

Suggestions for Modified Budget 2024-25
for
Department of Finance
Government of Rajasthan

Submitted By
Indicc Associates

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1. Introduction

The interim budget presented by the Hon'ble Finance Minister, Government of Rajasthan has incorporated significant proposals for equitable development across all sectors and constituencies of the state. The renewed focus on the economic empowerment of women, affordable and accessible medical services under the Mukhyamantri Ayushman Arogya Yojana as well as improving and incentivising quality education through advancement of educational infrastructure and financial assistance for deprived sections of the society is of immense importance. Moreover, the efforts to catalyse investments in the domain of industry and modernised infrastructure further reassure the commitment of the present government to envision 'Viksit Rajasthan'.

Infrastructure development will be the key for manufacturing and services sectors to flourish. As Rajasthan strives to do that, focus on sustainability and sustainable infrastructure will add to economic growth and development of the state. These priorities of the government through the lens of fiscal consolidation provide credence to the goal of inclusive development for the state of Rajasthan.

To build on these efforts, this representation provides specific and implementable recommendations in 06 categories namely Agriculture and Agro-Business; Urbanisation and Urban informality; Health and Education; Art and Culture; Doing Business and E-Commerce as well as Infrastructure including Green Infrastructure.

Recommendations are provided upfront in each section followed by an explanatory note under each category. These recommendations are based on deep engagement with the state over the past several years and have evolved after thorough consultations with the government departments, distinguished experts and with the research support of some of the foremost organisations in the country which were anchored by the technical support of Indicc Associates.

Besides the explanatory note, detailed reports backing these recommendations can be found on the website of the Planning Department, Government of Rajasthan. (<https://plan.rajasthan.gov.in/pages/sm/department-page/67804/455>), (<https://plan.rajasthan.gov.in/pages/sm/department-page/67805/456>)

2. Agriculture, Agro-Business and Allied Activities

Key Recommendations

Natural Farming (NF) related recommendations

- Expedite the implementation of existing natural farming (NF) programme in Rajasthan by setting up of a task force for formulation of technical guidelines
- Set up a PMU within the Agriculture Department to assist the implementation of the Natural Farming Programme
- Focus on post-harvest infrastructure for NF and non-NF crops
- Diversify FPOs as procurement agencies for NF produce for MDM/ICDS, much on the lines as has been done in Odisha

NF and Non-NF related recommendations

- Set up Cluster Business Promotion Units (CBPU) (for NF & Non NF crops) within District Industries Centres (DIC). Its key tasks would include leveraging state government policies in Agri-Business, exports, MSME, Tribal Development, Rajeevika and Union Government Policies
- Set up Crop Clusters Business Units (CCBU) which leverages geographical concentration of crops (for NF and non NF crops)
- In order to link Micro Entrepreneurs to CCBUs, Micro-entrepreneur Food Processing Units (MEFPU) are proposed for the different crops being grown (for NF and non NF crops)
- Set up three funds in order to actuate above. This could include
 - FPO/FPC Credit Guarantee Fund: This could be created in partnership with NABARD as has been done by Odisha and Tamil Nadu. The fund will allow FPO & FPC, that have reached a level of maturity to access loans (term and working capital) from NBFC and Banks.
 - MSME Credit Guarantee Fund: Micro- entrepreneurs are not able to access credit from NBFC or scheduled commercial banks. A credit guarantee fund targeting the MSME entrepreneurs will encourage value chain investments.
 - Exporter Credit Guarantee Scheme: After exploring the potential for exports, a pre-shipment and post-shipment credit guarantee fund will encourage exports thereby delivering greater value realization from the infrastructure investments. This scheme should operate over and above the schemes of EXIM Bank to incentivise the entrepreneurs to take the risk of developing exports from the state

2.1 Scaling up Transformative Opportunities through Natural Farming in Rajasthan

The agriculture economy in Rajasthan needs to be seen at the intersection of production systems, scope for agribusiness in the proximity of farms and allied activities. Since Natural Farming is gaining traction in the backdrop of Climate Change, and nutritional and food security, it is important that Natural Farming is given its due weight in the process of transformation. This needs to be accompanied by necessary institutional recalibration as well as harnessing new avenues like E-Commerce. Opportunities to create adaptive green economy can also follow through in doing the same in addition to unlocking new opportunities for skilling and employment. Both natural and chemical farming would also require ease of doing and running a business for post-harvest economic opportunities and management of data on multiple fronts, thus bringing in new investment opportunities.

There are several good reasons why opportunities through natural farming offer a promising growth path for Rajasthan. These are listed below:

- There is an increased focus on NF in India with the Government of India pushing the scale-up of NF through the National Mission on Natural Farming
- There are several existing financial allocations at the state and central levels that can be converged for the scale-up of NF
- The state of Rajasthan also has a policy on NF and ongoing work on NF which have come about after a thorough feasibility analysis of NF scale up for 4 lacs farmers
- There is proof of concept on the ground on NF practices involving more than 40,000 farmers
- There is an existence of Agriculture University that can provide technical assistance on inputs and raw materials
- Rajasthan has a good base of Self-Help Groups that can be pressed into action for scaling up NF
- Rajasthan's climate vulnerability can be well tackled through NF scale-up
- With NF scale up savings in energy subsidy can be substantive and can meet part cost of the transition
- NF scale-up is aligned with the objective of Atmanirbhar Bharat and has been recognised as such even under the National Mission on Natural Farming
- NF scale up can attract fresh investments and can also lower the cost of borrowing through Green finance by the state as and when the scale-up would require so

2.2 Building on Natural Farming Momentum in Rajasthan

An NF implementation is already underway in Rajasthan which is based on the following:

2.2.1 In-Depth Examination

- Quantitative analysis using data on over 100 indicators secured from 10 state departments and 13 local Civil Society Organisations (CSOs)
- Review of state initiatives on sustainable agriculture in Andhra Pradesh, Himachal Pradesh, Odisha and Sikkim
- Consultation with 22 local CSOs (engaging 25,000+ farmers) promoting NF
- Field visits to NF pilots in 4 districts in different agroclimatic zones bringing together 61 officials from 20 district-level departments
- State-level workshop with around 40 officials from 10 relevant departments to co-create the roadmap

2.2.2 Understanding of Benefits:

- NF practices like adding cover crops, intercropping, and application of biostimulants could improve the soil health and its water retention capacity and encourage water infiltration, in turn reducing irrigation water requirement by up to 60 per cent
- Merely 20 per cent of the state's farmers adopting NF could save the government's annual power subsidy outlay by INR 7.81 billion
- The reduced or no chemical input under NF could save cultivation costs by up to 60 per cent for crops such as wheat. The cost savings can potentially improve farm incomes by 30-40 per cent, likely to reduce the farmers indebtedness
- Improving farm incomes can help reduce the state's outlay on debt-waivers, which amounted up to INR 75.50 billion⁶ during 2018-20, and fertilizer subsidies (around INR 79 billion as of 2021-22 for Rajasthan)
- Reduced chemical use will also limit water, soil and air pollution from excess nitrogen and pesticides. Currently, the cost of N pollution to public health, economy, ecosystem and climate is estimated to be INR 261.40 billion and the impact of pesticide pollution on human health is estimated to be INR 46 billion per year
- NF practices and associated interventions like 365-days green cover, pre-monsoon dry sowing in Andhra Pradesh, and community water harvesting like khadin in Rajasthan, can unlock additional cropping cycles in rainfed areas, increasing the net farm output per hectare in such regions, in turn increasing the farm incomes

2.2.3 Management of Risks

Despite the benefits enunciated above based on proof of concept in other states, the uncertain impact of NF on crop yields is considered as the main risk. In order to mitigate this risk, the key guardrail that has been considered is the choice of region. In the short term, focus on regions with lower yields (e.g. rainfed regions), thus having a lower risk exposure has been considered. With this and investment in impact assessments to alleviate evidence gaps across Rajasthan the uncertainties, in the mid-term can also be eliminated.

2.3 Progress

Based on the above, implementation is underway with a total budget for three years of INR 6 billion. The plan is to cover 12 districts (8 in the Western Zone and 4 in the Southern Zone), ~700 Gram Panchayats, and ~3 lakh farmers with a total area of 380 thousand ha in three years.

The total budget for the programme's first year is about INR 1 billion. This estimate for Year 1 also includes the time required for the ramp of the programme. The proposed budget for Year 1 covers 12 districts, 696 Gram Panchayats, and 95,794 farmers with a total area of 119,233 ha in 1st year. The total cost per farmer for Year 1 is INR 10,474.

Around 63 per cent of the total cost is allocated for capacity building (including government officers, Rajeevika CRPs, farmers, Krishi/Pashu sakhi etc).

The total cost is the sum of Fixed costs (costs associated with PMU, State level capacity building, innovation fund etc.) and Variable GP level costs (costs associated with GP level capacity building, input support etc. For the year 1, around 80 per cent of the total costs are associated with variable GP level costs.

2.4 Taking Naturally Farmed Produce Directly to the Consumers

Developing market linkages to NF produce is critical to promote NF. So what is indeed needed is a two-fold approach. First, ensuring direct selling of NF produce to retail consumers (discussed in this section i.e. para 1.4) and, second, develop Agri-Business infrastructure for processing NF produce in proximity to farms (discussed in para 1.5)

- There is a need to carry out a detailed diagnostics with farmers engaged in NF on marketable produce both in terms of size and crops
- There is a need to carry out assessment of gaps in aggregation, logistics and storage
- There is a need to map size of retail opportunities currently available in the backdrop of scale of produce
- There is need to understand and evaluate different online and offline retail models along with their heterogeneity

- While there is increased consumer awareness, there is a need to map consumer demand, opinions on accessing authentic NF produce and develop an appropriate labeling regime for raw NF produce. (Please note that currently there is no standard testing system for raw organic food)

It may be noted that Indico has already begun the process of carrying out the assessment on the above. However, to expedite and scale up, state assistance can be instrumental.

A transformative and cost-effective way to aid this process can be by leveraging the services of FPOs particularly with respect to three consumer categories namely PDS consumers, MDM/ICDS/Jails etc. This is explained below but would need to be accompanied by actual assessments and financial implications.

- Total beneficiaries of ration card would need to be identified along with requirements of MDM/ ICDS/ tribal hostels/ jails
- Federations of FPOs can procure, store , process and supply to the state government as per the need . They can lease warehouses and outsource processing to processing units and make the activity 'asset light '. They can also aggregate and sell to private parties or exports.
- Union cabinet has approved a scheme of investing 1 lakh crores in rural warehousing, that will have synergistic impact
- Most of FPOs survive on sale of inputs. The proposed public procurement of NF can enhance the relevance of FPOs in the lives of farmers
- Farmer collectives can be given commission which improves their financial viability
- This will help the government to restrict its role to financing and governance
- Rajasthan's e-Bazaar can be a valuable initiative for B2G orders and procurement

2.5 Boosting NF by linking it with Agri-Business and diversifying the role of FPOs

In order to structure, NF based agri-business opportunities, the state may undertake the following:

- Set up Cluster Business Promotion Units (CBPU) within District Industries Centres (DIC). Its key tasks would include leveraging state government policies in Agri-Business, exports, MSME, Tribal Development, Rajeevika and Union Government Policies; identify and rectify infrastructure gaps in clusters; enabling financial linkage to entrepreneurs/FPOs with financial institutions, grants and schemes; facilitate enterprise skill development of entrepreneurs/FPOs etc
- Set up Crop Clusters Business Units (CCBU) which leverages geographical concentration of crops. The crop clusters allow for focused development of productivity tools, post-

harvest management, value addition & marketing and deployment of agro-logistics. Introduction and adoption of innovative technologies including digital tools will lead to reduction of harvest and post-harvest losses. It is expected that overtime the produce from each of the CCBU should be branded reflecting the Geographical Identity (GI), the unique aspects of the product quality, and other sustainability features. An integrated, market led approach are the common denominators for developing Crop Cluster Business Units (CCBU). End to end CCBU operations can be measured on the following parametres

Crop	No of FPO	FPO Estb Cost	Post Harvest Infra	Value Addition, Marketing & Branding	Working Capital	Total Investment	Revenue Generated INR Lacs	Farmers Impacted	Employment Generated
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- In order to link Micro Entrepreneurs to CCBUs, Micro-entrepreneur Food Processing Units (MEFPU) are proposed for the different crops being grown. This will be an integrated programme – starting from harvesting to marketing of farm produce. The program will select entrepreneurs, provide processing, handling and storage technology and equipment, near farm-gate and provide marketing linkages to the processed products. The program will also work with rural banks, NBFC, etc to ensure finance is arranged for the investments by the entrepreneur.

