The 15th International Forum for Sustainable Asia and the Pacific

"Accelerating Sustainability Transitions in Asia and the Pacific: The Transformative Potential of Integration, Inclusion and Localisation"

ISAP 2023
International Forum for Sustainable Asia and the Pacific

Mainstreaming CES in the Post-2030 Agenda for Enhancing Integrated Actions on Climate and Sustainability Goals: Towards Bridging Local-to-Global Feedback Loops

Circulating & Ecological Sphere Experiences in Nagpur Metropolitan Region, India

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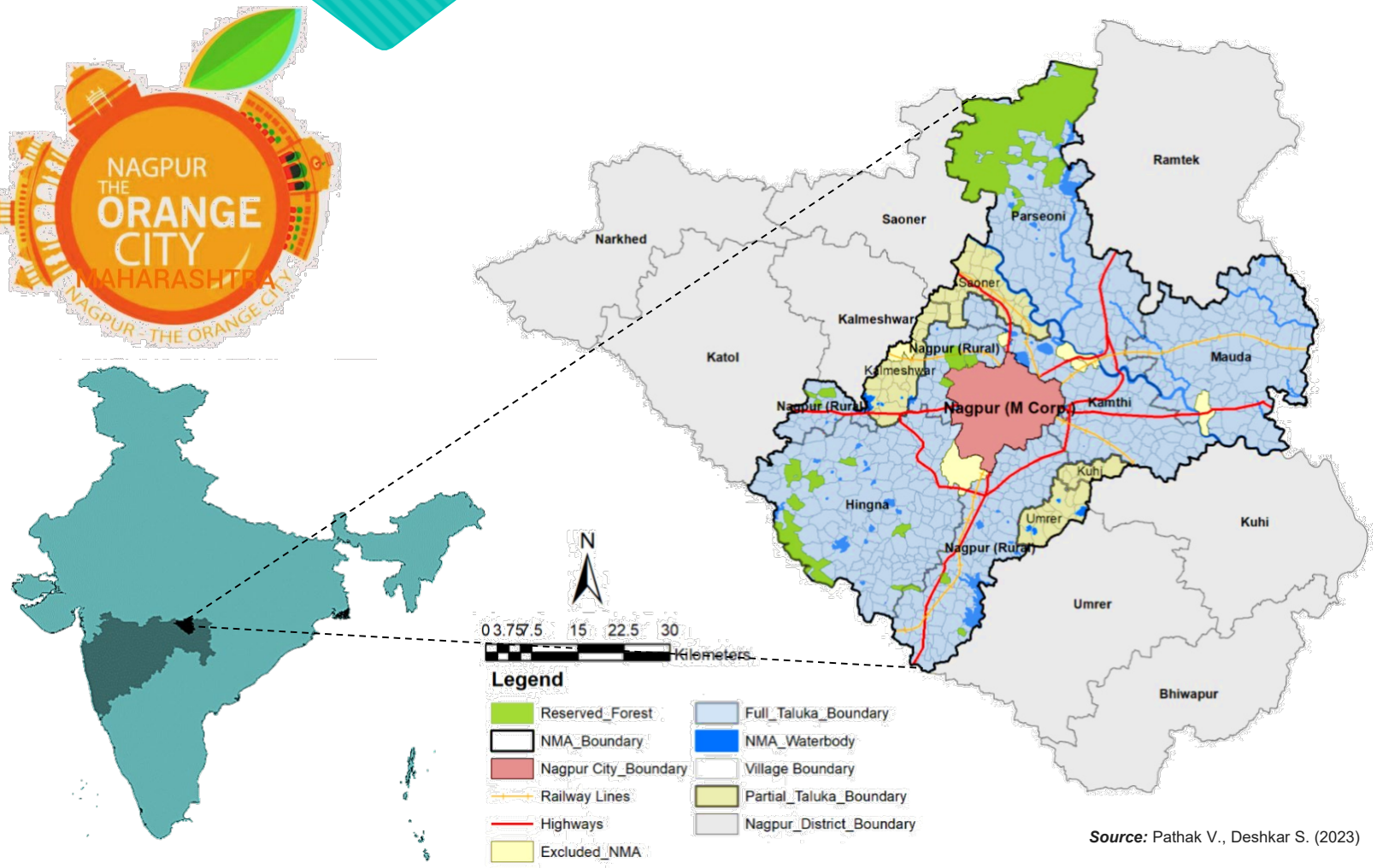
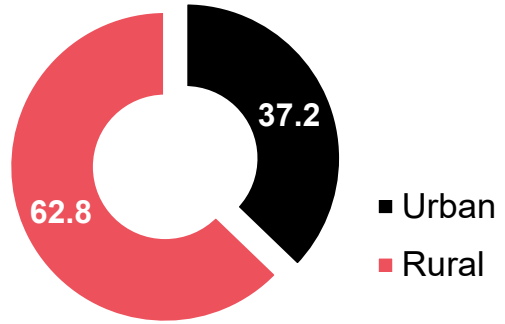
About Nagpur Metropolitan Region (NMR)



