Second International Forum (9-10 March 2022) Organized by IGES Japan

ZERO CARBON CITY

PRESENTED BY:

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DEPARTMENT OF ARCHITECTURE AND PLANNING

Organized by :

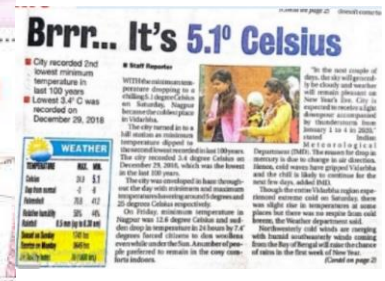
環境省
Ministry of the Environment

IGES
Institute for Global Environmental Strategies

01 Actions taken by local governments to strengthen their adaptive capacity against climate change impacts

- Seven out of the top 10 **most affected hotspot districts** in India belong to the **Vidarbha region** of Maharashtra.
- **Nagpur** is one of the **hotspots in India**.
- **Nagpur** is **vulnerable to changes** in average weather

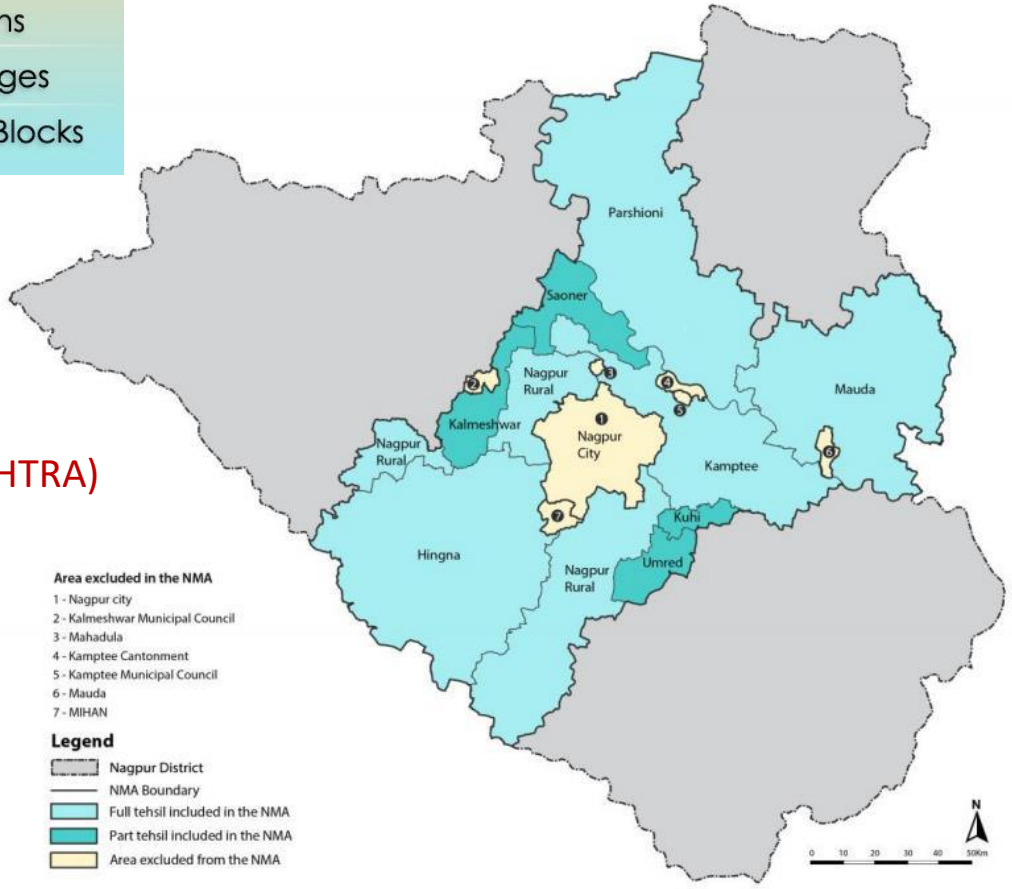

The Hitavada
Flashback 2019
NMC swings between extreme water cuts and floods


Brrr.. It's 5.1° Celsius

14	Sub-Districts
41	Towns
1617	Villages
13	CD Blocks

NAGPUR METROPOLITAN AREA (MAHARASHTRA)