Set up three funds in order to actuate above. This could include

- **FPO/FPC Credit Guarantee Fund:** This could be created in partnership with NABARD as has been done by Odisha and Tamil Nadu. The fund will allow FPO & FPC, that have reached a level of maturity to access loans (term and working capital) from NBFC and Banks.
- **MSME Credit Guarantee Fund:** Micro- entrepreneurs are not able to access credit from NBFC or scheduled commercial banks. A credit guarantee fund targeting the MSME entrepreneurs will encourage value chain investments.
- **Exporter Credit Guarantee Scheme:** After exploring the potential for exports, a pre-shipment and post-shipment credit guarantee fund will encourage exports thereby delivering greater value realization from the infrastructure investments. This scheme should operate over and above the schemes of EXIM Bank to incentivise the entrepreneurs to take the risk of developing exports from the state. **(Please see section 2.7 for details)**

2.6 Non-NF Related Agro-Business Infrastructure

For NF related infrastructure, details under section 1.5 can be useful as policy and investment decisions need to focus on improvements on both the supply and demand sides much as in the case of AMUL (for milk and milk products supply chain for domestic market), SAFAL (for fruits and vegetables supply chain for domestic market) and Nashik Grapes (supply chain primarily for exports).

Therefore, in addition to recommendation in section 1.5, following should be considered

- Mapping of PMGSY roads (PWD/RD) from processing clusters to large towns, logistics centres, and identifying gaps therein
- Establish Packaging Development Centers
- Develop and maintain a Marketing portal for promotion and trading of output
- National Accreditation Board for Testing and Calibration Laboratories (NABL) or National Accreditation Board for Testing and Calibration Laboratories
- Accredited Testing Centres for raw material and finished product quality. One testing facility should be able to service 5-7 CCBU
- Digitize the operations of top 300 FPO/FPC in the state and bring them on a common platform. ERP for FPO & FPC
- Creation of 'ITI' like institute for developing a cadre of passionate FPO leaders

2.7 Finance

2.7.1 FPO/FPC Credit Guarantee Fund

This fund should be created in partnership with NABARD

2.7.2 MSME Credit Guarantee Fund

A credit guarantee fund targeting the MSME entrepreneurs will encourage value chain investments

2.7.3 Exporter Credit Guarantee Scheme

A pre-shipment and post-shipment credit guarantee fund will encourage exports thereby delivering greater value realization from the infrastructure investments.

Further, a set of recommendations are given below the fast track the creation of Micro Entrepreneur Food Processing Units.

- Fee waiver and single window clearance for micro-processing units at farm level
- Single window clearance for distribution centers
- Waiver of fee on set up of electricity lines for the micro processing units
- Increase the farmer entrepreneurs micro processing units' access to key road networks in districts and blocks to help reduce logistics costs
- Allocate land of about 5 acres at subsidized rates for set up of Distribution centers in each cluster to support value addition activities

- Direct local banks and RRBs to extend loans and financial support including e-Warehouse receipt facility to farmers setting up micro processing units
- KVKs & NGOs to train farmers

3. Urbanisation and Urban Informality

Key Recommendations

Announce the enactment of the following Acts and Frameworks for managing future urbanisation:

- Rajasthan Rural-Urban Transition Bill
- Rajasthan Rural-Urban Transition Support Scheme
- Rajasthan Town and Country Planning Framework
- To manage urban informality in urban clusters, announce a comprehensive framework of recognition, security and growth for urban informal workers, addressing ease of living as well as ease of occupation

3.1 Managing Urbanisation

There is a need to treat urbanisation as a continuous process and create a policy framework that identifies rapidly urbanising settlements and provides necessary support in terms of key infrastructure (physical and social), planning and governance. The changing settlement structure of Rajasthan shows an increase in the proportion of population residing in urban settlements, particularly Class 1 towns in 2021. In addition, very large villages have also increased, which shows the potential for settlements that might convert to urban in the near-term future and need support to be ready for this transition.

The present and future geography of urbanisation in Rajasthan is closely connected to the availability of resources, particularly water. It is important to plan for future urbanisation keeping these constraints in mind, particularly in the context of climate variability. Similarly, there are strong linkages between urbanisation pattern in the state with infrastructural development and investments with majority of urbanising settlements being concentrated around industrial corridors and RIIICO parks which require planning attention to accommodate growth.

Therefore, there is a need to focus on the following themes:

- i) Transitions and Governance
- ii) Planning
- iii) Development and Infrastructure
- iv) Natural Resources and Environmental Planning
- v) Capacity and Institutions

This could be done through institutionalisation of the following three policy-based mechanisms to enable sustainable transition of settlements:

- Rajasthan Rural-Urban Transition Bill
- Rajasthan Rural-Urban Transition Support Scheme
- Rajasthan Town and Country Planning Framework

The **Rajasthan Rural-Urban Transition Bill** would ensure statutory backing for notified urbanising settlements to continue receiving funds from existing rural schemes and be eligible for urban schemes. The bill must identify administrative structures including setting up of a state level board, district level council, settlement level transition cells and technical support institutes to operationalise urban transition of notified settlements. The bill also must identify key tasks to be performed by each settlement including preparing a baseline study and a Settlement Transition Enabling Plan (STEP) to identify transition projects and resources required along with a monitoring & evaluation framework.

To support the implementation of the bill, the **Rajasthan Rural-Urban Transition Support Scheme** is recommended to provide directed financial, material and institutional support for notified settlements under the bill. The scheme must have two key components:

- i) Transition Governance Framework
- ii) Transition Plan and Integrated Projects which provide further details into the operational duties of administrative structures across various levels and details on the creation of STEP and integrated key projects.

This needs to be complemented through **Rajasthan Town and Country Planning Framework** which would provide recommendations towards a more holistic and comprehensive town and country planning (T&CP) legislation for Rajasthan.

Note: Draft of Rajasthan Rural-Urban Transition Bill, Rajasthan Rural-Urban Transition Support Scheme and Rajasthan Town and Country Planning Framework can be accessed [here](https://jankalyanfile.rajasthan.gov.in//Content/UploadFolder/DepartmentMaster/111/2023/Dec/30409/111ec74b344-7d23-4b66-a86a-2e0a58d80ab3.pdf) (<https://jankalyanfile.rajasthan.gov.in//Content/UploadFolder/DepartmentMaster/111/2023/Dec/30409/111ec74b344-7d23-4b66-a86a-2e0a58d80ab3.pdf>) or contact abhishek@indic.in

3.2. Managing Urban Informality:

Eight of every ten workers in the Indian economy are in informal employment. In Rajasthan, this pattern is no different. While their work is pivotal for their households as well as the economy as a whole, it is often unrecognised, precarious and unsupported. This precarity is mirrored in the conditions of everyday life for workers in the vulnerability of their housing, access to social protection, as well as a narrowing of the possibilities of socio-economic mobility.

Develop a framework to recognise, secure and support informal work and workers, provide a statistical estimation of the size and nature of the urban informal economy in Rajasthan and then

detail selected elements of the framework to show how they could be implemented as state policy and programmes.

The five visions that anchors such a framework start from a foundation of universal social protection (Vision 1) to the need for recognition of informal work (Vision 2), the expansion of opportunities for decent work (Vision 3), the creation of opportunities for mobility and growth (Vision 4) and, finally, the building of an institutional ecosystem to ensure delivery and implementation (Vision 5).

Vision 1 | Universal social protection that is both promotive and protective

Social protection plays an important role in alleviating poverty, improving standards of living, mitigating risks and shocks, and reducing episodes of financial adversities. In this report, we use the following definition of social protection: “all public and private initiatives that provide income or consumption transfers to the poor, protect the vulnerable against livelihood risks and enhance the social status and rights of the marginalised; with the overall objective of reducing the economic and social vulnerability of poor, vulnerable and marginalised groups.”¹

When we speak of protective social protection, we mean measures that guarantee relief from destitution. When we speak of promotive social protection, we mean measures that can enhance real incomes and capabilities. The difference is clear if you think of protective measures that ensure no one is hungry versus promotive ones that ensure that people have access to nutritious food.

This vision is applicable universally, i.e. to all residents regardless of their employment status as informal or formal workers. The focus is on the support workers need outside earning, income and wages. Each of the pathways in this vision centres on the provision of what we consider basic and public goods that are part of the citizenship rights of all urban residents regardless of their status as workers. Each is essential directly to the ease of living and indirectly to the quality of work for everyone in the informal economy. We focus on three core needs: housing, community infrastructure and maternal and child health. We do so working with the assumption that macro-economic investments in universal access to health care, education, and food security will continue and deepen.

Vision 2 | A society that advances dignity and recognition to diverse forms of work

One of the key challenges of informal work is that it is hypervisible but also invisible. It is common sense that construction workers, domestic workers, waste workers, street vendors, transport workers, sanitation workers, and home-based workers are the dominant sectors of work in urban India and in Rajasthan. Yet the nature of their work — the lack of contracts or registration, the absence of any recognition of the employer-contractor- employee relationship, or of their own enterprises — means that such work is not recognised or enumerated, making it absent in policy.

¹ See Conway, T., & Norton, A. (2002). Nets, ropes, ladders and trampolines: The place of social protection within current debates on poverty reduction. *Development Policy Review*, 20(5), 533–540. <https://doi.org/10.1111/1467-7679.00188>

Recognition and enumeration are the first steps to according dignity to informal work and workers. Both must occur at three scales: work, worker, and workplace. By work, we mean all forms of work must be recognised including, for example, often invisibilised work such as home-based workers who do piece-rate tailoring. By workers, we mean all engaged in the sector must be recognised by processes that are simple, welcoming and accessible. By workplace, we mean that all spaces (formal or informal, recognised or not) where work occurs must be recognised regardless of whether they are in public space (such as street vending), private homes (domestic work and home-based work), in infrastructure locations (landfills or waste collection sites), among others.

Vision 3 | An economy that creates more opportunities for decent work

Decent work is a framework established by the International Labour Organisation (ILO) to measure the conditions and quality of employment. It is understood as the availability of opportunities for work that is, among other things, “productive and delivers a fair income, security in the workplace and social protection for families.” How do we move towards a goal for Decent Work for All?

Here, we focus on reducing specific deficits in existing conditions of work that prevent it from meeting the criteria of being decent work. The first deficit is the absence of enabling urban economic infrastructure that can both support existing informal work and workers as well as generate new opportunities for their work. To this end, we argue for what the ILO calls “employment intensive investment” in urban infrastructure and planning that seeks to explicitly improve and increase opportunities for decent work. Here we re-emphasize the need to re-think urban planning for the informal economy as well as the Community Works Programme.

The second deficit is the absence of social security for informal workers. Existing work can be improved to becoming decent work if informal workers have access to the same social security benefit as formal workers. To this end, we argue for a new universal benefit scheme that brings parity to formal and informal workers.

The third deficit is the insufficient number of opportunities for decent work. This has structural roots, and the Indian economy is not creating enough formal sector jobs to absorb new entrants to the workforce. We mark the importance of promoting labour intensive sectors for growth and protecting and promoting informal workers within the existing sectors of the state economy such as craft, heritage, trade and tourism.

Vision 4 | An economy wherein opportunities for mobility and growth are equivalent to those in the formal economy

Informal workers often face an adverse environment to sustain their lives and livelihoods in the city, bearing disproportionate costs through long hours spent working and commuting, additional costs to secure their workspaces, higher amounts paid for access to infrastructure as well as for loans or credit, and the health implications of work such as waste work or construction work. Within this vision, we suggest a set of pathways that could enable the returns to the effort and capital invested by informal workers to be equivalent to those in the formal economy. These

pathways also offer possibilities for mobility and growth, moving beyond the ‘protective’ part of our long-term vision into the ‘promotive’.

