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Tackling Air Pollution at the Sub-National Level: The Case of Rajasthan

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Introduction

Air pollution in India has deteriorated significantly over the past two decades and today, it is the second largest risk factor contributing to the country's disease burden. It is a matter of urgent concern, as ambient air pollution poses grave, multifaceted risks to India's prospects for achieving its development goals.¹ It leads to a rapid increase in public health expenditure, diminished labour productivity, and reduced agricultural yield.² Estimates peg the economic cost of air pollution to the Indian economy at more than US\$ 150 billion a year.³

According to IQAS 2019 World Air Quality Report, India is home to 21 of the 30 most polluted cities in the world.⁴ The Lancet Planetary Health report⁵ has found that over 50 percent of deaths

attributed to air pollution in India occur in just five Indian States.⁶ This suggests that customised, sub-national strategies are equally important as national-level policies.

This report uses the case of Rajasthan to illustrate. According to the Global Burden of Disease Study 2019, Rajasthan is amongst the six Indian states having the highest per capita economic loss due to air pollution.⁷ In the last two years, the state recorded the highest death rate per 100,000 population due to air pollution. The deteriorating air quality in the state is not only putting tremendous pressure on its fragile healthcare system but also impairs the productivity of the population.

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In this context, the Observer Research Foundation (ORF), in collaboration with INDICC Associates organised a digital high-level state roundtable, ‘Securing Right to Breathe: Battle for Clean Air’ on 19 February 2021. The roundtable brought together policymakers, industry experts, and academicians to

identify sub-national strategies and develop a roadmap for implementing policy interventions, financial incentives, and technology solutions for combating air pollution in Rajasthan.

Macroeconomic and Health Impacts of Air Pollution in Rajasthan⁸

- Air pollution is the second-largest risk factor for premature deaths in Rajasthan (2016, state-level disease burden estimates by IHME, ICMR and PHFI).⁹
- Per-capita economic loss due to air pollution in Rajasthan is at \$28.5; in Delhi, where per-capita economic loss is highest, it is \$62.
- Economic loss attributable to air pollution as a percentage of state GDP is 1.70 percent.
- Economic loss due to lost output from premature deaths and morbidity attributable to household air pollution as a percentage of state GDP in Rajasthan is 0.79 percent.
- Economic loss due to premature deaths and morbidity as a percentage of state GDP in 2019 for Rajasthan was highest for ambient particulate pollution, followed by household air pollution, and ambient ozone pollution.
- Ischemic heart disease and lower respiratory infections are the leading causes of loss in productive life years in Rajasthan.
- The disease burden due to air pollution amongst children is highest in the state. Rajasthan records the highest number of deaths caused by Lower Respiratory Infection (LRI) in children. In 2017, the death rate due to LRI in the 0–5-year age group was 126.04 per 100,000 population.

Opportunities for Rajasthan

Rajasthan is amongst India's states that have taken steps to carry out a structured diagnosis of the problem of air pollution. It is in a position to build on the existing momentum, provided it is able to mobilise required resources. The following paragraphs provide a snapshot of current interventions.

The Central Pollution Control Board (CPCB) has identified 124 cities as “non-attainment cities”—i.e., they have failed to meet the prescribed standards on air pollution. Five of these 122 cities are in Rajasthan: Jaipur, Jodhpur, Kota, Alwar, and Udaipur.¹⁰ Their levels of PM10 and PM2.5 are higher than prescribed limits even though they meet SO₂ and NO_x standards. Bhiwadi, a city in Alwar district, has also been identified as a hotspot primarily because of its being a hub for many

polluting industries.¹¹ Other hotspots are likely to be identified in the state if monitoring facilities were improved.

In 2016, the Rajasthan State Pollution Control Board (RSPCB) began a detailed study in some of these cities through an engagement with the Indian Institute of Technology (IIT) Kanpur.¹² The study aimed to prepare a complete emission inventory highlighting the sources and magnitude of air pollution. The studies found that road dust significantly contributed to air pollution in the state—a fact that often evades policy attention. On Jaipur Road, for example, dust contributes to 46 percent of PM2.5 emissions; and in Bhiwadi, it accounts for 48 percent.¹³

Similar studies have been commissioned for other Rajasthan cities in collaboration with IIT Delhi and IIT Kanpur, and these studies have helped the state formulate science-informed action plans. As the results of new studies are awaited, action plans for other non-attainment cities have been prepared based on the experiences of Jaipur and Bhiwadi.¹⁴

At the same time, municipal waste treatment is also being given focus, as there is evidence that large-scale burning of municipal waste and horticulture waste contributes significantly to PM2.5 and PM10 emissions.¹⁵ More than 65 municipalities have already installed facilities to recycle municipal waste. Towards this endeavour, financial assistance is being provided by the Central Government under the National Clean Air Programme (NCAP) (INR 100 million for Jaipur, Jodhpur and Kota).¹⁶ Further, as per the 15th Finance Commission recommendations, INR 1.40 billion is also earmarked for these three cities.