- Nagpur district consist of Nagpur Metropolitan Area
- Comprises of 9 Tehsils



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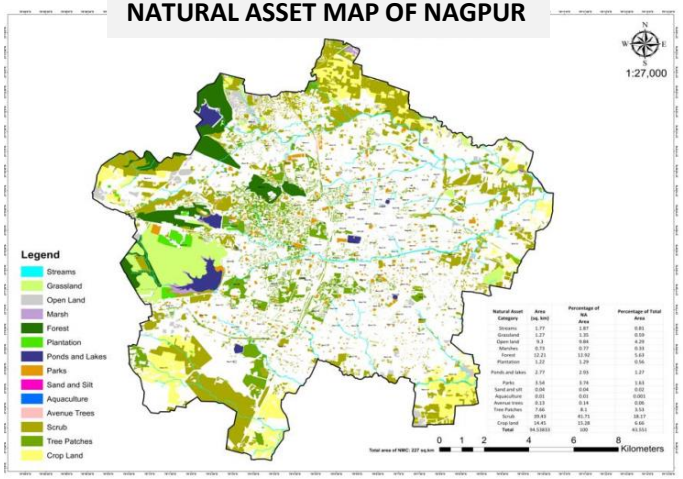
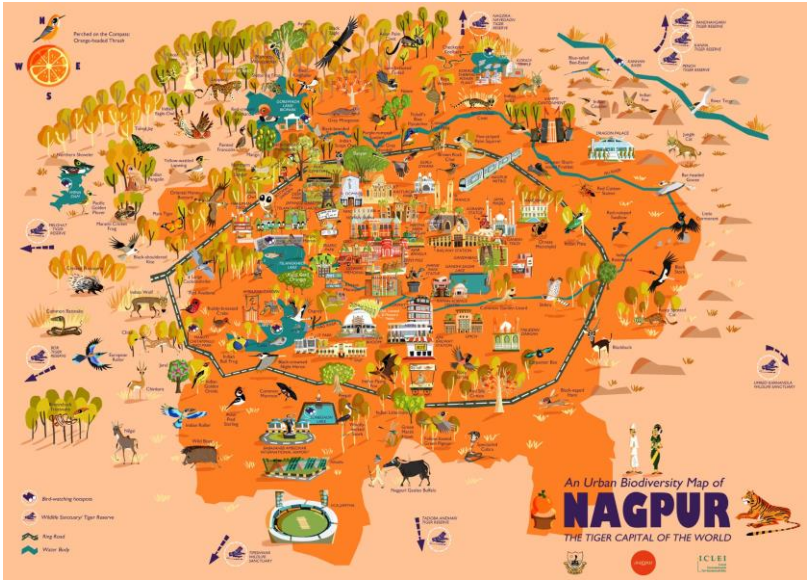
URBAN PARKS AND GARDENS IN NAGPUR

AUTHORITY	NO. OF PARKS / GARDENS	AREA (ACRES)
NMC	131	155
NIT	53	110
FOREST DEPARTMENT	1	50
DR. ANJABRAO DESHMUKH KRISHI VIDYAEETH	3	75
TOTAL	188	390

NATURAL ASSET MAP OF NAGPUR



GREEN COVER AND BIODIVERSITY



TREE CENSUS

2011: 2143838
2022: 2500000 (Projected)
Heritage Tree Age of Tree, UID & 31 other attributes (amendment 2021 in Tree act)

GREEN SPACE DEVELOPMENT

Amrut Gardens Created of Rs 4.47 Cr. : 07 nos.
Theme Base Garden of Rs. 7.00 Cr. :05 nos.

