and working capital (manufacturing, trading, service, small business); and expenditure for managing COVID-19 in terms of prevention, diagnosis and treatment. While it may seem that short-term measures do not have much scope for greening, international experience shows that for industries, greening of recovery packages can be used as a means to nudge industry players to upgrade technologies, adopt government norms, and inject investments into developing new products which would have markets. This paper is based on the analysis of more than 160 measures announced during the 2008 finance crisis, questionnaire responses by stakeholders and perspectives brought forth through a webinar organized by TERI and GGGI. The findings are summarised.

Lessons from the past: Learning from the lessons of the Great Depression, multiple recovery packages can be expected. Green stimulus packages should be thought of as interventions for the long term. Stimulus measures should look at fundamental changes and not merely rely on market forces. Role of the 'state' is paramount. Self-reliance has to be nuanced and should not imply nationalization which can be more damaging for the environment as local may not always be good for the environment. Self-reliance should also imply dealing with climate change and not merely relying on international cooperation. The 2008 experience shows that direct fiscal measures in terms of public spending were used by the government. Presently, the overall spending component of the economic package in India is low and ranges 1–2 per cent.

Increase in public spending and investment in green technology and infrastructure: There should be public pressure for changing technology paths such as fuel use in industry and transportation along with sustainable agricultural practices. For economic measures to be inclusive, resilient and green, it is essential to go beyond liquidity issues and delve into the domain of environmental reforms and changes in decision-making processes. Additional infrastructural and financial investments are needed to ensure the sustainability of the educational sector both in the short and long term. It would be important to upgrade IT infrastructure for remote learning and working in both rural and urban settings. Financial market regulators could also encourage, on a temporary and time-bound basis, extensions of loan maturities. In this context, RBI already has priority sector lending norms which targets environment sectors. These should be pushed by the government through banking sector policies.

Risk based decision-making: Post COVID-19 economic recovery path should consider investing in interventions that can 'reduce risks' from pandemics in the future rather than just aiming at creating higher growth.

Aligning decision-making with SDGs: SDG-aligned budgeting or green budgeting should be used as a framework for better alignment of government spending with environmental objectives and sustainable development goals. This will be a good starting point in eventually moving towards integration of environmental concerns and concepts into development planning and budgeting.

Revenue and resource allocation: In terms of greening the GST based on the concepts of environment friendly goods and services and other goods, we need to review the rates as well and cancel input credit for certain goods and services. The crash in world oil prices can free up revenues of the government which can be used to incentivise environmental sustainability measures. If the government does not bring down the market oil prices and continues to tax luxury goods and goods with negative environmental externalities, the revenues can be directed towards environmental sustainability measures in industry.

A holistic notion of health: Health needs to be looked at more holistically in terms of both human and environmental health; the concept of ecosystem services can aid in the same. Relief strategy is needed for this sector but also a recovery strategy that would ensure sustainability of healthcare services, first by mitigating the expected increase in demand on the existing system and second by identifying the ways to minimise the impact of the expected decrease in the supply of financial and non-financial resources available to healthcare systems and the disrupted supply chains to ensure green procurement. The government must provide funding for research needed for the safer and environmentally friendly disposal of healthcare and self-care kits like masks, PPE and gloves.

Incentive attached to information instruments: India is yet to formulate a set of concrete measures in manufacturing after the COVID-19 fall-out. The government can give encourage improvement in processes to existing certifications and labelling schemes like ZED, Eco-mark and other internationally accepted standards. Conditional incentives can be provided to those companies who have certification or those who commit to have the certification and labelling. Measures related to public procurement should be seen as an opportunity for pushing for sustainable public procurement in India and nudging market players in the right direction.

MSMEs: The banking sector needs to nudge MSMEs towards resource efficiency and circularity by providing concessional and incentive-based credit. Since the notion of 'self-reliance' and 'self-sufficiency' can lead to increased domestic manufacturing in India including in the MSME sector, there perhaps can be daughter funds in existing funds wherein the daughter funds can focus on green activities. For MSMEs, the revival package needs to identify how some of the existing schemes including Industrial Infrastructure Upgradation Scheme (IIUS) and Technology Upgradation Fund Schemes can be made more effective and attractive to MSMEs and facilitate faster adoption of Industry 4.0.

Strengthening capacity at state and local levels: The government can provide additional investment and incentives to local bodies and municipal corporations dealing with the additional biomedical waste and municipal solid waste generated as a result of the COVID-19 situation. The argument here is if this function is given to municipal bodies, it should be ensured that the local bodies have adequate revenue and human resources to undertake this function efficiently. This should enable 'self-sufficiency' of local bodies. State governments and local bodies should be allowed to borrow more either from RBI or from commercial banks and other primary dealers as they are operating under stricter fiscal constraints. RBI needs to enable loans to the government at a discounted interest rate, for the time being, for the required extra expenditure. Existing processes of decision-making such as resource allocation (including state budgeting and national budgeting) can be transformed into SDGs-linked mapping exercises.

