EXPERTS SUPPORT INDIA'S NECESSARY ACTION TOWARDS A GREEN RECOVERY

INDIA'S ROAD TO A GREEN RECOVERY: EXPERTS SPEAK ON #BUILDBACKBETTER

Since September this year Climate Trends has conducted four webinars with subject matter experts to discuss India's economic recovery plan. The webinars have focussed on what a "green recovery" would entail, the future of coal in India's energy mix, how renewables can help India's power sector to transition, and the choice of interlinkages between economy and environment.

This is because the excellent air and water quality in most countries during their Covid-19 lockdowns offered a rare glimpse into the severity of human impact on the environment. The pandemic's collateral damage through fatalities, unemployment, business shutdowns and lost economic opportunities has also spurred nations to announce recovery packages worth several hundred billion dollars.

A notable characteristic with most has been the focus on preserving the environment. Several packages have thus prioritised renewables over fossil fuels for their better employment potential, cheaper power output and nearly zero operational emissions. For instance, 30% of the European Union's 'Next Generation EU'[1] recovery package of $830 billion is earmarked for initiatives that specifically reduce its dependence on fossil fuels. Also significant is the rider that its loans and grants to member states will only be disbursed to projects that "do no harm" to the environment. France has gone a step further by demanding that the nation slash its emissions by 50% by 2030, and it will spend €2 billion on expanding the share of electric and hybrid vehicles.

The demands are not surprising, coming from (in recent times) some of the world's most environmentally-progressive economies. It underlines their resolve to affect a "green recovery" and stop their economies from falling back into an overwhelming reliance on fossil fuels, since globally there is growing recognition that economic growth can be de-coupled from carbon emissions.

The notion is equally supported by the International Energy Agency (IEA)'s and Bloomberg New Energy Finance (BNEF)'s findings that renewable energy jobs today outnumber the ones in coal, oil and natural gas by up to 5:1[2] — and the gap will widen as economies realign themselves to cheaper power, such as solar. Meanwhile, a new study[3] has found that jobs in the clean energy and e-mobility sectors in the US paid 25% more than the national average.

OPPORTUNITIES FOR A 'GREEN' ECONOMIC RECOVERY

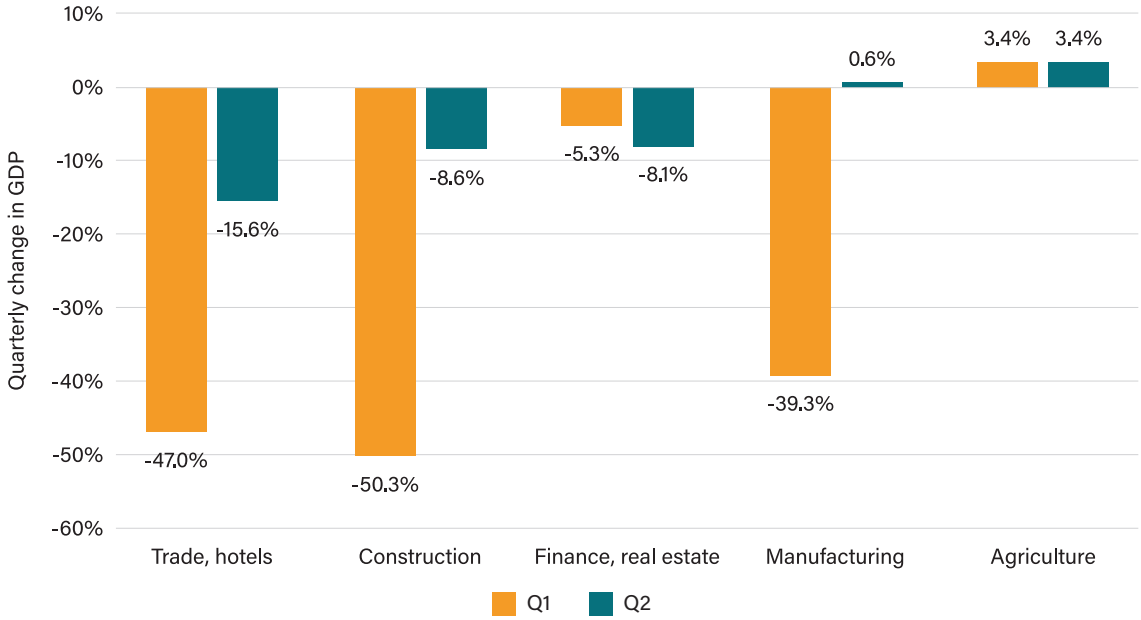
The economic damage rendered by the pandemic has been severe for India causing a shift in the priorities of the government which was dealing with a slowing economy even before the crisis struck.

