MIDS Occasional Policy Paper 17
Covid-19 Series
July 2020

Environmental Reforms in Tamil Nadu After Covid-19

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The Covid-19 pandemic and subsequent lockdown brought certain positive impacts on India's environment,[1] including improvements in air quality in major cities, improvements in water quality in most river systems, and reduction in solid waste generated in urban areas. Though temporary in nature, some of the environmental impacts are remarkable. For example, the lockdown achieved a milestone in terms of making water in the Ganges potable, which could not be achieved despite governments' massive efforts and expenditure (₹4,800 crore) from 1986 till 2017 to clean the Ganges.[2]

Before the arrival of the pandemic, India's environmental status was poor, with the country ranked low (168th out of 180 countries) on the global 'environmental performance index'.[3] India accounted for 23.7 lakh pollution-related mortality in 2017.[4] The country's estimated economic cost of environmental damages stood at ₹3.75 trillion, which was equivalent to 5.7% of its gross domestic product (GDP) in 2009 (Mani, 2013). Un-estimated pecuniary (e.g., cost of morbidity) and non-pecuniary (e.g., aesthetic value) costs imposed by various environmental problems could be manifold. The secondary effects of environmental damage (e.g., rural-to-urban migration) cause various hardships to people dependent on the environment for their livelihoods. Rural-to-urban migration is attributed largely to the failure of agriculture in generating adequate employment and income in rural areas. Environmental refugees constitute a significant portion of

[1] Kajari Goswami. 2020, May 2. Covid-19: 4 unbelievable environmental changes seen in India since lockdown. *indiatoday.in*.

[2] Press Trust of India. 2017, July 11. Ganga action plan: Over Rs. 4800 crore spent since 1986, says ministry of environment and forests. swachhindia.ndtv.com.

[3] Zachary A. Wendling, John W. Emerson, Alex de Sherbinin, Daniel C. Esty, et al. 2020. *2020 environmental performance index: India*. Yale Center for Environmental Law & Policy.

[4] Richard Fuller, Karti Sandilya, & David Hanrahan. 2019. *Pollution and health metrics: Global, region, and country analysis*. Global Alliance on Health and Pollution.

Muthukumara Mani (Ed.). 2013. *Greening India's growth: Costs, valuation and trade-offs*. Earthscan.

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these migrants,[5] since failure of agriculture is caused primarily by chronic environmental tragedies, such as over-exploitation of groundwater and shrinking of village commons. By this, we understand that environmental degradation is the root cause of India's painful reverse migration that took place during the pandemic. Most of the reverse migrants are likely to stay back in their original places during the post–Covid-19 period, putting pressure on scarce environmental resources. Since a self-reliant economy is likely to be the 'new normal' in the Covid-19 era, strengthening the environment is a necessary condition to make the new normal economy stronger and sustainable.

[5] S. Gopikrishna Warrier. 2020, May 28. India's Covid-19 relief package has environmental consequences. *Quartz India*.

It should be noted that there is a trade-off between economy and environment in general, and as a result, improvements in environmental quality during the lockdown were achieved at the cost of the economy. When the lockdown is relaxed, India's environmental status will once again become poorer due to revival of consumption and production activities—probably, with more intensity. Poor environmental quality has harmful effects on people's health, making them more vulnerable to Covid-19 infections, and therefore, measures to improve environmental quality would not only help to fight Covid-19 infections at present but also reduce the risk of future epidemics.[6] Strengthening the environment in rural areas will help in arresting future rural-to-urban migration, in addition to enhancing health benefits, livelihood options, and overall well-being.

[6] World Health Organization. 2020, June 5. *Protecting nature protects health – lessons for the future from COVID-19*.