Focus on livelihoods and natural resources: COVID-19 economic response must include efforts to transform agro-food systems and must take into account schemes aimed at improving farmers' competitiveness, supporting business growth in the rural economy and incentivising farmers to improve the environment. There is a need for capacity building to reap the benefits of existing government schemes such as MGNREGS, which can contribute to employment as well as to environmental sustainability. Emphasis on self-reliance approaches to be adopted by the Indian government should result in the creation of durable assets through natural resource management and through agriculture and allied activities. Sustainable jobs in the energy sector need to be recognized as these jobs will stay in the markets and have the potential to lead to a green recovery. Economic packages should lead to sustainable livelihood outcomes; these outcomes need to enhance natural capital. Economic packages can cater to rural workforces who can become skilled personnel in the renewable energy sector through the *Suryamitra* programme. Skill India training centres, which currently mostly cater to urban areas, can be expanded to rural areas along with stronger market and industry linkages in terms of the training and course content. The present farm labour situation in states like Punjab can be turned into an opportunity for boosting sustainable agricultural practices such as the use of direct seeding technology as well as sustainable cropping patterns.

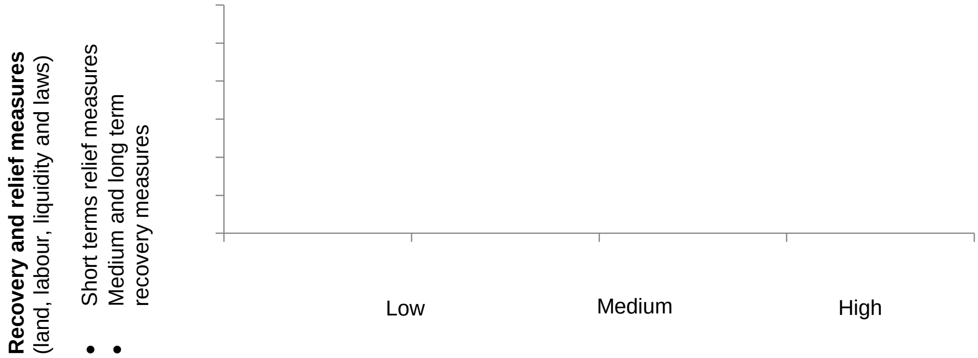
Energy investment is a win–win measure: In transport, scrappage programmes within stimulus packages can be implemented to phase out old cars and boost car sales. Tax incentives can be provided for electric vehicles and infrastructure investment would be needed for public transport including bus and rail transport. As compared to the traditional power sector, damage to the renewable energy sector has been lesser in the COVID-19 times. This implies that the renewable industry is less prone to market disruptions.

Integrating informal knowledge with formal knowledge: Policies should not only be innovative but must emanate from the needs of the common people and the informal sector who are usually not well represented in government decision-making processes. Global institutions should contribute to transforming these processes through which solutions are being looked at. There is a need to proactively create pathways for listening to the ideas of the common people. The central tenet in green recovery transformation is to proactively foster innovation in project and policy formulations by linking the informal sector with the formal sector. Innovative solutions need to be converted into actionable propositions and the role of civil society becomes important for ensuring social justice and building capacities at the local level.

Implications for international cooperation: More projects need to be initiated through bilateral cooperation with India. Substantial funding opportunities such as ‘Go For SDGs’ have been created for projects; hence, leveraging on such opportunities is the need of the hour. The forthcoming EU recovery plan will focus more on creating jobs, tax reforms, fiscal reforms and greening public procurement. There is a need to explore international cooperation opportunities for a circular economy and sustainable water management in the post COVID-19 era. The international climate community has not been able to provide a concrete solution on international finance and market instruments. Timelines of low carbon scenario will need to be revisited in light of the COVID-19 situation keeping in mind the imperatives of sustainable development and poverty eradication.

Need for a framework on green recovery measures: A framework is needed to examine green recovery in terms of assessing current actions of the government as well as to suggest actions in the medium- and long-term period. As next steps, a comprehensive exercise based on the framework suggested here could be undertaken to map measures against implications such as cost, sustainability and risk reduction. It could become a tool to map economic recovery against outcomes related to SDGs in terms of risk reduction, demand creation, livelihood related outcomes, and environmental outcomes. The exercise can identify economic recovery measures and demands created in backward linked sectors. The potential demand created, costs incurred, labour outcomes in terms of skilled and unskilled jobs, risk reduction, and environmental outcomes (water management, emissions reduction, and pollution abatement) can also be estimated. The demand created in the economy as well as the impact on SDGs can be estimated.  A possible framework is presented in Figure 4.