Based on a January 2020 study by IIT Kanpur, 10 hotspots in Jaipur have been identified where

dust emissions are significant. Micro-level action plans are being created with the non-government Centre for Science and Environment (CSE).¹⁷ A similar exercise is being planned for Jodhpur, Kota Alwar, and Udaipur, also with the help of CSE.¹⁸

Central to these plans is the progressively improving monitoring capacity. At present, there are 39 manual monitoring stations across the State, as well as 10 continuous air quality monitoring stations that provide real-time information. There is a plan to install 35 additional continuous air quality monitoring stations by the end of 2021.¹⁹ Ramping up monitoring capacity will enable air quality information in at least all district headquarters. Mobile vans are also being procured for short-term air quality measurement in any hotspot.

Already, there has been a steady decline in the level of PM10 and PM2.5 in the annual average figures since 2017. For instance, in Alwar, there was a decline of 57 percent in for PM10 and 45 percent in PM2.5 in the years following 2017.²⁰ All the cities have also witnessed a decline in ambient air pollution.

Key Challenges

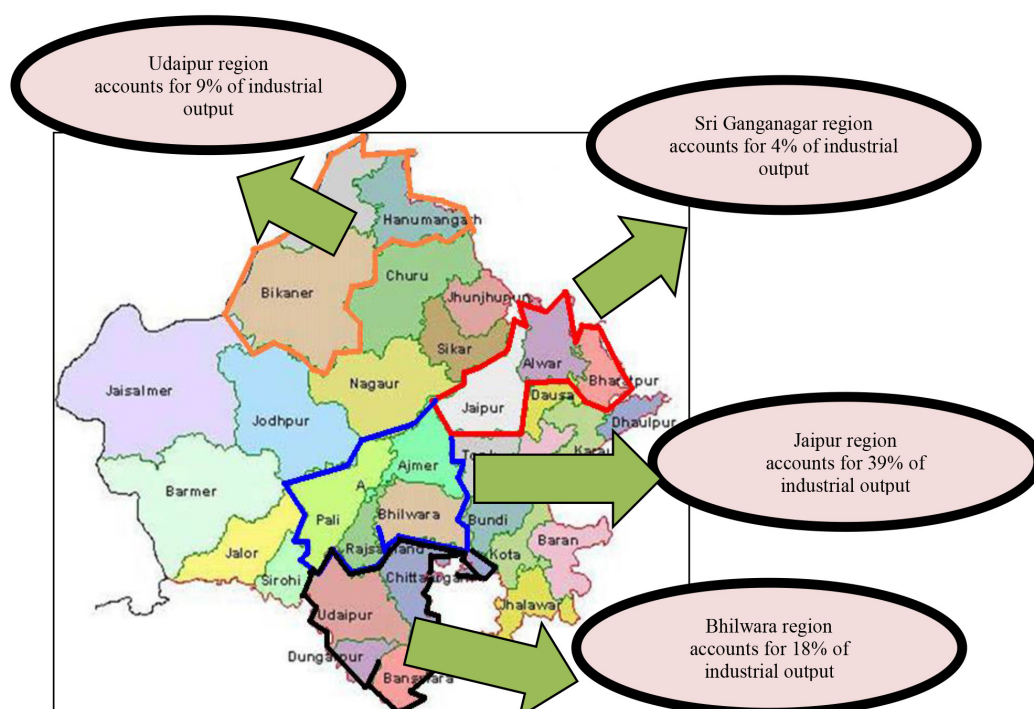
The complexities of Rajasthan’s air pollution problem need to be considered in designing a coherent and convergent strategy.