GREEN BUFFER

25km Green Buffer present on Road Divider
41km Green Buffer preparation on Road Divider is in progress

BIODIVERSITY

Prepared the Local Public Biodiversity Registered (Submitted to State Biodiversity Board)

TREE PLANTATION

In 2021 NMC planted 8008 Trees, Covering 62000 sqm with a Survival rate of 83%

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PROPOSED E-BUSES FLEET

NMT INITIATIVE

- Total **13 km cycle track** developed.
- **Public Bike sharing (PBS) started** at all Metro stations
- **Tri-party MoU** to be signed between NMC, Metro and Agencies **for PBS**

CHARGING INFRASTRUCTURE

PLANNING BY NMC

BY OTHER ENTITY

LOCATION		CATEGORY	Area (Ha)
East Zone	Watoda	Mother Charging Station	4.5
	Lakadganj (In Operation)	Opportunity Charging	0.36
West Zone	Wadi Naka	Opportunity Charging	1.13
North Zone	Koradi	Opportunity Charging	1.78
South Zone	Khapri	Opportunity Charging	3.54
Centre Zone	Morbhavan	Opportunity Charging	2.33
	Zero Mile	Opportunity Charging	0.41
Suresh Bhatt Sabhagruha	Reshim Bagh 50 KW	Solar Powered EV Charging Station	0.15

LOCATION		CATEGORY	No.
Maha Metro	Selected Metro Station	Opportunity Charging	25
Nagpur Smart City	Charging Station	Opportunity Charging	13

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LED STREET LIGHTS IN THE MISSION PERIOD

BEFORE 2017	
Total Conventional Street Lights	129040 Nos.
Actual Load	17.36 MW
Actual Consumption in Lacs	556 Units
IN 2022	
Total No. of Street Lights	152569 Nos.
Actual Load	8.23 MW
Energy Saving	52%
Conventional Street Lights Left for Conversion	835 Nos.

ENERGY CONSERVATION PROJECT

- Total conventional Sodium Vapor lamps by **LED**
- Total 1. 45 Lakh **Street lights replaced** from 2017
- **Total energy savings to the tune of 52%** as compared to energy consumption in 2017, despite the hike in tariff.
- **Budgetary provision** is being made to provide **street lights in non eliminated area** in the city.

ENERGY AUDIT OF PUBLIC BUILDINGS & ENERGY SAVING EFFORTS BY NMC

- In 2018-2019, **replaced of all conventional** in NMC buildings **by energy efficient LED Lights**.
- Also **replaced all celling fans** of 80 Watt plus **by energy efficient celling fan** of 50 Watt.
- Energy saving potential **Rs. 92 Lakhs** and Total expenditure Rs. 250 Lakhs.
- It is encouraged by NMC to state government & private buildings to **adopt energy efficiency majors**

SOLAR INSTALLATION ON ROOFTOP OR IN COMPLEXES OF PUBLIC BUILDINGS

- **200 KVA** Roof top Solar plant is installed in 2017 at Late Suresh Bhatt Auditorium this has resulted use of renewable energy.
- **3.5 KVA** Roof top Solar plant is being installed at Hedgewar e-library

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CLIMATE ACTION PLAN PROCESS

GHG Emissions Inventory (completed)	• Sectoral Energy & Fuel Use Mapping for 5 years • Sectoral GHG Emissions estimation using GPC Protocol • Identification of key sectors for potential emission reduction
Climate Risk & Vulnerability Assessment (CRVA) (completed)	• Assessment of Municipal Services • Identification & Mapping of vulnerable population towards climate hazards such as heat waves, low lying areas.
Technical Studies & Pilot Project (Completed)	• Stakeholders Consultations with ULB departments to identify city's needs and high impact climate action interventions • Nagpur- Biodiversity Conservation and Ground Water Augmentation
Climate Action Plan	• Sectoral Mitigation Strategies based on GHG Inventory, CRVA Analysis & City's needs • Adaptation strategies based on CRVA • Advanced climate actions, institutional mechanisms and policy interventions