We focus on the following three categories through which this can be enabled: (i) Reverse the informalisation of work within formal enterprises that has taken place due to changes in labour law. This could be done by extending benefits such as provident funds, paid leave, insurance to informal workers within formal enterprises; (ii) Create growth pathways or opportunities for informal workers within formal economy plans, such as the expansion of RIIICO areas, or planned nodes along the Delhi-Mumbai Industrial Corridor; and (iii) Upskilling and growth within informal economy spaces, through capital, skills or enterprise development support, in sectors such as culture, heritage, tourism, light manufacturing and crafts, architecture and heritage restoration.

Vision 5 | Building an institutional ecosystem to work in partnership

Each of the four visions described so far requires a deepening, expansion and strengthening of the institutional and governance eco-system in urban Rajasthan. In a sense, this Vision cross-cuts and underlies all the other visions and their effective implementation. We suggest a set of broad approaches to construct this governance ecosystem. The first is to directly increase state resources, capacity and human resource allocation. This must be done both through directed training and capacity building as well as increasing strength of key departments.

The second is to embrace partnership particularly with worker organisations, unions, federations and collectives. The last decades have seen significant rise in associations of informal workers mobilising and collectivising. This presents an enormous opportunity for the government to work with this ecosystem of institutions.

The third is to focus on one particular aspect of state capacity that has a deep and direct impact on any practices for their entitlements, rights and welfare. This is to strengthen systems of dispute resolution and labour law enforcement.

4. Health and Education

Key Recommendations

Health

- Setup a geographic information system for rationalization of facilities, services, and human resources
- Revisioning of the health system – creating relevance for the three-tiered system using comprehensive public health services and integrating telemedicine
- Develop and implement a comprehensive, fair, transparent HR policy with special reference to postings and transfers
- Institute a coordinating body – a PMU – to improve coordination between the National Health Mission (Centre) and the Directorate of Health and Medical Services (State), as well as convergence between sectors related to health
- Create a high-level group in CM Office for health governance

Education

- Establishment of ICT Labs & Digital classrooms across all government schools
- Build Partnerships with Ed-Tech players, Civil Society organizations, corporate players, and CSR agencies
- SDG Bonds or innovative financing bonds to promote digital education
- Encourage People-first Public Private Partnership (PfPPP) models to reduce digital divide
- Mapping schools' location and their real time connectivity
- Conversion of public places into internet hubs and creating public hotspots through innovative models like Wi-Fi buses.
- Intensive and specialized training programmes for teachers catering to low-income and marginalized students on imparting skills on digital technology
- Leverage from national schemes on digital literacy like Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA) & National initiative for school Head's and teacher's Holistic advancement (NISHTA).
- Collaboration with Tata Institute of Social Science (TISS) and impart Integrated approach to Technology in Education (ITE) trainings to all the schoolteachers

- Improving classroom practices through hybrid, digitally aided learning programmes for sustainable learning.

Common Recommendations for Health and Education:

Short-term solutions include

- Generation of data: adoption of a policy or guideline on e-office practices, strengthen infrastructure and recruit Data Entry Operators at the frontline, adopt citizen identifier data from Jan Aadhaar
- Data usability: re-evaluate data verification systems, improve capacities on use of software.
- Data use: work on combining datasets where there is fragmentation, introduce participatory data collection portals, define clear data utilisation practices at the frontline and improve use of predictive analyses.

Long-term changes include

- Linking data requirements to each part of the policy cycle for clearer targets
- Creation of a data stewardship body that can facilitate dialogue between departments on sharing and use of data.
- Ensuring an effective legal framework for governance
- Strengthening core areas of data use that include a clear recognition of the data management cycle, metadata, standards for data use and secure storage of data.
- Creation of Data Analysis and Response Teams (DART) to analyse data consistently, and regularly feed insights to decision-makers, to deliver services more effectively.

4.1 Health (Medical Services)

Rajasthan has an intricate public health system with concerted investments in the last few years indicating the high priority accorded to improving the health status of the state's residents. However, in comparison to other similar states as well as the national average, the state fares poorly in terms of health process and outcomes.

Recommendation 1: Urgent establishment of a geographic information system for rationalization of facilities, services, and human resources: every district, every facility

As a first step to ensuring equitable and rational distribution of facilities, there is a need for urgent geospatial mapping (every district, every facility) to be undertaken for the rationalization of location to fulfil population norms. Furthermore, this mapping should include facilities of potential partner agencies such as the Armed Forces, ESIC and not-for-profit organizations (e.g.,

NGOs and Mission Hospitals). The rationalization of facilities should also ensure that the services match the current gap and demand, for instance, in access to institutional delivery, contraceptive and child health services. This mapping would then form the backbone of a geographic information system (GIS) that includes the mapping of HR and services.

Recommendation 2: Revisioning of the health system – creating relevance for the three-tiered system using comprehensive public health services and integrating telemedicine

There is a pathway to reintroduce rationalization in at least two different ways that would potentially result in better access to people, better management and more efficiency. The first of these is the process of geospatial rationalization as mentioned above, that would allow for a hierarchical system of supportive supervision and referral between the three tiers. The second is the need for a fully integrated sub-system of telemedicine.

Recommendation 3: Develop and implement a comprehensive, fair, transparent HR policy with special reference to postings and transfers

A comprehensive HR policy should be further enabled by a legal provision. Additionally, it is recommended that performance-linked incentives such as promotions, relaxations in cut-off marks be incorporated in a transparent, comprehensible manner using the Annual Confidential Reports or other such monitoring mechanisms that are already available.

Recommendation 4: Institute a coordinating body – a PMU – to improve coordination between the National Health Mission (Centre) and the Directorate of Health and Medical Services (State), as well as convergence between sectors related to health

This would have to be an interdisciplinary body set up in a legitimate manner, with political mandate, and given the responsibility of coordination, integration, prioritisation and resource generation. The envisaged roles include acting as a translatable mechanism for policy, contextualizing the implementation of national programmes within the state; coordination of the horizontal integration of the health system; operational research to inform programme and policy; development of intersectoral, integrated models of care such as multidisciplinary health workforce teams; identification of capacity needs and capacity building; monitoring of services, and outcomes, including monitoring of rational treatments, quality control of health care services; and advising policy makers on health policy. The PMU would need a strong integrated comprehensive database alongside a GIS as reinforced throughout the study. Some models are available that point to the usefulness of such an agency, such as the State Health Resource Centre (SHRC), Chhattisgarh which is expected to be an apex body for technical support to the health system at all levels within the state. The options to position this PMU are: within the Health department itself; within the State Institute of Health and Family Welfare; within the newly emerging Center of Public Health Excellence or at a School of Public Health in the state; within a semi-autonomous body specially created for the purpose, e.g., SHRC, Chhattisgarh.

Recommendation 5: Create a high-level group in CM Office for health governance

Need for the creation of a high-level group in the Chief Minister's Office, i.e., a governing body, that oversees health and supports the PMU in its tasks through leadership and higher-level policy

and administrative decision-making, is required. This body, constituted by implementers, technical agencies, civil society groups and key decision makers (CMO, task forces, standing committees) would also provide strategic oversight and conduct a biannual review of the health system and policies. The PMU, positioned as the apex technical and implementing body, would be well able to represent the overlap between the ‘implementers’ and ‘technical agencies’. Apart from giving political legitimacy to key decisions, it is expected that its creation and placement will result in the adoption of a whole-of-government approach to health, leading to the consideration of health in all policies. The literature review also revealed that this approach addresses a perceived lack of command as well as improves prioritization of health, a gap that was articulated by several of the study participants.

4.2 Education

The education sector in Rajasthan is undergoing a massive transformation in recent times owing to digital education, demand for high quality education from both students & Parents. The pandemic has exposed inequity as an immediate concern.

Despite many numbers of laudable digital initiatives like ‘SMILE’, ‘Shikhavahini’ and ‘Sikshadarshini’ by the Rajasthan State’s education department, it is observed that many rural areas are on the far side of the digital divide. Access to ICT devices is minimal among students in the rural areas, and this is coupled with dependency on mobile data alone for internet, creating a roadblock for learning outcomes. Poor economic conditions of the families further aggravated the digital divide due to affordability challenges. Lack of modern infrastructure facilities within schools and digital illiteracy are major contributors for creating digital divide. Not addressing the huge access gap and disparities in digital infrastructure would not only exclude a vast majority of students from learning opportunities but also exacerbate the existing socio-economic disparities in educational opportunities.

Collaboration with Ed-tech players, promoting projects through People-First Public Private Partnerships, initiating projects with UNICEF on conducting connectivity studies and innovative financing models are broad areas of recommendations and these shall aid in formulating suitable policy directions that will provide sustainable learning in an uncertain environment and narrow the existing digital divide.

The key recommendation are divided into two sections:

Policy level recommendations to bridge the digital divide

- Establishment of ICT Labs & Digital classrooms across all government schools
- Build Partnerships with Ed-Tech players, Civil Society organizations, corporate players, and CSR agencies
- SDG Bonds or innovative financing bonds to promote digital education
- Encourage People-first Public Private Partnership (PFP) models to reduce digital divide

- Mapping schools' location and their real time connectivity
- Conversion of public places into internet hubs and creating public hotspots through innovative models like Wi-Fi buses.
- Intensive and specialized training programmes for teachers catering to low-income and marginalized students on imparting skills on digital technology
- Leverage from national schemes on digital literacy like Pradhan Mantri Gramin Digital Saksharta Abhiyaan (PMGDISHA) & National initiative for school Head's and teacher's Holistic advancement (NISHTA).
- Collaboration with Tata Institute of Social Science (TISS) and impart Integrated approach to Technology in Education (ITE) trainings to all the schoolteachers
- Improving classroom practices through hybrid, digitally aided learning programmes for sustainable learning.

4.3 Common recommendations for Health and Education Sector for improving Governance:

When three sectors of education, health and Panchayati Raj are assessed together to unpack how data is collected, its usability, use cases of data and how data can feed into policy improvement, interesting findings come to the fore. On conducting in-depth interviews and focussed group discussions with functionaries across all tiers of governance in these three departments, it was identified that each sector is a different stage of adoption of evidence-based decision making. For example, the education sector uses a unified Shala Darpan portal for school management and generation of report cards while health uses over – applications for similar management practices. Both sectors along with Panchayati Raj required stronger capacities at the frontline to collect and use the data. Publication of anonymised data in the public domain (as open data) remains limited. Large governing principles such as a clear identification of what data is required at which stage in the policy cycle was missing.

We propose the following recommendations to improve evidence-based decision-making in Rajasthan.

Short-term solutions to existing systems that can be made include

- Generation of data: adoption of a policy or guideline on e-office practices, strengthen infrastructure and recruit Data Entry Operators at the frontline, adopt citizen identifier data from Jan Aadhaar
- Data usability: re-evaluate data verification systems, improve capacities on use of software.

- Data use: work on combining datasets where there is fragmentation, introduce participatory data collection portals, define clear data utilisation practices at the frontline and improve use of predictive analyses.

Long-term changes that are required include

- Linking data requirements to each part of the policy cycle for clearer targets
- Creation of a data stewardship body that can facilitate dialogue between departments on sharing and use of data.
- Ensuring an effective legal framework for governance
- Strengthening core areas of data use that include a clear recognition of the data management cycle, metadata, standards for data use and secure storage of data.
- Creation of Data Analysis and Response Teams (DART) to analyse data consistently, and regularly feed insights to decision-makers, to deliver services more effectively.

5. Art and Culture

Key Recommendations

- Setup a Taskforce to promote intangible cultural assets and related employment
- Promote PPPs in revitalising tangible assets

Intangible cultural assets (ICA) are heritage wealth and refer to shared inter-generational knowledge, skills, and customs. While ICAs give a sense of identity to individuals and communities, they are also constantly evolving. This process of evolution, with individuals and communities at the center, makes it important to assess how ICAs are contributing to economic well-being. The role of the state in the protection, preservation, and promotion of ICAs, thus, is of paramount interest.