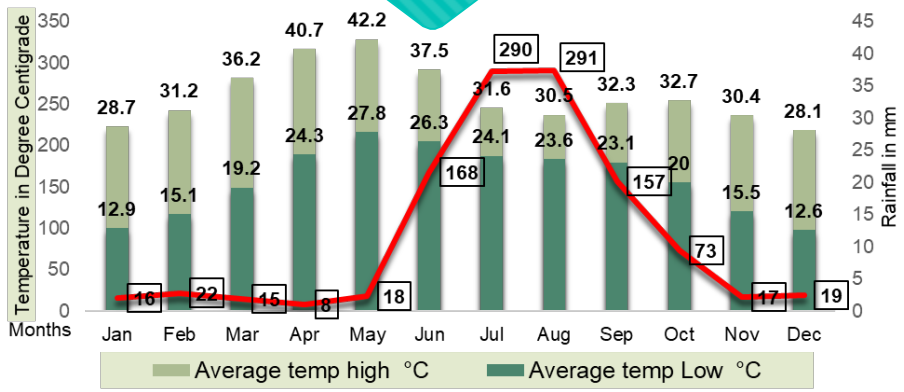
Source: Pathak V., Deshkar S. (2023)



Rural-urban distribution in percent for the Nagpur Metropolitan Area

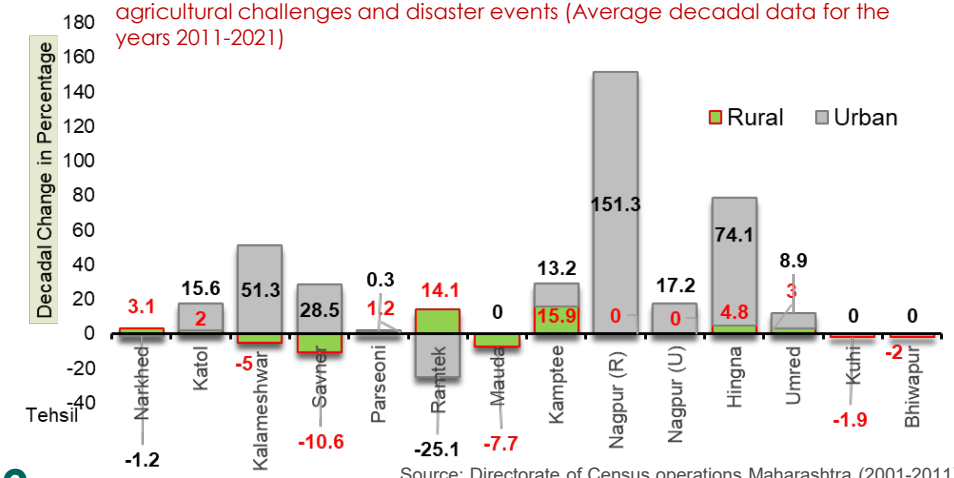
- NMR comprises **721 villages** and is spread across **3,567 square kilometers**.
- Nagpur City as one of the **Smart cities** under Smart City Mission 2016
- Economic boom due to the development of the Multi-Modal International Cargo Hub **(MIHAN)**
- Prominent power sector; two major thermal power plants **Koradi & Khaparkheda.**

Changing Climatic and Demographic conditions and emerging concerns



Source: https://nagpur.gov.in/geography-climate/

Rising temperatures and asymmetric rainfall distribution resulting in agricultural challenges and disaster events (Average decadal data for the years 2011-2021)

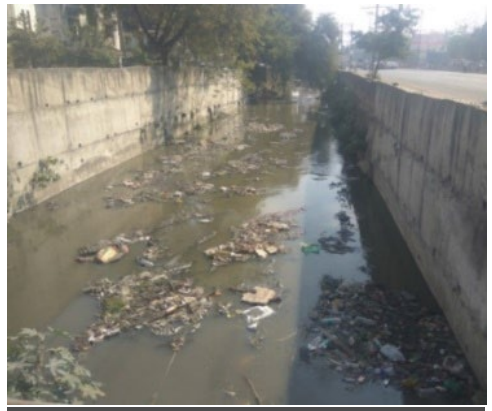


Source: Directorate of Census operations Maharashtra (2001-2011)