Tamil Nadu is an environmentally rich state as well as a state facing serious environmental negative externalities, such as pollution from industry and urban areas, solid waste, groundwater over-exploitation, land degradation, coastal erosion, seawater intrusion, and loss of biodiversity (Madras School of Economics, 2016). Results from micro-level studies suggest that the damage cost imposed by industrial pollution in certain environmental hotspots of the state has made the regional economies unsustainable (see Venkatachalam, 2005). The economy-wide aggregate environmental damage cost imposed by all major negative externalities has not yet been quantified, and as a result, the direction and magnitude of the environmental impact of development policies being pursued in the state are not known, especially to policymakers. Many development and infrastructural projects in the state—for example, leather tanning industry in Ambur, Vaniyambadi, and Dindigul; knitwear industry in Tiruppur, Erode, and Karur; fireworks industry in Sivakasi; Sterlite factory in Tuticorin; eight-lane expressway between Chennai and Salem; hydrocarbon projects in the Cauvery delta region; Neutrino Observatory Project in Theni; and Enayam port in Kanyakumari—face environmental challenges, and

Madras School of Economics. 2016. *State of environment report for Tamil Nadu*.

L. Venkatachalam. 2005. Damage assessment and compensation to farmers: Lessons from verdict of loss of ecology authority in Tamil Nadu. *Economic and Political Weekly*. *40*(15), 1556–1560.

therefore, future growth of Tamil Nadu's economy depends mainly on how effectively the government addresses the environmental issues through appropriate institutional reforms in its development and environment sectors. Hence, the state government will have to make use of the Covid-19 crisis as an opportunity to carry out environmental reforms which would not only benefit the people of the state but also the society at large. In this context, we propose important measures to be undertaken by the state government to strengthen the environment and make the economy more sustainable in the coming years.

Short-run measures

The closure of tourism activities due to Covid-19 crisis, especially in the 'recorded forest areas' consisting of reserved forests and protected areas (e.g., national parks and sanctuaries) in Tamil Nadu, should be extended at least till the end of this year so that the natural rejuvenation of forests and biodiversity can continue to prevail for some more time. Government of Tamil Nadu should notify the priority wetlands in all districts before the end of 2020 so that focused attention can be given to protect the precious wetlands in the state. Increasing the tree cover in urban areas helps to minimise air and noise pollution, and therefore, steps to greening the corporations and municipalities will have to be initiated; in this regard, 'tree officers' may be appointed to ensure adequate green cover as well as to closely monitor greening activities in urban areas.

Long-run measures

Green GDP

The GDP is considered an indicator of 'economic welfare'. The currently-measured state GDP cannot be treated as a proper indicator of economic welfare as the GDP measurement does not make necessary adjustments for changes in the value of the environment. Human–environment interaction takes place at three levels:

a. There are innumerable non-market ecosystem services[7] utilised by economic agents in their various production and consumption activities.

b. Negative externalities cause reduction in the quantity and quality of the ecosystem services, reflected in terms of environmental damage costs borne by the economic agents.

[7] Ecosystem services are benefits derived from environmental capital and utilised for the benefit of human well-being. The ecosystem services of, say forests, are classified as: (*a*) provisioning services (e.g. minor forest products); (*b*) regulating services (e.g., groundwater regulation); (*c*) cultural services (e.g., religious benefits); and (*d*) supporting services (e.g., maintenance of biodiversity). The Economics of Ecosystems and Biodiversity. 2010. *Mainstreaming the economics of nature: A synthesis of the approach, conclusions and recommendations of TEEB* (Report).

c. Economic agents take up preventive and remedial measures by incurring substantial amount of expenditures—called 'environmental defensive expenditure' (EDE)—to defend themselves from harmful effects of environmental externalities.

On the one hand, the economic value of non-market ecosystem services is not included in the estimation of state GDP (SGDP), making it an underestimate; on the other hand, any increase in the environmental damage cost and EDE wrongly expands the size of the SGDP, making it an overestimate. For example, the total turnover of knitwear industry in Tiruppur was ₹50,000 crore in 2018–2019,[8] which is included as 'income' in SGDP estimation. However, the un-quantified environmental damage costs inflicted by the industrial activities on society (i.e., in terms of health cost, cost on agriculture and allied activities, and cost of biodiversity loss) as well as the EDE (in terms of, for example, cost of hospitalisation or additional fertilisers to improve soil quality) will amount to several thousand crores which are not quantified and netted out from the SGDP. Therefore, the current SGDP does not indicate if the economy is moving on an environmentally sustainable path or reflect true economic welfare of the society. The government, therefore, should take initiatives to periodically estimate the economic value of non-market ecosystem services, environmental damage costs, and EDE, and make necessary adjustments in the SGDP so that appropriate environmental policy can be initiated in the relevant sector and the SGDP becomes an indicator of both sustainable income as well as true economic welfare of the society.