**Figure 4: Possible framework for assessing implications for various measures across sectors**




**Implications for outcomes for five pillars**

- Economy
- Infrastructure
- Demand
- System
- Demography

(in terms of reduction of future pandemic risks, costs, jobs and employment, economic outcomes (GDP; goods and services; ESG investments; revenue collection; environmental outcomes (clean air, water, land, SCP and waste, climate change); ecosystem services; and other SDGs outcomes)

The analysis can inform the development of a participatory decision-making tool, which can be developed to map existing interventions and future interventions against parameters such as potential for risk reduction, labour market outcomes, environmental outcomes and inclusive economic growth outcomes.

### Annexure 1: Green stimulus measures

| Name of Instrument | Sector | Type of Instrument |
|---|---|---|
| ***Austria*** | | |
| ÖBB (Austrian railways investments) | Rail | Infrastructure investment |
| Energy-saving renovation charge | Energy efficiency | Transitory subsidies |
| Science, research and development, innovation expenditures | Renewable/energy efficiency | Research investment |
| Globalisation 'campaign' | Renewable/energy efficiency | Transitory subsidies |
| Green technologies | Renewable/energy efficiency | Research investment |
| Car scrapping premium | Car | Transitory subsidies |
| Energy saving cheques | Energy efficiency | Infrastructure investment |
| ***Belgium*** | | |
| Energy subsidy to households | Energy efficiency | Transitory subsidies |
| Green investments | Renewable/energy efficiency | Infrastructure investment |
| Investments in energy efficiency public buildings | Building | Green technology investment |
| Reduction of household electricity costs | Energy efficiency | Transitory subsidies |
| Fund for the reduction of the global energy cost (FRCE) | Energy efficiency | Transitory subsidies |
| Suspension of car tax on new vehicles | Car | Tax/ fee |
| Reform of car tax | Car | Tax/ fee |
| Green transport infrastructure spendings | Car/ rail/ bus | Infrastructure investment |
| Premium for new car purchases | Car | Transitory subsidies |
| $CO_2$-friendly renovations of houses | Building | Infrastructure investment |
| Corporate innovation and energy efficiency credit | Energy efficiency | Infrastructure investment |
| ***Brazil*** | | |
| Support to automotive sector | Car | Green technology investment |
| **Czech Republic** | | |
| Reinforcement of investment into transportation infrastructure | Car/rail | Infrastructure investment |
| Increased expenditure with respect to extended access to transportation | Car/rail | Infrastructure investment |
| Extension of the VAT deductions for passenger cars | Car | Tax/ fee |
| Subsidy programme | Building | Transitory subsidies |
| Reinforcement of the PANEL subsidy programme | Energy efficiency | Transitory subsidies |
| ***Denmark*** | | |
| Suspension of car tax on new vehicles | Car | Tax/ fee |
| Reform of car tax | Car | Tax/ fee |
| Green transport infrastructure spendings | Car/rail/bus | Infrastructure investment |
| Premium for new car purchases | Car | Transitory subsidies |
| $CO_2$-friendly renovations of houses | Building | Infrastructure investment |
| Corporate innovation and energy efficiency credit | Energy efficiency | Green technology investment |
| ***Finland*** | | |

| Name of Instrument | Sector | Type of Instrument |
|---|---|---|
| Transport infrastructure projects | Rail/Highway | Infrastructure investment |
| Allocation for basic road maintenance | Road | Infrastructure investment |
| Water supply and sewer works | Water | Infrastructure investment |
| Allocation for basic rail maintenance | Rail | Infrastructure investment |
| Green technologies investments | Renewable | Green technology investment |
| ***France*** | | |
| "Grenelle de l'Environnement" | Overall | Plan/ policy |
| Public investments in development of network industries | Rail/network | Infrastructure investment |
| Car bonus | Car | Transitory subsidies |
| Rail | Rail | Infrastructure investment |
| Plan to develop a zero-carbon-emissions vehicle, including R&D support | Low carbon | Green technology investment |
| Investment on renewable energy and hydro energy | Renewable | Green technology investment |
| Sustainable agriculture, renewable energy | Climate change/renewable | Green technology investment |
| Building efficiency | Building | Infrastructure investment |
| Railway networks and water management projects | Rail | Infrastructure investment |
| Beyond the stimulus package: "Ecotax" on carbon emissions | Low carbon | Tax/ fee |
| ***Germany*** | | |
| Expansion and rehabilitation of Federal transport infrastructure with KfW program | Rail/highway/sewage car | Infrastructure investment |
| Vehicle tax suspension | Car | Tax/ fee |
| Car bonus | Car | Transitory subsidies |
| Car loans | Car | Loans |
| Car tax reform | Car | Tax/ fee |
| Transportation | Car/rail/bus building | Infrastructure investment |
| Energy efficiency of buildings fund | Renewable/energy efficiency | Fund |
| Central innovation programme for SMEs (ZIM) promoting applied research for environmental improvement | Renewable/energy efficiency | Green technology investment |
| Energetic building renovation programme of KfW | Energy efficiency | Green technology investment |
| Green investment | Renewable/energy efficiency | Green technology investment |
| Green job | Job | Programmatic spending |
| The Renewable Energy Sources Act | Renewable energy | Green technology investment |
| The Transfer Renewable Energy and Efficiency (TREE) project | Renewable energy | Green technology investment |
| ***India*** | | |
| Allocation to National Highways authority of India (NHAI) | Highway | Infrastructure investment |
| Accelerated Power Development and Reform Programme | Energy efficiency | Infrastructure investment |
| Provision for Brihan Mumbai Storm Water Drainage Project | Water | Infrastructure investment |