Population decline in rural areas and pertinent rise in urban resulting in a high demand for water and energy resources (Decadal data 2001-2011)

Water loss due to ageing infrastructure

Land use change, loss of productive agricultural lands



The residual untreated waste polluting the river

Rising demand from various sectors (Industry, Power, Agro)

Water stress due to surface water loss and groundwater exploitation

Lack of awareness about conservation practices

Current Policy Priorities/Programs in the Nagpur Division

Towards decarbonization, smart development

माझी वसुधरा

Thematic Areas

Bhumi (Earth)

Vayu (Air)

Jal (Water)

Agni (Fire)

Akash (Ether)

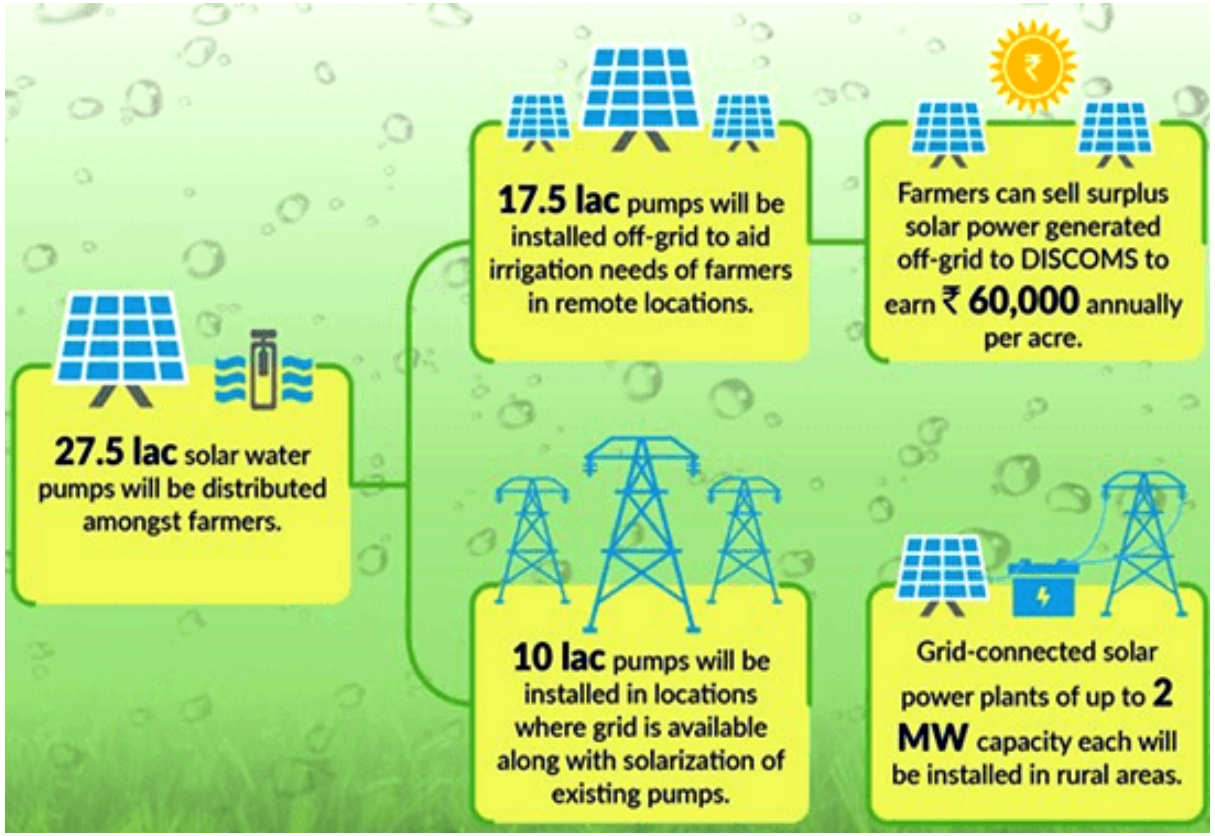
Majhi Vasundhara Abhiyan

A unique, integrated first ever exercise by the **'Environment and Climate Change Department'**, Government of Maharashtra for urban and rural areas - to identify and implement focused and scalable measures towards preservation and restoration of natural ecosystems and to encourage active citizen participation in different Climate Action initiatives.

Objectives

- To encourage active citizen participation in different climate change mitigation initiatives in a timely and innovative manner.
- To identify dynamic and incremental/scalable measures towards a sustainable environment through replication

PM-KUSUM Yojana



About

The PM-KUSUM scheme is aimed at ensuring energy security for farmers in India, along with honoring India's commitment to increase the share of installed capacity of electric power from non-fossil-fuel sources to 40% by 2030 as part of Intended Nationally Determined Contributions (INDCs).