Specific sectoral impacts are varied though equally concerning as seen in the graph below.

The year gone by shows that most of the recovery measures taken by the government have been to preserve traditional and legacy industries, and to that extent this has been a brown stimulus.

1 *https://thewire.in/energy/renewable-energy-role-covid-19-economic-recovery*
2 *https://www.cbsnews.com/news/renewable-energy-jobs-replacing-fossil-fuel-jobs-oil-wind/*
3 *https://www.houstonchronicle.com/business/energy/article/Wind-solar-jobs-pay-more-than-average-15668642.php*

Graph: Estimated quarterly impact of the pandemic on India, by sector GDP



Source: https://www.statista.com/statistics/1107798/india-estimated-economic-impact-of-coronavirus-by-sector/

To ensure that going forward principles of sustainable development are taken into consideration, it is important to:

- Find convergence points with ongoing efforts , schemes, missions of the government in the short term;
- To suggest ' sustainable development' focused policy options which can be put in place in a few years as the economy assumes a better shape and
- To seek opportunities to ' green' some parts of the stimulus which are brown in the short term.

AGRICULTURE

Overview

Agriculture is still the mainstay of the Indian economy and workforce and the recent farmers' protests have reiterated how central this sector is to India's economy and social sentiment.

With over half its territory being used as farmland, India is one of the largest agricultural producers in the world. Over the past few years, the sector's contribution to the national GDP has averaged between 15-20 percent. By most estimates, close to half of the country's labour force is estimated to rely on the agro-economy.[4]

While there is little doubt about the centrality of agriculture to India's socio-economic health, a culmination of several significant factors makes policy-making a tightrope act. In keeping with conventional macro-economic thought, India's post-liberalisation push has been to reduce dependence on agriculture and to drive growth in the industrial and service sector. This vision for growth still holds true as evident by accelerated efforts over the past decade to raise investments in industry, infrastructure and the service sector. While this

4 http://naasindia.org/documents/Agricultural%20Transformatio%20a%20Roadmap%20to%20New%20India.pdf

has resulted in growth of non-agricultural sectors, it has also had significant side-effects including migration to urban areas and aging of the farming populations. The scale and effect of migration was readily evident in the past year during India's lock-down.

Productivity has been growing steadily over the past two decades and India's agricultural sector has been expanding, but critical bottlenecks still exist in the agricultural supply-chain, storage and cold storage capacity and access to energy and water.[5,6] The country's projected population growth to 1.5 billion by 2030, and projected yield reductions from climate change in practically all major crops in the coming decade are critical considerations in developing policy. Further to this, India's changing patterns of land-use, dietary shifts toward animal-sourced nutrition, pressures on biodiversity and the agricultural carbon budget add layers of complexity.[7]

Despite its image as a sluggish sector, agriculture as a whole has proven to be among the more resilient parts of the economy. In fact, even as the rest of the economy was battered by disruptions from the COVID-19 pandemic, the Indian agricultural sector registered a growth of three per cent.[8] Despite relative resilience in the agricultural sector, the agricultural supply chain too was badly affected by the pandemic response. In response, the Indian government, in the third tranche of the stimulus package, announced the allocation of Rs.1 lakh crore (US$ 13.4 billion) for the creation of infrastructure for agriculture such as warehousing and cold storage with a view to strengthen resilience for farmers against changes in demand and disruptions in supply chains.[9]

Policy Status

The recent announcement is well-aligned with several other progressive steps taken by successive governments to promote sustainable agriculture. Efforts towards this have focused prominently on improving water-use efficiency through micro irrigation, resource-efficient cropping techniques, adoption of solar pumps for farmers and fertilisers that are eco-friendlier. The government's recent solar pump scheme, KUSUM, is one such example that aims to expand energy access and irrigation capacity across the country. While the scheme has gained accolades for expanding energy and water access, it also offers us a glimpse of the balancing act required in agricultural policy making, as analysts also fear unsustainable groundwater exploitation.[10]