CLIMATE RESILIENT CITY ACTION PLAN

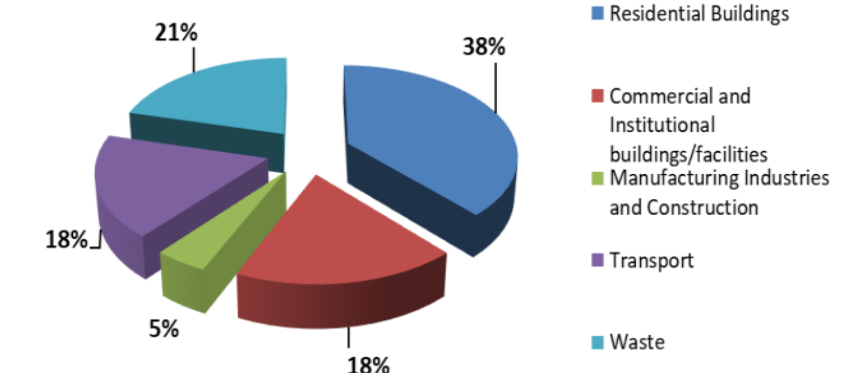
- Following the Climate Resilient Cities methodology - an action planning process tailor made for local governments for the development of a Climate Resilient City Action Plan.
- Includes sectoral mitigation and adaptation strategies based on GHG inventory, Climate risk and vulnerability assessment and City's needs

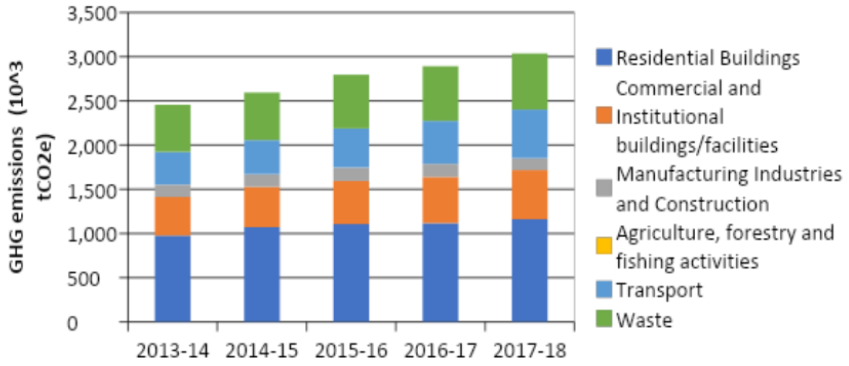
GHG EMISSION INVENTORY (2017-18)

Energy Consumption for Nagpur	7.09 GJ/capita
GHG Emission for	**GHG Emission Per Capita**
Nagpur	1.13 tCO2e
India (Average)	1.96 tCO2e
World (Average)	6.55 tCO2e

***Source:** India Third Biennial Update Report to The United Nations Framework Convention on Climate Change. India & Global emissions including Land Use, Land-Use Change and Forestry

SECTOR-WISE GHG EMISSION INVENTORY (2017-18)





