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Greening Post COVID-19 Economic Recovery in India

A Case for Green Fiscal Stimulus

DISCUSSION PAPER
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Executive Summary

The COVID-19 pandemic crisis has brought to forefront, the importance of reducing environmental risks in the process of economic development and risk reduction in future. The COVID-19 pandemic highlights that the need to look at health more holistically in terms of planetary health which encompasses both human health and ecological health. Greening the development process could help reduce future risks. Given the pandemic linked, disruption in the economy, kick-starting the economy presents an opportunity for economic as well as environmental revival. However, greening the economy is a long process and the actions aimed at reviving the economy have to be so designed as to yield benefits in the short as well as medium and long term. A plan for greening economy should therefore cater to the goals in all these timeframes and can be geared towards meeting sustainable development goals (SDGs) and the nationally determined contributions (NDCs). This discussion paper analyses the present measures taken by various countries and also measures announced during the 2008 financial crisis. Stakeholder consultations and validations was carried out through a questionnaire and through a webinar organized by The Energy and Resources Institute and the Global Green Growth Institute.

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. The package has five pillars: (1) economy; (2) infrastructure; (3) system; (4) vibrant demography; and (5) demand. In the short term, the greening of economy needs to be consistent with the goals of sustainable and self-reliant India as foreseen by the economic package. The actions in the short term would aim at promoting inclusivity, job creation and livelihoods. The key objective should be to protect jobs in the unorganised informal sector and integrate them with the formal sector where the fiscal concessions and environmental gains can be enforced and monitored. At the same time, short term measures should also foster innovation and achieve higher economic efficiency. In the medium and long term, the actions lie in the domain of reforms and changes in decision-making processes. This can include fiscal and financial support as well as policies and measures that can create viable and sustainable models of businesses and inclusive development. Certain shifts will come organically and will need only a supporting environment from the government to grow and flourish; while others will need a direction and nudge from the government. There is a need for a decision-making tool to measure the efficacy of green actions over the short, medium and long term and map economic recovery against outcomes that related to parameters such as risk reduction, sustainable development goals, environmental outcomes or demand and livelihoods.

From the recent COVID-19 responses from around the world, relief packages constitute cash and food for sustaining life and spurring demand targeted at workers, farmers and low income families. In addition, cash flow easing and provision of working capital targeted at manufacturing, trading, service and small businesses is seen. Moreover governments around the world have allocated fiscal spending for managing COVID-19 in terms of prevention, diagnosis and treatment. A key aspect of economic packages internationally has been that there has been a larger fiscal 'spending' component. In case of India, the fiscal stimulus for India in terms of spending is INR 2.66 trillion, which is 1.2 per cent of the GDP (Nayyar 2020). Within this, INR 0.9 trillion (0.4 per cent of the GDP) is from existing funds available with state governments (INR 0.67 trillion) and existing budget

provisions (INR 0.23 trillion). Thus, the effective fiscal stimulus, in terms of extra spending is INR 1.76 trillion which is 0.8 per cent of the GDP¹.

From the lessons of the Great Depression, multiple recovery packages can be expected from the government. From the 2008 financial crisis experience, governments in many countries used fiscal stimulus measures in terms of public spending. 162 green fiscal stimulus measures as a response to the 2008 financial crisis were analysed, out of which 86 per cent of the measures involved spending related measures. Most of these were direct fiscal measures in terms of spending for infrastructure, green technologies, funds and subsidies. Only 2 per cent of the analysed measures were loan related measures and 12 per cent were tax related or indirect fiscal stimulus measures. In response to the COVID-19 pandemic as well as the 2008 financial crisis response, other countries have a significant fiscal spending component in their economic recovery packages. Presently, the overall spending component of the economic package in India is low.

It will be important to upgrade technology and infrastructure in both rural and urban settings. Reserve Bank of India already has priority sector lending norms which targets environment sectors. Existing priority sectors could be expanded to include skills that support resource efficient activities, upgrading of rural training and education infrastructure and start-ups that promote green products and services. 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 and gloves.