While the agricultural sector reflects a multitude of challenges, coordinated public investment in infrastructure and R&D has been seen to improve productivity and provide better socio-economic returns as compared to piecemeal private investment. A recent example is the Rs. 1,000 crore National Monsoon Mission, which is estimated to have delivered 50-fold returns to farmers and fishing communities through dynamic and granular weather advisories.[11] District-level KVKs, have represented a similar story of success

5 *https://www.mdpi.com/2071-1050/12/9/3751*

6 *https://www.researchgate.net/publication/286294821_Food_security_and_sustainable_agriculture_in_India_The_water_management_challenge*

7 *http://www.fao.org/fileadmin/user_upload/FAO-countries/India/docs/Full_Paper-2.pdf*

8 *https://www.orfonline.org/research/green-recovery-opportunities-for-india/*

9 *https://www.climatepolicyinitiative.org/wp-content/uploads/2020/08/Green-Recovery-of-Indian-Economy_Webinar-Background-Paper_july-6.pdf*

10 *https://www.researchgate.net/publication/339326019_Policy_Review_and_Analysis_promoting_Solar-Powered_Irrigation_in_India*

11 *https://www.thehindubusinessline.com/news/return-on-national-monsoon-mission-was-50-fold-ncaer-study/article33015222.ece*

over their decades of existence, serving as the hubs of implementation of the several agricultural research programs funded by the government and for localised customisation of farming inputs.

Models charting the policy requirements for the coming decades have pointed to increased public investments in agricultural infrastructure and R&D as the most effective path to navigate the vulnerabilities and foreseeable pressures in Indian agriculture.[12] To this end, the National Mission for Sustainable Agriculture (NMSA) and the National Innovations for Climate Resilient Agriculture (NICRA), provided a strong model to implement best practices customised to localised conditions across the country, however the programme has faded away into obscurity following implementational bottlenecks and funding discrepancies.[13]

Another issue that has gained prominence in recent years is that of crop residue burning and its connection to India's toxic air problem, particularly noticeable in northern states in the winter when the paddy stubble is burnt. It is estimated that despite being outlawed, burning of crop residues in situ releases about 627 kilo tonnes (Kt) of PM10 and 4677 Kt of carbon monoxide to the atmosphere annually in India. The agricultural ministry's 2014 National Policy for Management of Crop Residue lays out the guiding framework to eliminate residue burning however little progress has been reported on the implementation. There is currently an urgent need to reassess cropping patterns that have been flagged as being unsustainable and ill-suited for the region. Calls have also been made to promote better use of crop residue briquettes in energy generation at local power plants and gasifying units.[14]

In a contentious recent development, the government has also sought to pass three new farm Bills, all with the state objective of delivering farmers greater freedom to farmers to directly sell their produce outside of the state mandis. While these Bills have come in response to long standing for reform in the state-regulated mandi-led procurement system, there has been wide criticism of its potential devastating effect on small and marginal farmers with poor access to the open market. Small and marginal farmers constitute about 80 percent of India's farming population. There are also concerns regarding the implications that an increase in monocrop contract farming would have land management, including the use of soil and water, biodiversity and food sovereignty. Experiences with abolishing the APMC in Bihar in 2006 and replacing it with a free-market system failed to achieve success and have resulted in demands from farmer organisations to return to the state-led procurement and minimum support prices.[15]

Recommendations

India's agricultural sector has not had an update to its national policy in 20 years. Comprehensive structural reforms must address issues of environmental sustainability while delivering on economic promises of doubling farmer income. Apart from investments toward strengthening the agricultural supply chain and food processing capacity, India's agricultural strategy will have to address fertiliser-use imbalances, inefficient cropping patterns and unsustainable water and land use.

Despite the slated legislation to increase reliance on the free market, agricultural subsidies are likely to play a big part into the future. India has one of the lowest levels of per capita agricultural subsidies among the world's large economies even though studies have shown the effectiveness of subsidies for agricultural

12 *https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2019EF001287*

13 *https://www.downtoearth.org.in/coverage/climate-change/not-adapting-to-change-59869*

14 *https://www.teriin.org/sites/default/files/2020-01/crop-residue-management.pdf*

15 *https://www.businesstoday.in/opinion/columns/why-agricultural-development-led-industrialisation-could-be-a-better-growth-model-for-india/story/427213.html*

productivity and sustained economic growth. Indian agriculture has also been blighted by inefficiencies in agricultural credit. The RBI's "Report of Internal Working Group to Review Agricultural Credit" from September 2019 revealed that several states availed agri-credits far higher than their entire agri-GDP. Independent analyses have also indicated that agri loans and tax exemptions have both disproportionately gone towards industry and corporate entities rather than farmers.

