SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

With support from

Ministry of the Interior and Safety

Incheon Metropolitan City

Residential Workshop on Urban Resilience and Making Cities Resilient 2030 (MCR 2030)

5th – 8th December 2022
SAARC Disaster Management Centre (IU)
Gandhinagar, Gujarat, India

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

INDIA

A. P JACOB MANOHAR,TCPO,Govt of India,Delhi

State of Urbanisation

1. Rate of urbanisation
2. Demographic details
3. Status of facilities and infrastructure
4. Status of welfare & development schemes

URBAN AREA IN INDIA

- URBAN AREA OF INDIA

  : 77.37 LAKH HA (2001)

  : 2.52%

- URBAN POPULATION OF INDIA

  : 377.10 MN. (2011)

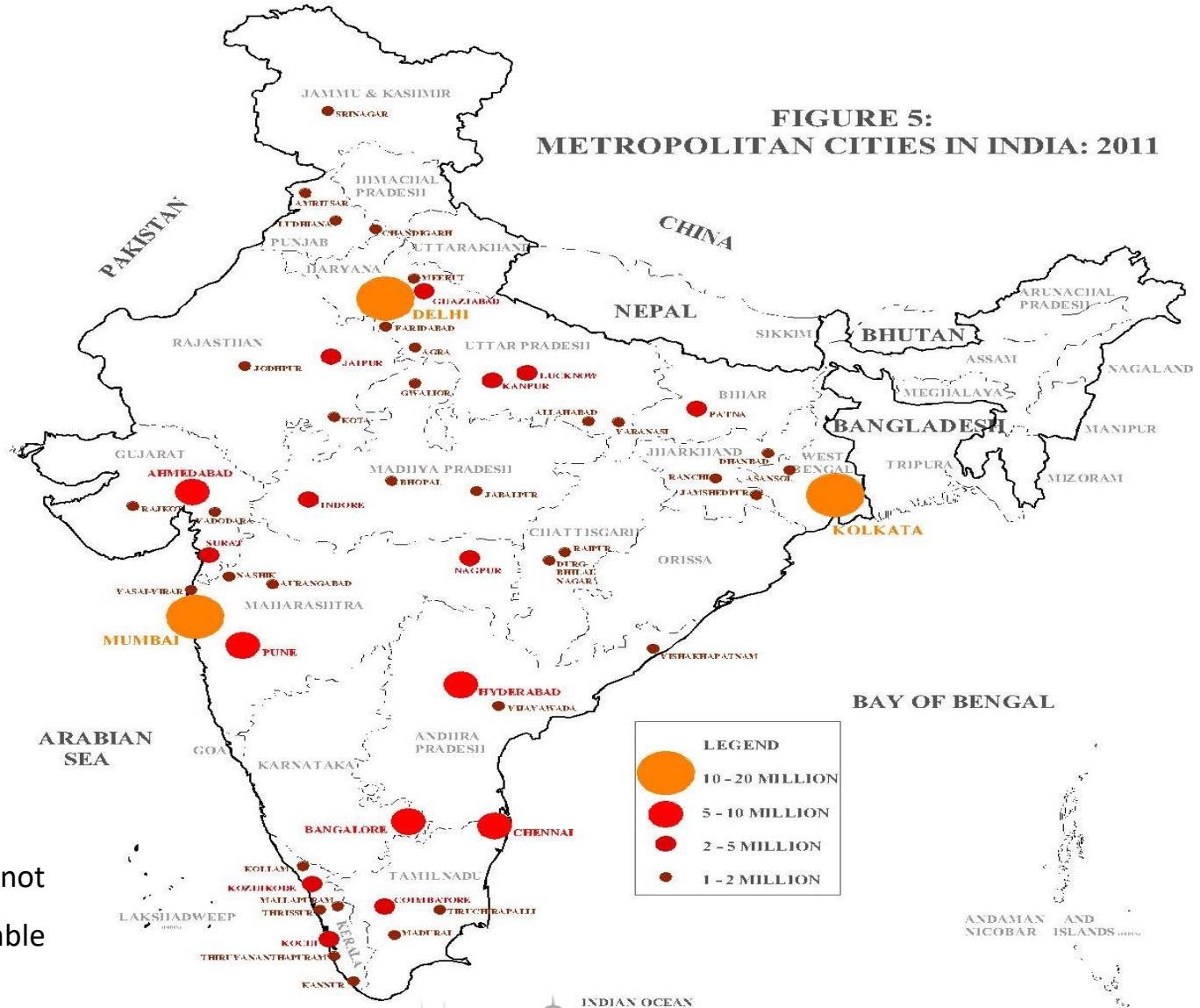
  : 31%

- PER CITIZEN URBAN LAND

  : 0.02 HA(2011)*

  : 0.03 HA(2001)