Components

The Scheme consists of three components:

- **Component A**: 10,000 MW of solar capacity through the installation of small Solar Power Plants of individual plants of up to 2 MW capacity.
- **Component B**: Installation of 20 lakh standalone solar-powered agriculture pumps.
- **Component C:** Solarisation of 15 Lakh Grid-connected Agriculture Pumps.

Mukhyamantri Saur Krushi Vahini Yojana

About

Intended to increase the use of solar energy in agricultural activities so that farmers do not have to depend on anyone for electricity and also to protect the environment, the Maharashtra State Vidyut Vitratan Co Ltd has launched the Mukhyamantri Solar Krishi Vahini Yojana.

Objectives

To provide cheap electricity to those farmers who can not meet the cost of electricity. Electricity is available at low cost so that the entire farming community can use the electricity. It was proposed to install solar panels to generate solar energy in various areas of the state. Through this scheme, all the farmer communities will be supplied electricity to their homes.

Mission 2025

Objective

Daytime electricity supply to agriculture

Target

7,000 MW decentralised solar capacity,
30% agriculture feeders in each district to be solarised

Govt of Maharashtra support

Financial

Substation improvement	₹25 lakhs/ sub-station	~₹350 Crore
Timely commissioning incentive	₹0.15-0.25/kWh for 3 years	~₹700 Crore
Social benefit grant to Gram Panchayats	₹5 lakhs/year for 3 years	~₹210 Crore
Revolving fund for solar generator's payment security		~₹700 Crore
5 year budgetary requirement from Green Cess Fund		**~₹1960 Crore**

Ecosystem development

- Remunerative land leasing rate (Rs 1.25 lakhs/ha with 3% p.a. growth) for farmers
- Building public support - Outreach and Communications
- Robust Monitoring and Review Framework
- Mission Dashboard
- Single Window Clearance
- Flexibility in project size (2-25 MW), connectivity at 11/22/33 kV

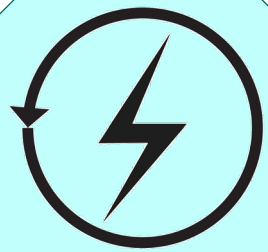
Mission Outcomes

- Reduction in cost of supply to agriculture and cross-subsidy burden on industries
- Investment of ~₹30,000 Crore across various districts in Maharashtra
- Day-time electricity supply to farmers and agriculture
- Over 10,000 direct rural jobs and development of solar ecosystem and skills
- Contributes to national and state solar targets, CO_2 emissions saving