The current scenario offers India an opportunity to prioritise sustainability and climate resilience in regulating the flow of subsidies to farmers. Subsidies and government input support is a readily available avenue to incentivise environmental sustainability and resource efficiency. Streamlined subsidies and government support schemes could be used to implement customised research outputs on the ground and encourage resource-optimised cropping patterns.

India's agricultural policy and structural reform will have to integrate several economic concerns with the need to improve sustainability. Charting out agricultural growth in the country will depend on how well India can integrate agricultural research with per capita economic outcomes, all while continuing to strengthen the agro-industrial supply chain.

ENERGY TRANSITION

One immediate area of concern for the economy is its power sector which in essence drives each of the other sectors. India's coal fired-plants have fallen to record low plant load factors (PLFs) of around 55%[16] (versus the theoretical maximum of 85% and the generally healthy threshold of >65%). The tepid response to coal block auctions reflects flagging interest in the fuel because:

- New coal-fired capacity is no longer the cheapest source of power. It has been overtaken by solar and wind energy, whose tariffs of around Rs. 2.8/kWh are cheaper than new coal's Rs. 3.6-5.5/kWh. As and when existing coal plants install pollution control technologies (flue-gas de-sulphurisers and electrostatic precipitators) to comply with the latest SOx, NOx and PM emission standards, their tariffs will likely rise by Rs.0.32 - 0.72/kWh[17] — making them even more uncompetitive.
- Growing evidence of coal power's role in aggravating air pollution and water stress across urban and rural India has made the technology unpopular in terms of public health. Confirmed cases of debilitating diseases suffered by villagers in and around India's coal mining heartlands (Korba in Chhattisgarh and Singrauli in Uttar Pradesh) have also led to a slew of legal challenges and penalties for the mines' and power plants' owners.
- India's growth in electricity demand has not kept up with the Central Electricity Authority (CEA)'s projections of 7.1% per annum between 2017-22 and 6% per annum thereafter till 2027[18]. Worse, the peak industrial demand only grew at 4% for FY2017 in place of CEA's projected 9.3%. Industrial, commercial and residential energy efficiency measures have played a key role, as has the 23% year-on-year contraction in economic growth between FY19 and FY20. Incremental demand going forward is expected to be lower than projections and the states of Gujarat, Chhattisgarh and Maharashtra have declared that they will not be building any new coal capacity, while Tamil Nadu's (which leads Indian states in renewable energy capacity) senior officials are saying that they must reassess their coal pipeline.

16 *https://powermin.gov.in/en/content/power-sector-glance-all-india*

17 *https://www.iisd.org/publications/indias-energy-transition-cost-meeting-air-pollution-standards*

18 *https://www.financialexpress.com/economy/electricity-consumption-in-india-power-demand-to-rise-7-cagr-in-5-year/716957/*

- The tariff competitiveness of solar and wind power has attracted the country's largest coal power developer, NTPC, to declare a target of 32GW of clean energy capacity by 2032[19]. It will also no longer develop greenfield coal plants. The shift in its strategy is hugely symbolic and confirms that coal is no longer the most sensible source of power. In fact, NTPC will also retail power from its renewables' portfolio without any PPAs, since it is confident of finding buyers in the open market. The mechanism is likely to be adopted by other power developers and the resulting competition could drive solar and wind tariffs down even further.

  The country's DISCOMS too are projected to be battling a cumulative debt of Rs. 4.5 lakh (USD 64 billion) by the end of 2020-21[20] — and they are already struggling to purchase cheaper renewable power. Yet, a determined switch to renewable energy would address all the problems: DISCOM debt, employment generation, air quality and energy independence (under the Centre's *Atmanirbhar Bharat* initiative).

Fortunately, there is ample recognition from the government that climate change and carbon emissions are a threat, and there is the will for corrective action. In its Rs. 20 trillion stimulus package to re-start the economy after the lockdown[21], the Indian government allotted Rs. 188.1 billion for the energy sector, which included packages for both conventional and renewable power. There was also financial outlay for smart cities and rapid transit solutions.