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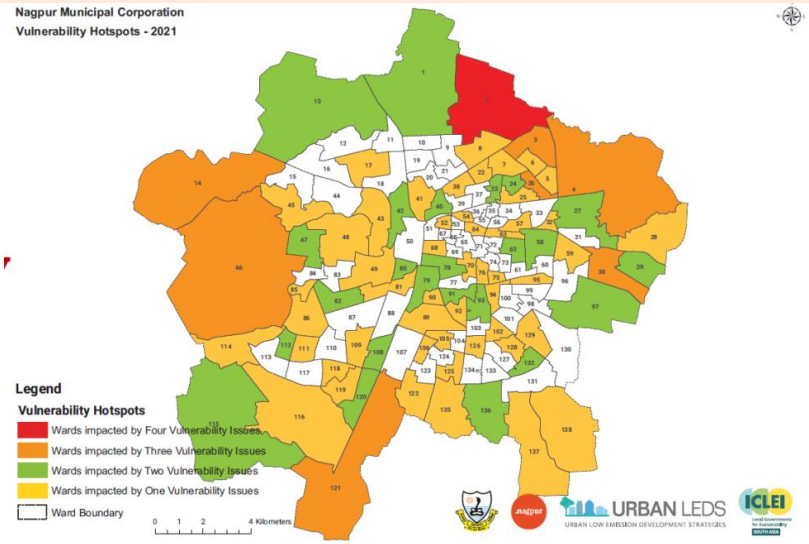
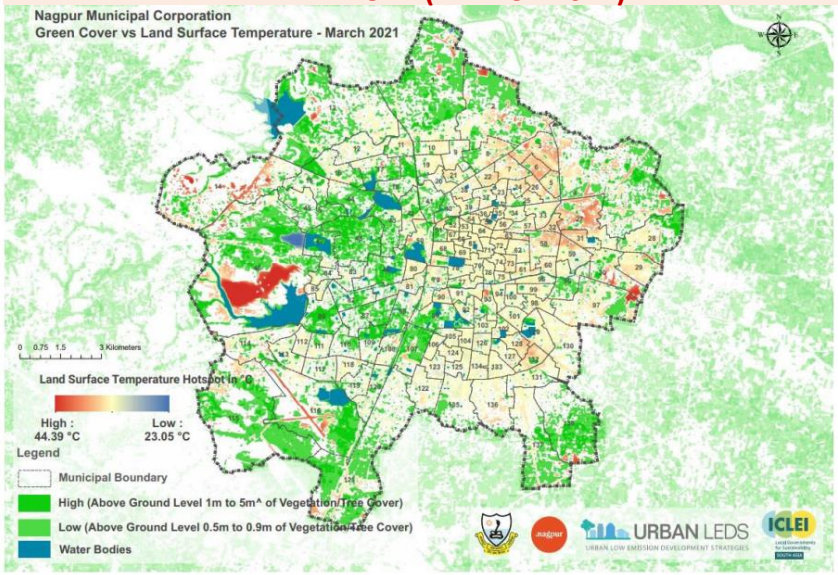
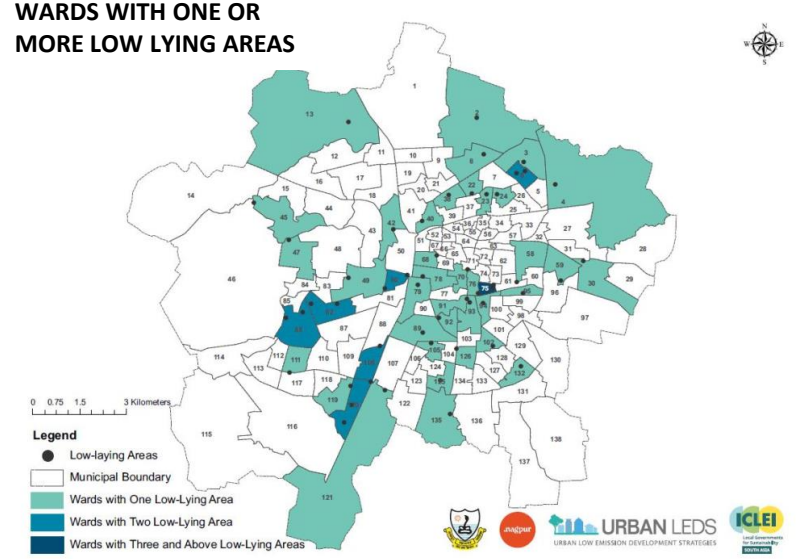
NMC VULNERABILITY HOTSPOTS (2021)