Priority Areas and Initiatives Towards Urban-Rural Equitable Development

Ensuring adequate water that is safe and safe to consume

Finance and Job creation



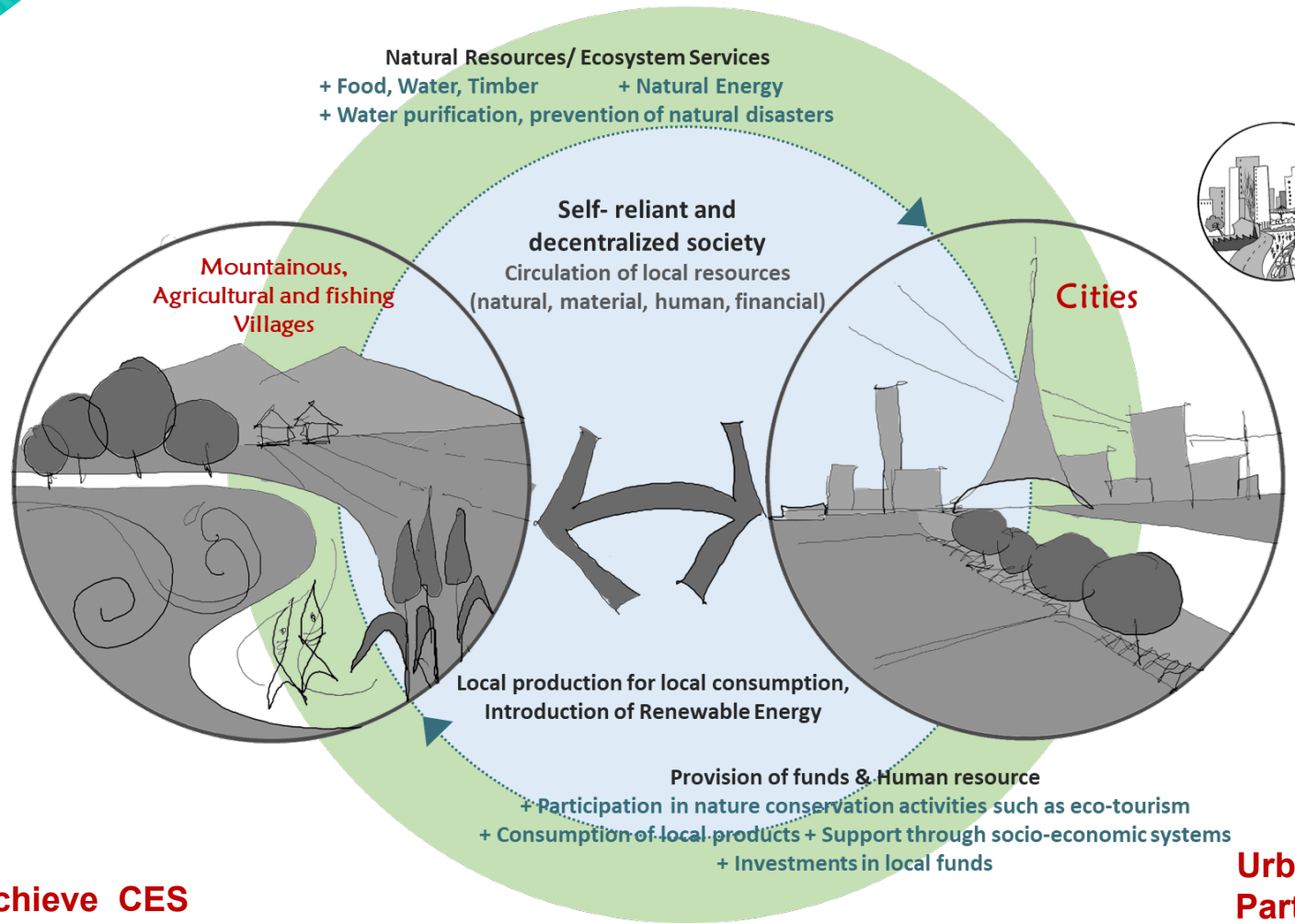
Ensuring an uninterrupted supply of clean energy

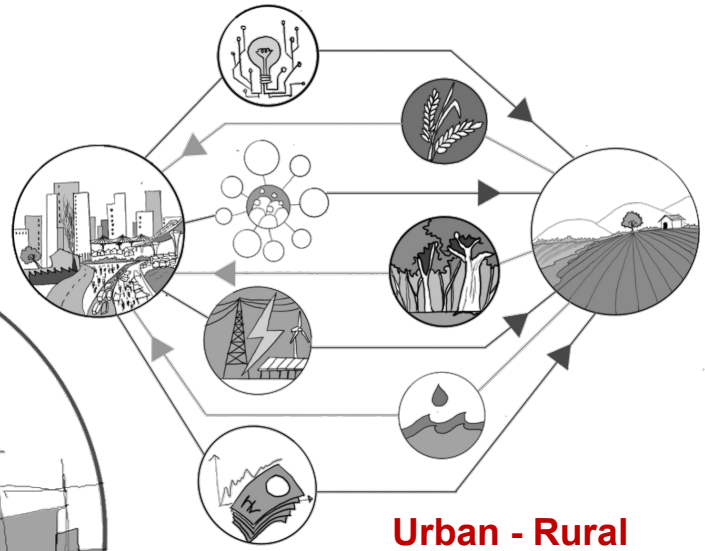
Environmental sustainability and social inclusion/ gender equality

'CES' as a Potential Approach

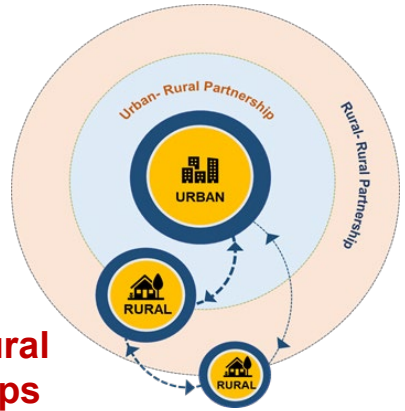
Rural-Urban Partnerships for benefit-sharing

- Policy coordination
- Technological Interventions
- Stakeholder Engagement
- Rural-Urban Partnerships
- Community Awareness