At the same time, however, its subsidies to fossil fuels for 2018-19 amounted to Rs. 83,134 crores (~USD 12.4 billion), as opposed to Rs. 11,604 crore (~USD 1.7 billion) for clean energy and electric mobility[22], despite the obvious merits of the latter. Thus, if in going forward the country fails to shake off its support for fossil fuels and disregards the environment for industrial expansion, a once-in-a-lifetime to course-correct will be lost.

POLICY RECOMMENDATIONS GOING FORWARD - ENERGY TRANSITION

India must "build back better" so that its economic recovery strategy places climate and environmental issues front and centre. The rationale is that we must build solutions that are not constrained by the narrow lens of short term employment and economic output alone, but that address India's present and future climate changes at the same time being relevant in the present social context.

INDIA'S GREEN RECOVERY: ALIGNING SOCIAL, ECONOMIC AND ENVIRONMENTAL GOALS

Dr. Ajay Mathur (Director General, TERI):

India's per capita energy consumption will grow four-fold by 2050, but the energy must come from non-carbon sources. At the same time, renewable energy in rural India and energy efficiency in the SME sector (small and medium enterprises) are two of the biggest opportunities for remunerative investment. The focus must be on providing reliable power to the farming and SME sectors so that it helps them generate better revenue and minimise wastage of produce.

19 *https://www.pv-magazine-india.com/press-releases/ntpc-aims-for-32-gw-of-renewables-capacity-by-2032/*

20 *https://www.eqmagpro.com/discom-debt-to-hit-all-time-high-of-rs-4-5-lakh-crore-in-2020-21-crisil/*

21 *https://home.kpmg/xx/en/home/insights/2020/04/india-government-and-institution-measures-in-response-to-covid.html*

22 *https://www.iisd.org/system/files/publications/india-energy-transition-2020.pdf*

Prof. Navroz Dubash (Centre for Policy Research):

India's economic recovery must grapple with fiscal constraints and at the moment, because of the ongoing pandemic, there may not be adequate policy support for updated climate ambitions. However, the country's recovery must focus on creating jobs and a greener economy. To this end, "productive power" — or supply of quality power that improves the productivity of rural India — will be essential.

Another important step could be to shut down old, inefficient coal plants where possible. This would help improve the economics of newer, cleaner coal plants that are struggling with low utilisation, and it would make more room for new renewable power capacity. Both cases make better financial sense for the banks.

Prof. Cameron Hepburn (Professor of Environmental Economics at the University of Oxford and the London School of Economics) Citing results from a report titled "The economics of a green recovery":

There are huge majorities of citizens around the world who want a green recovery. India is at the top of the list of 14 nations polled, with 81% of respondents backing the prospect of a green recovery (as opposed to an average of 65% around the world).

Around the world government rescue packages have neither been green nor brown (i.e. they haven't taken a side with either renewable or traditional energy). However, the economic recovery packages have been considerably focussed on green initiatives, such as year-on-year emissions reduction. In the short-term the recovery will be about technological and behavioral change towards a low-carbon output, instead of the undesirable and unsustainable step of locking down economic output to save the environment.

Partha Bhattacharya (Former Chairman, Coal India Ltd.):

Renewables are the future. GST compensation for coal and the capital subsidy on renewable energy makes new coal capacity unlikely to be able to compete. Also international finance for coal is out. Thus international firms will not show much interest in India's newly auctioned coal blocks, nor will domestic players be very interested in unexplored or underexplored blocks.

Yet, some of the auctioned mines will regain competitiveness as providing affordable power to nearly 300 million Indians remains a priority. A part of the low cost power can still come from thermal power plants with high efficiencies and low variable costs by consuming around 250 million tonnes of coal every year.

As we go forward, setting up state-of-the-art coal washeries that cost a tenth of FGDs and greatly improve the fuel's SOX and PM characteristics would be recommended for plants that run on India's low sulphur content-coal. Plants that run on imported coal may install FGDs.

Most importantly, state governments should spend their revenues on uplifting the poor mining communities, since securing better livelihoods and economic opportunities for them are a major task in India's energy transition.

Rahul Tongia (Senior Fellow, Centre for Social and Economic Progress):

The larger policy question is about smartly managing India's energy portfolio. Till renewables can meet India's evening peak, coal power will be needed. Therefore, since the plants with the highest efficiencies burn the cleanest, we must prioritise their operation. In fact investments that raise the efficiencies of the cleanest coal plants would be welcome. Doing so would simultaneously improve local air quality.