It is essential to go beyond liquidity issues and delve into the domain of environmental reforms and changes in decision-making processes. 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. The post COVID-19 economic recovery path should consider interventions that can 'reduce risks' from pandemics in the future.

In terms of greening the Goods and Service Tax (GST) based on the concepts of environment friendly goods and services and other goods, a review of rates for certain goods and services is the need of the hour. The crash in world oil prices can free revenues of the government which can be used to incentivise environmental sustainability measures. If the government continues aggressive taxing regime on fossil fuels and luxury goods with negative environmental and health externalities, revenues can be directed towards supporting climate resilient and environmental measures.

The government can boost existing certifications and labelling schemes like ZED (zero effect, zero defect), Eco-mark and other internationally accepted standards and labels. Conditional incentives can be provided to those companies who have or are committed to certification and labelling. Measures related to sustainable procurement (public or private) should be seen as an opportunity for nudging market players in the direction of sustainability.

The banking sector needs to nudge MSMEs towards resource efficiency and circularity concessional and incentive-based credit. There can be daughter funds in existing funds wherein the daughter funds can focus on green activities.

¹ The authors acknowledge the fact that apart from introducing price controls it has also announced exemption to customs duties and health cess on many essential commodities. This will definitely lead to revenue foregone for the government and may increase the effective fiscal stimulus, in terms of extra spending which otherwise have been estimated at 0.8 to 0.9% of GDP.

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. State governments and local bodies should also 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.

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 through the creation of durable assets. Economic packages should lead to sustainable livelihood outcomes; these outcomes need to enhance natural capital. 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.

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. 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 are imparting training in mostly in urban areas, can be expanded to rural areas along with stronger market and industry linkages in terms of the training and course content.

Policies should not only be innovative but must emanate from the needs of the common people and the informal sector that 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.

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.

A monitoring and evaluation 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. A tool can be developed to map economic recovery against outcomes 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.

Measures that can be taken by the government in terms of short, medium and long term responses are summarized in Table A.

Table A: Green recovery measures according to time-frame and economic package pillars

	Short term	Medium term	Long term
Demand 	<ul style="list-style-type: none"> Promotion of livelihoods and natural-resource based economic activities that generate environmental gains 	<ul style="list-style-type: none"> Introduce vehicle scrappage programs within stimulus packages to phase out old cars Increase awareness related to environmental goods and services 	<ul style="list-style-type: none"> Building resilience for the most vulnerable section of the population with respect to greater access to formal credit and social safety nets such as insurance and pension schemes.
Demography 	<ul style="list-style-type: none"> Create opportunities for green skills in both rural and urban areas Re-skilling and retraining of workforce 	<ul style="list-style-type: none"> Enhance IT related infrastructure for education especially in rural areas Enhance global citizenship and education for sustainable development New jobs in green industries like renewables and recycling of resources/material and e-commerce sectors 	<ul style="list-style-type: none"> Address infrastructural bottlenecks and supply-side constraints such as restrictive factor markets and labour market rigidities in employment generation
Economy 	<ul style="list-style-type: none"> Continue aggressive taxing and direct revenues by taxing fossil fuels and luxury goods towards environmental sustainability activities Push more investment in environment priority sectors through banking sector policies related to COVID-19 recovery 	<ul style="list-style-type: none"> Improve market competitiveness of environmental goods and services Become an investment destination by pushing norms related to responsible business conduct and ESG parameters Biofuels development 	<ul style="list-style-type: none"> Sectoral regulation Enhancement of international commitments (SDGs, NDCs) Encouraging change in behavior - eg. encouraging green consumption and minimize waste
Infrastructure 	<ul style="list-style-type: none"> Strengthening local bodies and municipal corporations dealing with additional biomedical waste and municipal solid waste Concessional and incentive-based credit for environment Conditional incentives for green technology and infrastructure upgrading 	<ul style="list-style-type: none"> Enhance infrastructure investment for safe public transport and work from home options Promotion of water use efficiency in agriculture and industry Disposal and use of agricultural residues Resource efficiency Management of urban and industrial waste Increase infrastructural spending on health and social care projects, as well as digital infrastructure to build greater capacity and resilience. 	<ul style="list-style-type: none"> Promoting Circularity across supply chains Incentives to state and local governments for energy and transport transition Boosting PPP in infrastructural development Changing attitude towards infrastructural risks
System 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Technology upgradation in renewables and industry 4.0 Outcome based fund for technology and infrastructure upgradation in MSMEs 	<ul style="list-style-type: none"> Strengthening health systems