Rajasthan is endowed with rich and diverse cultural forms. These cultural forms demonstrate developments in the state's history and have a strong bearing on contemporary economic lives. A unique range of traditional craftsmanship, social practices, festive events, art performances, royal architectural structures, and numerous havelis make up the key elements of ICAs in the state. Together, these elements have put Rajasthan on the tourism map globally.

Identification and Spatial Distribution

- Men in the age group 16-35 account for the majority of participation into ICAs. There is considerable potential for increasing women's engagement into ICAs
- Marwar and Gorwar together is the most diverse region for ICAs, followed by the Ajmer and Hadoti region
- The regional spatial distribution of performing artists has a strong positive correlation with ICA diversity and strong negative correlation with population density.

Consumption

- The key drivers of national tourist footfall include religious and spiritual appeal, traditional art, and the overall rural lifestyle. Locations with good air connectivity and well-developed markets are hotspots for international tourists
- Tourist footfall correlates strongly with the presence of amenities, infrastructure, and markets, as well as diversity of ICAs

Market Penetration and Integration

- The most prominent backward-linked industries with cultural activities are public administration, financial services, trade and utilities. The most prominent forward-linked industries are construction, financial services, transportation and storage, and wholesale and retail trade.

- After accounting for industry size, wholesale and retail trade has the largest influence on cultural activities, followed by agriculture, forestry and fishing, and construction

Employment

- Employment into ICA activities, on account of direct engagements and through linked industries/activities, accounts for roughly 8.12 percent of the total employment pool in the state, which is roughly 2.5 million persons
- Performing arts, visual arts, and folk arts account for the majority of direct employment into cultural assets, having a share of 31.9 percent, 22.9 percent, and 8.7 percent respectively
- Almost 70 percent of the artists are professionals, while the remaining 30 percent are non-professionals. Vulnerable employment is found among approximately 72 percent of the total number of artists

Investments

- Government allocation towards cultural activities – as noted through budgetary allocations to the Department of Tourism, Department of Art and Culture, Department of Archaeology and Museums, and Devasthan Department – is falling
- Private endeavours, as seen through the number of start-ups, are largely focused on travel and tourism

Export Potential

- The export of heritage products accounts for roughly 50 percent of Rajasthan's merchandise basket. But its share has been falling in the last five years
- Relative to the leading export states in the country, Rajasthan needs to rapidly address problems related to export credit, limited air cargo facility, and cluster development

Income Generation

- The average annual income of artists is nearly 23 percent lower than the annual average per capita income in the state. Moreover, at least 70 percent of artists earn less than the average annual per capita income of the state
- Per capita income of the state has the strongest association with ICA diversity, while its association with participation in art forms and tourist footfall is low

Laws and Policies

- Policy-making around cultural assets in the state needs more focus on compliance ease
- The considerable scope for inter-departmental synergies remains to be explored to improve the effectiveness and inclusiveness of ICA-related rules and regulation in the state

6. Doing Business and E-Commerce

Key Recommendations

- Institutionalise Regulatory Guillotine Framework
- Improve Tech-readiness for E-Commerce penetration
- Align DICs and District Export Hubs to align state with international trade
- Revitalise RUDA for promotion of E-Commerce in the state

6.1 Doing Business Regulation

The Government of Rajasthan (GoR) has been undertaking several initiatives to enhance investment and employment opportunities in the state. To this end, it has created an online Single Window Clearance Portal (SWCP)² as a one-stop and time-bound clearance system to facilitate smooth running of business and ease of obtaining clearances. GoR has also enacted the Micro, Small, and Medium Enterprises (Facilitation of Establishment and Operation) Act, 2019, which exempts MSMEs from any approvals or licensing requirements for three years from the beginning of their operations. Its approach towards reducing compliance burden can be summarised as: temporary exemption, digitisation, and fixing timelines.

Such measures are necessary but not sufficient to rationalise compliance burden and enhance ease of doing business. To contain excessive unemployment and ensure resilient recovery from Covid-19 pandemic for the state, attracting private investment and creating an enabling business environment will be crucial. Reportedly, unnecessary and avoidable compliances in the state are one of the key reasons for a large proportion of investment commitments not materialising. Typically, only around 15 percent of investment commitments materialise on ground. Even a recent report by ORF-TeamLease RegTech points out that compliances issued by GoR to businesses carry 810 imprisonment clauses,³ which has the potential to disincentivise industry.

Thus, a complete overhaul of compliance philosophy in the state is necessary. A systemic framework is required, based on which, proposed and applicable compliances can be reviewed on a regular basis, for identification, amendment, and removal of unnecessary compliances.

Upon review of frameworks adopted by different countries to enhance ease of doing business and reduce compliance burden, globally recognised Regulatory Guillotine (RG) framework for Rajasthan should be implemented. The RG framework rapidly reviews compliances through a consultative mechanism, reverses the burden of proof, and requires clearances to pass the tests of legality, necessity, and proportionality, to be retained.

² Retrieved from, <https://swcs.rajasthan.gov.in/AllServicesBasket.aspx>

³ Gautam Chikermane and Rishi Agrawal, Jailed for Doing Business: The 26,134 Imprisonment Clauses in India's Business Laws, February 2022, Observer Research Foundation

Key compliances covered

- Change of Land Use
- Use of Land for Warehousing Purposes
- Consent to Establish under Water and Air Acts
- Consent to Operate under Water and Air Acts
- Renewal of Consent to Operate under Water and Air Acts
- Fire No Objection Certificate (NOC)
- Building Plan Approval
- Registration under Rajasthan Shops and Commercial Establishment Act
- Renewal under Rajasthan Shops and Commercial Establishments Act
- Registration under Building and Other Construction Workers Act
- Registration under Inter-State Migrant Workmen Act
- Payment of Taxes, Levies, and Cess
- Installation of Telegraph Infrastructure
- Allotment of Industrial Land
- Grant of Mining Lease

These compliances cover the key department which industries need to interact with in their operations. These include, labour, pollution control board, industries, urban development and housing, local self-government, among others.

Selection of compliances was also validated through interaction with industrialists, representatives of industry associations, consultants, advisors, experts, and other stakeholders. Feedback from automotive, food products, metals, chemicals, soaps, garments, edible oils, solar, food processing, textiles, mining, among other industries were obtained. Business of different sizes, including micro, small and medium enterprises (MSMEs), shops and commercial establishments, among others, were covered.

It was pointed out in order to liaison with government departments; industries typically employ liaison officers at an approximate cost of INR 3 lakhs per annum. It has also been reported that

the cost of compliance with fire NOC norms may go up to INR 70 lakhs annually, disproportionate to the risks involved. In addition, reportedly, unreasonable pollution control norms have forced the industries to shift to other attractive locations. Similarly, inability to obtain change in land use has been adversely impacting hospitality industry for quite some time now.

Avoidable processes, duplicity of documents and delays in grant of approvals may lead to high sunk and opportunity costs. Stakeholders pointed out that reducing compliance burden can contribute to materialising substantially more investment proposals.

In order to test necessity and proportionality of compliances, and suggesting viable alternatives, rules, forms, processes, practices, and implementation mechanisms in other states were analysed and compared with Rajasthan. Consequently, practical recommendations have been made to reduce compliance burden. Possibility of replacing approvals with self-certification and third-party certification were also recommended.

Key specific recommendations

- Reduce the number of forms and documents for grant and renewal of consent to operate/ establish under Air Act and Water Act
- Ensure consistency among central and state classification of industries for pollution control norms
- Enable self-certification for change in land use from agricultural to non-agricultural purposes
- Adopt risk-based criteria for applicability of fire no objection certificate
- Avoid unnecessary steps/ procedures in building plan approval
- Avoid imposition of tax, cess, levies from retrospective effect
- Grant warehouses industrial status for land use purposes
- Make registration under Rajasthan Shops and Commercial Establishments Act, one time
- Do away with the requirement to submit similar documents for different registrations under labour and other laws

Recommendations for sharing of data among government departments, to reduce compliance burden on industries and institutionalising the three-step framework in Rajasthan have also been made. To this end, best practices such as, adopting sunset provisions, i.e. mandatory review of compliance within a pre-specified period of time, would be crucial.

Key general recommendations

- Review processes/ steps involved in grant of clearances, for identification and doing away with avoidable steps, and fixing accountability of officers causing delay
- Enable data sharing among government departments, to avoid duplication
- Rationalise fees and timeframe across compliances and ensure implementation
- Adopt a practice of deemed approval/ auto renewal, unless specified otherwise
- Adopt a practice of self/ third party certification, unless specified otherwise.
- Leverage technology for approval and post-approval management. Avoid physical inspections
- Transition from single window to single roof
- Adopt sunset clause for periodic review of compliances
- Institutionalise regulatory impact assessment

The feedback/recommendation from a relevant stakeholder and working towards it in prescribed stipulated time will enhance the ease of doing business in a state.

6.2 E-Commerce

In the past two decades, India's digital revolution has radically transformed business operations, transitioning them from physical to digital realms through electronic commerce or e-commerce. E-commerce has created new business models, employment opportunities and has allowed manufacturers and traders access to untapped markets. The sector witnessed widespread adoption across Indian states over the last decade, particularly in Tier-Y and Tier-Z cities.

E-commerce serves as a crucial avenue for Micro, Small, and Medium Enterprises (MSMEs) to broaden their market presence through increased efficiency and richer customer engagement. However, MSME participation in the sector hinges on their access to digital services and their capacity to harness digital tools.

Integration of MSMEs into e-commerce value chains requires sustained policy and institutional support. Micro enterprises constitute a staggering 99 percent of Rajasthan's 26.87 lakh MSMEs. These enterprises in particular require assistance from the Government in terms of market linkages, skilling and capacity building initiatives, and simplification of legal compliance frameworks.

While the Government of Rajasthan has implemented various institutional, legal and policy initiatives to boost investments and MSME competitiveness, several efficiencies can still be unlocked.

There is a need to assess opportunities for MSMEs under various models of e-commerce i.e. Private Marketplace Platforms; Open Network for Digital Commerce (ONDC); State-Owned Marketplace Platforms: Rajasthan's 'e-Bazaar' Platform; and Assisted e-Commerce.

The tech readiness index developed for the purpose of assessing E-Commerce serves as a proxy for understanding the level of e-commerce penetration within each state, and aids in the identification of crucial factors related to e-commerce penetration. Amongst the 28 states analysed, Karnataka, Maharashtra and Tamil Nadu emerge as leading states in terms of 'Tech Readiness' and Rajasthan ranks at the 11th position. Results from the index highlight the need for the State Government to focus on the parameters of 'Tech Access' and 'Tech Business Orientation' to strengthen its e-commerce sector, and compete with these frontier states.

Key highlights of the recommendations are provided below:

- Set up an institutional superstructure headed by the Chief Secretary, Government of Rajasthan, for monitoring and facilitation of e-commerce value generation
- Revitalise Rural Non- Farm Development Agency (RUDA) in order to focus on e-commerce value chains by facilitating market linkages; and aligning skilling programmes with cluster-specific requirements at a district level
- Target skilling programmes and curriculum imparted by the Rajasthan Skill and Livelihoods Development Corporation (RSLDC) towards sector-specific skill gaps; and e-commerce allied skills
- Harness existing Common Facility Centres (CFCs) for skill training workshops and programmes
- Streamline existing legal compliance structures through a self-certification framework governed by self-regulatory body
- Repurpose marketing centres set up under the Rajasthan Handicrafts Policy, 2022, to serve as e-commerce aggregation channels
- Leverage the network of vehicles operated by the Rajasthan State Road Transport Corporation (RSRTC) to bolster local logistics chains for mid-mile delivery, on a pilot basis
- Authorise private entities to perform last-mile pickup and delivery services under a tendering process
- Issue a representation to the Government of India highlighting the need for accountability, trust and transparency as fundamental principles under the national e-commerce policy
- Expand e-Bazaar's B2C segment by onboarding of local producers onto e-Bazaar and integrating with ONDC

7 Infrastructure and Green Infrastructure

Key Recommendations

- Setup a taskforce to refine PPP processes in the process stage, contract conditions, statutory provisions and for instituting PPPs in Green infrastructure
- Setup a Green Finance Working Committee to identify Green Assets for which green finance can be mobilised much on the lines of the issuance process of the Sovereign Green Bond. This could enable unlocking finance for Green Infrastructure and greater investor engagement for sustainable infrastructure
- Announce institutionalisation of Green Budget framework
- Setup Centre for Climate Resilience and Just Transition
- Setup a task-force to calibrate state utilities for climate action
- Revisit energy policies such as Rajasthan Electric Vehicle Policy, Rajasthan Green Hydrogen Policy, Rajasthan Renewable Energy Policy to align with market trends

7.1 Revitalising Public-Private Partnership (PPP)

The Government of India has adopted the Public-Private Partnership (PPP) over three decades ago as a tool to accelerate infrastructure development. Its revised National Policy 2021 seeks to boost private investments in Infrastructure across all sectors through PPP and Asset Monetization.

