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India's Green Deal: Greening our way out of the pandemic

Rohit Azad and Shouvik Chakraborty

Abstract

The global economy is in a deep crisis at three levels — the COVID-19 pandemic, economic slowdown, and climate change. We present a roadmap for the future, showing that the crisis has provided us with an opportunity to change the course of development, a model where people, and not profits, form the core. Based on the employment generating capacity and the carbon footprint of the various sectors of the Indian economy, we propose the Indian Green Deal (IGD) that will help create new jobs and fundamentally alter the economy's carbon footprint. This programme needs to be funded in an egalitarian manner, which brings down the unprecedented levels of inequality in the Indian economy and puts the burden of adjustment on those whose lifestyles are primarily responsible for India's environmental and economic crisis.

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Introduction

The global economy is in a deep crisis at three levels — the COVID-19 pandemic, economic slowdown, and climate change (the graphic in fig. 1 presents the three quite succinctly). The first two have often been commented upon and referred to as the twin crises, but the third, perhaps, the most serious of the three, remains in the background even as it is integrally related to the other two. We believe that these triple crises should be analyzed together to understand the impact of COVID-19 and find ways out of these ongoing crises.

Figure 1: The Triple Crises



Source: Cartoon by Graeme MacKay. <https://mackaycartoons.net/2020/03/18/wednesday-march-11-2020>

While these crises have affected the global economy, the Global South, at least on questions of livelihood, is affected more than the North because of the already precarious economic and health conditions in which people live in these countries. This paper will focus on South Asia in general and, in particular, India to look at the impact of these crises (section 2) and the government's response to them (section 3). Every crisis is also an opportunity to break free from the past, and the last section presents a comprehensive plan in that direction.

1 A Background to the Triple Crises

How are the three components of the triple crises related to each other? What is the justification for making figure 1 the background of this paper?

As argued by Morens and Fauci [2020], three things have made this virus so deadly — sustained infection among humans, extraordinary efficiency in transmission from one person to another and high mortality among the elderly and those with co-morbidities. With the experience of 2021, especially in countries like India, one could add another factor, the ability of the Corona virus to mutate and create variants. Efforts to control this highly infectious virus and its new mutants have taken the form of aggressive lock-downs that have imparted both a supply and demand shock, which have had a long term impact on the economic trajectory of countries. Therefore, the first and second crises— the COVID-19 and the economy — are directly related because there have been lock-downs, in some form or the other, across the world to deal with this deadly pandemic. That the Covid-induced economic crisis came on top of the global financial crisis that the world was still recovering from has made it even worse.

It is the inclusion of the third crisis which needs some justification. A two-way relationship between climate change and the economy has been studied extensively, especially the impact of the former on certain occupations like agriculture, fishing etc. and the consumerist model of growth which has resulted in the climate crisis in the first place. It is the relationship between the spread of the zoonotic crisis and climate change which seems tenuous and needs some justification for this study. There are complex ways, as science informs us, in which they may be related. While many zoonotic diseases can occur (or have in the past) with little or no link to climate change, there are ways, some of which are discussed below, in which climate change could, in certain diseases, be linked to their spread.

To start with, irrespective of whether the Covid virus is directly a result of climate change, there is no doubt among the scientific community that climate change is going to result in even more deadly pandemics in the near future if the process of global warming is not addressed at the earliest. Aaron Bernstein, in a recent interview on the relationship between climate change and the current pandemic, said that most of these pandemics in recent decades have entered into human hosts from wild animals (C-CHANGE [2020]). He argued that this is happening because, with changing climatic conditions, these animals are moving into habitats where humans live, which could increase the chances of spread of certain diseases. There are other ways, which are not necessarily causal in nature, in which the two phenomena may be related. For eg., aggressive deforestation or consumption patterns that cause climate change also contribute to zoonotic diseases and pandemics.

Secondly, irrespective of the two hypotheses of the virus's origins – natural vs. artificial¹ – there seems to be a vicious relationship between climate change and rising health crises in general. It is not surprising that in contrast to the epidemics in history, pandemics are occurring with greater frequency in recent decades, which have also witnessed climate change.

Thirdly, there is also an apparent class angle involved. Climate related problems disproportionately affect the poor, who, as evidence shows, have been at a higher risk of fatality in this pandemic the world over (BMJ [2021]). This is not to say that the rich and wealthy are immune to this virus. After all, the rich and the famous too were affected by this pandemic. Nevertheless, with access to advanced medical services, their likelihood of surviving was much higher than the poor.

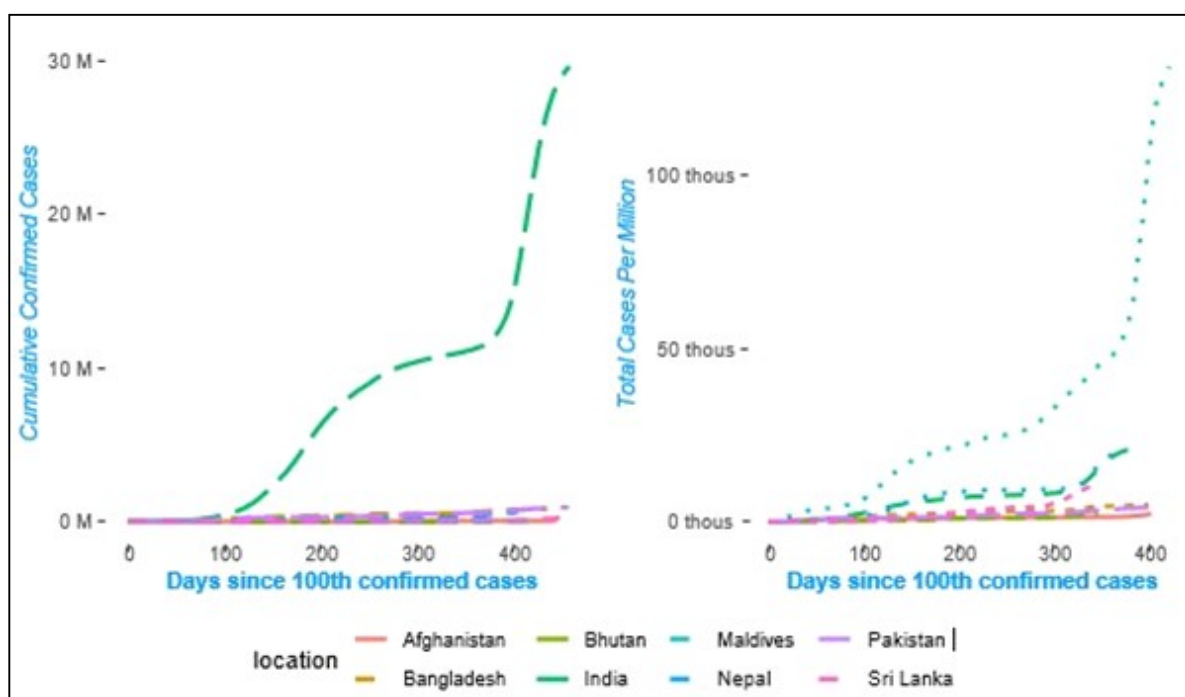
2 Impact of Covid-19

Countries implemented different strategies – national or local lockdowns, aggressive testing and tracing without prolonged lockdowns – to deal with the spread of this deadly virus. The South Asian countries also followed, to differing degrees, similar protocols. We look at the three crises in the following subsections, focusing on India within the overall discussion on the South Asian region.

2.1 Health

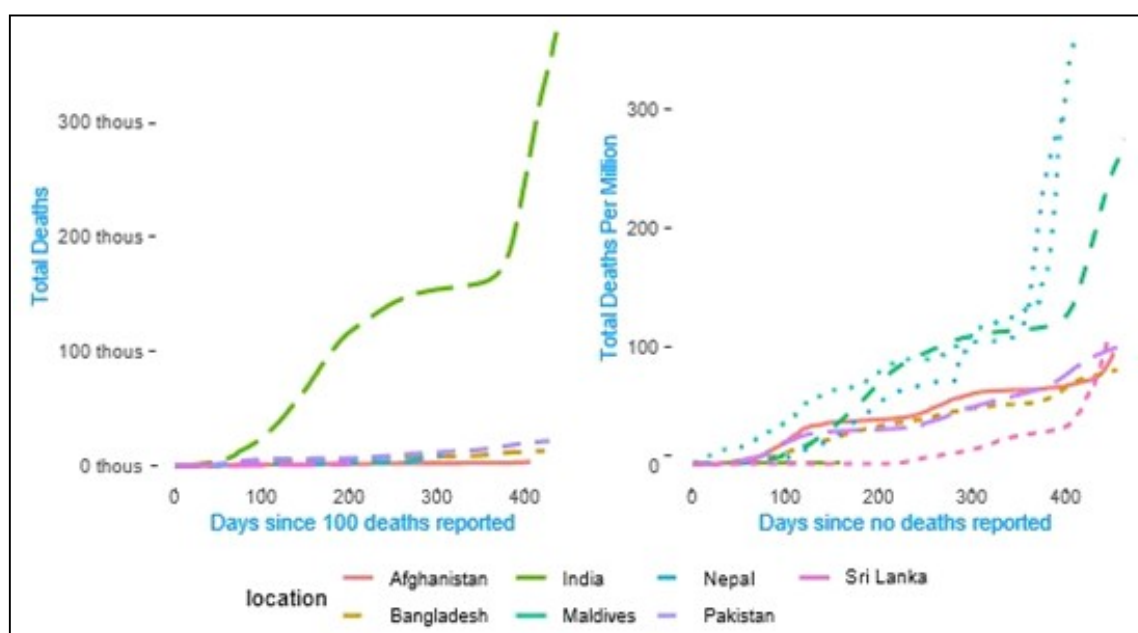
Countries in South Asia have witnessed waves of differing intensities of the virus, which can be measured by cumulative number of cases over time (absolute and deflated by per million population). Figure 2 shows the two metrics for all the South Asian countries. It can be seen that the second wave has seen a dramatic rise in cases. While India unsurprisingly leads the total number of cases within the region, Maldives has the highest cases per million.

Figure 2: Covid cases in South Asia



Source: Authors' calculations based on <https://ourworldindata.org/coronavirus>

The second wave has been deadlier, quite literally. Since every life lost matters, we show the absolute numbers and the more acceptable metric, i.e. relative to population. In figure 3, we show COVID-19 related deaths for all these countries, and India leads the pack in the absolute number of deaths, which, as we discuss below, may have been underestimated. Even when deflated by population, India, Maldives, and Nepal have reported more than 250 deaths per million so far.