| Name of Instrument | Sector | Type of Instrument |
|---|---|---|
| ***Italy*** | | |
| No increase of highway toll | Highway | Tax/ fee |
| Renewable energy and energy savings | Renewable/Energy porgramme | Green technology investment |
| The Car Stimulus Package: Fuel-efficient vehicles | Car | Transitory subsidies |
| Rail investments | Rail | Infrastructure investment |
| ***Japan*** | | |
| Creating jobs | Job | Programmatic spending |
| Grant to create infrastructure for local energy | Energy efficiency | Infrastructure investment |
| Subsidies for agriculture, forestry and fishery sectors | Climate change | Transitory subsidies |
| Projects for the acceleration of the dissemination of environmentally-friendly home electric appliances | Building | Green technology investment |
| Acceleration of the dissemination of environmentally-friendly vehicles | Car | Green technology investment |
| Establishment of "eco point" scheme for houses | Building | Green technology investment |
| Developing research infrastructure networks | Low carbon | Green technology investment |
| Promotion of green innovation | Renewable | Green technology investment |
| Promotion of low-carbon industrial locations | Low carbon | Green technology investment |
| Emergency support for Asia and Africa | Climate change | Green technology investment |
| Tax cuts | Energy efficiency/ Renewable/ Energy efficiency | Tax/ fee |
| ‘Green Economy and Social Reform’ plan | Overall | Plan/ policy |
| ***Lithuania*** | | |
| Introduction of object source Improvement in insulation and energy efficiency in public buildings | Energy efficiency | Green technology investment |
| ***People's Republic of China*** | | |
| Car sector support | Car | Research investment |
| Cut in the sales tax for cars | Car | Transitory subsidies |
| Low-carbon vehicles | Car | Transitory subsidies |
| Energy efficiency in rail | Rail | Infrastructure investment |
| Green lining China’s economic stimulus plans: energy efficiency in grids | Grids | Green technology investment |
| Energy conservation, emission control and environmental protection projects | General environment | Programmatic spending |
| Improved sewage ports and waterways | Water | Green technology investment |
| Sustainable development | Climate change | Green technology investment |
| Technical innovation, industrial restructuring | Infrastructure | Infrastructure investment |
| Public transportation investments in railway, road, irrigation and airport. | Rail | Green technology investment |

| Name of Instrument | Sector | Type of Instrument |
|---|---|---|
| Investment in solar power capacity | Renewables | Infrastructure investment |
| Rural development | Rural development | Infrastructure investment |
| Post-quake reconstruction works | Infrastructure | Infrastructure investment |
| Planning to increase subsidies for farmers | Agriculture | Transitory subsidies |
| Tax cut | Clean technology | Tax/ fee |
| Wind sector, low-carbon power | Renewable/low carbon | Green technology investment |
| Beyond the stimulus package: Green investment in renewable energy | Renewable energy | Green technology investment |
| Beyond the stimulus package: Investment in energy efficient buildings | Building | Infrastructure investment |
| Beyond the stimulus package: Energy consumption to be reduced from standard coal | Efficient energy | Plan/ policy |
| Beyond the stimulus package: Renewable energy target | Renewable energy | Plan/ policy |
| ***Poland*** | | |
| Investment in renewable energy from national fund for environmental protection | General environment | Fund |
| ***Portugal*** | | |
| Installation of solar panels and micro-generation | Renewable energy | Green technology investment |
| ***Slovenia*** | | |
| Sector specific support | Car/building/renewable/energy efficiency | Green technology investment |
| Environmental actions | Climate change | Infrastructure investment |
| Energy savings and efficiency | Energy efficiency | Infrastructure investment |
| Promotion and mobility and road safety | Road | Infrastructure investment |
| Support to automotive sector | Car | Transitory subsidies |
| Support to the strategic projects in the field of clean and technologically advanced industry | Climate change | Green technology investment |
| Energy rehabilitation of buildings in public ownership | Building | Infrastructure investment |
| ***Spain*** | | |
| Sector specific support | Car/building/renewable/energy efficiency | Research investment |
| Environmental actions | Climate change | Green technology investment |
| Energy savings and efficiency | Energy efficiency | Green technology investment |
| Promotion and mobility and road safety | Road | Infrastructure investment |
| Support to automotive sector | Car | Transitory subsidies |
| ***Sweden*** | | |
| Energy efficiency | Energy efficiency | Green technology investment |
| Climate investments | Climate change | Green technology investment |
| Other measures for protecting the climate | Climate change | Green technology investment |