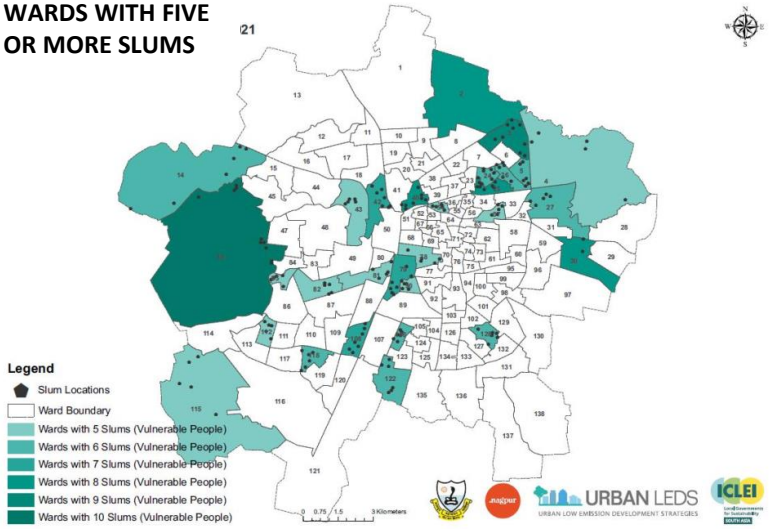
NMC CLIMATE VULNERABILITY GREENCOVER VS SURFACE TEMPERATURE (MARCH 2021)



NMC LOW LYING AFFECTED WARDS (2021)



NMC VULNERABLE PEOPLE-MAJOR SLUMS (2021)



02 What roles local governments can play to achieve the global goal on adaptation?

GLOBAL

UNFCCC

ipcc INTERGOVERNMENTAL PANEL ON climate change

WMO UNEP

13 CLIMATE ACTION

SUSTAINABLE DEVELOPMENT GOALS

PARIS2015 UN CLIMATE CHANGE CONFERENCE COP21·CMP11

NATIONAL

The Government of India launched National Action Plan on Climate Change (NAPCC) on 30th June, 2008 outlining eight National Missions on climate change.

National Mission on Sustainable Habitat	National Solar Mission	National Mission for Sustaining the Himalayan Eco-system	National Mission for Sustainable Agriculture
National Water Mission	National Mission for Enhanced Energy Efficiency	National Mission for a Green India	National Mission on Strategic Knowledge for Climate Change