Figure 3: Covid related deaths in South Asia

Source: Authors' calculations based on <https://ourworldindata.org/coronavirus>

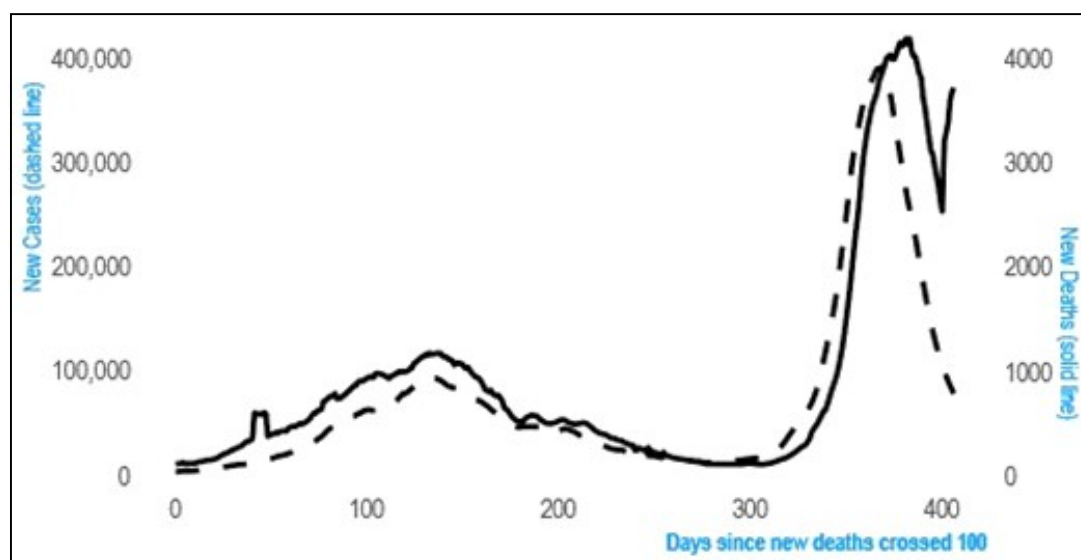
However, it is not direct mortality alone that matters here. Robertson et al. [2020] study the increase in mortality indirectly, under three scenarios, arising due to the disruption of access to preventive and curative health facilities and food. Using the data from this study, UNICEF [2021] estimated that, if the worst case scenario prevails, there could be more than 880,000 additional under-five deaths and 36,000 maternal deaths in the South Asian region in just one year.

The Case of India

Since India has been affected by the second wave most drastically, we focus on the case of India. To begin with, we look at the extent of the two waves that India has witnessed. A 7-day rolling average of cases (and deaths) shows that the first one pales in comparison to the second (fig. 4). We believe it is essential to look at the second wave more carefully, not just because of the havoc it has wrecked but also because, unlike the first wave, there were options to control the second one if only the governments, both central and state, had acted in time.

Drastic as they may sound, even these figures of deaths (and cases) are gross underestimates as some in the popular press have exposed (Anand et al. [2021], Leffler et al. [2021], Rukmini [2021]). The government was more interested in hiding numbers to cover-up its incompetence in handling the second wave. Rukmini [2021] has shown this for five Indian states for which the data is officially available. She has compared the data on deaths caused by similar causes in a non-pandemic year (using 2019 as the benchmark) to the pandemic year and found an excess of over 460,000 such deaths than were reported in the first five months of 2021. However, the official COVID-19 toll accounted for merely 6% of these deaths. Now, it is plausible that the rest of the 94% need not all be COVID-related deaths but such a vast gap does indeed indicate that the official COVID-19 deaths are gross underestimates.

Figure 4: Covid-19 in India



Source: Authors' Calculations based on <https://ourworldindata.org/coronavirus>

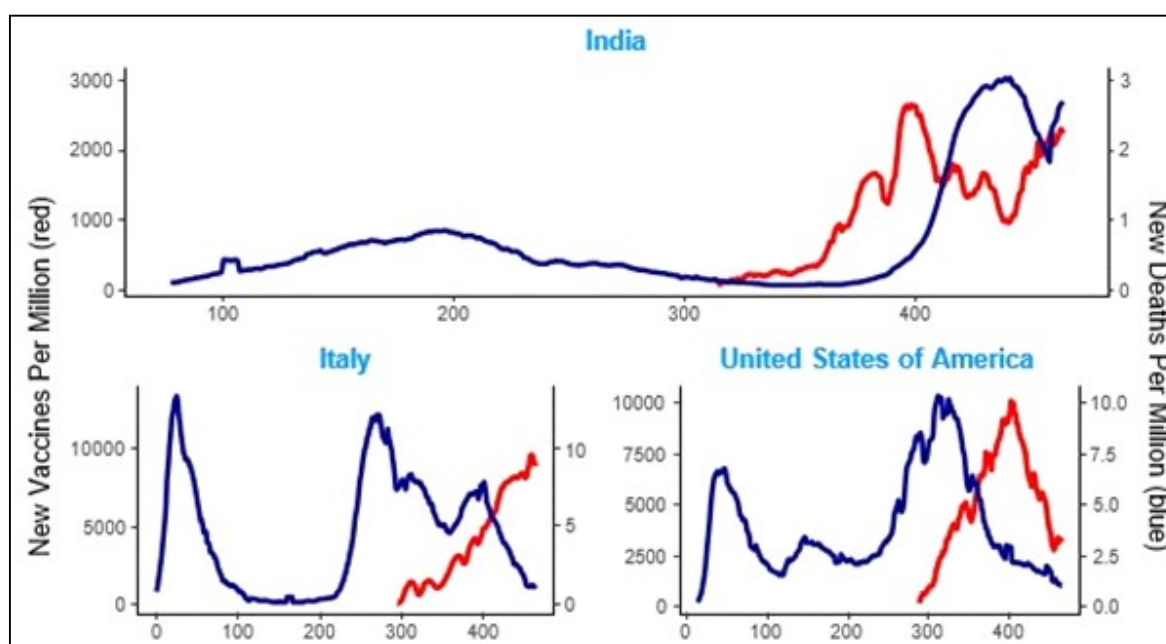
Note: Data are smoothed at 7 day rolling average

Quite aside from hiding behind false statistics, governments faltered on many counts. Many COVID-related deaths happened due to lack of adequate basic infrastructure, such as the availability of hospital beds and oxygen facilities. Could governments have done something differently?

The problem arose because healthcare has been low on priority of the governments for long. This recent calamity was just a grim reflection of that. While it is true that this long term lacuna could not have been

corrected in a day, the knowledge of it demanded, at the very least, the creation of emergency health facilities in anticipation of the second wave. But the Indian government was busy claiming victory over the virus in national and international fora. Further, unlike the first wave, vaccines had already been developed much before the second wave hit the country. Had India vaccinated its adult population in time, it would not have lost its citizens at this scale. There is enough evidence to show that vaccines decreased the virus's spread in countries that administered them in time. Fig. 5 compares the example of the US and Italy to compare with India to show what vaccines could achieve in these two countries and what India could have done to arrest the death rate of the second wave. As can be seen, these two countries —the USA and Italy— too, like India, faced a second wave. However, the only difference was that the vaccines had not been developed in their cases when the second wave struck them. And once they had administered vaccines to their populations, the death (and infection) rates came down drastically. India, in that sense, was at an advantage since not only had the vaccines been developed much before the second wave hit the country, they were successfully being administered across the world. What lacked in India, therefore, was not the availability of the vaccines but lack of planning, at best, or hubris, at worst.

Figure 5: Vaccines and Covid Deaths

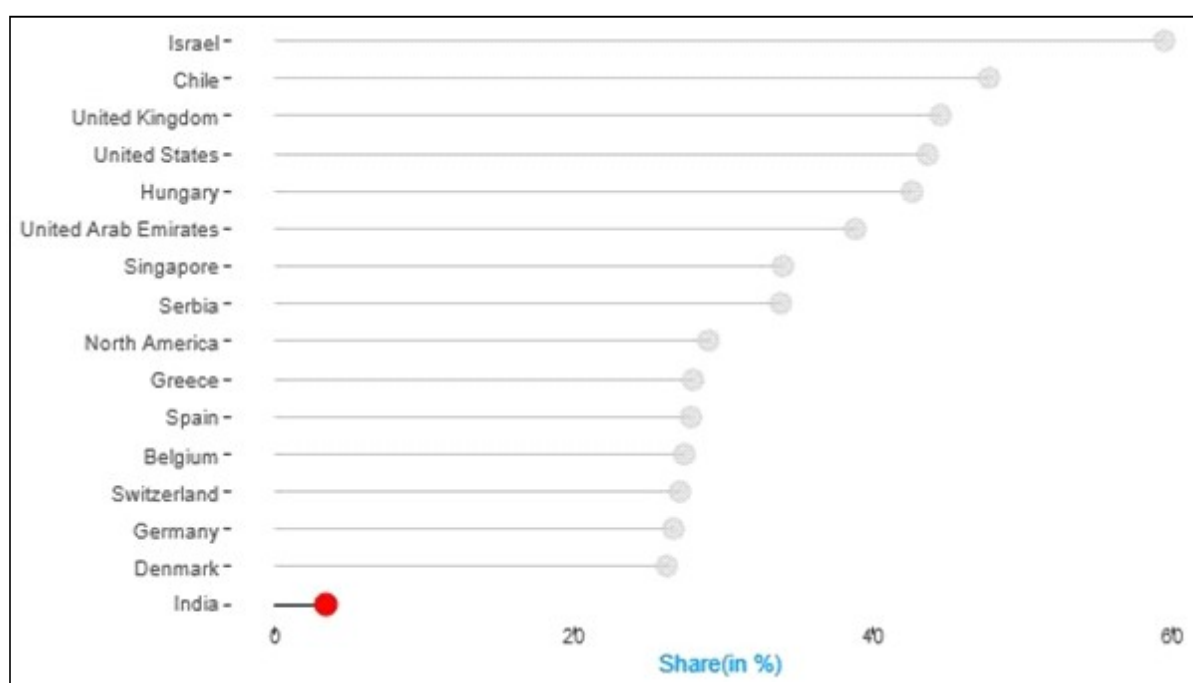


Source: Authors' Calculations based on <https://ourworldindata.org/coronavirus>

Notes: Data are smoothed at 7 day rolling average & the x-axis measures the number of days since total cases crossed 100 per million.

From figure 5, it seems as if the vaccination drive failed in India since the second wave happened despite a rise in vaccination, but that is misleading. A closer look at the data shows that even though there was a rise in the vaccination rate, it was minuscule compared to the extent required for it to be effective in controlling the spread of the virus. Chart 6 shows where India stood in terms of its vaccination rates compared to the top 15 vaccinated countries in the world. The sad part is that despite having faltered in the second wave, the government did not learn from its mistakes. The current vaccination rates are pretty low to fight a potential third wave. Even though the Indian government blames the public's vaccine hesitancy for the low vaccination rate, the primary reason happens to be low supply (Bose and Chowdhury [2021]).

Figure 6: Rate of Vaccination in Select Countries



Source: Authors' Calculations based on <https://ourworldindata.org/coronavirus>

Note: Only countries with a population of more than 5 million.

However, blaming the governments *solely* in these developing countries for being unable to vaccinate the populace does not capture the entire story. The governments of the advanced countries, especially that of the USA, and the role played by the multinational corporations in these countries is equally deplorable. It has been rightly argued that the hoarding of doses by these rich countries and the continuous hoarding of

technology by the big multinational drug companies helped sustain this ongoing scarcity of vaccines ([Mazzucato et al., 2021]). Today, the world is witnessing a vaccine apartheid; what the world needed is a ‘People’s Vaccine’, which is available to all, and affordable to all, including free vaccination programmes.

Moreover, for various political reasons, the government and political parties chose to either look the other way or aided, through their activities, spreading the virus. In the first category were religious events such as the *Kumbh* in Uttarakhand, where right in the middle of the second wave, almost 5 million devotees from different parts of the country congregated within two days to take a dip in the Ganga river (Times [2021]). While the Central government looked the other way, the state’s Chief Minister argued that ‘Maa Ganga’s blessings are there in the flow. So, there should be no corona’ (Wire [2021]). In the second category of events were state-level elections in different parts of the country, where political parties held massive public rallies throwing COVID-19 protocols to the winds. A more proactive and sensitive government could have promptly canceled such religious or other public events and postponed the elections.

2.2 Economy

We start with a broad presentation of major macroeconomic indicators in the South Asian region (Table 1).

As a result of the lockdowns of differing intensities in these countries, the economic conditions of the people took a severe hit. Except for Bangladesh, where the growth rate declined significantly but stayed positive, every country in South Asia faced a recession, with one-third of Maldives’ GDP getting wiped out in 2020 (table 1). India was the second most affected country in the region in terms of the decline in the rate of growth due to the aggressive lockdown last year.