Mohit Bhargava (Executive Director, NTPC):

Renewable energy will be a key cornerstone for NTPC. The DISCOMs cannot be burdened indefinitely with high debt, so we are looking to retail renewable power with no PPAs so that DISCOMS can purchase them without the obligation of buying power. It is essentially a risk-free model for them and NTPC will be working on RE and green hydrogen (as fuel and feedstock) in a big way.

Vinay Rustagi (Managing Director, BRIDGE TO INDIA):

There is a societal and environmental need to switch to renewables. Globally major commercial and industrial customers are switching to RE. But leaving it to India's DISCOMs to get to the 450GW target by 2030 will not help, and Renewable Purchase Obligations (RPOs) have not worked. To a certain extent we will need to force RE power offtake and it has to be a political decision.

We must subsidise RE and battery storage (similar to solar and wind power earlier in the decade) to keep with RE expansion and not simply be cost-sensitive. We are already late in building our energy storage capacity but this has to change. Distributed RE (such as rooftop solar) will also be important for India in places with land acquisition issues and high Transmission and Distribution (T&D) losses.

URBAN MOBILITY

Overview

India's biggest environmental challenge currently is its abysmal air quality levels. India's toxic air is estimated to be costing the economy dearly with damaging implications on health and productivity.

This issue is particularly pronounced in India's urban clusters which include not only the metros but also the rapidly expanding network of tier-2 and tier-3 cities. A big part of the air quality solution involves a complete rethink of mobility, especially as private vehicle ownership in the country continues to grow especially in smaller cities that lack public transport infrastructure. Unless there is a swift transition towards electric mobility and efficient public transport, India's petroleum demand is slated to grow as a result. A shift towards cleaner transport is thus not only fundamental to achieving reduced emission targets and import bills, but also readily achievable.[23]

Governments, at both the state and central levels, have pushed for policies to incentivise EV ownership over conventional IC vehicles through tax incentives and subsidies. Recent state policies, such as that of Telangana have also sought to draw investments towards manufacturing of EVs and their components.[24]

One of the priorities in the push to promote electric mobility has been the need to set up a robust and reliable public network of charging infrastructure for which the Indian government has already laid down plans.[25]

While the government has stated plans to achieve 30 percent electrification of mobility by 2030, this currently seems highly ambitious. Despite greater interest in EVs over recent years, EV ownership currently makes up for just 1 percent of the total market.

23 *https://www.ceew.in/sites/default/files/CEEW-IndiaElectricVehicleTransitionReportPDF26Nov19.pdf*

24 *https://www.ceew.in/publications/india%E2%80%99s-electric-vehicle-transition-0*

25 *https://shaktifoundation.in/report/charging-indias-four-wheeler-transport/*

There are however clear signs that the wind is changing. With mobility on the forefront of low-carbon plans worldwide, particularly in the stimulus packages for post-COVID recovery, the supply chain for EVs are getting increasingly localised. There is evidence of this in India as well. Buoyed by central and state incentives, India has seen a recent groundswell of manufacturers and investors venturing into electric mobility, particularly in the two- and three-wheel segments. The falling costs of battery storage are likely to further accelerate the shift to electric mobility.

The need of the hour is for India to capitalise on this change in tide and facilitate the creation of local supply chains and supporting ecosystem required for effective change. One of the roadblocks in doing so however is the dependence on imports, particularly from China, of raw materials critical to EV manufacturing. India will have to move swiftly and decisively to attract global investment if it wants to create a space for itself in the global supply chain, as well as create a sustainable and growing Indian market. India's large market share though will prove to be a boon in unlocking the vast investments required.[26]

Current Policy Status

While changes in private vehicle ownership and the shift towards EVs will hinge heavily on cooperative engagement between government, the private sector, and civil society actors, the impending transformation in the public transport systems is more complicated. India's transportation system primarily follows top-down federal decision-making structure, with budgetary allocations flowing from national ministries and government departments.

Most of the country's transport decisions are made by the national ministries and government departments, specifically the Ministry of Housing and Urban Affairs (MoHUA) and MoRTH and implemented by a range of national-, state- and local-level agencies, institutional contractors and vendors. Technical and research institutions and advocacy organisations play a role in the formulation of such policies, and building consensus among the different stakeholders for their implementation. Each of the actors or agencies are continuously influencing the actions of other agencies.[27]

The complexity in the number of agencies, levels at which they operate and their capacity to influence decisions in transport policymaking is evident in the various transport policies that exist in India today. There are currently at least six different national-level plans each of which influence decision-making about public transport systems in cities.