Rajasthan state has been a pioneer in utilizing PPP as a strategy for infrastructure creation and economic development. GoR is in the process of updating its PPP Policy first made in 2008 based on its experiences over the past two decades. The revised Draft Policy has been published in Aug 2021.

The objective is to identify strategies to enhance the dynamics of the PPP eco-system in the state to help attract private investment in infrastructure assets and related services to help their rapid and sustainable development.

Recommendations

Process Stage Improvements

- To strengthen project preparation and approval process, it is necessary to have a robust Project Appraisal mechanism by Government before the competent Authority approves the Project Report and commence the selection process for Concessionaire. The Appraisal Mechanism will involve validating the various aspects crucial for sustainability of the project as conceived in the Project Report. The Appraisal may be carried out by

nominated group of experts from multi-disciplinary areas such as legal, financial, regulatory and engineering/technology. Wherever in house skill sets are not adequate Government may appoint reputed independent agencies/experts to be part of the Appraisal mechanism

- Demand Risk is one of the complex risks for many PPP Projects. Reliability of estimation made in the project preparatory stage may get affected due to multiple factors. Therefore, as far as possible demand estimation should be based on verifiable data with statistically proven relationship which needs to be vetted through an independent review in the Project Appraisal stage prior to approval of Project Report by competent authority of the Government. Where such robust data and statistical relationship are not possible, adequate provision shall be made in the Concession Agreement (Contract) for a rational sharing of demand risk between both parties
- PPP Projects being essentially of public interest, it is necessary that the project should have measurable outcomes linked to public interest. These must be clearly defined in the Project Report prior to approval by Competent Authority of Govt.
- Stakeholder consultations including with the project beneficiaries/users and project affected groups are necessary to gather the critical user perspectives and stakeholder concerns. The project report should clearly state the outcomes of the stakeholder consultations and define how those are addressed in the project design. This will help competent authority to assess the political risk in the project during the approval stage itself
- The selection process should be strengthened to ensure that the selected bidder has the financial capability to take the project to financial closure and commercial capability to manage the technical and operational risks. Banking sector has evolved broad based norms for assessing the bankability of the project and the borrower. The same may be adopted as basis for fixing multi factor eligibility criteria for bidders in the selection process
- PPP Projects need to be differentiated from Asset Monetisation initiatives. The very purpose of PPP Projects is to achieve a set of defined outcomes with social and economic benefits in the public interest and not to be construed as a means of raising financial resources for the Project Sponsor based on the market value of underlying asset. Thus, the project development process for PPP Projects and Asset Monetization would typically differ. Therefore, Government should make appropriate guidelines and a tool assess the specific nature of the project (PPP or Asset Monetization) to help various departments to have adequate clarity in respect thereof. Asset Monetisation initiatives shall be launched based on conducive economic conditions in the domestic financial market and broader economic conditions

Improvements in PPP Contract Conditions

- Authority and Methodology to fix and revise user charges is an important source of risk in PPP projects. The Concession Agreement shall specify the schedule, circumstances, and methodology to fix the user charges. Only for some sectors like energy and telecom the regulatory mechanism to fix and revise user charges are well defined. It is highly desirable that Government may constitute a permanent administrative mechanism for approval and revision of user charges for PPP Projects for those sectors for which there are no other statutorily formed commission/authority to fix/revise user tariff
- Land Acquisition related issues form another significant source of risk to PPP Projects. It is recommended that Govt may strive to complete the land acquisition prior to the selection process for Concessionaire so that encumbrance free land can be handed over on signing of Concession Agreement. In any case the completing the land acquisition and handing over encumbrance free land for project development shall be made a condition precedent for the Government/ Project Authority
- Effective contract management is inevitable for sustainability of PPP Projects. The Concession Agreement should define the provisions for Contract Management. It is suggested that provision for appointing an Independent Project Manager (IPM) with mutual consent of Parties and adequate safeguards such as provision for rights for either party to seek change of IPM and compulsory change of IPM after a defined period could be helpful to achieve higher efficiency in PPP contract management
- Draft PPP Policy of Rajasthan 2020 clearly outlines that Risk allocation in the Concession Agreement shall be such that the party which is capable of managing such risks. For administrative convenience, GoR may also evaluate the possibility of defining the risks that it can assume based on the need of the project in the case of PPP Projects. Typically, the risks arising from political events, change in law/ policy/taxes etc. shall necessarily be assumed by Government as a Private entity will not be able to manage such risks. Also, the responsibility of concessionaire in respect of obtaining regulatory approvals and time and cost overrun risk thereof must also be clearly defined to limit/avoid scope of interpretation at a later stage leading to disputes impacting the project

Statutory changes to improve the sustainability of PPP eco system

- Considering the typical and highly complex nature of PPP Projects in view of structured risk sharing between Government and a private investor on a long term, we suggest that Government may consider a specific statute to adequately secure the long-term risks and avoiding conflicts with other state statutes relevant to the sector or process in which PPP project is formulated. Such a statute may define the specific rights and procedure in respect of dealing with the following risks
 - ✓ Specific events and process for Re-negotiation of Concession Agreement. Since PPP Contracts are long term contracts, neither government nor any private party will be able to foresee all risks that may appear on long term. Therefore, it is

necessary that a prudent provision is made to define the specific events that may require re-negotiation and the typical process required to be followed in that respect

- ✓ Differentiating PPP Projects from Asset Monetization so that PPP Projects do not get in conflict with other laws that deal with Public Asset transaction
- ✓ Provisions of Specific Relief Act 2018 may be made applicable to PPP Projects in the state. Alternatively, Government may undertake appropriate measures to implement the Specific Relief Act 2018 in the state of Rajasthan
- ✓ Permitting payments from Government if any envisaged under a Concession Agreement to a PPP Project to be made in time specifically to support debt service obligation irrespective of any dispute resolution process underway. Such a provision will help ease project lending to PPP Projects
- ✓ Mandating a specific time bound process for all regulatory approvals in the case of a PPP project irrespective of existing regulations in respect thereof. This will help bring certainty of time in respect of regulatory approvals and avoid time and cost over runs due to prolonged processing time for any regulatory approval

7.2 Green Infrastructure

Green transition is imminent, and trillions of dollars are estimated for making this a reality. The current investment numbers suggest that the overall flow of finance is insufficient to meet the climate goals. Climate Policy Initiative estimates that US \$ 44 billion flowed in green finance to India as compared with the annual requirement of US\$ 170 billion to meet India's NDC⁴. Private sector's contribution to finance has been 59% whereas the rest is public sector's contribution evenly supported through Government Budgetary spends (Central and State) and PSUs at approximately 54% and 46% respectively.

Going forward there will be two challenges with public finance, namely, the debt limits prescribed by law and the loss of tax revenue where there is large fossil fuel dependent economy. The fiscal resources will have to be used more efficiently to crowd in private capital. More importantly there is also a need to scale up finance for adaptation that at the moment remains limited.

In this backdrop, it is important to look at some critical and fundamental aspects so that a sustainable finance pathway can be ushered in Rajasthan. First, the state needs equal focus on mitigation as well as adaptation measures. This is an important message, particularly in light of the fact that most studies highlighting the financing gap tend to predominantly focus on mitigation. The second important aspect that the state climate action plan draws the attention towards is the absence of specific action that needs to be taken in order to calibrate state's growth strategies in accordance with regional vulnerabilities.

⁴ [Landscape-of-Green-Finance-in-India-2022-Full-Report.pdf \(climatepolicyinitiative.org\)](#)

This is important to consider because a large part of climate action and sustainable development depends on infrastructure creation and without an adequate assessment of infrastructure requirement in accordance with regional vulnerabilities, the risk profile of investments may go up. Therefore, there is a need for more granular approach to green infrastructure planning.

Be that as it may, creation of Green infrastructure in the state is also highly contingent upon fiscal headroom which is severely limited at the moment. In fact, a singular message that can be extrapolated from the financing requirement that various studies have highlighted at the national level, is that sooner or later all states in India will have to step up unprecedented debt management strategies in order to meet climate goals as public finance will not be enough.

In order create sustainable infrastructure, it is important to identify and use tools to access Green finance and expand the envelope of financing through secure and innovative mechanisms. Accordingly, role of few instruments, structures and institutions will be important. These include (Green) Sustainable Development Loan (SDL), Public Private Partnerships (PPP) in Green Infrastructure, Infrastructure Investment Trusts (InvITs) and revamped role of PDCOR Ltd – a state level institution that holds immense potential to enable access to long term private capital for green infrastructure creation.

While the Green SDL route, owing to concerns around fungibility and absence of comprehensive Green tagging in the budget, appears to be a relatively a limited avenue, it can have a significant demonstration effect. However, with 'Green' classification of assets using internationally recognized taxonomy, there is a possibility to expand Green financing through SDL route in the future. But since SDL is mostly used to finance fiscal deficit, its scope still remains limited as the requirement for Green transition is likely to be significantly higher. In other words, over and above the borrowing limits available under fiscal responsibility legislation.

This necessitates exploring other avenues like PPPs which can substantially enlarge the financing envelope without significant fiscal overhang. Importance of PPPs is also significant as large part of infrastructure is with states and is monopolistic. In PPPs the asset is inherently public while financing and management can be taken care of by the private player. This allows a win-win for both parties while serving the public interest effectively. Until now no specific framework for PPPs in Green Infrastructure is publicly available barring some studies such as from the World Bank which have taken a very high-level view. For this purpose, a draft Green PPP framework is provided below.

Public Private Partnerships (PPP) in Green Infrastructure

As discussed above, the Green SDL route for infrastructure in the immediate future may be a limited one. Moreover, as SDL borrowings primarily finance fiscal deficit and are currently color blind, it does not guarantee a substantive glide path.

Therefore, the need is to substantially enlarge the envelope of infrastructure finance within the constraints of fiscal responsibility legislation. Towards this endeavor, PPP can be a useful mechanism as it represents an important tool available to governments to plug the sustainable infrastructure deficits, while enhancing availability of services.

In other words, Public Private Partnerships (PPP) are an important vehicle for governments to augment programs of infrastructure services delivery by bringing in much needed capital and management expertise from outside the government under robust contractual arrangement. Infrastructure services inherently represent resource consumption that will occur daily for all human activity. It is, therefore, important to take measures that will Green such services and mitigate the impact on climate as part of day to day living.

As a pioneer state in development and use of PPPs and in climate-change related initiatives, Rajasthan is well placed to modify and implement changes in policy and practice relating to infrastructure services and PPPs.

For this purpose, it is important to reflect on conceptual areas such as classification of Green Infrastructure and PPPs, process changes and institutional framework. These are discussed below.

Green infrastructure broadly falls into the following three categories:

Green by Taxonomy: This would include renewable energy (solar, wind, hydro), forest expansion and management, and offset programs for normal activities (example: green cover in buildings and real estate development). As such the entire sector or project is classified as 'Green'. No significant changes are required here in any government process, other than the monitoring, evaluation and certification. However, there may be some elements related to infrastructure through PPPs that may be required here which are discussed later.