Urban - Rural Linkages

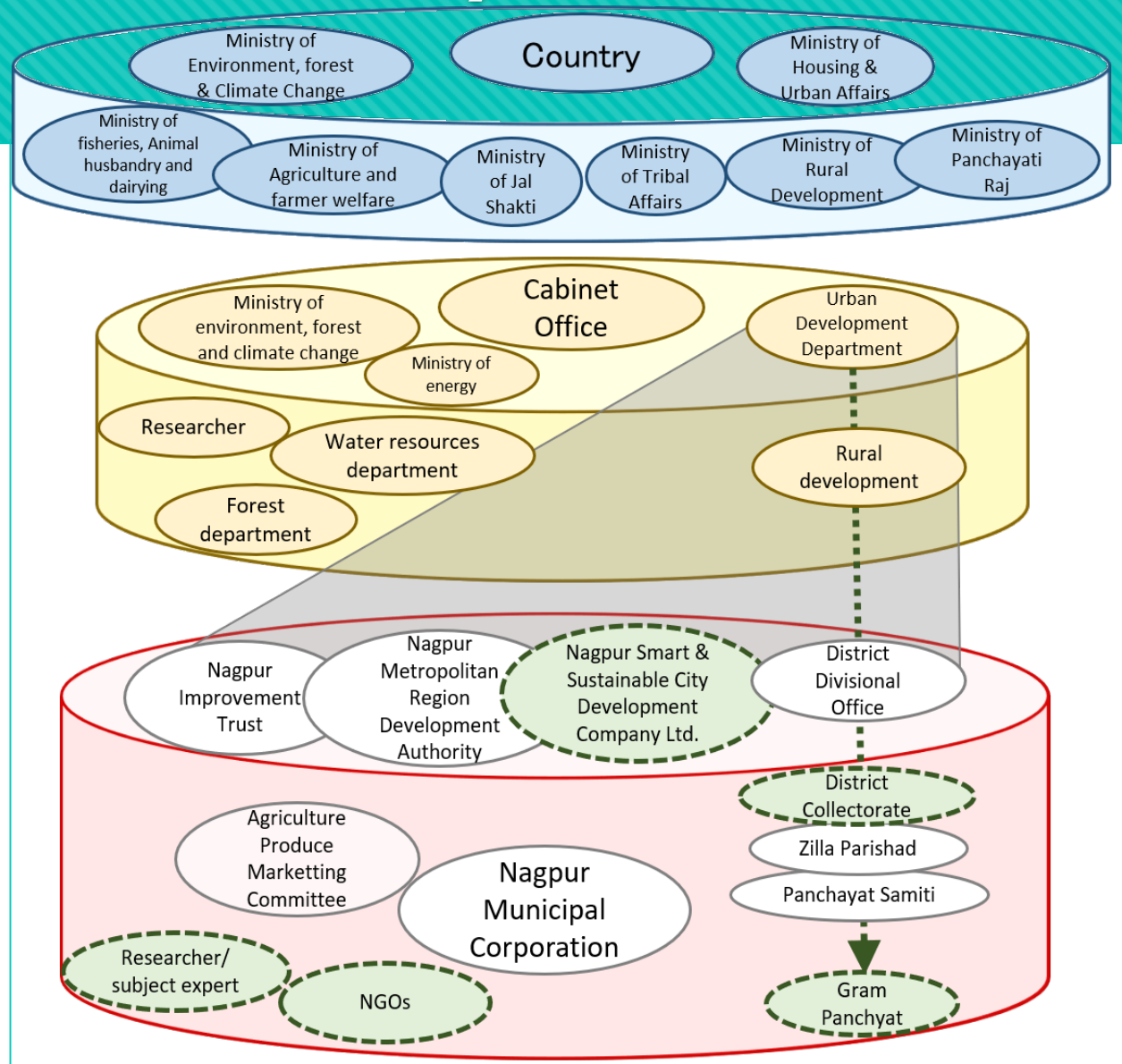


Urban - Rural Partnerships

Key Entry Points To Achieve CES

Existing Administrative Hierarchy for Enabling CES

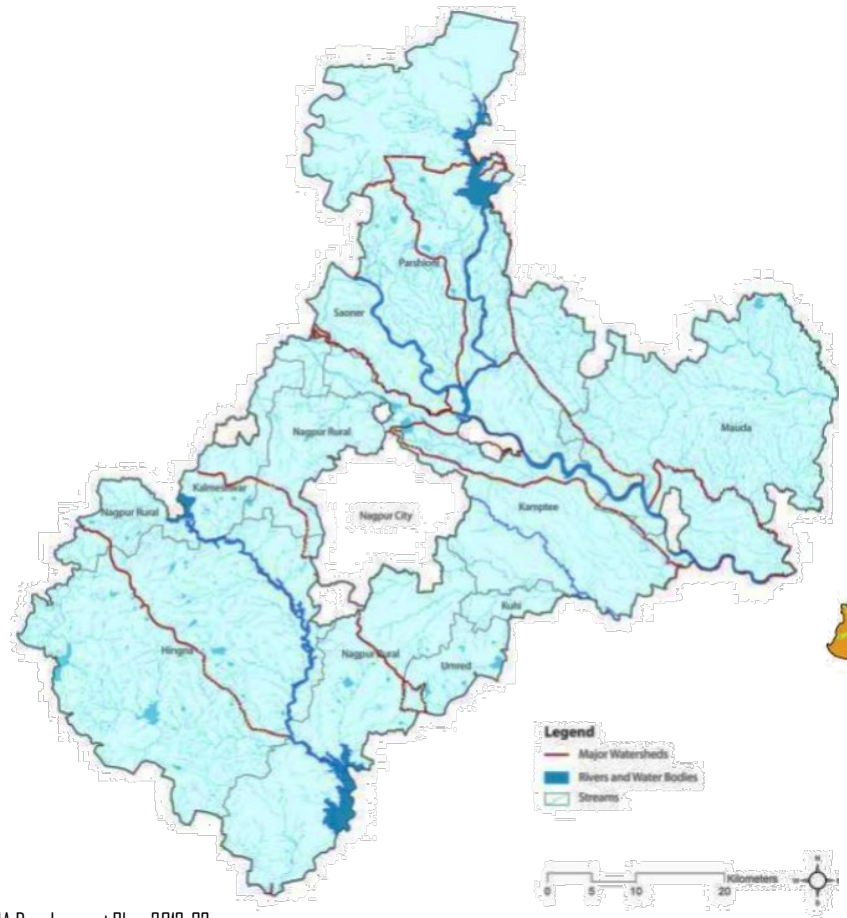
- District Collector office *(city administrative)*
- Nagpur Municipal Corporation (NMC) *(city administrative)*
- Nagpur Improvement trust (NIT) *(city administrative)*
- Nagpur Metropolitan Region Development Authority (NMRDA) *(city administrative)*
- Nagpur Smart and Sustainable City Development Corporation Limited (NSSCDCL) *(city administrative)*