| Name of Instrument | Sector | Type of Instrument |
|---|---|---|
| ***Netherlands*** | | |
| Schiphol/aviation/flight tax | Aviation | Tax/ fee |
| Waterways, locks and inland ports | Water | Infrastructure investment |
| Faster implementation of FES environmental and sustainability projects | Climate change | Green technology investment |
| Car scrapping schemes | Car | Tax/ fee |
| Sustainable farming | Climate change | Green technology investment |
| Electronic cars | Car | Green technology investment |
| Energy investment tax credit | Renewable/energy efficiency | Tax/ fee |
| Residential energy savings | Energy efficiency | Green technology investment |
| VAMIL/MIA (SMEs tax reduction for ecological investment) | Climate change | Tax/ fee |
| Sustainable energy | Renewable/energy efficiency | Green technology investment |
| Spatial economy (Van Geel motion) | Land use | Green technology investment |
| Sustainable business | Business | Green technology investment |
| ***United Kingdom*** | | |
| Warm front project | Energy efficiency | Green technology investment |
| Accelerated decent home programme by providing funds to houses with energy efficiency and heating measures | Energy efficiency | Green technology investment |
| Cut in VAT | Energy efficiency | Tax/ fee |
| Expansion railway network capacity | Rail | Infrastructure investment |
| Support energy and resource efficiency | Renewable/Energy efficiency | Green technology investment |
| Decentralised small-scale and community low-carbon energy programme | Low carbon | Green technology investment |
| Low-carbon vehicles | Car | Fund |
| Support low-carbon industries and advanced green manufacturing | Low carbon | Green technology investment |
| Accelerated call for trans-European transport projects (TEN-T) | Energy efficiency | Green technology investment |
| Plan to spend budget reserves on energy and internet infrastructure | Energy efficiency | Infrastructure investment |
| Climate change financing by EIB | Climate change | Loans |
| EBRD additional credit for green and infrastructure investment | Renewable/Energy efficiency | Infrastructure investment |
| British Waterways network infrastructure | Water | Infrastructure investment |
| Expenditures on flood defence infrastructures | Water | Infrastructure investment |
| Low-carbon power | Low carbon | Infrastructure investment |
| Jobs in the low-carbon sector | Job | Programmatic spending |
| ***United States of America*** | | |
| Clean energy | Renewable energy | Green technology investment |

| Name of Instrument | Sector | Type of Instrument |
|---|---|---|
| Highway construction | Highway | Infrastructure investment |
| Investment in building and home energy conservation programmes | Building | Infrastructure investment |
| Tax credits for energy-efficiency improvements | Energy efficiency | Tax/ fee |
| Rail, high speed rail investment | Rail | Infrastructure investment |
| Low carbon vehicles | Car/bus | Infrastructure investment |
| Tax incentives to spur savings and green jobs | Renewable | Tax/ fee |
| Energy efficiency and renewable energy programs | Renewable/energy efficiency | Green technology investment |
| Federal loan for renewable-energy systems and electricity transmission | Renewable | Green technology investment |
| Modernizing of nation's electricity grid | Grid | Green technology investment |
| Army corps of engineers (water) and other | Water | Infrastructure investment |
| Water infrastructure projects | Water | Infrastructure investment |
| Improvement of national parks | Climate change | Infrastructure investment |
| ARRA extends the PTC for the sectors under TARP | Renewable | Fund |
| Carbon capture | Low Carbon | Green technology investment |
| DoE loan guarantees | Energy | Loans |
| Capital subsidy for a new plant | Renewable | Transitory subsidies |
| Job creation | Job | Programmatic spending |
| The proposed Waxman-Markey American Clean Energy and the Security Act of 2009 (ACESA) | Green policy | Tax/ fee |

*Source: Own Analysis based on GPRC (2009), HSBC (2010), ILO (2010), Strand and Toman (2010)*

## Bibliography

***References***


ADB (Asian Development Bank) (2009), *The Global Economic Crisis: Impact on India and Policy Responses*, URL: https://www.adb.org/sites/default/files/publication/156019/adbi-wp164.pdf (Accessed on 19 May, 2020).

Agarwal, V (2020), "COVID-19 and Tourism", *KPMG*, URL: https://home.kpmg/in/en/blogs/home/posts/2020/03/covid-19-and-tourism-travel-hospitality-and-civil-aviation.html (Accessed on 19 May, 2020).

Anderson, G E (2012), *Designated Drivers: How China Plans to Dominate the Global Auto Industry*, John Wiley & Sons.