Economic Geography

The economic geography of Rajasthan is skewed (see Figure 1). Over 70 percent of Rajasthan’s industrial output comes from just four regions dominated by small-scale industries—Jaipur, Bhilwara, Udaipur, and Ganganagar account

for, respectively, 39 percent, 18 percent, 9 percent, and 4 percent of the State’s industrial output. Within these regions, the key districts driving industrial growth are Ajmer, Alwar, Barmer, Bharatpur, Bhilwara, Bikaner, Bundi, Chittorgarh, Jaipur, Jodhpur, Kota, and Udaipur.²¹

Figure 1:



Source: National Skill Development Corporation (NSDC)²²

This indicates that these regions, and in particular those specific districts, attract a high concentration of people, leading to the clustering of activities and habitation that in turn result in higher concentrations of pollution.

Such a skewed economic distribution possibly owes to the availability of natural resources and connectivity, both intra-state and interstate, in these specific regions. In other words, the physical geography of the desert state appears to be directly related to economic geography, leading to high pollution levels in certain pockets. It can be assumed that the burden on such areas progressively increases due to inward migration from low-productivity areas. This in turn puts undue pressure on governance quality, economic resources, mitigation strategies, behaviour change, as well as access to health facilities. As a result, disease burden due to pollution increases.

Compounding the problem is that Rajasthan provides an arterial and the longest passage on Delhi-Mumbai Industrial Corridor—²³ which means it absorbs significant levels of inter-state road emissions and its roads are utilised massively, worsening their condition. The state also shares boundaries with several other states. While this

facilitates the movement of people, goods and services, it results in the emission of pollutants from sources outside its control.

Stubble Burning and Fugitive Emissions

An estimated 12-15 million tonnes of crop residue are burnt each year in Punjab, Haryana, Rajasthan, and Western UP. The smoke from stubble burning is a major source of air pollution across northern India during October and November.²⁴ A National Green Tribunal (NGT) panel in 2019 noted that pollution from stubble burning accounts for 25-30 percent of air pollution in NCR in October and November every year.²⁵

This exacerbates the air pollution problem for Rajasthan, and necessitates the framing of both intra-state and inter-state strategies. There should also be large-scale sensitisation amongst farmers and the introduction of appropriate technologies in farming methods.

Small Industries, Smaller Budgets, and Costly Compliance

As discussed earlier, a large part of the industrial output in Rajasthan comes from small industries. Although there are expert studies which suggest that MSME-led green transitions can create jobs at lower additional costs than large industry,²⁶ adopting techniques, processes and technologies to reduce emissions in their production processes is costly. This is especially true as those industries are perennially short of capital due to low profit margins, delayed payments, lack of access to credit, high power costs (compared to other states) and other inefficiencies that inhibit them from growing or being competitive. Further, there is no strategic roadmap for MSMEs to convert their processes and products into green and environment-friendly processes and products.²⁷

Given that the majority of industrial output comes from small industries, there is greater human interface in the production process due to low automation. Morbidities due to air pollution are therefore expected to be directly related to industrial and agricultural productivity of the state.

Indoor Air Pollution Needs Similar Attention

According to a 2020 report in *Lancet*, economic loss attributable to air pollution as a percentage of state GDP for Rajasthan is 1.70 percent.²⁸ Economic loss due to lost output from premature deaths and morbidity attributable to household air pollution as a percentage of state GDP in Rajasthan is 0.79 percent.²⁹

In absolute terms, total and per-capita economic loss due to premature deaths attributable to air pollution in Rajasthan is pegged at US\$ 2294 million for 2019.³⁰ Notably, household air pollution is the second biggest contributor to air pollution, after ambient particulate pollution. This is due to the fact that significant proportions of the population in Rajasthan have yet to adopt improved cooking techniques and continue to rely on solid fuels.³¹

Spotlight on Fiscal Constraints

Every potential intervention—whether in behavioural change, healthcare infrastructure, or action on the economic, social and administrative front—requires the deployment of financial resources. There are three important factors that affect state resources: the first relates to the structural and administrative issues under the control of the state government; the second is the fiscal position of the Union; and the third concerns the additional pressure on state resources on account of the COVID-19 pandemic.

Unlike industrialised states, Rajasthan has faced systematic constraints to generating comparable quantum of revenue. The state's natural endowments are also unique and thus far have remained sub-optimally utilised to leverage emerging technologies in areas like solar and wind energy. It is also important to view recent budgetary developments affecting resource availability.