Apart from national lockdowns, a significant decline in the external markets due to the global lockdown led to a fall in exports except for Bhutan. Not surprisingly, for the Maldives, exports fell almost by half with subsequent recovery in certain sectors (World Bank [2021]).

The other two autonomous growth components – investment and government expenditure – did not help arrest the decline. A fall in private investment as a share of the GDP is not unexpected under conditions of

a significant squeeze in demand but what was required in response was a large injection of demand from the government. However, the rise in such expenditure was not sufficient to arrest the recession wherever it took place. In fact, in some instances, such as India, this increase may have been notional, something we discuss below.

Bangladesh is an interesting case. One of the reasons its economy did not contract is that despite a fall in their exports, remittances remained strong which was partly driven by tax incentives given by the government and partly by bulk repatriation of savings of those returning home after losing jobs abroad. This helped sustain consumption, the most significant contributor to the positive, though lower, rate of growth.

With the lockdown, a significant contraction of economic activity was expected. But what about the recovery? Many international institutions have been predicting a V-shaped recovery because it is assumed that the lockdown was a supply shock that would disappear once the lockdown is lifted. Furthermore, as for the demand, the pent-up demand of the lockdown period would be unleashed.

However, the story is not so simple for developing countries since a supply shock of this kind also brings about a suppression of demand for a more extended period. This is especially so because people in these countries do not have social security systems, such as in certain countries of the global North, where employees are partially cushioned against such income shocks, which keeps the consumption demand buoyant when the supply shock is eased. And in those countries in the North where social security systems may not be as strong, an aggressive fiscal response to the Covid crisis may have insulated them from the lingering lack of aggregate demand. In sharp contrast, in developing countries with no social safety nets, job loss is often prolonged, and the possibility of a release of pent-up demand may not arise. Moreover, even if employment growth resumes after the lockdown is lifted, such jobs are low-paid and often distress-driven. Indeed, incomes may not destabilise for the rich and the salaried classes, but they constitute a tiny section of the population. And they cannot make up for the substantial loss of demand by the rest of the people. In the absence of a “V-shaped” recovery in demand, merely lifting the lockdown, therefore, will not necessarily bring about a V-shaped recovery.

Table 1: Select Macroeconomic Indicators for South Asia

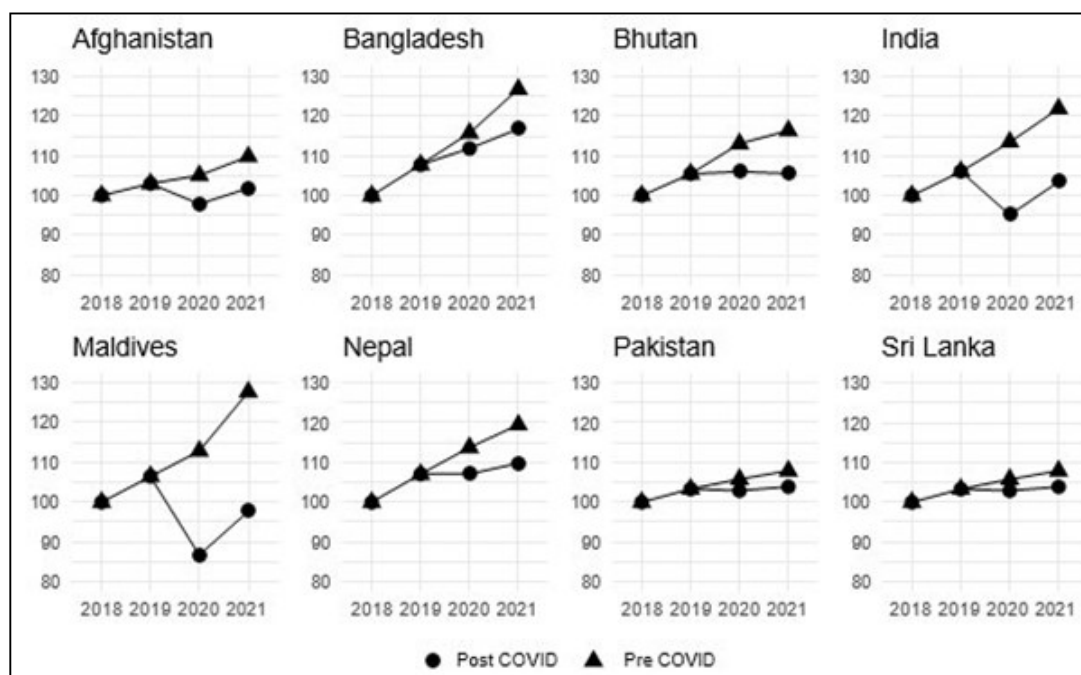
Indicators	Country	2018	2019	2020
1. Real GDP Growth Rate (%)	Afghanistan	1.2	3.9	-5.0
	Bangladesh	7.9	8.2	3.8
	Bhutan	3.8	4.3	-0.8
	India	6.5	4.0	-8.0
	Maldives	8.1	7.0	-32.2
	Nepal	7.6	6.7	-1.9
	Pakistan	5.5	1.9	-0.4
	Sri Lanka	3.3	2.3	-3.6
2. Inflation (%)	Afghanistan	0.6	2.3	5.6
	Bangladesh	5.8	5.5	5.6
	Bhutan	3.7	2.8	4.2
	India	3.4	4.8	6.2
	Maldives	1.4	1.3	-1.6
	Nepal	4.1	4.6	6.2
	Pakistan	3.9	6.7	10.7
	Sri Lanka	4.3	4.3	4.6
3. Growth in Exports (%)	Afghanistan	28.9	-5.1	-10.4
	Bangladesh	6.4	14.0	-13.0
	Bhutan	-0.4	-0.1	5.2
	India	4.8	-2.1	-8.0
	Maldives	18.2	4.3	-49.1
	Nepal	—	—	—
	Pakistan	7.0	-5.4	-1.2
	Sri Lanka	6.1	-2.1	-24.7
4. Total investment (% of GDP)	Afghanistan	18.0	18.2	16.4
	Bangladesh	31.2	31.6	27.7
	Bhutan	49.7	38.3	34.5
	India	32.1	30.7	28.4
	Maldives	20.0	20.0	20.0
	Nepal	39.5	40.7	31.3
	Pakistan	17.3	15.6	15.4
	Sri Lanka	30.6	27.4	26.0
5. Govt expenditure (% of GDP)	Afghanistan	28.9	28.0	29.5
	Bangladesh	14.3	15.4	15.0
	Bhutan	34.5	25.5	32.3
	India	26.3	27.1	31.0
	Maldives	32.4	33.4	47.8
	Nepal	28.0	27.3	27.0
	Pakistan	21.6	22.0	23.1
	Sri Lanka	18.8	20.8	21.5

Source: WEO April 2021, IMF

It may be too early to show this conclusively, but a simple look at the data shows that there does not seem to be a V-shaped recovery in sight for the South Asian countries. It is easy to argue that there will be a V-shaped recovery in growth *rates*, which is almost a statistical truism since that is just the base effect. So, for example, an economy with GDP of 100, after having faced a 10% contraction due to the lockdown, may bounce back with an arguably impressive 5-6% rate of growth. But, that does not mean much because the economy is still below 100. It shows that the economy has not even reached the pre-COVID GDP levels, let alone have a V-shaped recovery.

To get a sense of what the actual recoveries are like, we look at the projections of the IMF at the levels and not the rates of growth (fig 7), taking 2018 as the reference year with a GDP index of 100. Moreover, these projections about 2021-22 may themselves be overestimated significantly since the pandemic is far from over. As can be seen, there is a significant gap between the pre- and post-Covid projections, but that is to be expected. But, what is more alarming is that even with these optimistic projections, in most countries (with Bangladesh as the outlier for reasons discussed above), the GDP will mostly hover around the levels of 2018.

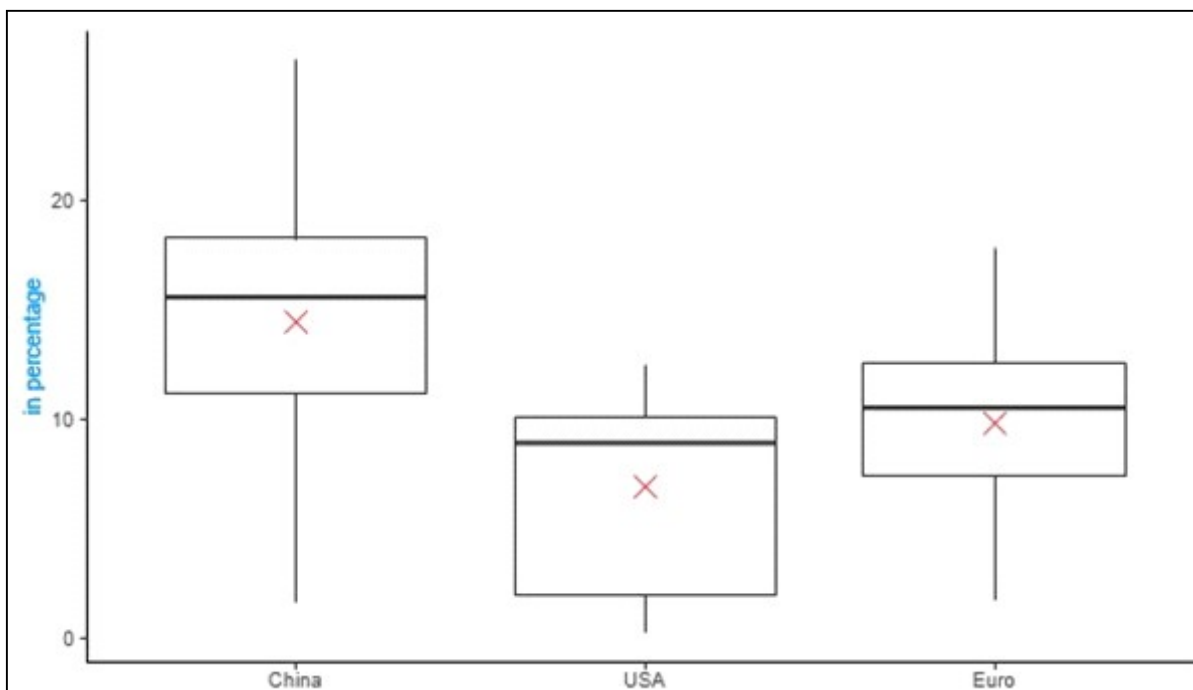
Figure 7: IMF's GDP Forecasts (indices) in the Pre- and Post-Covid Scenarios



Source: Authors' estimates based on the World Economic Outlook, April 2020:
The Great Lockdown, An IMF publication.

We suggest the IMF projections could be overestimated because one of the essential exogenous influences on growth is their dependence on external demand (including tourism from foreign visitors). And if the global economy drags, such enthusiasm may be misplaced. Figure 8 shows the extent of dependence of the South Asian economies on the US, China, and the Euro region.

Figure 8: Trade Exposure of South Asian Countries



Source: Authors' Calculations based on IMF's DOTS database

Economic Fallouts of a Severe Lockdown in India

In the case of India, the Covid-induced recession was a continuation of the economic slowdown already underway since the fourth quarter of 2017-18. Let us take a look at this recession in the backdrop of the prolonged slowdown.

There were multiple reasons for the pre-Covid slowdown. First, Anand and Azad [2019] show that a developing economy faces one or more of three constraints: demand, and on the supply side – finance and agriculture. The performance of any developing economy depends on the constraint which is binding at a

point in time. For the period after 2014, they show that all the evidence points toward a demand-constrained economy. Capacity utilisation in industries is much lower than in previous periods; agricultural incomes, a major source of demand for mass consumption goods, have fallen in real terms. As a result, the rate of private investment has been below the average of the previous decade. At the same time, the two supply-side constraints are not binding as buffer stocks of food are way higher than the norms while the banks are sitting with idle liquidity.