- Gram Panchayat *(rural administrative)*
- Subject experts
- Social workers *(Working in rural and urban sectors)*



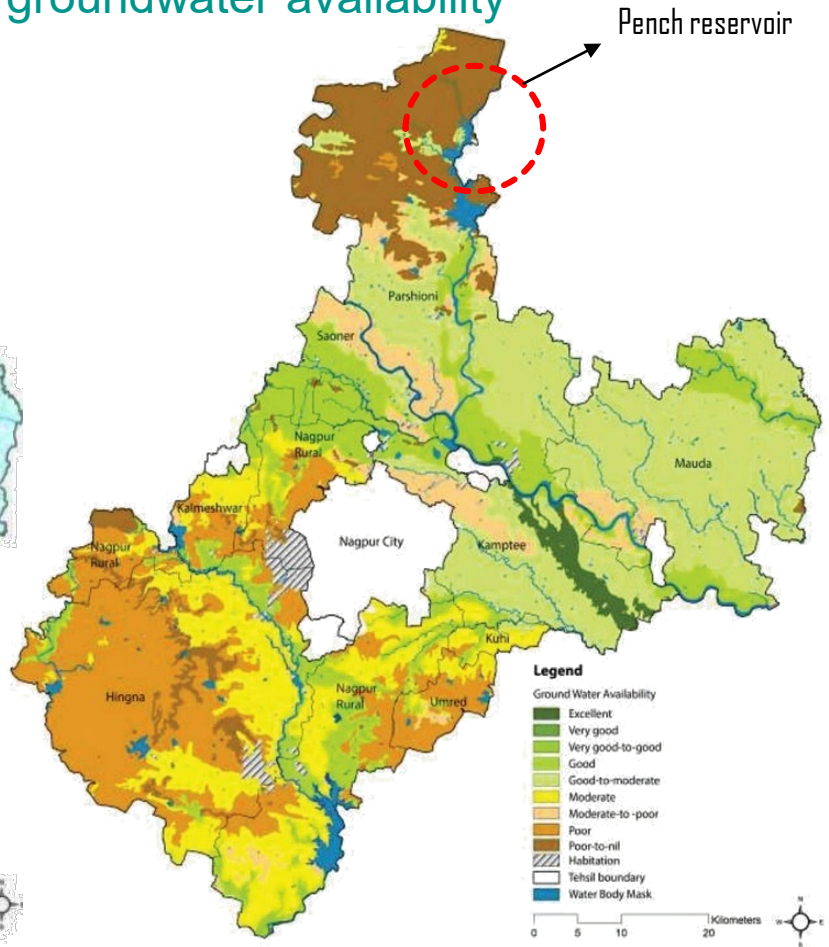
'Water' as Crucial Linkage

Considering water as a crucial linkage between urban and rural areas, the CES initiative in the Nagpur Metropolitan Region highlighted the conflicts over the sharing of this valuable resource between urban and rural entities and explored opportunities for collaborative management through various entry points.