State Fiscal Management

As per the State Finances Audit Report of the Comptroller and Auditor General of India (CAG) for the year ended 31 March 2019,³² the state government has been struggling to adhere to the key provisions of the Fiscal Responsibility and Budget Management (FRBM) Act. For instance, Section 6(a) of the FRBM Act states that the State Government³³ was to achieve Zero Revenue Deficit from FY2011-12 and thereafter maintain it or attain surplus. However, the State Government could maintain the revenue surplus only during the years 2011-12 and 2012-13, and thereafter the government has been mostly running on a revenue deficit. As per the CAG, greater fall in revenue receipts than budget estimate, along with relatively less control over expenditure, have caused increase in revenue deficit.

Similarly, Section 6 (b) of the FRBM Act as amended in 2011 provided for a fiscal deficit of 3 percent of GSDP by FY2011-12 and thereafter to maintain the said ratio or reduce it. The 14th Finance Commission (FC) also recommended keeping the fiscal deficit within 3 percent of the GSDP. However, even before the pandemic, the fiscal deficit had already breached the FRBM limits. Further, the State Government had amended in April 2016 the provisions of Section 6(c) of the FRBM Act to prescribe the limit for Debt-to-GSDP ratio for FY2018-19 up to 35.0 percent. However, it may be noted that it was substantially higher than the limit of 24.4 percent recommended by the 14th FC.

Furthermore, there has been a considerable mismatch in actual revenue realisation by the state and the assessment of the 14th FC.³⁴ This has caused the state to receive less share in the central taxes. A high ratio of revenue deficit-to-fiscal deficit in the five years before the pandemic reveals that the state has been borrowing to meet its consumption needs rather than investing in new assets.

Fiscal stance of the Union and impact on State resources

A state's fiscal position depends not only on its own revenue collection but also that of the Union. Therefore, if revenue through Union taxes falls, there is bound to be a decline in the state's share in central taxes as well. In this context, there are a few things that are important to consider.

First, the shrinking GDP implies decline in incomes and therefore a reduction in expenditure through consumption.

Second, even before the pandemic, there were signals that demand is slowing in India essentially due to low purchasing capacity of the majority of the population and saturation of demand in the higher-income population.³⁵

Third, there is adverse implication on state finances due to the progressively increasing cess regime. Since cesses are not shareable with states, the effective share of states in central taxes has been going down progressively from 42 percent as recommended by the 14th FC,³⁶ to around 30-32 percent more recently. Earlier in April 2021, the then Finance Minister of Kerala T M Thomas Isaac also expressed the same.³⁷

Fourth, at the time of the Goods and Services Tax (GST) rollout in July 2017, the central government had assured states of full compensation from any losses arising due to the transition to GST for a period of five years, assuming a growth rate of 14 percent in revenues. This means that states have to be compensated until July 2022³⁸ for any losses. An examination of GST compensation reveals that this has not been the case. Here it may be noted that the revenue neutral rate of GST was already pegged at a much lower level than what it should have been. Therefore, there was already an expected revenue crater as a result of the GST rollout.

Fifth, the 15th FC³⁹ in its interim report estimated the devolution of INR 511.31 billion for Rajasthan from the divisible pool for FY 2020-21 while the state budget figures for the same year reveal the share from central taxes to be only INR 328.85 billion—a difference of over INR 180 billion or one-third of the earlier estimated amount.

The cumulative effect of these factors has a substantive implication on the state's share in central taxes, thus putting more pressure on the state's resources.

Impact of Covid-19

Covid-19 has negatively impacted economic growth in the last financial year as well as the current one. As per a recent working paper by the National Institute of Public Finance and Policy (NIPFP), except for the Union Excise Duties, the revised estimates of 2020-21 show fall in revenue collections from all sources of tax and non-tax revenues.⁴⁰

The continuation of Covid-19 in the current financial year is likely to further upset the economic recovery from the previous episode. Indeed, health experts are warning of a possible third wave of the pandemic, perhaps even a fourth one. One can thus expect reduction in annual growth rate and re-prioritisation of focus areas in the state, including reduction in transfers to the Urban Local Governments.

Therefore, any strategy to mainstream the agenda of air pollution in the state must be aligned with measures to increase tax and non-tax revenue, reduction in liabilities, and improvement in quality of expenditure.

Impact of Fiscal Constraints on Resource Availability

To be sure, the air pollution agenda has captured the attention of policymakers in India in recent years. However, the rhetoric has not been complemented by financial commitments. A Centre for Policy Research (CPR) analysis on the 2021 Budget and Air Quality is instructive.⁴¹ CPR observes that the seriousness with which the 15th FC⁴² has dealt with the issue is in many ways “unprecedented”. In the FC’s own words, it has “prioritized investments in the most fundamental form of capital i.e. human capital as well as additional attention to climate change and environmental risks, such as air pollution.”