[8] R. Ravichandran. 2019, April 18. Tirupur garment exports grow 8% in FY19 to Rs 26k crore. *Financial Express*.

Environmental accounting system

Environmental accounting system (EAS) is a prerequisite for overall environmental management in general and for computing green GDP to monitor if the state income is sustainable in particular. Environmental accounting will have to be developed for all major environmental resources—water, forests, and biodiversity—so as to monitor the interaction between the economy and the environment. EAS should periodically measure the change in the 'stock' of the environmental resource and 'flow' of ecosystem benefits emanating from it. EAS has two components: physical accounting and monetary accounting. Physical accounts measure the stock and flow of resources in terms of physical units. For example, total stock of water (both surface and subsurface) available at the beginning of the accounting period, the changes in the stock terms of 'additions' (rainfall, return flow, contribution from tributaries, and import from other basins) and 'subtractions' (withdrawal for various uses, run-off, export to other basins, evaporation, and evapotranspiration) throughout the entire accounting period, and the total stock at the end of the accounting period are measured systematically in terms of physical units (usually, in million cubic feet). Based on the total stocks at the beginning and at the end of the accounting period, the net 'surplus' or 'deficit'

can be calculated (i.e. net surplus/deficit = stock at the end minus stock at the beginning). An alternative way of measuring the net surplus or deficit is to deduct 'subtractions' from 'additions'. The flow accounts measure the flow of physically measurable ecosystem benefits, such as quantity of water used in agriculture sector, how much is used for different crops, and how much water is used in allied (e.g., livestock) and non-agricultural (e.g., household and industry) activities. The flow accounts inform the decision makers whether water is used efficiently in a particular activity, how much water can be transferred from one crop to another crop (or from one place to another place), how much water can be transferred from agriculture to industry without affecting agricultural productivity, and so on. Physical accounting, though essential for effective decision-making, poses some problems. For example, ecosystem benefits are measured in different units (e.g., water used in industry is measured in kilo litres, recreational benefits in the number of tourists visited), which creates an 'aggregation' problem. Similarly, many ecosystem services are qualitative (e.g., cultural benefits), which cannot be quantified in physical units. Thus, monetary accounting overcomes these problems by way of estimating the economic values in terms of monetary value (e.g., in rupees). In most cases, deterioration in the quality of environment may reduce the benefits of ecosystem services even if the stock of the resource is increasing in size. For example, a river basin may be full of water, but if it carries pollution, then the ecosystem services become unfit for any use. So, physical accounting should be modified to incorporate quality issues, by taking into account problems like pollution and biodiversity loss. EAS is a prerequisite for designing appropriate institutions and policies in the environmental domain, and therefore, the state government should take up this task on a priority basis.

Accounting for biodiversity

By establishing an accounting framework for specific environmental resources, one can analyse the critical relationship between changes in environmental quality (e.g., water quality) and changes in biodiversity. A recent study by Salim Ali Centre for Ornithology and Natural History (SACON, 2019) provided baseline data for developing an accounting framework for capturing the interaction between changes in the quality of wetlands and their impact on biodiversity. It developed a Wetland Heath Status Score based on:

Salim Ali Centre for Ornithology and Natural History (SACON). 2019. *Criteria for prioritisation and framework for wetland monitoring in the state of Tamil Nadu* (Report). Submitted to State Planning Commission, Government of Tamil Nadu.

a. change of land-use patterns;

b. threats to wetlands (e.g., pollution); and

c. biodiversity value measured in terms of total flora and fauna of 141 prioritised wetlands in Tamil Nadu.