STATE

Government of Maharashtra

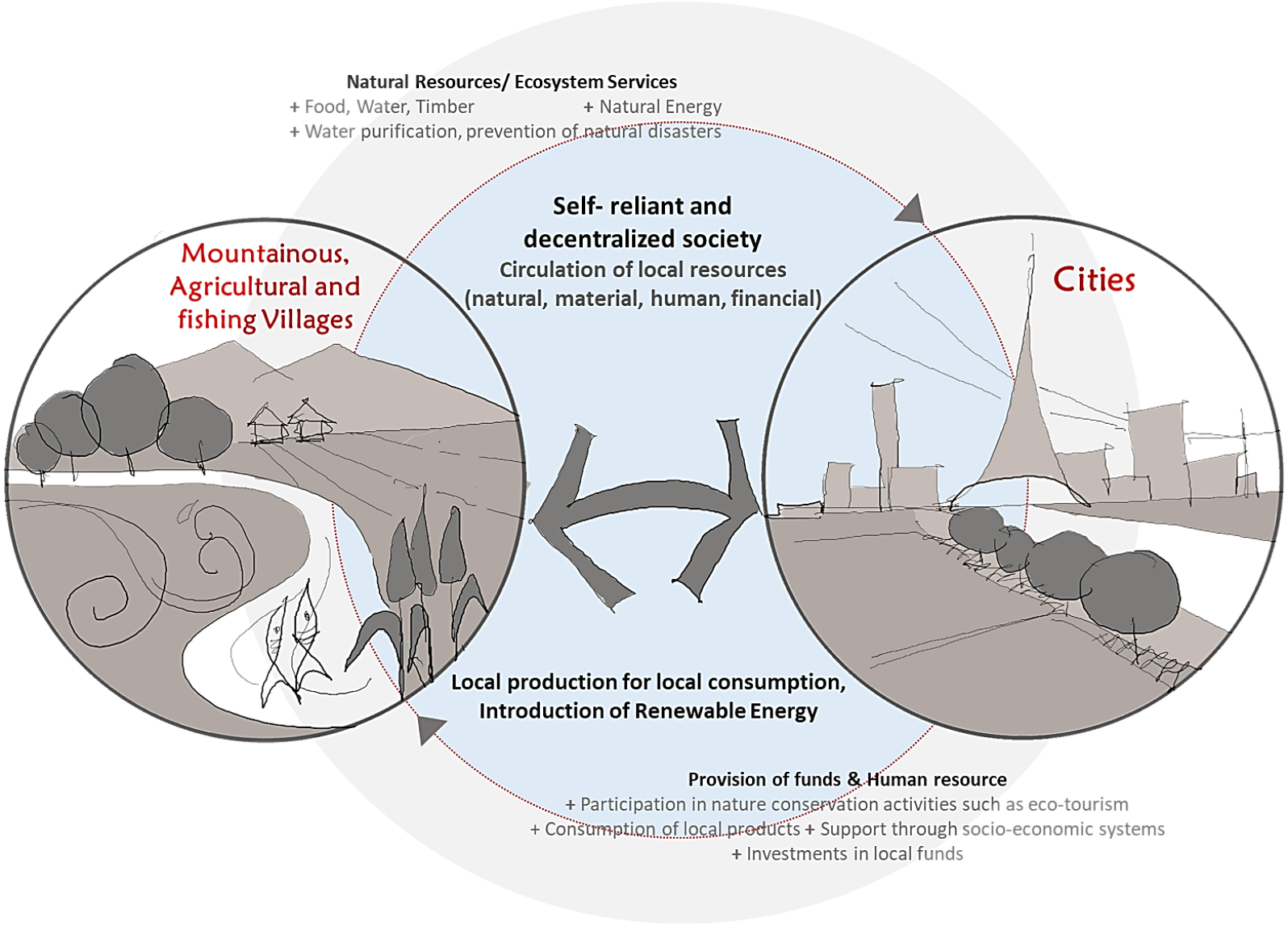
Council for Climate Change

↓

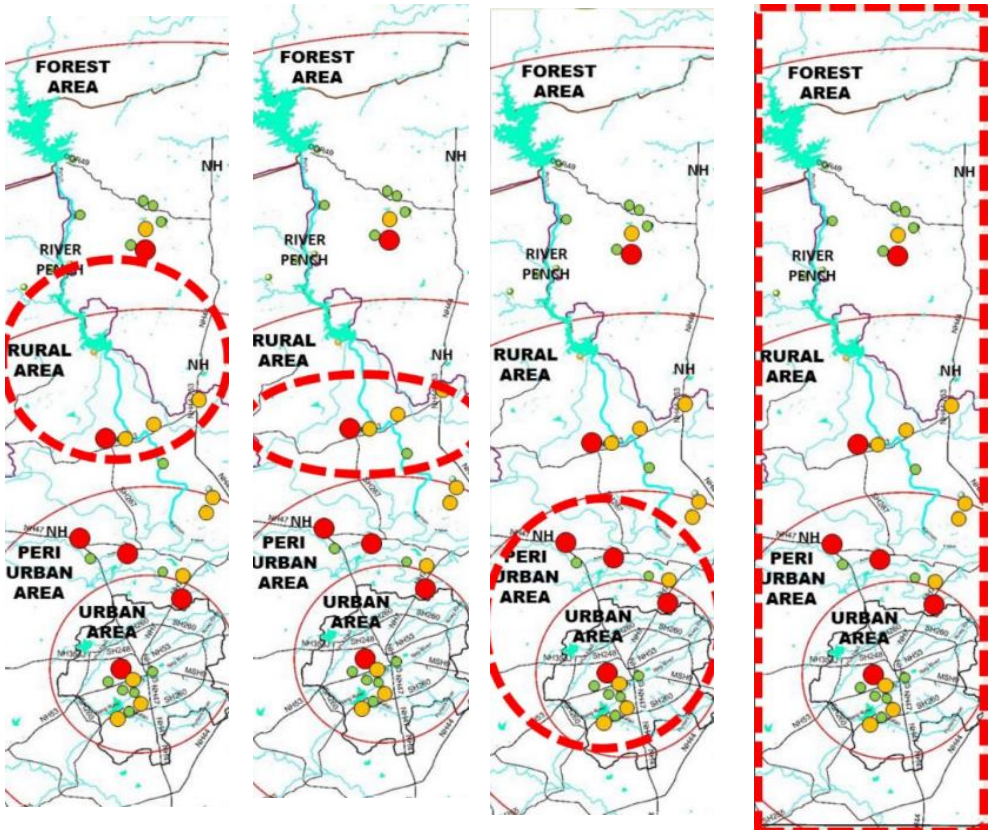
State Action Plan on Climate Change (SAPCC)