Accordingly, the Commission in its interim report for 2020-21 recommended a massive INR 44-billion allocation to ULBs (50 percent upfront and 50 percent performance-based).⁴³ The same was accepted by the Finance Ministry and incorporated in last year’s budget, and after some delay the first tranche was released in November 2020. However, the total grant has been halved in the current budget.

Similarly, the National Clean Air Programme (NCAP) launched in January 2019 (and primarily operationalised through city action plans) is a milestone. However, NCAP has seen no significant increase in the budget. In fact, the budgetary allocation at INR 4.70 billion is substantively lower than the environment ministry’s projection at INR 6.60 billion under line item ‘Control of Pollution’ for 2020-2021. Moreover, the revised estimates for 2020-21 are down to INR 2.80 billion, suggesting a significant reduction in the environment ministry’s spending on NCAP this year.⁴⁴ Moreover, the Central Pollution Control Board’s budget has remained unchanged for the last three years, at INR 1 billion even as pollution levels have increased.⁴⁵

“The air pollution agenda has captured the attention of policymakers in India; the rhetoric has not been complemented by financing.”

The allocation for Pradhan Mantri Ujjwala Yojana (PMUY), which aims to provide access to LPG to over 80 million households, is also notable. The allocation for LPG subsidies dropped from INR 356.05 billion last year to a much lower INR 124.80 billion.⁴⁶

With regards to incentives to accelerate transition towards a cleaner vehicular fleet, the Budget allocation for the Faster Adoption and Manufacturing of Electric Vehicles in India Phase II (FAME II) subsidy scheme for EVs has increased from INR 6.93 billion in FY21 to INR 7.57 billion in FY22. However, the revised estimates for FY21 have fallen to INR 3.18 billion.⁴⁷ At the same time, the Budget 2021 contained an announcement for additional capital infusion to the SECI (Solar Energy Corporation of India) and IREDA (Indian Renewable Energy Development Agency).⁴⁸

Potential Solutions

It is clear that amidst competing priorities, the lack of resources could have serious implications on strategies to mitigate air pollution. One way to align the air-pollution agenda with emerging state priorities and shortage of resources is by undertaking a cost-benefit analysis. What is being increasingly seen in India—including Rajasthan, the case study in this report—is tremendous progress in monitoring which is leading to the creation of action plans. However, there is a need to work on prioritisation of such plans on the basis of economic analysis. In this context, economic growth must be seen as inclusive—i.e., subsuming social and environmental concerns as well. The cost-benefit analysis therefore must entail a citizen, consumer and regulatory impact analysis, and an effort to reconcile the three.

As regards the mobilisation of financial resources, an exploration of new instruments is necessary. In particular, the following three instruments may be considered.

Viability Gap Fund (VGF)

A considerable part of the air pollution agenda has to do with infrastructure development⁴⁹ and there is a need to identify and invest in those projects. Such projects can be funded through VGF which acts as a capital subsidy and as an instrument to attract the private sector participation in PPP endeavours.⁵⁰

VGF typically comes in the form of a grant which is disbursed at the construction stage itself but only after the private sector developer makes the equity contribution required for the project. The lead financial institution is responsible for monitoring and evaluation with agreed milestones and performance levels, particularly for the purpose of grant.

Accordingly, multilateral organisations need to be sensitised to institute a VGF-like model which acts as a grant and not as a loan. This is particularly important because a grant will help the government to keep its debt-to-revenue ratio under check, which in turn will have a favourable impact on sovereign credit rating. In the past, the World Bank has already set a precedent by providing VGF to develop highways in the country.⁵¹ Given constraints on fiscal resources, this needs to be done for more infrastructure projects, particularly PPP.

On the other hand, PPP modalities need to be refined in practice. Often, PPP projects are lacking an element of partnership, leaving the landscape marred by disputes, delays and issues concerning design of projects. There is also a need to get capital markets finances into environmental protection particularly in projects that have high social and economic cost.