ASEAN Briefing (2020), "Indonesia Issues Second Stimulus Package to Dampen COVID-19 Impact", URL: https://www.aseanbriefing.com/news/indonesia-issues-second-stimulus-package-dampen-covid-19-impact/ (Accessed on 19 May, 2020).

Atlantic Council, https://atlanticcouncil.org/blogs/new-atlanticist/can-we-compare-the-covid-19-and-2008-crises/

Barbier, Edward B (2010), *Global Governance: The G20 and a Global Green New Deal*, Department of Economics & Finance, University of Wyoming, Laramie.

CLE (Council for Leather Exports) (2019), *Indian Leather Industry*, Chennai: CLE.

DowJones (2010), "Spain Pledges EUR 590 Million to Boost Use of Electric Cars", URL: http://www.easybourse.com/bourse/actualite/news/813665/.

EIA (Energy Information Administration) (2010), *International Energy Outlook 2010: Transportation Sector Energy Consumption*, Washington, DC: Energy Information Administration.

EU (2020), Taxonomy: Final Report of the Technical Expert Group on Sustainable Finance (March 2020)

EU (European Union) (2011), *European Green Cars Initiative*, Brussels, EU.

FAO (2011), "Lessons from the World Food Crisis of 2006-08". In *The State of Food Security in the World 2011*. Rome: Food and Agriculture Organization of the United Nations, pp. 21–31

FEB (Financial Express Bureau) (2019), "Textile Bodies Urges Centre to Come up with Stimulus Measures", URL: https://www.financialexpress.com/industry/textile-bodies-urges-centre-to-come-up-with-stimulus-measures/1716490/

FICCI (Federation of Indian Chambers of Commerce & Industry) (2020), "FICCI Seminar on the Indian Tourism Industry; Impact, Survival and Roadmap to a Better Future", FICCI.

Forstater, M (2009), *Implications of the Global Financial and Economic Crisis on the Textile and Clothing Sector*, Geneva: International Labour Organization.

FSB (2020), "COVID-19 Pandemic: Financial Stability Implications and Policy Measures Taken" https://www.fsb.org/wp-content/uploads/P150420.pdf

German Federal Government (2009), *Nationaler Entwicklungsplan Elektromobilität – NEPE*, Berlin: German Federal Government.

GGBPI (Green Growth Best Practice Initiative) (2013), *Korea's Green Growth Experience: Process, Outcomes and Lessons Learned*, Seoul: GGBPI, https://www.greengrowthknowledge.org/sites/default/files/downloads/resource/Koreas-Green-Growth-Experience_GGGI.pdf

GPRC (Government of the People's Republic of China) (2009), "China's Stimulus Helps Meet Green Goals", URL: http://www.china-embassy.org/eng/gyzg/jjmy/t560080.htm (accessed 21 May 2020).

GSP (Green Stimulus Proposal) (2020), "A Green Stimulus to Rebuild Our Economy", URL: https://medium.com/@green_stimulus_now/a-green-stimulus-to-rebuild-our-economy-1e7030a1d9ee.

HSBC (2010), *Delivering the Green Stimulus*, London: HSBC Climate Change & Global Research.

IBEF (India Brand Equity Foundation) (2020), *Leather Industry and Exports*, New Delhi: IBEF.

IBEF (India Brand Equity Foundation) (2020), *Textile Industry & Market Growth in India*, New Delhi: IBEF.

Idaho National Laboratory (2015), "Plug-in Electric Vehicle and Infrastructure Analysis", September 2015.

ILO (International Labour Organization) (2010), *Green Stimulus Measures*, EC-IILS joint discussion paper series No. 15.

ILO (International Labour Organization) (2010), *Green Stimulus Measures*, Geneva: ILO.

ILO- A review of global fiscal stimulus https://www.ilo.org/wcmsp5/groups/public/---dgreports/---inst/documents/publication/wcms_194175.pdf

JAMA (Japan Automobile Manufacturers Association) (2009), *Fact Sheet Japanese Government Incentives for the Purchase of Environmentally Friendly Vehicles*, JAMA.

Kamal-Chaoui, L, Fabio Grazi, Jongwan Joo, and Marissa Plouin (2011), *The Implementation of the Korean Green Growth Strategy in Urban Areas*, OECD Regional Development Working Papers 2011/02,Paris: OECD Publishing.

Kelkar, V (2012, July), Interview on green growth for Green Growth and Development Newsletter. (S. Kedia, Interviewer)

Khetarpal, S (2020), "Post-COVID, 75% of 4.5 Lakh TCS Employees to Permanently Work from Home by '25; from 20%", URL: https://www.businesstoday.in/current/corporate/post-coronavirus-75-percent-of-3-5-lakh-tcs-employees-permanently-work-from-home-up-from-20-percent/story/401981.html (Accessed on 19 May, 2020).