Greening of Conventional Infrastructure Services: Conventional infrastructure development may include transportation systems, sanitation, waste management systems, energy delivery systems, to name a few. In Rajasthan (and India), the focus is on cost-efficient systems that can effectively deliver services to all citizens. Given that a segment of citizens in the lower income groups may be unable to pay or bear full costs of such services, the government usually defrays these costs from its budgets to the extent it can.

Since 'Green' design can substantially impact climate change related targets, it is possible that such green design may add to costs per unit of service delivery due to enhanced capital investments and/or operations costs.

For instance, a switch to Electric Vehicles (EV) in urban transportation systems may require accompanying infrastructure by way of charging stations and battery banks, amongst other things. EV themselves may entail higher costs. Thus, both capital and operations costs could increase. Similarly, capturing methane emissions from distributed off-grid septic management systems, which are present in substantive number, would require additional investments for capture, enforcement and monitoring. Even switching goods transportation systems to biofuels, something already under implementation by California State, may require investments in bio-fuel agriculture, extraction plants, entire collection and recycling systems for used oil, amongst other things.

There is thus a clear distinction between conventional project design that is compliant with national and state level laws and ‘Green’ project design that will specifically use abatement systems, technologies and processes.

Emerging PPP Scenarios for Infrastructure Development and Services: Infrastructure as defined above entails supply side interventions i.e. provision of services. However, equally important is the demand-side intervention that will contribute considerably to reduction of resource usage i.e. ‘Green’ consumption. For instance, domestic demand from household appliances can be aligned to climate imperatives through new technology such as light bulbs or ceiling fans (DC) which consume anywhere between 30-80% less energy for the same service level output. Such changes may require households to switch from their current appliances to green-tech appliances. The latter are sold at a considerably higher price when compared to normal appliances.

These examples indicate a need to embark on transition programs which can be undertaken in the PPP mode but not classified currently as ‘infrastructure’ or even ‘public services’. They can be funded by government grants along with some commercial finance (blended finance routes). As a one-off example, government actively sought and supported private sector partners for COVID vaccination in a time-bound manner with elements of complete subsidy (free) and normal user charges for citizens.

To summarize, there will be PPPs in three kinds of projects and programs – those that are classified clearly as ‘Green’ by recognized taxonomy, those services that will require modifications for ‘Green’ design over and above normally compliant projects and those that form a new category of time bound transition programs for ‘demand management’ and which have considerable potential gains for combating climate change (**See Table 1.11**)

Table 1: PPP in Green Infrastructure

PPP in Green Infrastructure (Projects and Programs)		
Green Taxonomy	By Incremental green projects in infrastructure (beyond normal environmental compliance required by law)	Managed Services for ‘Demand Management’

As discussed above, while the first category projects do not require significant changes apart from monitoring and certification, the latter two would require process changes.

Essentially, this would include, project design from concept to bid process where Expressions of Interest (EOI) are sought from potential partners to the government in the PPP bid process and evaluation for ‘Green’ elements, as additionality to existing processes on infrastructure PPPs, and in processes during implementation and after commencement of operations. This will relate to verification, certification, and quantification of Green impacts.

A clear process of modifications, dispute settlements that may emerge due to systemic risks associated with newer, emergent 'Green' technologies and systems also may need to be factored into processes used for PPPs currently.

These elements are explained in ensuing paragraphs.

At the design and DPR stage, it will be necessary to develop and design the project at two levels i.e. best cost design compliant with all existing rules and laws for conventional sector projects (Level 1) and with additionality of 'Green' elements in design after clearly identifying incremental capital costs, investment as well as operations related costs, if any (Level 2).

Additionally, intangibles need to be also earmarked as 'Green' costs. These could include programs of behavioral change, awareness and community partnerships to aid implementation and monitoring.

The above highlighted two-level feasibility tests need to go through a rigorous system of evaluation prior to approval. This will inter alia include – check on the robustness to see if proven 'Green' technology is appropriate to the scale of the project and suitability for the context of the project (geography, socio-economic profile, personnel availability to operate services, etc). Specific recommendations relating to monitoring and evaluation including operations and for the project life cycle may also be made for incorporation into contracts and costed accordingly.

This can be done by constituting a panel of 'Green' technology experts who will be part of development approval committees for the project PPP. Experts from this panel may join the conventional approval committees so that 'Green' additionality is integrated into the existing systems. One expert group could work with the Project Manager/PPP cell in project development, while another set of experts could be part of project approval committees of government, sourced from within and outside the government.

The costs arising from design modifications approved by such committees, relating to 'Green' design, may be identified as incremental costs to the project.

It is desirable that the project approval committee approve a specific design for the PPP based on recommendations of the Project Manager/PPP Cell. The DPR process should also include consultation with Green domain experts to arrive at the recommendations.

At this stage, the Government will also be clear about the financial support (and any other required measures such as regulation changes) for the selected design. It must be highlighted that this will also help government indicate 'Green' component of financial requirements to relevant national and international institutions. Such commitment, based on selected project design, may be specifically stated in the bid documents.

In addition to the above, in the case of 'Green' infrastructure, it is necessary to spell out specific competencies to identify suitable project design and execute Green elements, as decided by the

approval committee that includes the Green panel and to accommodate a consortium style bidding to enable prime bidders to bring on board the competent agencies and personnel.

Given the nascent growth of Green projects, it is likely that no prior and proven expertise may exist with bidders. However, it is not different from the government's initial foray into airports, where no domestic experience of managing airports existed.

Bidders must, as part of the bid documents sought, clearly indicate their agreement to identifying 'Green' components of their bid, as part of their overall and final bid quotations. Rationale for such classifications may be provided with the bid-quote, on matters that are particularly grey.

The decision of the PPP project approval committee in such matters may be deemed final for the purposes of bid-evaluation. The approval committee therefore must include relevant Green technology experts as highlighted earlier.

Additionally, bidders may be given an incentive, by way of additional points in scoring the overall bids for innovations in the design, that may enhance the Green credentials of the project. On the other hand, bids will separately indicate the innovation done vis-à-vis design defined in the invitation to bid, and the additionality by way of Green impacts, lower costs and any such relevant matter.

The contract agreement for the PPP should also spell out the following incremental aspects relating to Green elements of the project.

Monitoring and certification of implementation as per contracted design: Such certification must also include non-physical aspects of the implementation such as behavioral change programs. Certification will also enable processes regarding accessing finance and reporting Green impact gains.

Monitoring and certification of operations over project life cycle: Similar monitoring of Green elements over the project life cycle, as opposed to contracted project tenure are necessary. For the purposes of the PPP contract, such monitoring and certification through independent agencies should be part of the contract 'Green' costs. This is because such costs would not have been incurred but for the transition.

With respect to contract payment, dispute settlement and re-negotiation, recommendations have been detailed in the report on 'PPPs in Infrastructure' submitted to CMRETAC by PDCOR limited in March 2023⁵. The additions in process and personnel on Green elements are discussed below for each of these areas.

Contractual payments: The above stated report spells out in detail the role of an Independent Project Manager (IPM) post-contract to manage the PPP projects for government. Such an IPM will need to be qualified for expertise relating to green component compliances as per the contract. This will be the basis for normal contractual payments, plus triggering of additional

⁵ <https://jankalyanfile.rajasthan.gov.in//Content/UploadFolder/DepartmentMaster/111/2022/Dec/30409/124056.pdf>

initiatives to obtain green finance (ex. carbon credits, additional grant funds and incentive for performance achievements etc). The process should be time bound as per conventional PPP contracts.

Dispute Settlement: The IPM, as recommended earlier in the above stated report should also be responsible for managing disputes in a time bound manner. The appointment of an IPM may be agreed upon by both parties, soon after execution of the contract, as a time bound condition in the PPP contract. Dispute settlement including Green elements must also be handled as part of this process with the IPM being suitably pre-qualified to decide such issues.

Renegotiation: Green technologies and systems are in various stages of development and operations around the globe. There are some inherent risks to such programs, including the robustness of the technology in scale in a given geography or context. As part of the monitoring mechanism, it is desirable that the IPM, independently flags matters that could constitute significant risks to the Contract terms and likely to create a case for renegotiations and the same may be captured in an annual review. The recommended process for renegotiations has also been extensively described in the above stated report.

The institutional framework to manage the new dimension of 'Green' infrastructure services can be best accomplished by institutions already tasked with PPP projects (from concept and design till post-operations matters)

Empanelment of Expertise – personnel and / or institutions for different roles: For this, government can empanel institutions and individuals with relevant expertise for climate change/Green technologies. The advantage of such open-ended empanelment is that those who are competent to discharge the specific tasks can be pre-qualified and appointed to specific roles in the project development process. This will also integrate the Green dimension into existing processes without creating another institution and point-of-approval for new project development.

Project Manager (PM) / PPP Cell for Project Development Enhancement: It has earlier been recommended to appoint a Project Manager (PM) for development of PPPs working with government PPP Cell for project development and implementation. The PM should also have Green technology and systems competence as part of its executive team. The PM, with Green expertise on board, will thus undertake evaluation of bids including Green design components and can provide recommendations relating to final design, contracting and post-contracting systems for monitoring and evaluations.

Independent Project Manager for Post-Contracting management of disputes, payments, recommendations for renegotiations: Separately, there needs to be empanelment of institutions for the role of Independent Project Manager (IPM) that are distinct from those involved in other aspects of PPP projects. This will ensure that there is no likely conflict of interest where an agency is involved in bid evaluation and monitors the same project on which it has evaluated the winning bidder. The integrity of the IPM is thus maintained.

While PPPs can be very effective for new infrastructure creation, InvITs can come in handy especially in the context of creating investment circularity, expanding the financing envelope and channelling private capital while managing debt. The instruments can be particularly useful for low-risk assets i.e. those that have achieved revenue stage.

It is pertinent to highlight that PDCOR Ltd is an ideal institution that can aid structuring of Green Projects in the state. For optimal results, Rajasthan needs to have a detailed State Level Green Infrastructure Finance Plan (SLGIFP), whose formulation can be both top down and bottom up. This will enable a dynamic formulation of the plan. In other words, the state does not have to wait for a detailed plan to be first formulated before taking an action. Both top down and bottom up activities can be roll out simultaneously and immediately leading to the structuring of the plan. Given the 2030 timelines and climate urgency, such an approach will be in order.

In light of the above, key recommendations are as follows:

With respect to State Level Climate Action Plan

- State level climate action plan highlights the need for high focus on both mitigation as well as adaptation measures while most studies highlighting financing gaps at the national level have preponderance on mitigation strategies. This necessitates the need for Rajasthan to carry out its own assessment of finance requirement for Green infrastructure over the long term
- The regional or district level infrastructure planning in the state needs greater focus. The current climate action plan does not contain specific action agenda even though there are thoughtful yet disparate steps being taken by several state entities. Therefore, as an immediate step the state should carry out a consolidation exercise to identify projects that may be eligible for Green finance

Financing Green Infrastructure

- Given limited fiscal headroom, the state should deploy simultaneous options which include use of internationally recognized taxonomy to identify Green assets. The taxonomy may also be used for Green tagging of assets for the preparation of Green budget and fiscal risk statement. For this purpose, a dedicated body may be setup as suggested in the report. This will enable easier flow of private capital and better monitoring of financial resources
- In the short term, earmarking of 'pure play' green assets for a Green SDL will be useful. This will have a positive impact on Quality of Expenditure. Once a comprehensive, Green classification of assets is done, the state may enlarge the quantum of financing through Green SDL as well. A Green SDL category could also be built into the composite index prepared by RBI which could potentially bring down the cost of finance through SDL. This however will be outside the realm of the state government
- For expanding the finance envelope, the state should embark on a State Level Green Infrastructure Finance Plan and institutionalize the framework for PPPs in Green

Infrastructure, set up an IDF and increase the use of InvITS for ensuring circularity of finance and managing debt. For these purposes, PDCOR Ltd. could be recalibrated to provide necessary technical assistance. The detail framework presented in the report could be used for the same

- The Public Finance Management Division under Department of Finance could work in tandem with PDCOR Ltd to ensure a sustainable glide path to fiscal deficit over a time bound horizon

7.3 Energy Transition

The transition required to meet India's ambitious clean energy goals will play out in its states. By 2030, India aims to have 50 per cent of its installed power generation capacity based on non-fossil energy sources and reduce its emissions intensity of GDP by 45 per cent (over 2005 levels). Rajasthan, with abundant renewable energy (RE) resources, is positioned to lead India's energy transition to cleaner energy sources. The state is already the country's largest RE producer, with over 23 GW of installed RE capacity in June 2023 (Ministry of New & Renewable Energy (MNRE) 2023). The Government of Rajasthan (GoR) aims to achieve 37.5 GW of RE capacity by 2025 (MNRE 2022) and ~90 GW by 2030 in line with enhanced national clean energy targets.⁶ However, an assessment of the state's past efforts and current context shows that several challenges may impact the pace of this transition.