‘Green’ Investments

Alternative sources of finance such as ‘green investment’ or ‘sustainable finance’ makes them inherently attractive. This is because such investments are transparent—i.e., one knows where the money is raised and where it is going to be deployed, and how that will create assets or capacity which can provide a positive

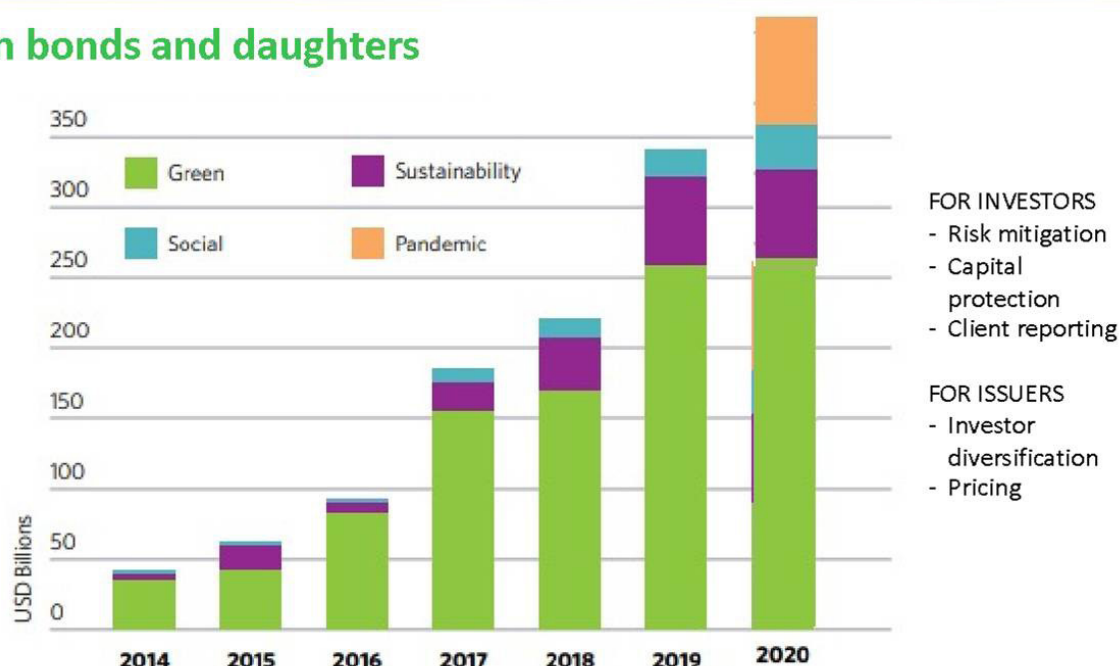
environmental outcome. In other words, it is the transparency around the use of proceeds that makes them attractive for investors interested in greening their portfolios.

As green financial instruments become more popular, better understood and evident, their demand is also going up. Green bonds, for example, reached a USD one-trillion worth of issuance globally in 2020.⁵² This happened within a decade after these instruments hit the market. It only shows that investors see these instruments as beneficial for their risk mitigation strategies, capital protection and client reporting, while borrowers or issuers get the tightening of price and investor diversification.

Figure 2 gives a snapshot of the demand and the surge in green debt capital market instruments. It can be seen as a proxy to suggest the determined expansion of the universe of green investment itself. Such green investments can come in the form of green loans or green equity investments. Indeed, the pandemic year saw an explosion in thematic financial instruments, all of them bearing the fundamental characteristic of transparent use of proceeds.

Figure 2:

Green bonds and daughters



Climate Bonds INITIATIVE

- FOR INVESTORS
- Risk mitigation
- Capital protection
- Client reporting

- FOR ISSUERS
- Investor diversification
- Pricing

Source: Climate Bonds Initiative⁵³

Rajasthan has already taken commendable steps at the city level. To understand what kind of alternative sources of finances are necessary and available, an understanding of the problem as a whole is important to gauge the capital mix required to address the problem.

Further, to decide the financing strategy and instrument itself, an understanding of co-benefits and trade-offs is necessary. Once such an exercise is undertaken, Rajasthan can consider raising green

bonds either as green sub-sovereign bonds {State Development Loans (SDLs) and earmarking the spend for green projects}; or as issued by a state-backed corporate entity: the state-backed issuer could be a new special purpose green financing corporation or dedicated green financing operations or ‘green windows’ set up at existing entities.

Moreover, the readiness of a state to issue green bonds depends upon the creditworthiness of the issuer and its capacity to deploy the proceeds of green bonds in suitable end uses (pipeline of demand for capital). Being sub-sovereign entities, states are creditworthy entities as bond issuers, with market participants factoring in an implicit sovereign guarantee on their issuances. However, issuances by state-backed corporate entities are not characterised by a sovereign guarantee. Their creditworthiness would depend upon the extent of the backing provided by the state government but would ordinarily not exceed the standalone creditworthiness of the state.