Second, even though finance is not a binding constraint currently, bad debts from the past and the new ones building up did cause an initial drag on new loans as the banks became wary of extending loans both for investment or consumption purposes. Azad et al. [2017] argue that in the case of India, the high growth of the 2000s was essentially credit-driven, which for various reasons also created grounds for bad debts later.

Third, Anand and Thampi [2016] show that there has been a significant rise in inequality since the early 2000s, which, in the absence of other demand offsetting factors, can lead to a slowdown via the under-consumption route. So, while credit-induced corporate investment acted as that offsetting factor during the 2000s, there were no offsetting factors during the more recent period.

Fourth, in such situations, one component of demand i.e. fiscal expansion could have acted as a counteracting factor but was kept under a tight leash. Principles of “sound” finance dictated fiscal decisions instead of sound logic. Even though the Fiscal Responsibility and Budget Management Act was passed in 2004, it is only during the slowdown period that this limit has been more or less adhered to. We will come back to what the State did in some detail in the next section.

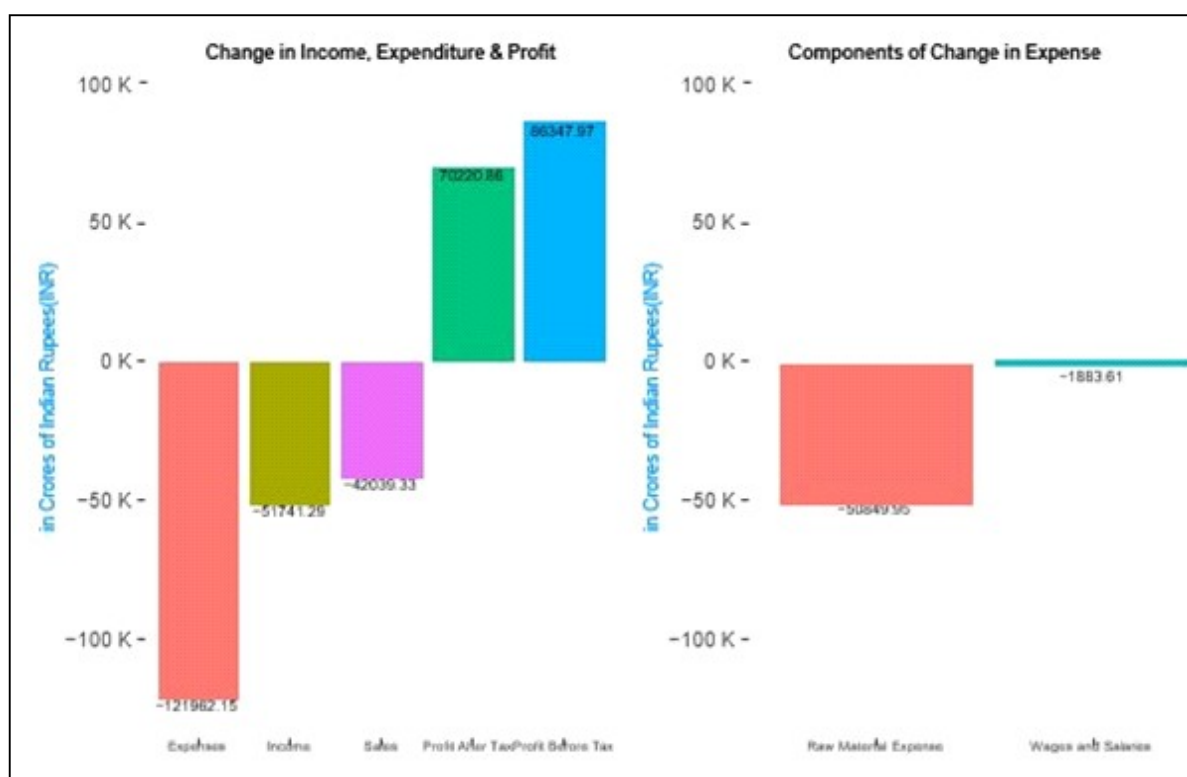
COVID-19 Lockdown and Two Paradoxes in India: Coming back to the specific period of lockdown-induced recession, we find two paradoxes relating to the Indian economy that need to be discussed.

One, corporate sector data shows that while their sales nose-dived, profits rose dramatically during this period (fig. 9). Using CMIE data for the corporate sector, IEL [2021b] show that this is because the expenses for these companies fell faster than revenues, as a result of which profits soared. Furthermore, the expenses fell both because of layoffs resulting in falling wages and a fall in raw material costs. Even as

the pandemic raged, the capitalists not only did not feel the pinch, they gained from the misery of the ordinary people. Even within this, some sectors like the IT (and a few other corporate houses) gained disproportionately at the cost of others.

A fall in raw material costs that accommodated falling sales also means a net loss of income for raw material producers. A part of the raw material purchase would be from abroad, a decline in which shows up in a significant decline in imports. However, the decline in the income of the raw material producers domestically would have also meant that the capitalists gained at the cost of their employees, the petty producers and the small and medium enterprises to which sub-contracting takes place. What is more is that instead of addressing this skewed distribution of income in such trying times for the Indian people, the tax burden of companies declined sharply during the pandemic. Corporation tax (as a proportion of GDP) fell almost by one-third from 1.42% to just 0.95% between November 2019 and November 2020. And the burden of tax collection (to keep the fiscal deficit under control) fell on indirect taxes, which just added to the woes of the Indian working class.

This period also witnessed a spectacular rise in the stock market even as the economy witnessed a sharp recession (fig 10). Keynes had proposed that the stock market indices represent part enterprise (fundamentals as they are called) and part speculation. It is not easy to ascertain with precision which of the two contributed more to the recent rise, but anecdotal evidence suggests that it was definitely a combination of both, especially since the stocks rose not just in the sectors which benefited during the pandemic but also of other firms which did not do all that well.

Figure 9: Paradox 1: Corporate Profits Rise Even as Sales Fall

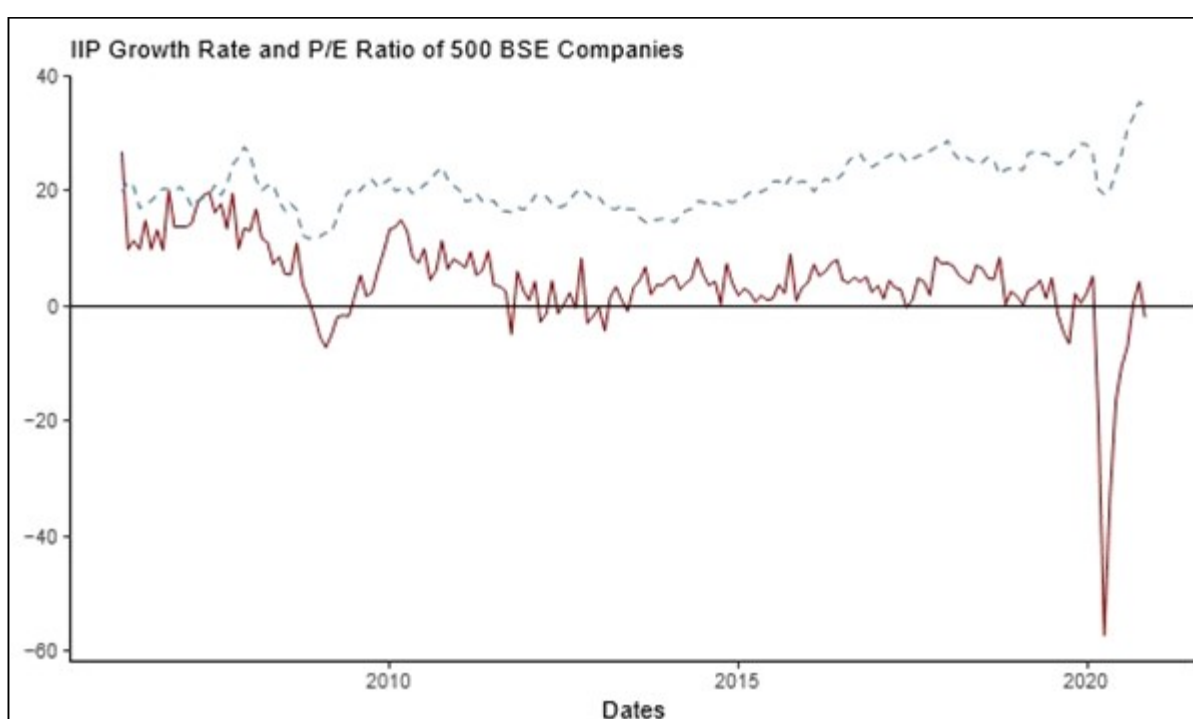
Source: Indian Economy lab, <https://indianecolab.wordpress.com/macro/>

It can be seen in figure 10 that the P/E ratio has more or less followed the trend in output growth except during the pandemic when they become a mirror image of each other. It is possible that a part of this stock market run reflects what Keynes called 'enterprise' since the profits were rising and what matters for the shareholders is profits (and not necessarily sales alone). However, even here, there is an element of a bubble. The rise in profits during this period is likely to be a short-run phenomenon since raw material costs are already rising due to the revival of the global economy. If the sales do not pick up, rising costs may eat into these profits sooner than later.

As for the speculative side of this run, there are quite a few factors which point in this direction. There was increased inflow of foreign institutional investment, which can be short termist in nature especially if the reason for their inflow are push factors from the countries of their origin. In this particular case, low returns in the financial markets of the North has made finance fly out into developing countries where the returns

were relatively high even after taking into account “country” risks. But it is not the foreign institutional investors who have driven the market up, domestic ones have played their part too. Big corporates, sitting with idle cash with fewer avenues for real investment, seem to have contributed to lifting big-cap stocks. Mutual funds, with money from retail investors, have done the same for mid and small cap stocks. Retail investors, with a record 2 crore rise in demat accounts just during the pandemic, command 70% of the market share in average daily turnover as against 11% in May 2015 [Bureau, 2021].

Figure 10: Paradox 2: Sensex Surges Ahead Even as the Real Economy Falters



Source: Indian Economy lab, <https://indianecolab.wordpress.com/macro/>

The reason we mention this is because a bubble in the stock market with a battered economy may not bode well for the future of the Indian economy.

Inequality, Poverty and Distress-driven Employment IEL [2021a] show that there has been a significant increase in inequality, which is not surprising given that corporate profits rose even as sales fell. Between April and July 2020, using the Forbes India Rich List, they show that the combined worth of the 100 wealthiest billionaires increased by a whopping 35%. On the one hand, the wealthiest Indian, Mukesh

Ambani, was making Rs 90 crores every hour since the lockdown started. On the other hand, in April 2020, 1.7 lakh people were losing their jobs every hour. Moreover, this inequality was not felt uniformly across the population since the earnings gap between men and women or different castes is quite significant in India.

IEL [2021a] further shows that the Covid-protocols such as physical distancing or washing hands were drastically biased against the poorer sections of the population who mostly had a tiny one room house and did not have access to a piped water supply. Other requirements, such as access to the internet, are so critical that online classes for children were heavily skewed in favour of the rich and socially advantaged sections of the population. This coupled with job loss for parents and falling incomes, would have induced higher dropout rates.