A holistic approach is needed to determine future transition pathways for Rajasthan's power sector such that the transition aligns with the state's development aspirations, the nation's international commitments, and the changing global context. Understanding the long-term pathways should inform the state's medium-term policy goals, guiding the state's near-term strategies for sectoral transition..

Aligning state ambitions with national clean energy targets

The long-term transition pathways for Rajasthan suggests that aligning with the national aspirations of building a Net-Zero economy by 2070 would help the state retain its clean energy leadership while meeting its development aspirations.

Pursuing a Net-Zero pathway would present significant opportunities for the development of the state's power sector compared to a business-as-usual scenario, as depicted below.⁷

- The state's electricity demand would nearly double by 2030 and rise tenfold by 2070 due to a growing economy, rising incomes, urbanisation and a rapid electrification of various end-uses.
- Power generation within the state periphery would rise even faster to cater to clean electricity demand from within and outside the state.

⁶ Indicative target as per stakeholder engagements and secondary literature (Economic Times 2022; 2023).

⁷ This analysis uses a state-level version of the Global Change Analysis Model (GCAM).

- Generation is expected to triple by 2030 and grow 16-fold by 2070
- Renewable energy will become a dominant generation source well before 2030 and contribute to ~60-70 per cent of generation (equivalent to 80-90 GW capacity)⁸
- The power sector would present the biggest opportunity for emission mitigation, given its majority contribution to the state's emissions (54 per cent share in 2020). If the power sector emissions peak around 2040,⁹ they would need to drop to zero by 2050 for the state to align with India's net zero target. The power sector would need to decarbonise the fastest among all other sectors in this transition pathway.
- Investments of the order of ~INR 5.4 lakh crore (~USD 66 billion)¹⁰ would flow into the state for setting up required generation (70 per cent), transmission (20 per cent) and storage (10 per cent) capacities by 2030.¹¹

To realise these opportunities, Rajasthan should consider enhancing its clean energy ambitions by:

- Formally aligning with the national aspirations to build a Net Zero economy by 2070,
- Setting enhanced clean energy goals for 2030 in the form of 80-90 GW of RE capacity by updating existing policies, with a parallel emphasis on decentralised renewable energy, and
- Creating an attractive ecosystem to mobilise adequate investments for its clean energy goals

Cost-effective integration of renewable energy

A rise in the share of variable RE (VRE) in Rajasthan's generation mix would pose several challenges linked to variability and uncertainty in RE generation, surplus availability during low demand (leading to negative net load) and limited inertia or reactive power support available for secure grid operations. Given these challenges, the need and the role of various generation sources and flexible options for optimal system dispatch at the state and national levels need to be assessed.

To become India's clean electricity powerhouse by 2030, Rajasthan will need to enhance the flexibility of its power system. This may include:

⁸ As per draft Urja Niti 2050, the state aims to achieve 90 GW RE by 2030. It also highlights the massive RE potential and availability of abundant wastelands that favour rapid scale-up of RE in the state.

⁹ 2040 is considered as the peaking year for overall energy sector emissions in the GCAM model as also in Chaturvedi and Malyan (2021).

¹⁰ Assuming USD 1 = INR 82

¹¹ Chapter 2 provides details on the investments break-up across sub-sectors and/or generation technologies and the ways to attract these investments.

- The share of VRE in the state’s generation mix could rise to 72 per cent by 2030, which will be significantly higher than the share of VRE in the nation's power mix (33 per cent). This reconfirms that Rajasthan is expected to emerge as the clean power supplier to the nation.
- Storage and flexible generation resources will be key in meeting the peak demand and reducing RE curtailment. At the national level, to limit the annual RE curtailment within 5 per cent, the power system would need 44 GW of battery energy storage systems (BESS), 81 GW of thermal capacity retrofitted to operate at 40 per cent minimum technical loading (MTL), and 22 GW of pumped storage hydropower (PSH). Despite this, 12 per cent of RE generation would be curtailed at the Rajasthan periphery (due to demand and transmission constraints)
- Of the total BESS capacity required, a majority (~32 GW) will be located within Rajasthan at utilisation levels that are attractive for investors. This indicates that Rajasthan will also be a major contributor to meeting the national flexibility needs.

Rajasthan Discoms will need robust resource adequacy planning to meet the rising electricity demand.

- The share of VRE in the contracted generation mix will increase from 17 per cent in 2022 to 39 per cent in 2030. In parallel, the share of thermal generation will drop from 74 per cent to 51 per cent. However, the annual utilisation of thermal capacity will increase to ~65, up from 58 per cent in 2022, to meet the rising electricity demand.
- But even with current and planned conventional generation capacities, seven per cent of demand remains unmet in 2030, mostly during non-solar hours and due to limited flexibility in the system (Figure ES2).
- Rajasthan’s 15-minute net load ramping requirement increases by 4-fold by 2030. The state must reduce select thermal units' minimum technical load (MTL), operate the existing coal fleet at part load, and ramp it rapidly. However, even if planned generation capacities become operational and CEA’s current standards for flexibilisation of thermal power plants are met, the system will not be flexible enough.

Flexibility can be enhanced to manage load reliably in a RE-rich power system by:

- Utilising RE with storage (BESS and PSH), the short-term market, and demand-side management,
- Upgrading the intra-state transmission network to ensure better system controls and enhanced communication abilities, and
- Implementing integrated resource planning to achieve a technically and economically sound resource mix in a planned and systematic manner.

Cost-effective operation of the coal fleet

To ensure that the system runs at least cost, flexible operation of coal-based generating sources will have to be managed cost-efficiently. Six state-owned and two privately-owned thermal power plants comprise nearly 40 per cent of Rajasthan's total long-term contracted generation capacity and half of the annual energy procurement.

The assessment of current operational trends suggests that:

- The annual declared capacity (DC) of state-owned plants was 32-68 per cent in the fiscal year 2022 (FY22), much below the annual target availability of 83 per cent, primarily due to technical issues. On average, nearly half of all thermal generating capacity in outage per day in the second half of the fiscal year was due to technical issues.
- While the 'merit order dispatch' (MoD) principle was largely followed for scheduling thermal power plants, Discoms would have saved nearly INR 500 crore in FY22 if eight of the largest coal plants had met their target availability and were utilised cost optimally.
- Historically, Rajasthan has witnessed significant deviations in the projected and actual annual peak demand and consumer segment-wise energy requirement, critical power system operation and planning inputs. The accuracy of forecasts on operational timescales of week- and day-ahead is 80-90 per cent, which can be improved.

State entities can ensure that the coal fleet continues to operate cost-efficiently by:

- Increasing the utilisation of allowed O&M expenses to reduce the incidence of technical outages, revising regulations on normative O&M expenses, and facilitating timely payments for energy,
- Notifying a methodology for estimating the variable costs of plants and drawing up the MoD stack, and
- Using advanced metering infrastructure to collect and store granular load data and using advanced statistical tools for high-accuracy demand forecasts.

Towards a financially robust power distribution sector in Rajasthan

Rajasthan's Discoms are in financial distress with aggregate technical and commercial (AT&C) losses of 17.5 per cent in FY22, accumulated losses of ~INR 90,000 crore (including regulatory assets worth ~INR 49,000 crore), total debt worth ~INR 66,000 crore, and a low debt-to-service-coverage ratio of 0.91. State Discoms are in a vicious cycle of recurring losses, debt, delayed payment to generation companies, poor credit ratings, and high-interest burden. Since Discoms are the largest off-takers of clean energy, a perception of high off-taker risk is a key barrier to clean energy investments in the state.

The assessment of the factors leading to loss accumulation suggests that disallowed costs by the state regulator during the true-up process are a major contributor to the accumulated losses of Rajasthan Discoms. In FY22, RERC disallowed over INR 6,000 crore of the Discoms' claimed expense, 59 per cent of which pertained to power purchases owing to gaps in forecasting and

Discoms' operational inefficiencies. Disallowed costs reflect as losses in the Discoms balance sheet, affect cash flows, and add debt and interest costs.

Rajasthan Discoms must undertake measures to break out of the vicious circle and to:

- **Boost their credit ratings** to enable access to debt at attractive rates and check the rising interest cost burden.
 - In the short term, Discoms and the state regulator must pursue timely subsidy (as done in FY22) and revenue realisation, timely tariff filing, and release of tariff orders.
 - In the medium term, efforts must focus on timely payments to the generating companies and reducing the ACS-ARR gap through optimizing power procurement projections, improving billing efficiency and dissipating built-up regulatory assets.
- **Improve their billing efficiency** to reduce distribution losses and lower the extent of disallowed costs and revenue gap. In FY22, Rajasthan Discoms reported 100 per cent collection efficiency, but their billing efficiency was 82.51 per cent. State Discoms must leverage the opportunity to improve their billing efficiency through smart meter deployment and focus on:
 - Effective consumer engagement and awareness strategy
 - Designing and developing system architecture for secure and integrated data storage, sharing and management system
 - Enhancing institutional capacity by creating well-staffed smart meter units, conducting periodic training on smart meter technology
- **Implement a dissipation schedule for the unfunded revenue gap**, which largely forms the accumulated losses. Between FY11 and FY23, cumulative carrying costs of ~INR 49,300 crore have been allowed on the accumulated unfunded revenue gap, which has resulted in an interest cost burden on consumers equivalent to 8-10 per cent (INR 0.58/kWh) of the average electricity tariff. If the status quo remains, we estimate that the consumers would be levied with a carrying cost of ~ INR 52,000 crores over the next decade, with the unfunded revenue gap remaining unrecovered. Proposed solution:
 - Discoms can swap the existing expensive loans against the unfunded revenue gap with cheaper debt and reduce the carrying cost burden using the transitional finance route. Along with swapping of loans, a regulatory surcharge of ~5 per cent (per unit additional impact of INR 0.35/kWh) can ensure dissipation of the accumulated unfunded revenue gap in 5-8 years (5 years for AVVNL, 7 years for JVVNL, and 8 years for JdVVNL). The dissipation schedule would save consumers a carrying cost of INR ~17,300 crore in the near term.

- Regulatory surcharge should be levied separately in the electricity bills for consumers. For Discoms, the surcharge should be reported separately in the billing database. A clear and separate accounting of the revenue gap and associated carrying costs will improve transparency and allow their time-bound recovery.

Diversifying State Power Generation Utility to include Renewable Energy

While substantial progress has been made in the state on Green power, most of it is meant for export purposes and is led by the private sector. The state power generation company may also embark on a diversification path incorporating greater share of renewables, much on the same lines as some other states like Andhra Pradesh, Tamil Nadu and Gujarat.

Note: For more on Just Transition refer to - https://india.fes.de/fileadmin/user_upload/documents/Human_Settlement_Framework_for_TP_Ps_in_the_context_of_Just_Transition.pdf

For detail planning on Green infrastructure creation, its impact on public finance and role of private capital, the state should not only recalibrate Public Finance Management Division and PDCOR Ltd. but may also setup a Green Transition Committee (GTC) under the Chairmanship of the Finance Secretary which shall supervise all Green transition activities. These may include Green infrastructure creation, Green financing and formulate strategies to address other costs that would be entailed in additionalities that come with delinking from the carbon economy.

7.4 Agriculture Transition

Please refer to Section 2.1

7.5 Transport Transition

The Rajasthan EV policy of 2022 aims to boost EV adoption but faces critical gaps: insufficient incentives for EV manufacturing and a high EV-to-charging point ratio. To address these, the policy should enhance manufacturing incentives akin to Telangana and Karnataka and streamline incentives for charging infrastructure, ensuring strategic placement.