That said, key would be to bunch together some projects which include air pollution mitigation strategies and technologies, electric mobility, and renewable energy capacity. The effectiveness of suitable policy and regulatory measures geared towards lowering risks for investors will further determine the attractiveness of a state for investments.

Philanthropy

Philanthropy can play a significant role both in conjunction with existing state efforts but also by investing in areas that are critically relevant but marginalised due to competing state priorities, particularly in light of resource and capacity shortage. It is also well-placed to take a holistic

view of its investments. Often, public and private funds are invested in high-carbon and resource-intensive systems instead of funding for the future. India's future is intertwined with its young demography and therefore, air pollution as a public health and environmental issue can have significant economic impact.

In this context, an ideal framework for philanthropic intervention can have the following three components:

- To build more evidence on the air quality that can be used to inform policy solutions including credible, localised evidence on health and economic impacts.
- To inform and support implementation of sectoral policy solutions, frameworks and governance systems that can guide a well-funded and coordinated response to tackling the issue.
- To create societal pressure by building narratives as well as awareness among key stakeholders of the extent and impact of air pollution to motivate the right set of actions and solutions that are needed.

Conclusion

This report highlights key issues at the sub-national level in the context of Rajasthan. Tackling air pollution at the state level is a highly complex problem due to factors like multiple sources of pollution, limited monitoring capacity, physical and economic geography of the state, intra-state and inter-state ramifications, requirement of technological and behavioural interventions, and above all, limited state capacity and resource constraints. Yet, for the state, it is imperative to address air pollution because its health effects are directly linked with economic productivity.

In many ways, air pollution is not only a health policy issue but is equally concerned with policies and practices across sectors like manufacturing, logistics, transport, and rural and urban development. A dimension that is under-studied is the impact of pollution on migrant workers from other states. In that sense, the adverse impact of pollution is also exported out of the state.

Mitigating the manifold impacts of air pollution requires a multi-dimensional policy and practice approach that must be predicated upon design elements of policy and practice. A structured strategy is needed in designing such a policy and practice framework.


Such a strategy may include the following key components.

- Expand the discourse from being merely technical or technology-centric to one that is propelled by multiple constituencies.
- Multiple constituencies can be unleashed by elevating the discourse from issues to interests of those constituencies. For example, road dust is as relevant a concern from a health perspective as it is from that of road safety and connectivity. Therefore,

the transport department must be an equally interested stakeholder. Road construction can also create employment and opportunities for asset creation through PPP mode which in turn can help provide fillip to economic activity. In that sense, multiple departments can align their interests towards the same goal.

- For each constituency, a separate narrative will be needed while the overarching issue of mitigation of air pollution will remain the same. For this purpose, there will be a need to identify catalytic projects for each constituency.
- In order to identify catalytic projects from a set of ideas, a vetting process is necessary. The vetting process can help identify natural, transactional and transformative allies; provide an idea of different ingredients and incentives needed for the project to become successful;

and help diverse constituencies realise the quantum of effort and action on their part, and strategies to win over strategic allies.

- To accomplish the above, a state-level anchor is needed. The primary role of the anchor will be to build a broader societal coalition to accomplish a set of goals by directing different synergies and interests towards those goals under the overarching aim of mitigating air pollution. 

Annex

ORF-INDICC Working Group

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2. Ms Aparna Roy, Associate Fellow and Lead, Climate Change and Energy, Centre for New Economic Diplomacy, ORF
3. Mr Abhishek Kumar, Partner, Indicc Associates
4. Mr Aniket Deogar, CEO, Haqdarshaq
5. Ms Anumita Roy Chowdhury, Executive Director for Research and Advocacy, Centre for Science and Environment (CSE)
6. Mr. Jyotirmay Mathur, Head of Centre for Energy and Environment at Malviya National Institute of Technology (MNIT)
7. Dr. V. K. Singhal, Chief Environment Engineer, Rajasthan Pollution Control Board (RPCB)
8. Ms. Neha Kumar, India Programme Manager, Climate Bonds Initiative
9. Ms Shipra Mathur, Founder, People's Engagement with News (PEN) Foundation
10. Mr Shirish Sinha, Director (Climate), Children Investment Fund Foundation (CIF)
11. Mr Simran Grover, Founder, Bask Research Foundation
12. Mr S. P. Chandak, Former Acting Director, United Nations Environment Programme (UNEP)
13. Mr. Tanushree Chandra, Junior Fellow for Economy and Growth Programme, Observer Research Foundation (ORF)
14. Urvashi Narayan, Lead Economist for Environment, Natural Resources, and Blue Economy, World Bank