The unplanned lockdown in India had a dramatic impact on the workforce and earnings. It led to a fall in the labour force participation rate (LFPR) since fewer people were seeking jobs. At the same time, even with this decreased labour force, an unprecedented one-fourth of the workforce was unemployed during March-April 2020. However, when differentiated across gender and age, the women and the young bear an undue burden of this loss [Kesar et al., 2021].

Despite this dramatic rise in unemployment during the two months of 2019, a perplexing find, according to the PLFS 2019-20, is that the unemployment rates fell during the pandemic compared to the previous two. Anand [2021] argues that this is because of an increase in the self-employed category, whose monthly earnings fell by 16%, not regular or contractual workers. Also, almost the entire increase in the workforce is absorbed in agriculture. Coupled with a drastic fall in consumption expenditure, this so-called increase in employment seems to be distress-driven.

Mehrotra and Parida [2021], using the same PLFS, show that poverty has risen since 2011-12 after consistently declining since 1973-74. For the first time since 1972-73, they argue, the number of poor has increased in absolute numbers. They believe demonetisation followed by the Goods and Services Tax (GST) fiasco was squarely responsible for this dramatic turn of events in the medium term. In the more immediate run, it was the unplanned lockdown that has pushed people into poverty.

Table 2: Relative and Absolute Poverty in India

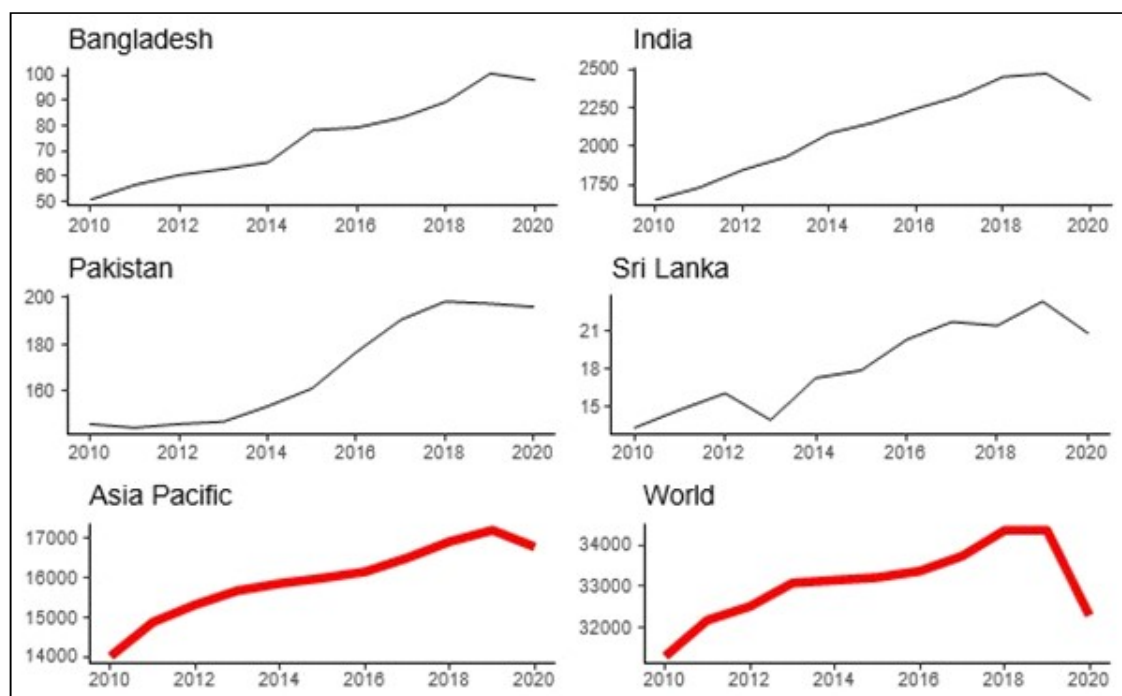
Incidence of Poverty	As per NSS-CES data		As per PLFS data
	2004-05	2011-12	2019-20
Poverty head count ratio (%)	37.1	21.9	25.9
Number of poor (million)	407.2	269.8	348.0

Source: Mehrotra and Parida [2021]

2.3 Climate Crisis

Amidst all the misery, there was a small silver lining — a decline in carbon (and other harmful gases) emissions resulting from a halt in production of commodities (other than essentials) — which was more a reminder of the problem than a real solution.

Data on emissions across the world show a significant dip in carbon emissions during the lockdown. We also observe this for some countries in South Asia in figure 11. No international treaty or green energy transition in the world has ever brought the emissions down to this extent. COVID-19, therefore, has opened up, though not necessarily for the right reasons, the possibility of discussion on ways in which the climate crisis can be tackled (and their limitations). But not only was this drop temporary, studies show that even this relief may not be material since, as Forster et al. [2020] show, it also weakened the aerosol cooling effect, which caused short-term warming. This means for it to have an effect, the decline in emissions was required to continue for longer. This was perhaps the most extensive human experiment of a degrowth strategy. That is not to say that the degrowth theorists would recommend it, but merely to point out the scale of efforts needed to achieve a substantial decline in emissions. Therefore, what is needed is a combination of green and degrowth strategies, where while the ultimate goal would be to shift the demand pattern of the people away from carbon-rich commodities, in the short to medium run, the underlying system of production and consumption of energy is moved away from fossil fuels.

Figure 11: The Silver Lining: Declining Emissions During the Lockdown

Source: Statistical Review of World Energy, 2021.

IPCC [2021], the most recent Intergovernmental Panel for Climate Change (IPCC) assessment report (AR6), suggests that there is “unequivocal” evidence that human activities are responsible for the increase of greenhouse gases over the industrial era. IPCC-AR6 makes a case for a do or die situation as we have just this decade to effect such changes, in the absence of which the 1.5.C target would have been missed for ever. The report also argues that the effect of global warming is more universal than previously thought it to be. This means that it is equally important for the countries of the global North to act for their own sake. As for the South Asian region, the most devastating impact is that precipitation will rise significantly, and dangerous heat stress thresholds such as $HI > 41.C$ will be crossed much more often along with increased droughts.

If the targets are not met by 2030, tropical regions of the world, which happen to be densely populated and primarily located in the global South, are likely to be most negatively affected because of their low altitudes and pre-existing high temperatures Mendelsohn et al. [2006], Martin [2015]. Martin [2015] argues, based on a report by a U.K.-based risk analysis firm Maplecroft, that out of the top 32 countries at “extreme risk” from climate change, the top 10 are all tropical countries.

Only with a collective effort from the North and the South can this serious problem of climate change can be stalled. And given that the global South has more to lose in the immediate sense because of their tropical location, they must look at the problem more objectively. There is no doubt that the problem staring us in the face has been primarily caused by the cumulative emissions from the global North and, recently, by China. At the same time, we need all hands on deck if we want to avert the danger in time. Moreover, hiding behind low per capita emissions even as absolute emissions are high in India is perhaps akin to acting like an ostrich - ‘hiding behind the poor’ [Azad and Chakraborty, 2020]. What matters for the world is not the incremental contribution of an individual to total emissions but what we, as humankind, are contributing to the environment. Once the temperatures rise globally, it will not choose its victims based on their contribution to the problem. Rather, owing to the poor socio-economic conditions, high population density along coastlines, job dependence on agriculture and other allied activities in the South, the casualties of environmental degradation (arising out of rising water levels, cyclones, and other devastating natural events) are going to be significantly more than the North.

A mitigating climate proposal in this paper (in the last section) presents a blueprint of what can be done with special reference to India.

3 State Response So Far

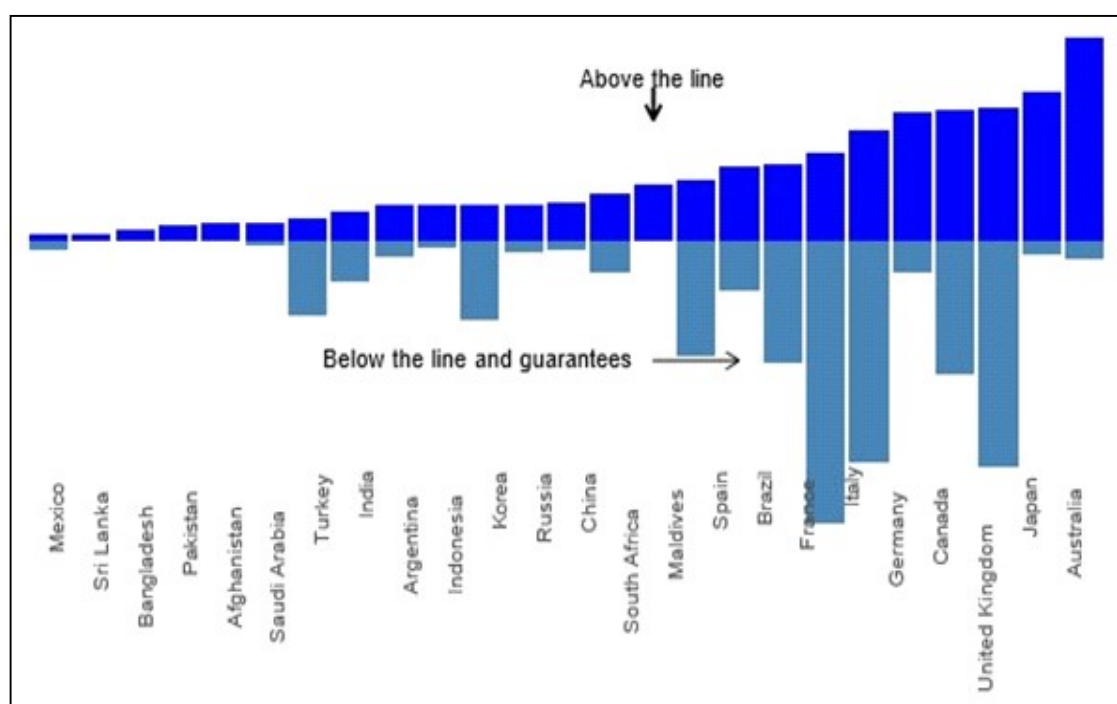
States in the South Asian region had responded in a similar way when it came to addressing the lockdown-induced recession. The efforts have been mostly below-the-line measures, i.e. a monetary policy response. For the South Asian countries for which this data was available, we plot in fig. 12 the above and below the line measures and rank them according to their above the line measures. The South Asian economies are towards the left side of this chart. As a result, the recovery has been far slower than what could have been if they considered fiscal policy their first priority. Why is that so?

3.1 Becoming a Prisoner of Monetary Policy

Keynes [1936] had argued succinctly that there is many a slip between the cup and the lip when it comes to monetary policy being used, especially when the economy is in a downward spiral, to revive an economy. But the current macroeconomic consensus, which influences the policymakers of most countries, has for far too long argued the opposite.

The expectation of policy makers was that a loose monetary policy, both in volume (credit easing) and cost (fall in interest rates), would revive demand in the economy. But, unfortunately, in an economy with depressed demand, it is not so easy. Credit availability and long-term state of expectations are both necessary conditions for a high level of activity, but neither is sufficient. In Keynes' words, 'whereas the weakening of either is enough to cause a collapse, recovery requires the revival of *both*.' (emphasis in original). Deeper the crisis, more binding this condition becomes. We are in the midst of such a crisis, so, it is not surprising to find that monetary injections (at least in isolation) do not seem to be working.