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. 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	<ul style="list-style-type: none"> INR 3 lakh crore collateral free automatic loans for business including MSMEs INR 20,000 crore subordinate debt for MSMEs INR. 50,000 crores equity infusion through MSME Funds of Funds INR 30,000 crores liquidity facility for NBFCs/FCs/MFIs INR 45,000 crores partial credit guarantee schemes for NBFCs INR 90,000 crores liquidity injection for Discoms
Tranche 2: Poor, including migrants and farmers	14 May 2020	<ul style="list-style-type: none"> 3 crore farmers with agricultural loans of INR 4.22 lakhs crores availed the benefit of 3 months loan moratorium Interest subvention and prompt repayment incentive on crop loans, due from 1 March extended up to 31 May 2020 25 lakh new Kisan Credit Cards sanctioned with a loan limit of INR 25 ,000 crores. Liquidity support provided to farmers post COVID State governments to utilise (SDRF) for setting up shelter for migrants and providing them food and water etc . More support will be provided to migrants who are returning home
Tranche 3: Agriculture (May 15, 2020)	15 May 2020	<ul style="list-style-type: none"> INR 30,000 crore additional emergency working capital for farmers through NABARD INR 2 lakh crore credit boost to 2.5 crore farmers under Kisan Credit Card Scheme MSP purchases of amount more than INR 74,300 crores made during lockdown period Additional support has been provided for animal husbandry and fishery units INR 1 lakh crore Agri Infrastructure Fund for farm-gate infrastructure for farmers to be created INR 10,000 crores scheme for formalisation of MFE has been announced INR 20,000 crores for fishermen through PMMSY An animal husbandry infrastructure development fund of INR 15,000 crores will be set up 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	<ul style="list-style-type: none"> 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 Infrastructure development of INR 50,000 crores
Tranche 5: Reforms	17 May 2020	<ul style="list-style-type: none"> 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: Compilation by Authors from 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.

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

Uncertainties and Unstable Financial Markets: 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: The Case for Fiscal Stimulus

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. 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.

Table 2 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. In case of India, because of robust savings, there were limited interventions needed in terms of economic stimulus in 2008. During the 2008 financial crisis, various fiscal and monetary measures were announced. Fiscal measures included direct and indirect green fiscal stimulus measures.

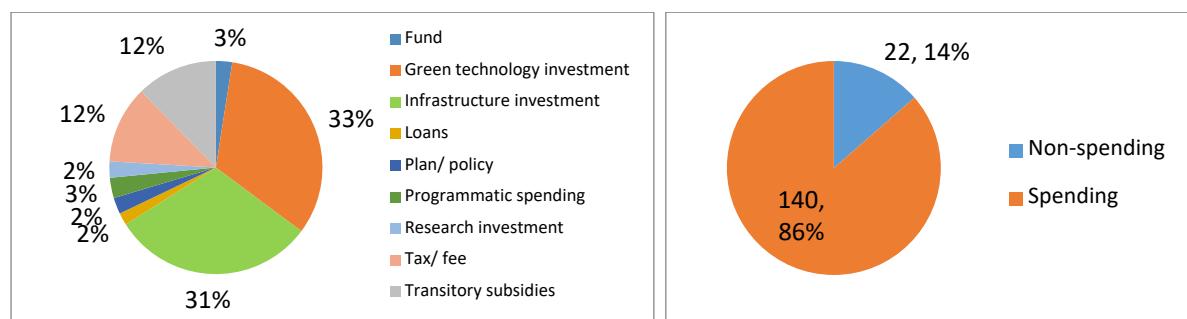
Table 2: Economic stimulus package and green component in countries following the 2008 economic shock

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)

162 green fiscal stimulus measures as a response to the 2008 financial crisis were analysed, out of which 86 per cent of the measures involved spending in terms of non-liquidity measures (Figure 1; Annexure 1). Most of these were direct fiscal measures in terms of spending for infrastructure, green technologies, funds and subsidies. Only 2 per cent were loans related measures and 12 per cent were tax related or indirect fiscal stimulus measures.