High spatial variation in groundwater availability



Drainage Pattern



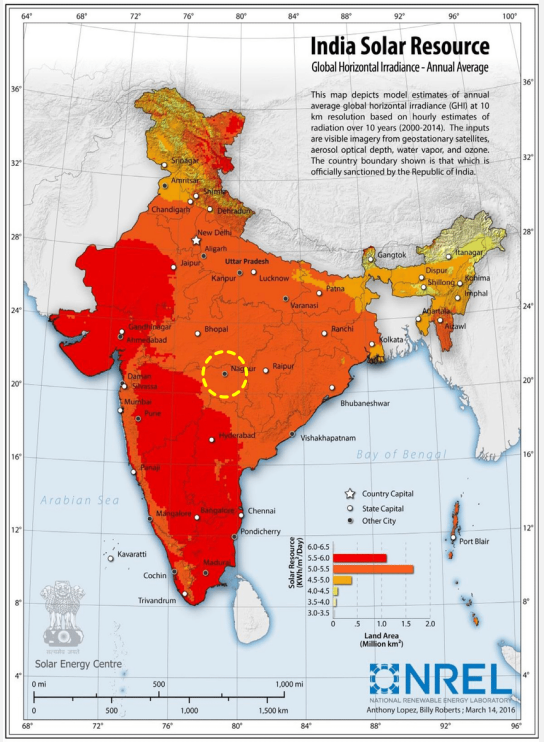
Groundwater Availability

Source: NMA Development Plan: 2012-32 (NIT 2015)

Agri-Voltaics as a Decarbonization Initiative:

Existing policy provisions to be leveraged

Representative image(s)



- Nagpur shows tremendous potential for harvesting solar energy.
- People are willing, yet some challenges need to be addressed at the local scale for effective implementation and sustainable partnerships

Bye-laws

- **Benefits to urban dwellers of solar installation.**

Area covered under solar panels shall not be counted in FSI and the solar panels not exceeding 1.8 m. in height shall not be included in the computation of the height of the building

- **Mandatory renewable energy provisions** for large townships and tourism infrastructures.

The UDCPR bye-laws encourage installation of solar rooftop photovoltaic panels at the building levels and at the same time, makes it mandatory for the **tourism infrastructure as well as the SMART townships** to invest in the renewable energy.

However, there is no elaboration regarding the direct investment. The possibility of **partnership with rural areas for share and generation of energy** for new as well as could be explored.

Land-use:

- Provision for land in rural areas under Component A of **PM-KUSUM** (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan) Scheme[18]
- **Land Availability** (Unconventional Energy Generation Policy 2020)[19]

Three types of land will be available for Non-conventional energy projects, funded through mixed mechanisms:

1. **Various Institutions** of State Government, Companies, Corporations, Public Undertakings, Administrative Departments, Civil and Local Self Government Institutions, Universities, etc. Lands owned by (excluding and owned and/or in possession of the Revenue Department) and leased by the Revenue Department.
2. Land owned and occupied by **Revenue Department**.
3. Lands owned or in possession of the **private Central Government,** Central Institutions / Corporations / Public Undertakings, Ordnance Factories, Defense, etc.

Incentives:

The government shall provide up to 10% rebate on property tax as well as 40% subsidy on the installation of residential solar rooftop panels in the city.

The **subsidies** for the installation of solar energy projects have been made available only for solar rooftop photovoltaic projects (particularly in the urban residential sector) and **no specific guidelines regarding agro voltaics have been mentioned so far.**

This demands a thorough discussion between the different **stakeholders for the financial mechanisms** to encourage the installation capacity of rural areas as well as the probable partnerships arising out of it.

Co-Design and Co-Development Approach

Outreach and Impact


CityLine

Nagpur City, Metro Region script urban-rural partnership at VNIT


TOI OPEN APP

CITY

Bridge urban-rural gap for sustainable development: Experts

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- Closely working with knowledge institutions and project partners to determine locally relevant and feasible solutions for addressing the integrated concerns.
- Building partnerships and collaborations to bring together governing authorities, urban-rural community members, and various stakeholders, including private partners.

Multi-stakeholder consultation workshop at VNIT, Nagpur

***Community Consultation in Kadoli and Palsad villages**, Nagpur district*

Decision theatre workshop in VNIT, Nagpur

Round Table Meeting with local stakeholders in VNIT, Nagpur

Focused Group Discussion at Nayakund village, Nagpur district

Thank You

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