The combined value of these three aspects gives the health status of a wetland (Table 1), and policymakers can take an informed decision to improve the quality of the wetland and to protect biodiversity. Such an exercise should be carried out periodically to monitor the dynamic relationship between environmental change and its impact on biodiversity.

Table 1

Health Status of 141 Prioritised Wetlands in Tamil Nadu

Sl No.	Wetland Health Status Score group	Number of wetlands	Status	Action needed
1	-0.75 to 0.00	04	Critical & serious concern	Most urgent and immediate
2	0.001 to 0.500	19	Critical & serious concern	Urgent and immediate
3	0.501 to 1.00	21	Serious concern	Immediate
4	1.001 to 1.500	40	Advance concerns	Threats need to be addressed on a priority
5	1.501 to 2.00	25	Threats are in initial stages	Conservation measures need to be initiated
6	Above 2.000	32	Stable conditions	Conservation plan should be implemented

Source. SACON. 2019. *Criteria for prioritisation and framework for wetland monitoring in the state of Tamil Nadu* (Report). Submitted to State Planning Commission, Government of Tamil Nadu.

Economic valuation of ecosystem services

Most ecosystem services originating from environmental systems are not traded in markets, and as a result, their economic importance is either not known or not readily available to decision-makers. This being the case, policy decisions undermine the importance of environmental protection, leading to loss of social welfare. To protect the environment and increase the social benefits, an informed decision will require information about economic value of the ecosystem services enhanced due to certain policy interventions (e.g., how much additional health benefits can come from pollution control measures to improve air quality). So, estimating ecosystem benefits in terms of monetary values serves multiple purposes, which include computing green GDP and assessing social benefits and costs of different policy interventions. But how can we estimate the economic values of non-market ecosystem benefits (and costs) in monetary units? Based on information from existing data sources, we estimated the monetary values of ecosystem benefits of 141 prioritised wetlands in Tamil Nadu.

Rudolf de Groot, Luke Brander, Sander van der Ploeg, Robert Costanza, Florence Bernard, Leon Braat, Mike Christie, Neville Crossman, Andrea Ghermandi, Lars Hein, Salman Hussain, Pushpam Kumar, Alistair McVittie, Rosimeiry Portela, Luis C. Rodriguez, Patrick ten Brink, Pieter van Beukering. 2012. Global estimates of the value of ecosystems and their services in monetary units. *Ecosystem Services*, *1*(1), 50–61.

Average per hectare economic value (called global value) of different types of wetlands (e.g., coastal and inland wetlands) has been estimated by de Groot et al. (2012). We utilised the global values to estimate the total economic value of 141 prioritised wetlands in Tamil Nadu (Table 2). The potential economic value is the monetary value of total ecosystem services generated when the wetland is maintained in its best quality level. In that sense, the potential economic value of all the 141 prioritised wetlands is ₹11,283.09 per year. In reality, however, the wetlands are not maintained in their best quality level. They experience depletion (e.g., due to siltation) and degradation (e.g., due to pollution), and as a result, most ecosystem services either shrink or vanish. This makes the actual value of ecosystem services to be much less than the potential value.

Table 2

Economic Value of Ecosystem Services of 141 Prioritised Wetlands in Tamil Nadu

Wetland type (Nos.)	Method	Total value of ecosystem services (in ₹ crore)
Coastal wetland (5)	66,017 ha x ₹16,15,922.94 per ha	10,336.89
Inland wetland (135)	45,294.14 ha x ₹2,14,089.26 per ha	944.00
Reservoir (1)	633 ha x ₹34,617.62 per ha	2.20
All (141)		**11,283.09**

Source. Authors' study.