Moreover, robust incentives for battery manufacturing are essential, as Rajasthan could be the most favourable location near recently discovered Lithium reserves in J&K in terms of its proximity with the established auto cluster. Clearing up policy discrepancies related to battery recycling incentives is crucial for investor confidence.

Lastly, improving incentives for e-buses, possibly through self-achieving targets for state and city transport utilities or establishing a SPV with niche expertise to operate buses in OpEx Model.

The Rajasthan EV policy of 2022 aims to boost EV adoption but faces certain gaps:

- Insufficient incentives for EV manufacturing.
- High EV-to-charging point ratio (313 EVs per charging point).

- Clarity regarding battery recycling incentives provided in the EV policy, 2022 and RIPS 2019.
- Lack of competitive incentives for e-buses compared to states like Karnataka and Maharashtra.

Recommendations:

- Enhance manufacturing incentives similar to Telangana and Karnataka.
- Streamline incentives for charging infrastructure, focusing on strategic placement.
- Introduce robust incentives for battery manufacturing leveraging local advantages.
- Clarify and align battery recycling incentives across policies.
- Improve e-bus incentives through self-achieving targets or a dedicated SPV mechanism.

7.6 Setting up of a Centre for Climate Resilience and Just Transition (CCR&JT)

Rajasthan ranks 7th in CEEW’s Climate Change Vulnerability Index. 10% of the most vulnerable districts in India are from Rajasthan. There has been a six-fold increase in the frequency and intensity of extreme drought events since 2000 and a four-fold increase in the frequency and intensity of extreme flood events since 2010. Further, in most of the districts, groundwater is overexploited, whereas surface water resources are over-appropriated.

Given the increasing frequency and intensity of the climate risks and the impact it can have on the state’s economy, there is a need for the state, particularly those economic actors and sectors who employ a significant proportion of state’s population, to develop a mitigation and adaptive capacity to manage such events and the loss and damage, particularly to employment and livelihoods, they can cause (e.g. around 2/3 population and 25% of SGDP depends on agriculture). This would need to be accompanied by a transition management plan for broader decarbonisation of Rajasthan’s economy to mitigate climate risk. Therefore, it is proposed that a Centre for Climate Resilience and Just Transition is set-up

Building state’s adaptive capacity will require capacitation on two fronts: 1) capacitation of existing government departments and public institutions in the state (particularly environment, water, agriculture, industry, energy and mobility) towards mainstreaming climate action in their policies and programmes, 2) Capacitation of current and future executives and the workforce driving economic activity in the state. The proposal made in this note focuses on the point# 1; the proposal to address the point# 2 has been submitted to RSLDC, separately.

Solution and Proposed Process:

Centre for Climate Resilience & Just Transition (CCR&JT)

- The CCR&JT will act as a think tank to the state departments and institutions and will provide technical support in mainstreaming climate action within their respective work

streams. The CCR&JT will undertake training, exposure visits within and outside states, build partnership with external institutions, commission studies, and provide a platform for dissemination and incubation of innovative ideas on climate change mitigation, adaptation and resilience. CCR&JT will also collaborate closely with RSLDC towards shaping the strategies for upskilling state’s workforce with ‘Climate Smart Skills’ to improve their resilience.

CCR&JT will also develop and deliver trainings for executives of support organisations (outside the government) for enabling a support ecosystem for providing services to complement government’s capacity for climate action and just transition. It is only pertinent to mention here that the need for just transition emerges due to high social and economic linkages to carbon economy. This necessitates strategic outlook towards Transition and Justice, Transition Finance and Transition Governance.

- CCR&JT can be housed in Department of Environment and Climate Change, headed by a Principal Secretary or Secretary level or equivalent officer from the department. It will employ topical experts in the climate, environment, energy, economics and social sciences domain. It is suggested that the CCR will have an advisory board which will have representation of Secretaries from all the departments which will be chaired by the Economic Advisor to the Chief Minister. For its effective functioning, it is proposed to have a separate administration and finance staff.

Budget Allocation:

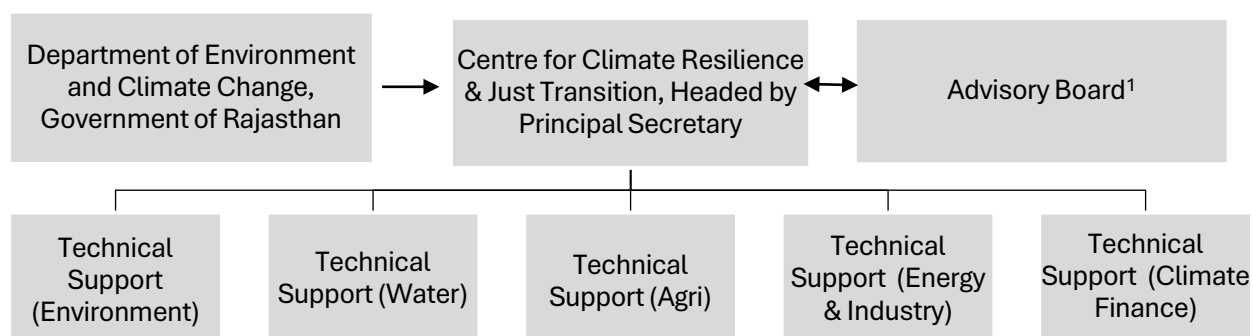
- Total budgetary outlay would be to the tune of **INR 375 crores over next five years**, requiring **about 75 crores per year**. This will comprise the following:

Table 2: Proposed allocation for CCR&JT

S.N.	Budget Category	Budget/annum (in crore)	Budget for next five years (in crore)	Remarks
1	CCR&JT Secretariat	2.5	12.5	Expenditure on account and allowance of the officers and establishment
2	Research & training	10	50	Expenditure towards the development of training modules, designing and organisation of the training programmes, etc.

3	Events and conferences	2.5	12.5	Expenditure towards organisation of national and international conferences, roundtables, consultations, etc.
4	Advisory services to other departments	50	250	Expenditure on technical advisory for mainstreaming climate action within the policies and schemes of other departments (water, agriculture, urban development, industry, transportation, energy, etc.)
5	Grant in aid for incubation projects	5	25	Expenditure for setting up of innovation centres, supporting research on innovative climate informed solutions
6	Exposure visits and exchange programme	5	25	Expenditure for organising national and international exposure visit and exchange programmes for the officials
	Total	75	375	

Suggested Institutional Structure and Human Resources for CCR&JT



¹Advisory Board: Secretary level officers from all the climate relevant departments

Suggested competency list*

1. **Technical Support:** Technical support can be provided by an organisation/expert/s with a minimum of 10 years of experience in the domains such as development studies, public policy, environmental sciences, etc.
2. **Admin and IT staff:** For smooth execution of CCR&JT the government should deploy relevant staff from IT, statistical services, and finance. This can be as per government guidelines

*In the continuously evolving field of climate action, the expertise areas are constantly evolving too. However, the following examples of relevant education can be used to come up with a more detailed list of education to be considered for above roles. Such a list should also be revised regularly and can be refined at the time of setting up of CCR&JT:

- Water: MSc, MTech or PhD in Water Management or Water Resource Engineering or similar courses
- Agriculture: MSc, MTech or PhD in Agriculture Sciences, Agriculture Engineering, Agriculture Economics, or similar courses
- Environment: MSc, MTech or PhD in Environmental Sciences, Environmental Engineering, Environmental/Ecological Economics, Natural Resource Management, or similar courses
- Energy and Industry: MSc, MTech or PhD in Energy Studies, Production Engineering or similar courses

7.6 Green Budget

Green tagging of infrastructure can lead to much broader set of tangible benefits. Some of them are listed below:

- Lower cost of borrowing through thematic bonds such as Green Bonds
- Better quality of expenditure
- Opening up of Green investment opportunities
- Identification of 'Green' infrastructure components in central and state schemes (and policies). This may help in both central and state government borrowings
- Better alignment with budgeted and actuals figures due to non-fungibility and transparency
- Better monitoring of climate action

Starting with this exercise immediately, in the medium term Rajasthan can comprehensively embark upon the process of 'Green Budgeting'. Towards this endeavor, as a first step, it is recommended that Rajasthan sets up a dedicated body under the Public Finance Management

(PFM) division under the Department of Finance to enable a smooth institutionalization of 'Green Budget' process.

Such a body can be a mix comprising climate experts, former & current government officials from finance and environment departments, and taxonomy experts. Sectoral experts and regulators can be invited from time to time on need basis. The key to its success will be a formal mandate by the state government. To begin with, some of the issues such a body can look into in the short term are as follows:

- A state level climate action plan should serve as a base document to guide overall state strategy on mitigation, adaptation, sectoral development and investment. The actionability of state climate action plan is therefore critical. Currently, district wise action strategies in the state climate action plan are generic in nature. This could be made more specific in accordance with vulnerabilities identified for each district under the plan, compliances sought by National Green Tribunal (such as National Capital Region plan on Transport), new policy announcements such as Rajasthan Hydrogen Policy, re-look at policies that may need better alignment with the market trends and Greening and alignment of state policies with Long Term- Low Emission Development Strategies (LT-LEDs) articulated by the central government to complement India's updated NDCs
- Identification of relevant departments and their respective allocations towards Green spending to enable understanding of overall expenditure towards its Green Infrastructure. A recent paper by National Institute for Public Finance and Policy (NIPFP) titled 'G20 and Climate Responsive Budgeting' can be instructive in this regard¹². Amongst other aspects, the paper highlights the role of disarmaments that directly and indirectly linked towards achieving the Green targets
- A state level fiscal risk statement can serve as an overall guideline document to better plan fiscal management in the backdrop of climate imperatives. For instance, Odisha periodically comes out with such a document¹³. Fiscal risk statement must also include risk management strategies such as creating fiscal buffers, ensuring budget flexibilities (for example, contingencies for natural disasters, provisioning), and using risk transfer instruments (for example, insurance)
- A medium term fiscal policy statement needs to be adjusted in the backdrop of climate considerations. In other words, the fiscal trajectory specified in a MTFP should be consistent with debt sustainability analysis, which should cover the effects and risks related to climate. This would inform policymakers in the implementation of risk mitigation measures
- Climate tagging of infrastructure assets as per recognized taxonomies done by respective departments would come in handy and will not only help in Green budget formulation but

¹² https://www.nipfp.org.in/media/medialibrary/2023/09/WP_401_2023.pdf

¹³ <https://finance.odisha.gov.in/sites/default/files/2022-07/FISCAL%20RISK%20STATEMENT%202022-23.pdf>

also during the budget execution. An indicative list of Green assets is available as an Annexure

- For the ease of tracking, program-based budgeting frameworks can be incorporated
- Control and audit mechanisms should be used to examine, measure, and monitor the efficiency and effectiveness of Green budget

Table 3: High Level Framework for Green Budgeting in the Medium Term

Planning and Fiscal Framework	Preparation of Budget	Execution of Budget	Audit
<p>Requirements</p> <p>Revision of Climate Action Plan to incorporate more specific action strategies in accordance with vulnerabilities highlighted under the plan</p> <p>Set up a committee of experts in Public Finance Management Division of the Finance Department</p> <p>Fiscal Risk Analysis</p>	<p>Requirements</p> <p>Identification of sectors based on planning approach</p> <p>Mapping of relevant schemes and policies (For this purpose, alignment with updated NDCs and LT-LEDS with state action can be a starting point)</p> <p>Identification of expenditure allocation by all relevant departments towards specific mitigation and adaptation requirement</p> <p>Applying recognized green taxonomy for Green tagging</p>	<p>Requirements</p> <p>Tracking of green expenditure through chart of accounts to include a green or climate coding</p> <p>Financial management information system with adequate functionality for accounting and reporting of climate-related expenditure</p> <p>Should enable direct comparison between estimates and actuals</p>	<p>Requirements</p> <p>By Department of Finance, Line Ministries and External Audit</p> <p>Note: External auditors need to improve their own capacities to audit green budgets effectively</p>