Figure 12: Above and Below the Line Measures During the Covid Crisis



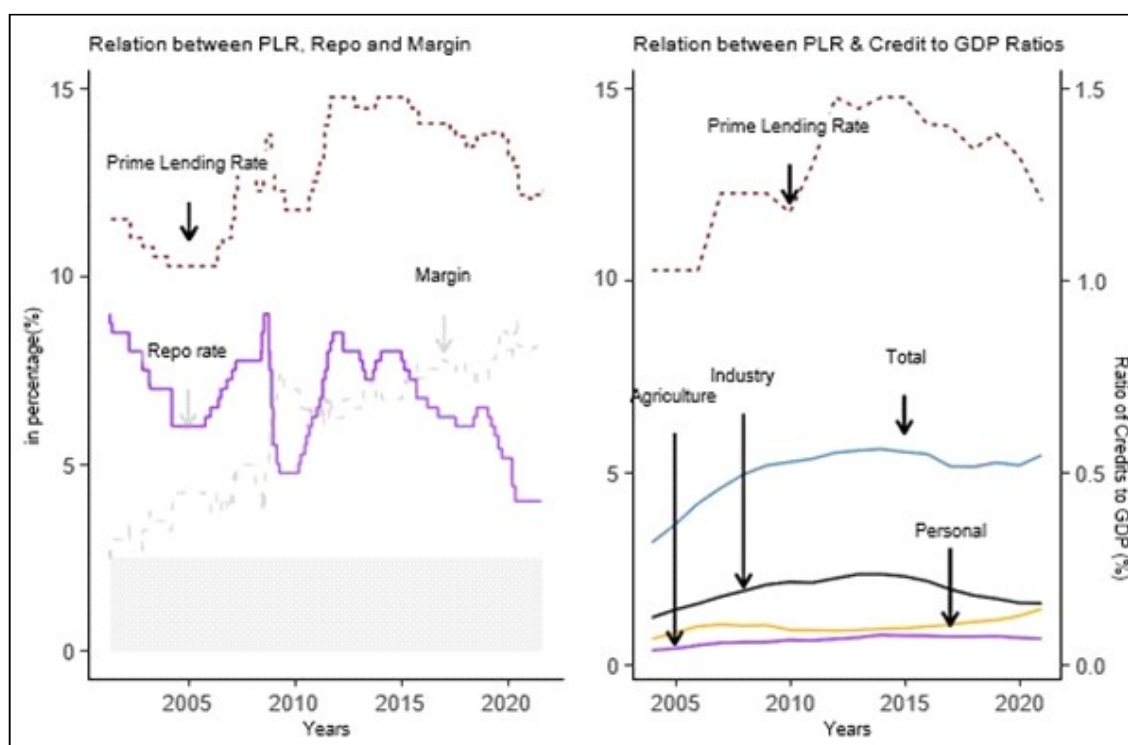
Source: Database of Fiscal Policy Responses to COVID-19, IMF.

The link between economic revival and monetary policy could break down at any of the many slips between the cup and the lip. A fall in the policy rate needs to translate into a fall in the lending rate of the commercial banks and that needs to revive investment or consumption demand. Credit easing will take off only if there are takers for credit. In a depressed economy, both the households, whose incomes and jobs are unstable, and the corporates, whose factories are running below capacity, will be wary of taking on more credit despite a fall in its cost.

In figure 13, we explore the various slips discussed above. In particular, we check whether the interest rate changes by the RBI are passed on by the banks to the consumers through the PLR² and the relationship between PLR and credit growth in agriculture, industry and personal loans (Fig 13).

As is evident, there is no one-to-one pass through of the policy rate to the market rate, especially during a fall in the policy rate (left chart in figure 13), with the difference between the two, the margin, rising over the years. The chart on the right in figure 13 shows that there has been no revival in any of the three components of credit, except in the latest period in the case of personal loans. Even this rise in personal loans (as a proportion of the GDP) is partly because GDP has fallen in absolute terms and partly because of personal loans being aggressively handed out by the banks in the very recent period. This sounds ominous because with falling incomes and job loss and no recovery on the horizon this could result in loan defaults and add to the NPA kitty of the banks in the future. And if this credit has gone into the stock market, that is even worse.

Figure 13: Repo rate, Prime Lending Rate (SBI) and Credit Growth in India



Source: Authors' calculations based on Reserve Bank of India and State Bank of India database.

3.2 Why Fiscal Policy Would Have Worked

As opposed to this ill-thought revival strategy of providing loan guarantees or cheap loans, the economy could have been revived through good old fiscal policy, which directly influences the level of activity.

If the route is so obvious, why are the governments reluctant to increase fiscal expenditures? The answer lies in the political economy of State intervention. Private capital wants control over the accumulation process and an active State may keep such a process under regulatory control. Also, higher fiscal expenditure *may* lead to higher public debt, especially in conditions of recession, because tax revenues may not increase *pari passu* at least initially. However, even if they do, why should that be a problem? The answer lies in the countries, especially in the developing region, being singularly fixated on credit ratings by international agencies. A fall in credit rating in the event of public debt crossing a red mark might cause a capital outflow because portfolio investors may get scared. This could affect the stock market and cause depreciation, which could spiral out of control — a realistic scenario that needs to be addressed seriously.

Before we go further into this, let us take a careful look at India's policy stance in the recent period. The government had announced an *Atmanirbhar* package worth 10% of the GDP last year to deal with the Covid crisis. In figure 12, we had shown that package as constituting the total of the above and below the line measures. It is clear that the above the line measures i.e. the actual fiscal response to the pandemic is a mere 2.5% of the GDP. The rest of the 10% of the GDP promised is practically below the line measures in the form of loan guarantees and credit availability.

The government of India, and its admirers, always point to a booming stock market and rising foreign reserves as proof of a healthy economy, even at the cost of a flagging real economy. The second paradox described above becomes more evident when seen in the light of this. It is what the government wanted and has, therefore, actively encouraged. Using the favourable international financial conditions with finance looking for an outlet, the government, by maintaining low deficits and zero long term capital gains tax, has managed to make the Indian stock market a tax haven. To be fair, this speculation itself can fuel enterprise through the wealth effect since the consumption of the rich and those holding stocks would rise if their nominal wealth rises. But herein lies the fallacy of this strategy. What the government has gained in terms of a short-term speculation-induced consumption is, precisely, what it has lost in terms of a more stable and

long-term fiscal policy-driven revival strategy. In other words, ordinary peoples' employment and wellbeing have been sacrificed on the altar of speculative finance and the stock markets.

Moreover, this cannot be a sustainable solution. A stock market where speculation trumps enterprise may go bust at any time, taking not just consumption down but may dampen corporate investment, effect capital flight, and sharp devaluations or reserve depletion or both, all of which perhaps points to the fragility of the current conditions in India.

Everything that the State does is geared towards pushing Tobin's q up. Even a corporate tax cut helps that. A tax cut need not necessarily shore up investment as is generally expected, but it can certainly increase the firms' cash flow, which can then be used for financial investments, a process that has also contributed to the bull run in India during the pandemic.

Therefore, the strategy of the State is to give up on government expenditure to keep the stock market happy while wishing for the wealth effect to shore up the demand. The State turns into a mere enabler (whether through monetary policy or the inability to use fiscal policy) instead of an active player in steering the economy, especially under conditions of depressed demand. If the fiscal deficit is more or less a fixed proportion of the GDP, the public debt to GDP ratio also stays under control, or at least the policy makers will have one believe so.

But in the very process, it generates multiple problems. For one, no countercyclical fiscal policy is possible anymore because government expenditure itself gets directly tied to the activity level. Secondly, this attempt to keep the deficit under a tight leash has its usual problems in a depressed economy. Since the revenue is tied to the level of activity, a lower than expected level of activity may mean two things: reduction in expenditure or increase in tax rates, and mostly it is indirect taxes that are raised as has been the experience in India during the entire tenure of this government. Moreover, in the event of corporate tax cuts, there is a double burden on indirect taxes (and the common people). Third, while foreign capital may be lured and the stock market witnesses a bull run, it does not mean it will significantly impact the real economy since the wealth effect may be muted in a depressed economy, something India has been experiencing during the current market run.

In short, a sure-shot weapon of recovery, fiscal expenditure, is given up for a chimera of stock market-driven growth.

4 India's Green Deal: Greening Our Way Out of the Pandemic

This last section deals with what could be the roadmap for the future. While we focus on India in this section, there is nothing in the programme which ties it down to a country, and it can be planned for other South Asian countries as well. The Indian government had promised 10% of the GDP as an *Atmanirbhar* (self-reliant) package for Covid recovery. We have already discussed the limitations of this programme. In this section, we propose an alternative and more fruitful way of spending that amount.

4.1 An International Perspective

A recent editorial in *Science* by Rosenbloom and Markard [2020] succinctly argues that '[l]everaging COVID-19 recovery programs to advance the climate agenda simultaneously presents a strategic opportunity to transition toward a more sustainable post-COVID-19 world'. Another editorial [Jin, 2020] argues, '[w]e need all kinds of creative technological solutions and "all hands-on deck" in the fight to mitigate climate change.'

Forster et al. [2020] argue that with an 'economic recovery tilted towards green stimulus and reductions in fossil fuel investments, it is possible to avoid future warming of 0.3°C by 2050.' Hepburn et al. [2020] show that, if correctly implemented, a fiscal stimulus focused on clean physical infrastructure, building efficiency retrofits, investment in education and training, natural capital investment, and clean R&D can go a long way in fighting climate change as well as creating a more inclusive and just growth paradigm across the globe. In a similar vein, Kuzemko et al. [2020] conclude 'that the politics of sustainable energy transitions are now at a critical juncture, in which the form and direction of state support for post-pandemic economic recovery will be key.'

As can be seen, there seems to be a broad consensus on the need to integrate the policy response to the Covid-19 pandemic with inbuilt ways to mitigate climate change even as the economic recovery unfolds.

A comprehensive policy for such a revival, which is slightly long-term (with a planning horizon of 10 years), has been provided for the US. This is a project to “Transform, Heal and Renew by Investing in a Vibrant Economy (THRIVE),” henceforth THRIVE (Pollin et al. [2021]). It divides the programme into four components: infrastructure, care economy, agriculture, and green energy transition. With an investment of 9.5 trillion over ten years, the study estimates that this program will generate about 15.5 million total jobs every year, more than accommodating the unemployed (open and disguised) resulting from the lockdown. The study also provides disaggregated evidence on the quality of jobs as well as gender and racial representation. We draw inspiration from the THRIVE agenda presented to the US Congress, which constitutes a part of their *Green New Deal*.

4.2 Contours of the IGD

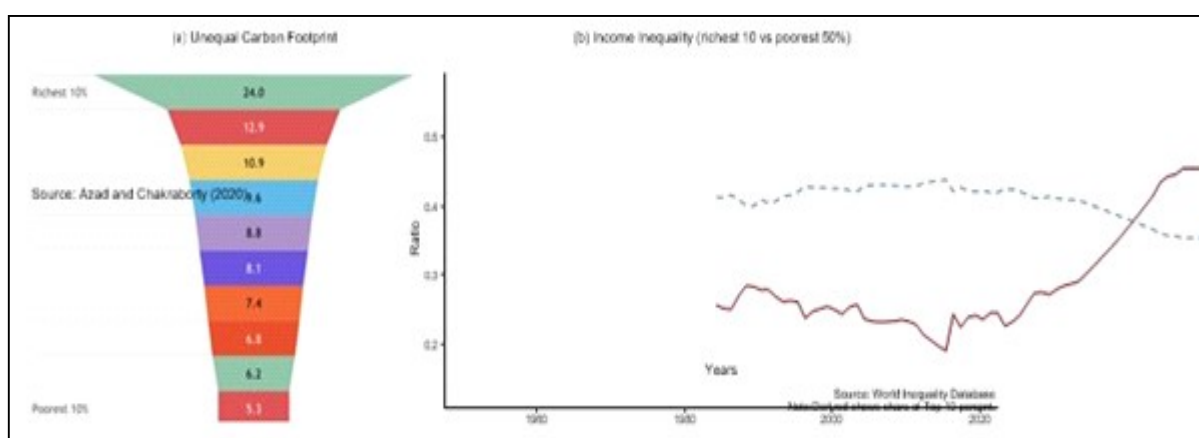
We take India as an example to present a blueprint of this policy but it can also be drafted for other South Asian countries. We believe that this crisis has provided us with an opportunity to change the course of development, a model where people, and not profits, form the core. Based on their employment generating capacity and their carbon footprint, we pick a few sectors to propose an *India Green Deal (IGD)* that creates green jobs and fundamentally alters the economy’s carbon footprint. We also believe that this programme should be funded in an egalitarian manner which brings down the unprecedented levels of inequality in the economy and puts the burden of adjustment on those whose lifestyles are primarily responsible for the climate crisis to which the elites in India are also contributing to a certain extent.