KNN (Knowledge and News Network) (2020),
"Leather Exporters Seek Govt Help after Orders Worth Rs 7600 Cr Got Cancelled Amid COVID-19 Outbreak", URL: https://knnindia.co.in/news/newsdetails/sectors/leather-exporters-seek-govt-help-after-orders-worth-rs-7600-cr-got-cancelled-amid-covid-19-outbreak (Accessed on 19 May, 2020).

KPMG (2020), *Potential Impact of COVID-19 on the Indian Economy*, KPMG.

Kundu, P (2020), "Indian Education Can't Go Online – Only 8% of Homes with Young Members have Computer with Net Link", URL: https://scroll.in/article/960939/indian-education-cant-go-online-only-8-of-homes-with-school-children-have-computer-with-net-link (Accessed on 19 May, 2020).

Medina, A (2020), "ASEAN Incentives to Counter COVID-19 Impact", ASEAN Briefing, URL: https://www.aseanbriefing.com/news/asean-incentives-to-counter-covid-19-impact/ (Accessed on 19 May, 2020).

MOCF (Ministry of Chemicals and Fertilizers) (2020), Import of Chemicals and Petrochemicals (Loksabha Question), New Delhi: MOCF, Government of India.

MOEFCC (2010), "Ecomark Criteria for Textile", New Delhi: MOEFCC, Government of India, URL: http://cercenvis.nic.in/indproduct.html

MOF (2020), https://pib.gov.in/PressReleasePage.aspx?PRID=1616022

MOF (Ministry of Finance) (2019), “Expenditure on Social Services Increased by More than One Percentage Points as Proportion of GDP during Last Five Years: Economic Survey”, New Delhi: MOF, Government of India, URL: https://pib.gov.in/newsite/PrintRelease.aspx?relid=191204

MOHFW (Ministry of Health and Family Welfare) (2019), *Public Health Expenditure*, New Delhi: MOHFW, Government of India, URL: https://pib.gov.in/Pressreleaseshare.aspx?PRID=1580410

MOMSME (Ministry of Micro, Small and Medium Enterprises) (2020), "ZED Certified MSMEs - 13 - Manufacture of Textiles", New Delhi, MOMSE, Government of India.

MOT (Ministry of Textiles) (2020), New Textile Policy (Lok Sabha Question), New Delhi: MOT, Government of India.

MOT (Ministry of Tourism) (2019), *Annual Report 2019*, New Delhi: MOT, Government of India.

Nayyar, D (2020), “Stress on supply-side in economic package while neglecting demand reveals flawed understanding of economies”, URL: https://indianexpress.com/article/opinion/columns/coronavirus-economic-relief-package-nirmala-sitharaman-pm-modi-6423005/ (Accessed on 23 May, 2020).

NPE (National Electric Mobility Platform) (2013), *Vision and Roadmap of the National Electric Mobility Platform,* Systemic Approach Working Group, Berlin: NPE.

OECD (2009), *Responding to the Economic crisis: Fostering Industrial Restructuring and Renewal*, Paris: OECD.

OECD (Organisation for Economic Co-operation and Development) (2019), *OECD Health Statistics* 2019, France: OECD, URL: https://stats.oecd.org/Index.aspx?DataSetCode=SHA

Pasquier, S B, and N Jollands (2010), *Summary of Country Reports Submitted to the Energy Efficiency Working Party: Period from January 2010 to September 2010*, Paris: International Energy Agency.

Pelligana, D (2020), “COVID-19: Economic Stimulus in ASPAC”, KPMG.

PMO (2020), https://pib.gov.in/PressReleasePage.aspx?PRID=1618955

Reuters (2020), "World has Historic Opportunity for Green Technology Boost: IEA", URL: https://bit.ly/3fboTV4

Sharma, S (2020), “These Industries Allowed to Open; Check Full List of Lockdown Relaxations for Services, Factories”, URL: https://www.financialexpress.com/economy/these-industries-allowed-to-open-check-full-list-of-lockdown-relaxations-for-services-factories/1928915/ (Accessed on 19 May, 2020).

Simhan, T (2020), “Domestic Leather Sector Flattened as $1-B Export Orders Stand Cancelled”, URL: https://www.thehindubusinessline.com/news/domestic-leather-sector-flattened-as-1-b-export-orders-stand-cancelled/article31453535.ece (Accessed on 19 May, 2020).

Strand, J and M. Toman (2010), “Green Stimulus,” Economic Recovery, and Long-Term Sustainable Development, Washington, DC: World Bank.

TFC (Thirteenth Finance Commission) (2009). *Report of the Thirteenth Finance Commission*. New Delhi: Finance Commission.

TVC (Textile Value Chain) (2020), *Post COVID Economic Recovery and Business Continuity Plan by SRTEPC*, TVC.

UNESCO (United Nations Educational, Scientific and Cultural Organisation) (2009), *Early Impact Assessment of the Global Financial Crisis on Education Financing: Country Case Studies*, Montreal: UNESCO.