The SACON (2019) study documented currently available ecosystem services of 141 wetlands in the state, and based on the information, estimated the actual value of the wetlands as ₹1,343.32 crore per year. Subtracting the actual value from the potential value, we get the net economic loss—₹9,940 crore per year. The policy implication is that if the wetlands are maintained in their best-quality level, society will be able to gain a gross economic benefit of ₹9,940 crore per annum. If 141 wetlands alone can generate this much of benefit, maintaining over 41,000 water bodies across the state can generate a much higher level of social benefits; if we add ecosystem benefits from other forms of environmental resources—forests, land, and biodiversity—it will increase the size of the SGDP by several trillion crore. This implies that income growth can significantly be enhanced not only by promoting industry and service sectors but also by strengthening the environmental sector in the state. Therefore, economic valuation of ecosystem services of environmental resources in Tamil Nadu should be taken up on a priority basis to make informed decisions regarding protection and management of the environment.

Payment for water ecosystem services

As far as the water bodies are concerned, the traditional *kudimaramathu* system, which prevailed for centuries in the state, had fully empowered the communities to manage water bodies—especially, the irrigation tanks—on efficient, equitable, and sustainable bases. Such a system gradually disappeared from the state due to government agencies taking over the control of water bodies, farmers switching over from tank irrigation to modern tube-well irrigation, and so on. In recent years, the Government of Tamil Nadu has been trying to revive kudimarmathu system in the state. The issue is that the government agencies themselves are carrying out most of the activities under kudimaramathu system, without adequate community participation. Lack of community participation cannot increase social welfare; it indirectly increases the government's transaction costs of water management, which in turn increases the tax burden on the public. Community participation can be made more effective by way of designing an appropriate incentive mechanism. This is where payment for water ecosystem services (PWES) can play a profound role.

Under a PWES scheme, user rights over ecosystem services can be assigned to communities so that they can manage the water bodies and share the ecosystem benefits with other users through mutual negotiations. For example, Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB) draws around 150 million litres of water per day from Veeranam lake to serve consumers in Chennai. When water becomes scarce in the lake, water transfer produces an economic trade-off wherein the consumers in Chennai are made better off by making the farmers in the Veeranam command areas worse off. How do we address this trade-off? If the stakeholder villages are assigned with the right to manage Veeranam lake, CMWSSB can buy raw water from the villagers through mutual negotiations. Studies found that water users in Chennai spent around ₹1,250 crore in 2017 on purchasing water from private vendors.[9] If good quality water is supplied by CMWSSB, users will be willing to pay an amount equivalent to what they already pay in the private water market at present. A significant share of that money can be transferred to the villages managing Veeranam lake. Through proper institutional arrangements (such as bringing representatives from all stakeholder villages to form a group) and involving other institutions (e.g., government, market, corporate firms, and non-governmental organisations), a PWES scheme can bring a win-win outcome for all stakeholders (Venkatachalam & Balooni, 2017). The Government of Tamil Nadu may think of implementing such a scheme for managing not only water bodies but also other forms of environmental resources, namely, forests and biodiversity. For example, farmers may be provided additional incentives for cultivating perennial tree crops for enhancing ecosystem benefits in the long run; similarly, incentives may be given to

[9] Keith Schneider. 2017, May 17. The story behind the $180-million industry fuelled by Chennai water crisis. *Citizen Matters*.

L. Venkatachalam & Kulbhushan Balooni. 2017. Water transfer from irrigation tanks for urban use: Can payment for ecosystem services produce efficient outcomes? *International Journal of Water Resources Development, 34*(1), 51–65

farmers to cultivate organic products to protect soil quality, reduce groundwater pollution, and enhance agro-ecosystems.