The policymakers in the emerging economies, particularly on the right side of the aisle, have traditionally stigmatized any form of environmental regulations as being a detrimental practice, which raises the cost of production, disproportionately affects small businesses, and imposes expenses on the economy that tend to stifle economic growth and cut levels of employment (Murphy et al. [2015]). So, this argument essentially juxtaposes environmental regulations against the growth and job opportunities in any economy. In the specific context of developing countries, this raises serious concerns about any environmental regulations as these economies are already reeling under problems of severe unemployment and poverty. Therefore, any discussion on clean energy in the context of a developing economy is usually taken with a grain of salt since it somehow tends to generate a feeling among the politicians as well as the policymakers that it will inflict hardships on the economy.

However, with the ongoing research on employment generation through investments in a clean energy programmes, opinions are much more favourable to the positive synergies between environmental regulation policies and the increased levels of growth and employment. Recent studies show that investments in renewable energy and energy efficiency not only do not slow down the growth process of the economy but also generate net positive jobs in the economy (Pollin et al. [2015], Pollin [2015]). This is so because the clean energy sector has a higher employment elasticity than the fossil fuel sector per unit of money invested. It is to be noted that there are considerable variations between technologies, with wind power appearing to be relatively less labour-intensive, while solar and energy efficiency investments appear more labour-intensive.

One of the hallmarks of the IGD is that it forefronts environmental justice in the proposal. To understand how critical it is to address this injustice, we present the inequality in carbon footprint (panel (a) in 14). The rich have a much higher footprint than the poor partly due to income inequality (panel (b) in 14) and partly due to the composition of their consumption baskets. As we go up the income scale, the same rupee usually is spent on goods with a higher carbon content. The best example of this is transport costs, with the richest 10% spending as high as 40 times more than the poorest 10% (Azad and Chakraborty [2020]). Another category of consumption with a similar disparity is industrial goods, which have a higher carbon content than other commodities.

Figure 14: Income Inequality and Unequal Carbon Footprint



(a) Source: Azad and Chakraborty (2020)

(b) Source: World Inequality Database.

The paradox of climate injustice is that those who contribute the least are the ones who suffer the most from the adverse effects that climate change brings. Any policy, therefore, should intend to invert this injustice funnel. This can be done in two ways.

One, the employment generating capacity of the green economy, in general, is higher than the fossil fuel industry (table 3), so any shift towards renewable energy will increase employment along with having a positive impact on environment (Azad and Chakraborty [2019b]). The bulk of the discussion that follows is about how many jobs and wherein the economy can jobs be created. This is particularly important for a country where even the highest of the growth phases — the 2000s — did not see decent growth in employment. In fact, the employment elasticity of output during that time was close to zero.

Two, funding of the programme itself can be planned in a way that there is some income redistribution (in kind) in the process. We have proposed such a mechanism in Azad and Chakraborty [2020] for India and Azad and Chakraborty [2021] for Delhi. The essence of the argument is that apart from spending on the green energy programme, there should also be a provision for free electricity (up to a certain limit) and public transport to all. Additionally, there could be provisioning for free ration (upto a certain limit). These could be financed through a carbon tax, which also addresses the issue of climate change from the demand side since the prices of commodities rise according to the carbon embodied in them. We have shown conclusively that such a redistribution policy with an otherwise regressive carbon tax can distinctly invert the climate injustice funnel. However, since we have discussed this part of the proposal in detail in our earlier papers, we leave these out in what follows and only briefly discuss them towards the end when we come to the issue of financing the IGD.

Table 3: Employment Generation from Investments in Green vis-à-vis Fossil Fuels

	Direct	Indirect	Total
Green Energy Program	83.4	68.4	151.7
Energy Efficiency (33%)	81.2	73.1	154.3
Renewable Energy (67%)	84.4	66.0	150.5
Fossil Fuel Program	5.6	38.4	44.0

Source: Authors calculations (detailed methodology in the Appendix).

Note: Jobs per 1 million

We pick specific sectors of the economy and calculate employment multipliers by matching the sectors with the corresponding ones in the NSS survey on employment³. We believe such a programme can provide a blueprint for a greener and more inclusive India for tomorrow. Throughout this section, the number for employment represents how many jobs can be created in the respective (sub)sectors for every million USD spent in that (sub)sector.

We break down the overall programme into three categories: infrastructure development, care and green energy. We have identified these three programmes because we believe that this should be the economic path in the future. It helps that the employment generating capacity of these sectors is quite high. Table 4 presents the number of jobs that can be generated in different categories under these three programmes. Direct jobs are created as a result of the programme, whereas indirect ones are created through the backward linkages of these activities.

Next, we address the quality and social composition of jobs if the current labour standards prevailed in these sectors. We present these figures separately for the three sub-programmes as discussed above (table 5).

While the number of jobs created may be high, there is no guarantee that they would be of good quality. This is particularly so because the calculations are based on the *current* quality of jobs prevailing in these sectors. So, if a large proportion of workers are employed in informal status within a sector, the same would reflect in this programme in the *absence* of an active policy to reverse the prevailing situation.

To measure the quality of jobs, we categorise the jobs into two categories: no benefits, some benefits. It is to be expected that the proportion of jobs of the former type will far dominate the latter, given the current composition of the labour market in India. But this need not be replicated. Instead, an active policy in favour of labour standards will be required to mitigate this acute problem of poor quality of jobs. The point of presenting the current status is to show the extent to which such mitigation may be required. And this may vary across sectors, as we shall see below.

Table 4: Employment Generated per million USD Invested in the Respective Components of the IGD

	Employment numbers (per million)		
	Direct	Indirect	Total
Infrastructure Development Program			
Surface Transportation	89.9	56.4	146.4
Water infrastructure	51.7	60.1	111.8
Electricity Infrastructure	48.6	60.0	108.7
Railway infrastructure	64.5	54.4	118.9
Inland Water transportation	66.0	58.1	124.2
Improving Waste management	56.8	60.3	117.0
Broadband	56.5	68.3	124.8
Agricultural R & D and training	161.3	37.5	198.8
Care Program			
Schools	119.1	52.6	171.7
Public Health	91.7	61.3	153.0
Care Sector	89.1	57.4	146.6
Green Energy Program			
Building Retrofits	110.6	75.4	186.0
Industrial Efficiency	78.2	78.2	156.4
Improved Smart Grids	67.6	80.4	148.0
Public Transport	68.4	58.7	127.0
Bioenergy	189.7	47.7	237.3
Wind Energy	61.8	77.0	138.8
Solar Energy	47.1	70.2	117.3
Geothermal	66.9	68.1	135.0
Small Hydro	56.7	67.2	123.9

Source: Authors' Calculations based on PLFS (July 2017-June 2018) Annual Report, May 2019

Note: The detailed methodology and weights are provided in the appendix.

As far as the social composition of jobs is concerned, an assessment of the gender and caste representation in these new jobs yield troubling results, as, again, that is representative of the prevailing condition of the job market. In the absence of any active intervention to ensure better gender composition, representation of women is mostly around 10% or less except in the care economy as expected, agriculture R&D and bioenergy. If we look at the caste composition, even without formal reservations in these jobs, the numbers show that the representation is more than reservation would have provided in most activities. While that in itself may be a redeeming feature, it also points to the quality of jobs. High end jobs do not just have a glass

ceiling, dominated caste representation is often negligible. So, if we find that the increase in jobs favour the underprivileged more, it is more likely that these are not necessarily quality jobs.

To get an idea about the quality of the jobs, we look at their location (rural/urban), level of education required, whether they are contractual and have non-wage benefits. A good thing is that these jobs are mostly based in the rural sector, which will help pull out the disguised unemployed from that sector. As for education, most of the jobs will be offered to school pass-outs or less, which again means that it will help pull less educated people out of poverty. But it also means that they may be informal and unskilled low-end jobs. Therefore, it is not surprising to find that most of these jobs are contractual (and not permanent) with no benefits.

Given the low quality of jobs, the jobs created through this programme must have an inbuilt social security system, which is possible since the State is providing them. Labour rights, decent minimum wage laws, and strict adherence to it are some of the measures well within the perimeter of the State's influence. And to address gender underrepresentation, provisions for reservation for women can be inbuilt into this programme.

Table 5: Social Composition of Employment Generated under the IGD

	Female	Rural	Education			Caste				No Contract	No Benefits
			Primary	School	College	ST	SC	OBC	General		
Infrastructure Development											
Surface Transportation	7.3	61.0	41.0	48.8	10.2	8.0	25.7	40.5	25.8	61.0	73.9
Water infrastructure	9.8	54.5	37.5	44.2	18.3	8.1	25.4	39.1	27.4	54.5	63.4
Electricity Infrastructure	9.2	55.9	38.0	45.7	16.2	8.2	25.2	37.6	29.0	55.9	63.4
Railway infrastructure	5.0	53.5	34.2	51.6	14.2	7.0	24.2	39.2	29.6	53.5	63.9
Inland Water transportation	6.1	56.6	37.5	49.2	13.3	7.7	25.9	38.9	27.5	56.6	66.3
Improving Waste management	9.5	55.3	35.6	43.8	20.6	7.9	25.2	40.3	26.6	55.3	62.2
Broadband	10.6	51.4	35.6	44.5	19.9	6.7	24.7	38.6	30.1	53.0	63.8
Agricultural R & D	29.4	63.3	31.3	35.1	33.6	11.0	17.6	38.6	32.7	66.8	60.7
Care Programme											
Schools	25.6	58.7	29.9	35.1	35.0	9.2	23.4	38.6	28.8	62.9	59.5
Public Health	24.8	53.9	31.0	41.0	28.0	8.4	25.1	38.0	28.5	54.7	61.9
Care Sector	25.6	54.1	32.0	41.5	26.5	9.0	26.1	38.2	26.6	57.4	60.9
Green Energy Programme											
Building Retrofits	10.0	75.0	54.2	41.4	4.4	10.9	32.5	39.7	16.9	75.0	84.4
Industrial Efficiency	9.1	48.1	32.4	49.8	17.8	6.5	19.9	41.3	32.3	48.1	67.9
Smart Grids	9.8	47.0	32.3	50.4	17.2	6.4	19.7	39.6	34.3	47.0	65.6
Public Transport	5.8	52.3	33.1	51.5	15.4	6.7	22.9	39.7	30.7	52.3	64.9
Bioenergy	22.5	82.7	52.6	39.6	7.9	13.3	22.3	41.0	23.4	82.7	82.0
Wind Energy	8.9	49.4	34.0	49.9	16.1	6.6	21.7	42.5	29.2	49.4	66.8
Solar Energy	10.3	48.1	30.2	47.3	22.5	6.6	22.2	38.0	33.2	48.1	56.3
Geothermal	10.1	53.3	33.7	44.8	21.5	7.5	24.1	39.1	29.2	53.3	63.2
Small Hydro	10.9	50.9	33.5	45.0	21.5	6.3	23.8	39.4	30.6	50.9	58.9

Source: Authors' Calculations based on PLFS (July 2017-June 2018) Annual Report, May 2019

Note: The detailed methodology and weights are provided in the appendix.