WEF (World Economic Forum) (2020), “This is How Coronavirus could Affect the Travel and Tourism Industry”, URL: https://www.weforum.org/agenda/2020/03/world-travel-coronavirus-covid19-jobs-pandemic-tourism-aviation (Accessed on 19 May, 2020).

World Bank (2009), *Republic of Korea's Green Stimulus,* Washington, DC: World Bank.

World Bank (2020). “Three Imperatives to Keep Food Moving in a Time of Fear and Confusion”, Blog by Juergen Voegel, URL: https://blogs.worldbank.org/voices/three-imperatives-keep-food-moving-time-fear-and-confusion (Accessed on 5 May, 2020.

WTO (World Tourism Organization) (2020), “Tourism and COVID 19” , URL: https://www.unwto.org/tourism-covid-19 (Accessed on 19 May, 2020).

WTTC (World Travel and Tourism Council) (2020), “Open Letter from WTTC to Governments”, URL: https://wttc.org/News-Article/Open-letter-from-WTTC-to-Governments-from-WTTC-and-the-Travel-Tourism-sector (Accessed on 19 May, 2020).

***Web-links***

http://ficci.in/spdocument/23196/Impact-of-COVID-19-on-Indian-Economy-FICCI-%2023-03-2020.pdf

http://indiaenvironmentportal.org.in/files/Study_Financial_Crisis_impact_on_RE_.pdf

http://www.seaisi.org/News/842/Economic+downturn-+its+impact+on+steel+demand+and+outlook+

https://dipp.gov.in/programmes-and-schemes/infrastructure/industrial-infrastructure-upgradation-scheme-iius

https://economictimes.indiatimes.com/https://economictimes.indiatimes.com/news/economy/policy/revise-upgrade-schemes-to-help-msmes-battled-covid-19-gadkari/articleshow/75071199.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

https://economictimes.indiatimes.com/markets/stocks/news/coronavirus-whats-its-impact-on-indias-auto-sector/articleshow/75078607.cms?from=mdr

https://economictimes.indiatimes.com/news/economy/policy/covid-19-why-india-needs-a-stimulus-package-quickly/articleshow/74738382.cms

https://economictimes.indiatimes.com/news/economy/policy/the-steps-india-has-taken-so-far-to-contain-economic-fallout-of-covid-19/articleshow/75285944.cms

https://globalnews.ca/news/6721577/trudeau-farmers-loans-coronavirus-covid19-agriculture/

https://obamawhitehouse.archives.gov/sites/obamawhitehouse.archives.gov/files/achievements/The%20Record%20-%20The%20Economy.pdf

https://qz.com/india/1841174/coronavirus-is-indias-chance-to-pursue-clean-energy-aggressively/

https://telanganatoday.com/fiscal-conservatism-is-imprudent-now?fbclid=IwAR2nigiFF33twMO9QcPcXOhxos-o-J3oOzQLkF9vq1hVeeiLeWHhC-hQGgk

https://www.adb.org/sites/default/files/publication/28663/impact-asia-and-emerging-consensus.pdf https://www.business-standard.com/podcast/current-affairs/how-telecom-sector-is-coping-with-a-10-data-demand-spike-amid-covid-19-120032301553_1.html

https://www.business-standard.com/podcast/current-affairs/how-telecom-sector-is-coping-with-a-10-data-demand-spike-amid-covid-19-120032301553_1.html

https://www.ceew.in/publications/mapping-india%E2%80%99s-energy-subsidies-2020

https://www.cnbc.com/2020/03/26/coronavirus-india-needs-a-support-package-larger-than-20-billion-dollars.html

https://www.euractiv.com/section/agriculture-food/news/eu-farm-ministers-seek-targeted-measures-to-withstand-covid-19/

https://www.first5000.com.au/blog/the-impact-of-covid-19-on-manufacturing/

https://www.ibef.org/industry/autocomponents-india.aspx

https://www.icraresearch.in/research/ViewResearchReport/2938

https://www.imf.org/en/About/FAQ/imf-response-to-covid-19#Q3

https://www.indiatoday.in/business/story/coronavirus-5-indian-sectors-that-need-urgent-help-as-virus-ravages-economy-1670099-2020-04-23

https://www.prnewswire.com/in/news-releases/net-zero-carbon-emissions-from-harder-to-abate-sectors-is-technically-and-financially-possible-by-mid-century-700901041.html

https://www.theguardian.com/environment/2020/apr/20/green-energy-could-drive-covid-19-recovery-international-renewable-energy-agency

https://www.thehindu.com/news/national/covid-19-lockdown-suspension-of-mobile-manufacturing-to-hit-telecom-sector-kpmg/article31274242.ece

https://www.wri.org/blog/2020/04/after-covid-19-5-ways-india-can-pursue-sustainable-and-resilient-recovery