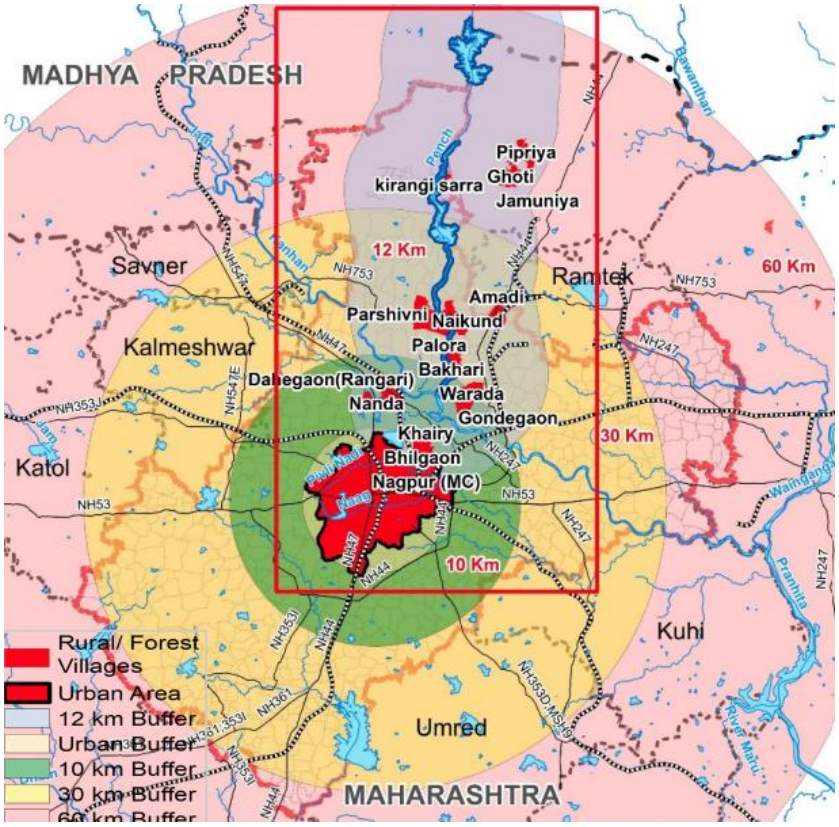
माझी वसुंधरा

02 What roles local governments can play to achieve the global goal on adaptation?



03 What collaboration are necessary to strengthen local actions on climate adaptation?





FOREST-RURAL	RURAL-RURAL	PERIURBAN-URBAN	FOREST-RURAL-PERIURBAN-URBAN	LEVELS
FOREST DEPT. /COMMUNITY	CORPORATE SECTOR/ COMMUNITY	CORPORATE SECTOR /MJP/NGOs/CBO/NMC/ULB/VP	MJP/NGOs/CBO/NMC /ULB/VP/INSTITUTIONS /URBAN-RESIDENTS	STAKEHOLDERS

04 What are challenges to strengthen adaptation policies and actions at local level?

THANKYOU