4.3 A Brief Discussion on Financing the IGD

Although 10% of the GDP may sound like an awful lot, this is a figure that the government itself had provided last year in its *Atmanirbhar* package. It is another matter that it constituted mostly of loan guarantees and liquidity injection measures, as discussed in detail in the last section. It is true that perhaps a Third World country, like India, cannot easily mobilise such a huge sum. Hence the issue of financing the programme needs to be taken seriously. We propose that this 10% is split in 3 parts: 5% for the infrastructure development programme; 3% for the care economy programme; and the remaining 2% for the green energy programme. As a result of this distribution, the total jobs and their distribution across these three programmes are presented in table 6. It can be seen that not only does it absorb the currently unemployed,

it also generates extra jobs which can certainly absorb a significant section of the disguised unemployed in the economy.

Table 6: Total Employment Generated Under IGD and 3 financing scenarios

		Amount (USD bn)	Employment(mn) (mn)	Share of total labourf force (in %)
India Green Deal		262.2	38.6	8.2
	Infrastructure	131.1	17.5	3.7
	Care	78.6	13.2	2.8
	Green Energy	52.4	8.0	1.7
Financing IGD				
Scenario 1: Tax-financed	Wealth Tax	104.9		
	Corporate Tax	104.9		
	Carbon Tax	52.4		
Scenario 2: Global JET		268.4		
Scenario 3: Deficit+Tax	Wealth Tax	52.4		
	Corporate Tax	52.5		
	Carbon Tax	26.2		

Source: Authors' calculations based on World Development Indicators, WB, 2020 Assumptions:

Note: In 2020 , India's GDP is 2,622 billion and total labour force is 472 million.

1. Investments on Infrastructure, care and green energy account for 5%, 3% and 2% of the GDP, respectively.
2. Scenario 1: Carbon tax finances the green energy program, the remainder of the spending is distributed equally between wealth and corporate tax.

Scenario 2: Global Just energy transition program which covers all the expenses from international transfers.

Scenario 3: 50% is deficit-financed, and remaining 50% is tax financed. In the tax finance part, the same ratios are maintained as in Scenario 1.

There are three routes of financing possible. One, progressive in its incidence, is a revenue-neutral policy where the increase in expenditure is financed through an increase in wealth, inheritance, and corporate taxes, all of which are either low or non-existent in India. Another part can be financed by carbon taxes (Azad and Chakraborty [2020] presents a detailed proposal on that) but, unlike the other taxes, would be regressive in nature. To compensate for that, a carbon dividend – in the form of free electricity, public transport and free rations – can be inbuilt into the policy proposal. So, a comprehensive India Green Deal

will constitute a commitment to spend 10% of the GDP (ideally over the next 10 years if we want to make perceptible changes to climate and provide gainful employment to unemployed and underemployed Indians). And this can be financed through a combination of different taxes – wealth, inheritance, corporate and carbon. Let us say, the green energy programme is entirely financed by carbon tax as proposed in Azad and Chakraborty [2020], then we are left with financing the remaining 80% of the programme or 8% of the GDP.

Second, as Azad and Chakraborty [2019a] argue, an international global green deal provides for a Just Energy Transition (JET) in the countries contributing less than the global average emissions. The essence of the argument is that those countries that have contributed (currently or cumulatively) more emissions than the global average pay for the energy transition of those who have contributed less. The extent of the payment would depend on where a country lies on the global scale of emissions. As a ballpark figure, such an international global carbon tax settlement process would yield an annual sum of around USD 270 billion for India to effect a fundamental energy transition towards renewables along with other measures.

Third, there is always the possibility of deficit financing (or partly deficit- and partly tax-financed) the entire sum, although this may increase public debt (depending on the various counteracting multiplier effects of increased spending discussed in the appendix in detail). Such an increase can adversely affect credit ratings and financial flows into the economy, thereby affecting the stock market and threatening capital flight. But the economy can be insulated from these shocks if the capital account is kept under a tight leash and the basic thrust of government policy shifts away from a fixation on stock market-driven speculative growth towards a more broad-based and stable growth of output, employment, which is also climate-sensitive.

5 Conclusion

The global economy is in a deep crisis. This crisis is at three different levels — health, economic, and climate. While the first two have often been commented upon in the form of twin crises in the context of the Covid-19 induced global lockdown, the third one, the most serious of the three, remains in the background. This paper focuses on South Asia in general and India in particular, to look at the impact of these crises, the response of the government and a long-term way forward. Every crisis should also be seen as an opportunity to break free from the past.

To control the health crisis, lockdowns of differing degrees of intensity were imposed across the South Asian region. Data shows that not only have governments not dealt with the health crisis adequately, but they have also aggravated the economic crisis. As for the climate crisis, the so-called silver lining provided by the temporary decline in emissions has been largely ineffective since the countervailing factors have canceled the impact of the lockdown.

In response to the severe triple crisis problem, governments have primarily relied on 'below the line' measures, which are in the nature of loan guarantees and 'potential' liquidity injection, which are essentially supply-side measures at best, and are, therefore, ineffective when the crisis is about demand in the economy. For example, India's fiscal response to the pandemic, the 'Atmanirbhar package', is a mere 2.5% of the GDP even if we take the most liberal estimates. The rest of the 10% of the GDP promised (20 lakh crore) is practically below the line measures.

In sharp contrast to that, we propose an alternative path to spending the proposed 10% of the GDP in the form of a comprehensive India Green Deal. We pick a few sectors based on their employment generating capacity and their carbon footprint to show that the IGD creates green jobs and fundamentally alters the economy's carbon footprint. We also believe that this programme should be funded in an egalitarian manner which brings down the unprecedented levels of inequality prevailing in the Indian economy and puts the burden of adjustment on those whose lifestyles are primarily responsible for the climate crisis. The total amount required to fund the India Green Deal is used to calculate a wealth (and inheritance) tax rate and carbon tax (capital gains tax on speculative activities?) required to finance it under different scenarios. We believe such a programme can provide a blueprint for a greener and inclusive India for tomorrow. And a similar programme through the South Asian region for a greener world.

Appendix

A Methodology

The methodology used in the paper is similar to the existing literature. We employ the Input-Output system to estimate the job numbers generated through investments in the clean energy program. The method is static in nature i.e. it does not take into account the changes in employment elasticities that might result from

technological innovations in the future. The best case scenario is projecting employment generating capacities of different sectors based on their current elasticities. In that sense, these could overstate the case since technological innovations are more likely to increase labour productivities within a given sector. However, it is safe to assume that the *relative* elasticities across the sectors are more likely to stay similar to what they are at the moment. Since it is difficult to estimate what the labour productivities in the future are going to be like, we take the current structure of production as given and extrapolate it into the future (discussed in detail in the penultimate section).

One of the limitations of this methodology, which is a limitation for any work based on the IO methodology, is that it does not take into account the changes in the production structure such a capital expenditure will entail in the future and to that effect is a static analysis. The alternative to that is comparative general equilibrium modeling, which requires demand and supply elasticities to be taken into account to present a dynamic picture but that has its limitations along with the issue of the unreliability of these elasticities.⁴ At the end of the day, it is always better to tell a story in as simple a term as possible because it is not about the exact numbers as they will pan out but more about the relative trends in different scenarios.

B Employment Multipliers

A detailed methodology of calculating the employment multipliers as a result of the clean energy policy has been discussed in Pollin et al. [2015] and Pollin and Chakraborty [2015]. Our estimates on employment generation draw directly from the Input-Output (I/O) tables and the employment and unemployment surveys of NSS for India.

We take into account the direct and indirect content of one commodity in a unit of another commodity through the I/O table. The elements a_{ij} of the Leontief inverse matrix gives us the total input of commodity i embodied in output of commodity j . We match the NSS sectors with that of the I/O sectors to get the employment-output ratios (measured in employment per million dollar value of the gross output of an industry) for each of the I/O sectors.⁵ Multiplying the Leontief inverse matrix with the employment-output ratios calculated thus gives us the employment matrix (**EM**), the diagonal elements of which tell us the direct employment generated by the sector and the sum of the rest of the column elements gives us the indirect employment generated for the sector in that column.

Combining the two components of employment, which is the total sum of the columns, generates the total employment multiplier for each of the sectors per million USD spent in these sectors. The next step is to find out the employment multiplier generated as a result of the different forms of energy-related investments.

Based on the employment matrix and the expenditure on each of these sub-divisional categories of the energy programme, we can find the number of jobs that can be generated per million USD spent on these programmes. The composition of employment based on region, gender, caste, education, sector has been calculated based on the NSS which provides this information at the level of individual industries.

C Data sources

We use the latest NSS 68th round unit level data (survey done in 2011-12), and the corresponding source for the Input-Output table is OECD database. NSS schedule 10 has been used to calculate the employment intensity of different sectors.

Table 7: Code Matching from Input-Output Tables to NSS Categories: Employment Scenario

Industrial Categories	IO Codes*	NIC-2008(Sec & Div)**
Agriculture & Allied Activities	C01T05	Sec A
Mining & Quarrying	C10T14	Sec B
Food Products & Related Items	C15T16	Div 10+ Div 11+ Div 12
Textiles, Leather & Related Items	C17T19	Div 13+ Div 14+ Div 15
Wood & Related Items	C20	Div 16
Pulp, paper, & Related Items	C21T22	Div 17 + Div 18
Coke, & Related Items	C23	Div 19
Chemicals & Related Items	C24	Div 20 + Div 21
Rubber & Plastic Products	C25	Div 22
Non-metallic Mineral Products	C26	Div 23
Basic Metals	C27	Div 24
Fabricated Metal Products	C28	Div 25
Machinery & Equipment, nec	C29	Div 28
Computer & Related Items	C30T33X	Div 26
Electrical Machinery & Apparatus, nec	C31	Div 27
Motor Vehicles & Related Items	C34	Div 29
Other Transport Equipments	C35	Div 30
Manufacturing nec; recycling	C36T37	Div 31+ Div 32+ Div 33
Electricity, Gas & Water Supply	C40T41	Sec D + Sec E

Construction	C45	Sec F
Wholesale & Retail Trade; Repairs	C50T52	Sec G
Hotels & Restaurants	C55	Sec I
Transport & Storage	C60T63	Sec H
Post & Tele.	C64	Sec J - Div 62
Financial intermediation	C65T67	Sec K
Real Estate Activities	C70	Sec L
Renting of Machinery & Equipment	C71	Div 77
Computer & Related Activities	C72	Div 62
R&D & Other Business Activities	C73T74	Sec M + Sec N - Div 77
Public Admin; Defense & CSS	C75	Sec O
Education	C80	Sec P
Health & Social Work	C85	Sec Q
Other Community, Social & Personal Services	C90T93	Sec R+S+T+U

Source: Compiled by authors from IO, NSS

*Codes are taken from OECD Input-Output Tables (IOT), 2015

**NIC Codes are in the Schedule 10 of NSS 68th round;
Sec stands for Section and Div stands for Division

Notes

- ¹ In a letter written in the journal *Science*, scientists have demanded an open-minded inquiry into the virus's origins (Bloom et al. [2021])
- ² PLR used here is of the SBI, which as the largest bank, represents the PLR of the scheduled commercial banks
- ³ Methodology for these calculations is given in data appendix
- ⁴ For a detailed discussion on the advantages and disadvantages of this methodology, see (Pollin et al. [2015], pp.123-144)
- ⁵ Table 7 in the Appendix provides all the industry-wise details of the matching principle employed.

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