The National Urban Transport Policy (NUTP) and JNNURM funds expand urban bus transportation and metro rail routes in cities across the country. The policy, however, failed to address the issue of last mile connectivity which has continued to be haphazardly planned.

Despite the 2014 NUTP highlighting the need to enhance green mobility through good design, it fails to frame design principles to guide public transport systems. With a vision to promote the electrification of India's public transport, the central government last year launched the National Electric Mobility Mission Plan (NEMMP). The new plan focuses on interesting links between the use of EVs in public transportation, such as buses, and as intermediate public transport options such as three-wheelers, especially in cities involved in the national Smart City Mission. Parallelly, under FAME II, the emphasis is on procuring more e-buses and to switch to their use in the long run.

26 *https://www.orfonline.org/research/green-recovery-opportunities-for-india/*

27 *https://www.orfonline.org/research/policymaking-towards-green-mobility-in-india/*

The SCM platform was used to conceive and launch the Green Urban Mobility Initiative (GUMI) in 2017 in 103 cities across the country. The initiative is split into two components:

- **Sustainable urban mobility** which seeks to improve efficiency in public transport systems and increase transport integration
- **Sustainable vehicles and fuels** which seeks to promote EV adoption for public transport projects. It aims to create over 1000 kilometres of BRT networks and redevelop 550 buses, 20,000 paratransit services and 6,000 buses on alternative fuel/electric systems

The GUMI's scope has since been expanded to include more sub-components which aim to integrate transport planning with larger urban planning processes. While the GUMI focuses on 'greening' various aspects of mobility, experts have pointed out that not all of the addendums to the scope of the initiative pass the muster. One of the glaring contentions is in the objective to adopt and implement transit-oriented development, which experts have flagged as potentially problematic from an environmental perspective.

Policy Recommendations

Models have shown that achieving a 30 percent target for EV penetration in the country would translate to a 12 percent reduction in oil consumption from transport. While this fits into low-carbon priorities and India's strategy to reduce dependence on energy imports, it also implies a potential loss of over Rs.1 lakh crore for central and state governments through forgone tax revenue. Any strategy to promote EVs will have to be developed in conjunction with steps to reduce reliance on petroleum tax revenues.[28]

A further consideration would be to facilitate investments in the larger EV ecosystem that includes battery manufacturing, charging infrastructure, electric powertrain and maintenance capacity. Reductions in the share of ICE vehicles on the road is bound to have a fallout for employment however a favourable policy environment could unlock great investment and employment potentials which will help compensate for any loss of jobs.

Sustainable mobility, however, is not simply a matter of increasing the share of EVs in India's vehicular fleet. For India's climate and sustainability objectives, India's shift to EVs will have to be integrated with larger urban mobility policy including plans for traffic decongestion. Central and state governments will have to revitalise public and shared modes of transport. Models show that increasing public transport capacity alongside adoption of EVs deliver greatest reductions in oil demand for transport. This mixed-mode strategy would also deliver the greatest benefits for public health through air quality improvements.[29]

India's transition towards clean mobility requires comprehensive policy support that is able to incorporate all the individual pieces of policy action at different levels. The government will now have to harmonize commercial interests of the auto lobby, environmental and health interests at local and national levels and finally developmental interests. A task that is easier said than done.

28 *https://www.ceew.in/publications/india%E2%80%99s-electric-vehicle-transition-0*

29 *https://pure.ulster.ac.uk/ws/files/78277263/ruchira_accepted_Gian_paper.pdf*

AIR QUALITY MANAGEMENT IN INDIA AND EXPECTATIONS FROM THE UNION BUDGET

The National Clean Air Programme (NCAP) started in 2019 with a five-year plan to reduce air pollution by 20%-30% of PM2.5 and PM10 by 2024, in 122 non-attainment cities across the country. Experts believe that the measures being taken now should be aimed at increasing accountability. There is also expectation that Finance Commission grants will continue to support air quality improvement and there will be further clarity regarding the funding of the commission. There is also an expectation that the allocations under NCAP can be increased substantially. While so far the stress has been on ambient air quality, experts are of the opinion that this budget should also consider further investments in managing household air pollution for example through targeted subsidies for clean fuels.