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



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

Table 3 provides a comparative assessment of these relief measures across various economies as a response to COVID-19.

Table 3: Short term relief measures to combat COVID 19

Relief Measure	India	Worldwide
Direct cash payments	<ul style="list-style-type: none"> INR 500 is being provided to each woman Jan Dhan account holder, ₹1,000 for senior citizens, poor widows and the disabled Payments for MNREGA and front loaded PM-KISAN payments has been hiked INR 1000 crores from the PM CARES Fund is being used to provide food and accommodation to migrant workers 	<ul style="list-style-type: none"> 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 US is providing a one-time payment of \$1,200 to its citizens Hong Kong is providing a cash handout of HK\$ 10,000 for each permanent resident aged 18 and above
Financial assistance to corporations	<ul style="list-style-type: none"> 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 Financial support to NBFCs as mentioned in Table 1 	<ul style="list-style-type: none"> US created a \$500 billion dollar fund to bailout failing corporates in the aviation and healthcare sectors The French government has announced that it will provide a bailout of 7 billion euros to Air France-KLM The French government has earmarked 20 billion euros for bailout
Loans for small business	<ul style="list-style-type: none"> 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) 	<ul style="list-style-type: none"> Most countries have offered small businesses emergency loans and fast access to credit during this period. Many nations are also providing tax relief for these businesses. Japan government have schemes to cover two thirds of the rent of small businesses for up to six months
Payments to employees	<ul style="list-style-type: none"> TDS/TCS rate has been reduced by 25 per cent which is expected to put INR 50,000 crore in the hands of people. 	<ul style="list-style-type: none"> US has announced a Paycheck Protection Programme to help small businesses keep their employees on payroll 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 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. 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

It is seen that economic packages announced as a response to COVID-19, even in terms of relief measures, countries have a substantial spending component in terms of their packages.

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.

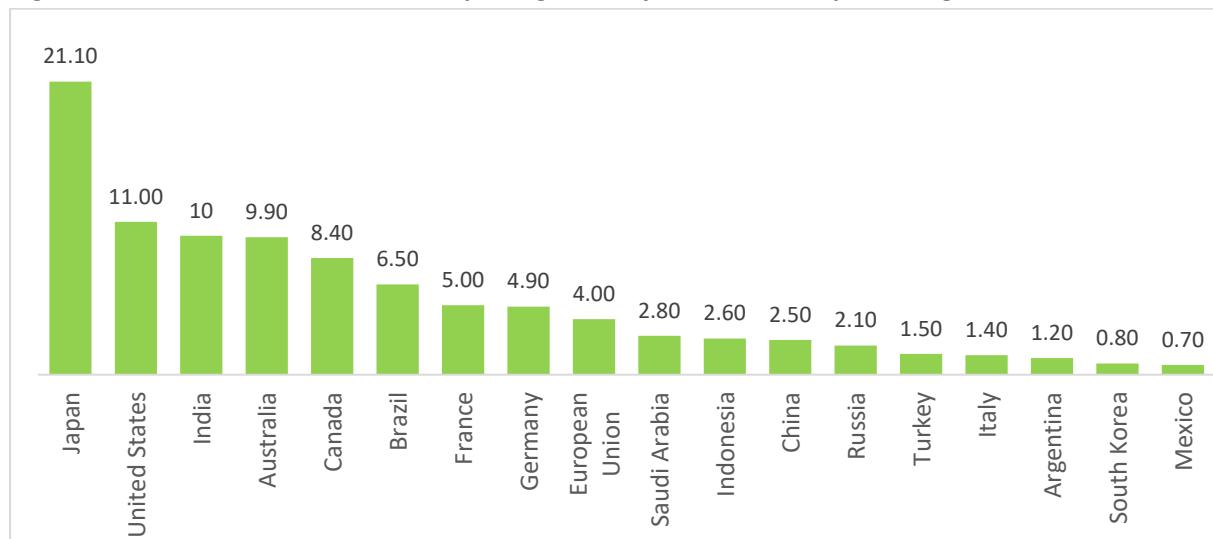
- In order to safeguard the smooth transmission of monetary policy within the euro area, the European Central Bank (ECB) has launched the Pandemic Emergency Purchase Program (PEPP), a temporary asset purchase programme for private and public sector securities.
- The Bank of England has launched a term funding scheme to support SME (small and medium enterprises) lending, a COVID-19 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, INR 0.9 trillion, or 0.4 per cent of the GDP, is from a drawdown on the existing funds available with state governments (INR 0.67 trillion) and existing budget provisions (INR 0.23 trillion). Thus, the effective fiscal stimulus, in terms of extra resources provided by the government, is INR 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)