Tradable water rights

How can we allocate surface water amidst scarcity or conflicts among water users? Tradable water rights (TWRs) can work as a promising instrument in this area. In Bhavani river basin, for example, the present pattern of water allocation on the basis of 'senior appropriation rights' between the old canal system (consisting of Arakkankottai, Thadapalli, and Kalingarayan canals) and the new canal system (the Lower Bhavani Project) has resulted in a conflict between farmers across these canal systems (Rajagopal & Jayakumar, 2006). An experimental study (Venkatachalam & Narayanamoorthy, 2012) found that introducing TWRs would not only resolve the present conflict but would also lead to efficient utilisation of scarce water through 'water trading' arrangements. The study found that the farmers in the new canal system were willing to pay for obtaining additional irrigation water, and farmers in the old canal system were willing to accept compensation for saving their irrigation water and subsequently transferring it to the needy farmers in the new canal system. Around 63% of the farmers could participate in trading irrigation water voluntarily, which would make more water available to the new canal system farmers without reducing production and productivity in the old canal system. If TWRs are implemented in Tamil Nadu, the authorities can initially allocate TWRs to all farmers on the basis of their current irrigation entitlements. For example, if a farmer is entitled to 90 irrigations during a particular cropping season, then 90 units of TWRs can be assigned to that farmer. In case the farmer utilises only 80 irrigations through efficient irrigation practices and saves 10 irrigations, then the farmer can transfer 10 units of TWRs to a needy farmer who is willing to purchase them. During the next cropping season, fresh TWRs can be distributed to all farmers again based on their original entitlements. TWRs provide incentives for farmers to utilise water efficiently, thereby achieving a win-win outcome for buyers and sellers as well as increasing social benefits. TWRs can be coordinated by the water users' associations in different river basins in Tamil Nadu. Not only within the agriculture sector, TWRs can also facilitate efficient water allocation between agricultural and non-agricultural sectors. For example, industry can buy water rights from willing farmers so that irrigation water can be transferred for industrial use. Since the percentage of water used in non-agricultural sectors is comparatively small (19%) and 15% of irrigation water used at present can be transferred to non-agricultural sectors without any reduction in agricultural output, TWRs can play a major role in efficiently facilitating inter-sectoral water allocation. The state government can think of introducing such

A. Rajagopal & N. Jayakumar. 2006. Equity, access allocation: Conflict in the Bhavani. *Economic and Political Weekly, 41*(7), 581–582.

L. Venkatachalam & A. Narayanamoorthy. 2012. Estimating economic value of irrigation water through contingent valuation method: Results from Bhavani river basin, Tamil Nadu. *Indian Journal of Agricultural Economics, 67*(3), 308–315.

innovative economic instruments to make policy decisions more effective on inter-sectoral and intra-sectoral allocation of water.

River-basin boards

The Integrated Water Resources Management approach suggests that treating river basin as a unit of analysis is a prerequisite for better water governance. Institutional reforms for water governance include creating river basin boards (RBBs) which can coordinate all water allocation and management activities. Water accounting, economic valuation of water ecosystem services, exchange of water entitlements, and other institutional arrangements for overall water governance at the basin level will have to be coordinated by the RBBs. RBBs should consist of elected representatives from all stakeholders so that decisions regarding water management and allocation are mutually agreeable to all parties. Since water-related issues are site-specific, creating RBBs for all 17 major river basins in Tamil Nadu will significantly improve the social benefits from water use.

Revamping pollution control policies

Industrial pollution and urban sewage are the major culprits in decreasing the quality of environment in Tamil Nadu. Despite several measures, industrial pollution continues to be a serious issue in the state, threatening not only agriculture and environment sectors but also the industry sector. The present pollution control policy, based on command-and-control (CAC) approach, is responsible for the current situation. The CAC approach does not provide adequate incentive for polluters to mitigate pollution. Therefore, there is a need to move away from the CAC approach towards more incentive-oriented, market-based approaches. For example, the CAC approach in controlling industrial pollution has not been effective in the state. This is because the current approach forces both high-cost and low-cost polluters to reduce pollution, irrespective of the size of the abatement cost, which varies across polluters. Similarly, when pollution is controlled through common-effluent treatment plants and polluters have to pay the average abatement cost, it results in a situation where the high-cost polluter ends up paying less than her actual abatement cost, and the low-cost polluter paying more. Such an arrangement punishes the efficient polluter and rewards the inefficient polluter. Rather, tradable pollution permits provide incentive for the low-cost polluter to mitigate more quantity of pollution and the high-cost polluter to outsource her pollution control activity to the low-cost polluter so that the prescribed level of pollution is controlled at least cost. Market-based instruments, such as tradable pollution permits, have proved to efficiently reduce pollution in Gujarat.[10] Such instruments can be introduced in controlling air and water pollution as well as sewage pollution in the state.