Endnotes

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- 14 These plans have been approved by the State government and the CPCB, and are being implemented through line departments. Progress is reviewed by the Chief Secretary
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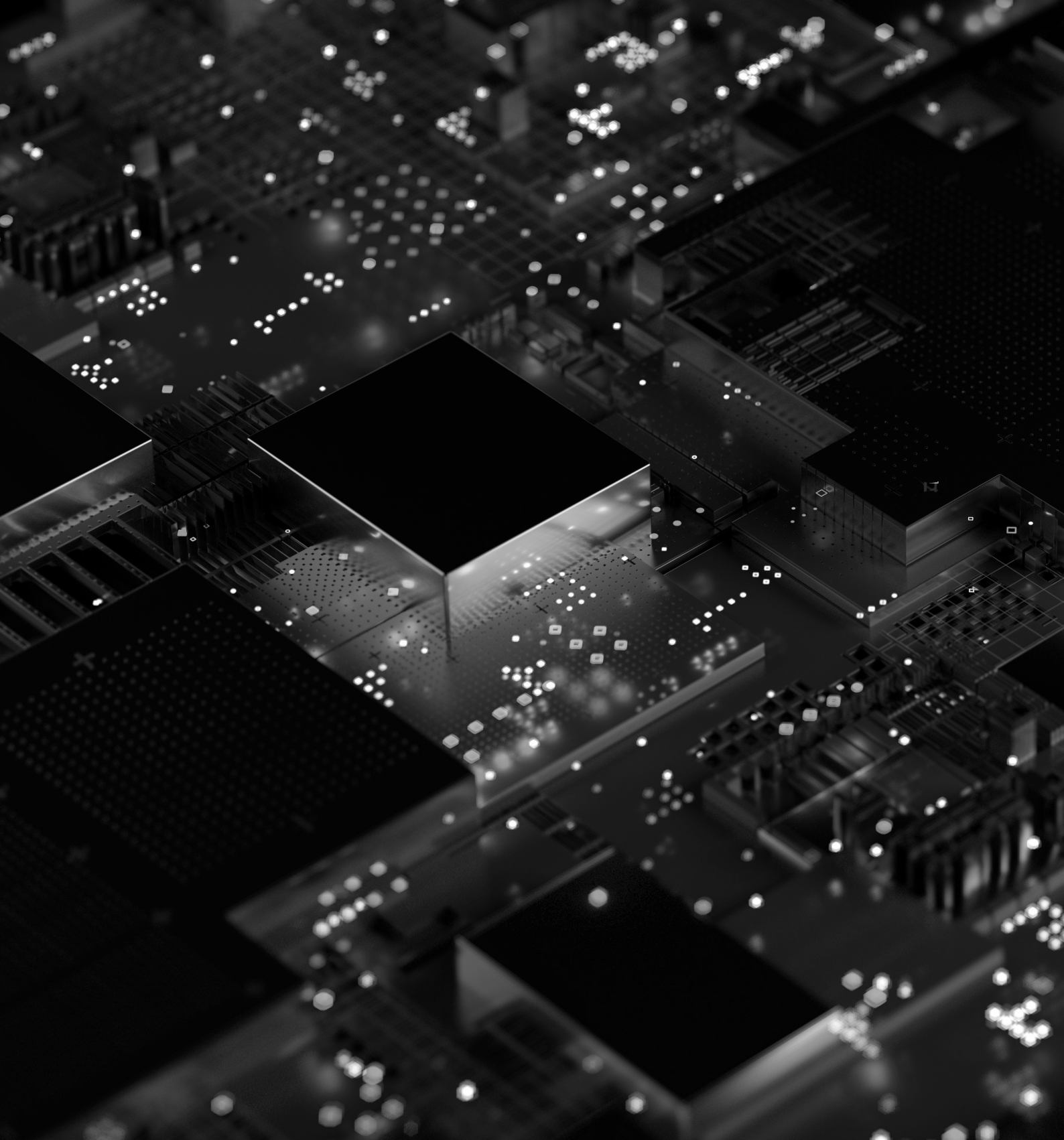
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