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

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:

- Federalism: 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.
- Environmental sustainability: 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: According to IMF recommendations on monetary policy in response to COVID-19, 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. 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 for mapping and monitoring spending from existing budgets. 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). Therefore, not just relief strategy is needed for this sector but also 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 (Pandey and Manuja 2020). 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 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). Even if a country suffered budget constraints in the sector during the crisis, increased investment through direct stimulus packages is required (UNESCO 2009). 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 through the 'digital divide' (Kundu 2020).

Agriculture

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. 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). COVID-19 economic response scenario must include 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

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. 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 COVID-19 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.

Chemicals: 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. 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: 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: 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. 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). 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.

Leather: 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).

IT and telecom sector: 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. 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 industry could also make an attempt to establish an app and software that would be useful to track COVID-19 patients. 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

Power: 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 and continuation with an aggressive taxation regime on fossil fuels can free up revenues to help tackle the crisis and also for 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 (IISD 2020). Renewable energy can be incentivised on a large scale (Shrivastava and Shrivastava 2020).

Transport: 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). 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).

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).

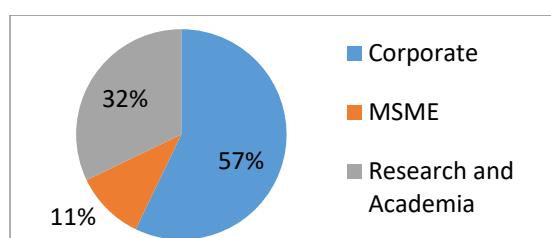
Tourism

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). 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). 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. 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).

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 which solicited inputs on how 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: Respondent profile to questionnaire



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. Viewpoints of the respondents are summarised.

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

This paper is based on the analysis of 162 measures announced during the 2008 financial crisis, analysis of economic packages as a response to COVID-19. Further consultation and validation was undertaken by through a questionnaire exercise and through a webinar organized by TERI and GGGI. The analysis clearly makes a case for fiscal stimulus measures as a response to COVID-19. The findings are summarised in table 4.

Table 4: Green recovery measures according to time-frame and economic package pillars