[10] Sapna Gopal. 2019, September 4. Gujarat pilots emissions trading programme to tackle air pollution. *Mongabay*.

Creating an environmental database

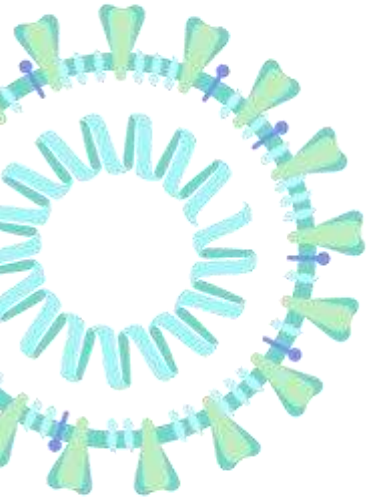
In Tamil Nadu, many government agencies collect environment-related data. Tamil Nadu Pollution Control Board (TNPCB), Environment Department, Forest Department, Regional Environment Cells of Water Resources Organisation, Institute of Water Studies (IWS), Tamil Nadu Water Supply and Drainage Board (TWAD Board), and so on are engaged in collecting various types of data on the environment. However, these data are not much useful for some specific purposes, such as computing environmental accounting, ecosystem valuation, environmental impact assessment, and social benefit–cost analysis. Similarly, the same type of data are collected by more than one agency—for example, water quality data is being collected by TNPCB, regional environment cells, and TWAD Board. In future, collection and maintenance of environment-related data will have to be channelised, and data will have to be collected based on specific policy requirements. All the environment-related data collected should be maintained by a single agency.

Capacity building

As we have seen, many development and infrastructural projects face resistance from people on the environmental ground. Such resistance will hamper economic growth, thereby shrinking income- and employment-generating opportunities in the state. Similarly, uncontrolled economic growth hampers the environment, thereby affecting the employment and livelihood opportunities of many. The prevailing 'economy versus environment' approach is harmful, but 'economy and environment' approach is desirable. Projects become environmentally controversial due to social preferences not being adequately incorporated in environmental impact assessments. Environmental resistance, in many cases, takes place due to inadequate information or wrong information available to the stakeholders. To overcome environmental controversies, capacity will have to be built in the state in the areas of environmental policy, environmental impact assessment, economic valuation of ecosystem benefits and damages, social benefit–cost analysis, and environmental education among all stakeholders—staff in government departments dealing with environmental matters, environmental lawyers, judges, non-governmental organisations, environmental activists, farmers' organisations, corporate firms, consumer groups, teachers, and panchayat leaders. Such measures would help in formulating better economic policies that provide due concern to the environment, making future economic growth more sustainable.

Note

The views expressed in this policy paper are personal.



COVID-19 SERIES

We are in the midst of a pandemic shock as well as a deep economic recession. It necessitates extraordinary policy action. However, we do not have the luxury of time to carry out a new research plan. The situation calls for immediate reflection and action, based on available data. In the Covid-19 Series of Occasional Policy Papers, MIDS faculty contemplate on diverse issues of importance, contextualise their work to the contemporary challenge, draw attention to linkages with interrelated sectors and issues, and suggest short-to-medium–term policy measures. This series would be a useful input in the design of the state's post-pandemic socio-economic policy.

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MIDS Occasional Policy Paper

No. 17 / July 2020

Covid-19 Series

Image credit: Desiree Ho for the Innovative Genomics Institute.

Madras Institute of Development Studies (MIDS) was founded in 1971 by Malcolm S. Adiseshiah. It studies development problems of India, with a special focus on Tamil Nadu. Since 1977, MIDS is a national institute funded jointly by the Government of India (through Indian Council of Social Science Research) and the Government of Tamil Nadu.

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