	Short term	Medium term	Long term
Demand 	<ul style="list-style-type: none"> Promotion of livelihoods and natural-resource based economic activities that generate environmental gains 	<ul style="list-style-type: none"> Introduce vehicle scrappage programs within stimulus packages to phase out old cars Increase awareness related to environmental goods and services 	<ul style="list-style-type: none"> Building resilience for the most vulnerable section of the population with respect to greater access to formal credit and social safety nets such as insurance and pension schemes.
Demography 	<ul style="list-style-type: none"> Create opportunities for green skills in both rural and urban areas Re-skilling and retraining of workforce 	<ul style="list-style-type: none"> Enhance IT related infrastructure for education especially in rural areas Enhance global citizenship and education for sustainable development New jobs in green industries like renewables and recycling of resources/material and e-commerce sectors 	<ul style="list-style-type: none"> Address infrastructural bottlenecks and supply-side constraints such as restrictive factor markets and labour market rigidities in employment generation
Economy 	<ul style="list-style-type: none"> Continue aggressive taxing and direct revenues by taxing fossil fuels and luxury goods towards environmental sustainability activities Push more investment in environment priority sectors through banking sector policies related to COVID-19 recovery 	<ul style="list-style-type: none"> Improve market competitiveness of environmental goods and services Become an investment destination by pushing norms related to responsible business conduct and ESG parameters Biofuels development 	<ul style="list-style-type: none"> Sectoral regulation Enhancement of international commitments (SDGs, NDCs) Encouraging change in behaviour, eg. encouraging conservation of energy
Infrastructure 	<ul style="list-style-type: none"> Strengthening local bodies and municipal corporations dealing with additional biomedical waste and municipal solid waste Concessional and incentive-based credit for environment Conditional incentives for green technology and infrastructure upgrading 	<ul style="list-style-type: none"> Enhance infrastructure investment for safe public transport and work from home options Promotion of water use efficiency in agriculture and industry Disposal and use of agricultural residues Resource efficiency Management of urban and industrial waste Increase infrastructural spending on health and social care projects, as well as digital infrastructure to build greater capacity and resilience. 	<ul style="list-style-type: none"> Promoting Circularity across supply chains Incentives to state and local governments for energy and transport transition Boosting PPP in infrastructural development Changing attitude towards infrastructural risks
System 	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> Technology upgradation in renewables and industry 4.0 Outcome based fund for technology and infrastructure upgradation in MSMEs 	<ul style="list-style-type: none"> Strengthening health systems

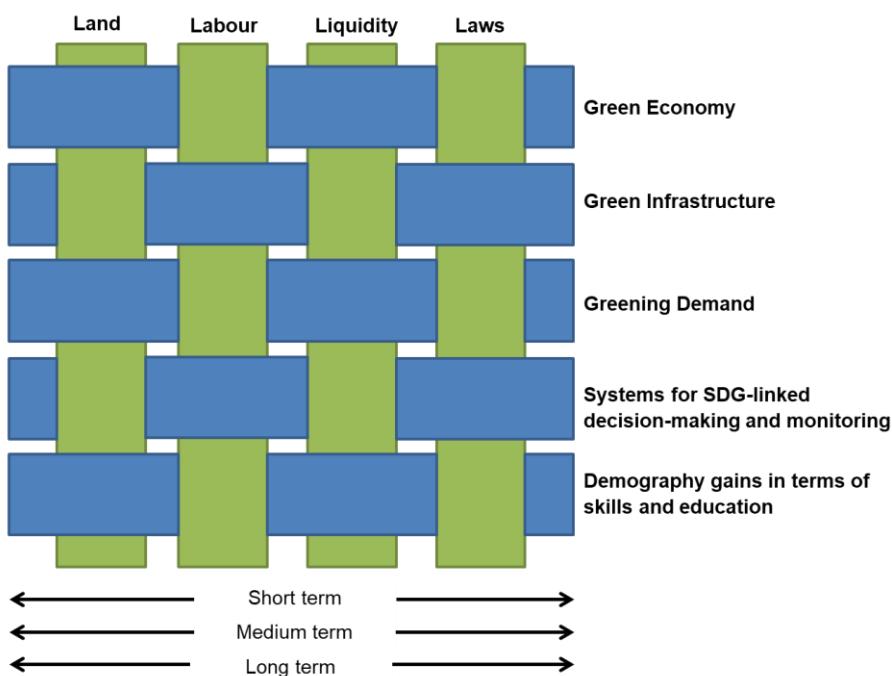
Source: Compiled by the study team

Economic packages as a response to COVID-19 should include short-term relief measures to begin 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.

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.

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



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. 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.

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.

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.

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.

Health needs to be looked at more holistically in terms of both human and environmental health; the concept of planetary health and 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.

India is yet to formulate a set of concrete measures in manufacturing after the COVID-19 fall-out. The government can 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.

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.

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.

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.

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.

Policies should not only be innovative but must emanate from the needs of the common people and the informal sector that 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.

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.

Annexure 1: Green Stimulus Measures Announced after the 2008 Financial Crisis

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
CO2-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
CO2-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 programme	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)

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