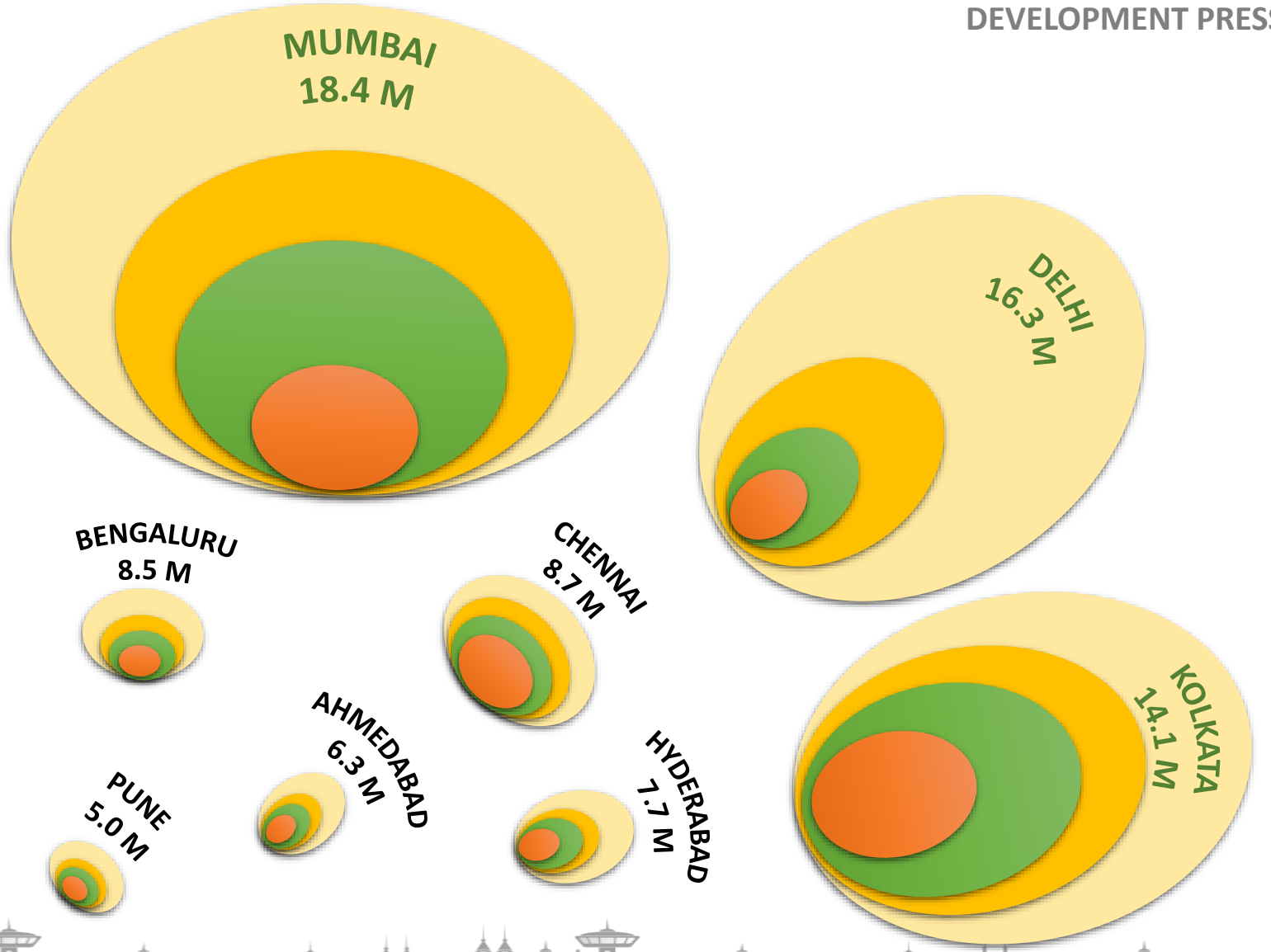
*Considering the 2001 urban area since 2011 figures not available

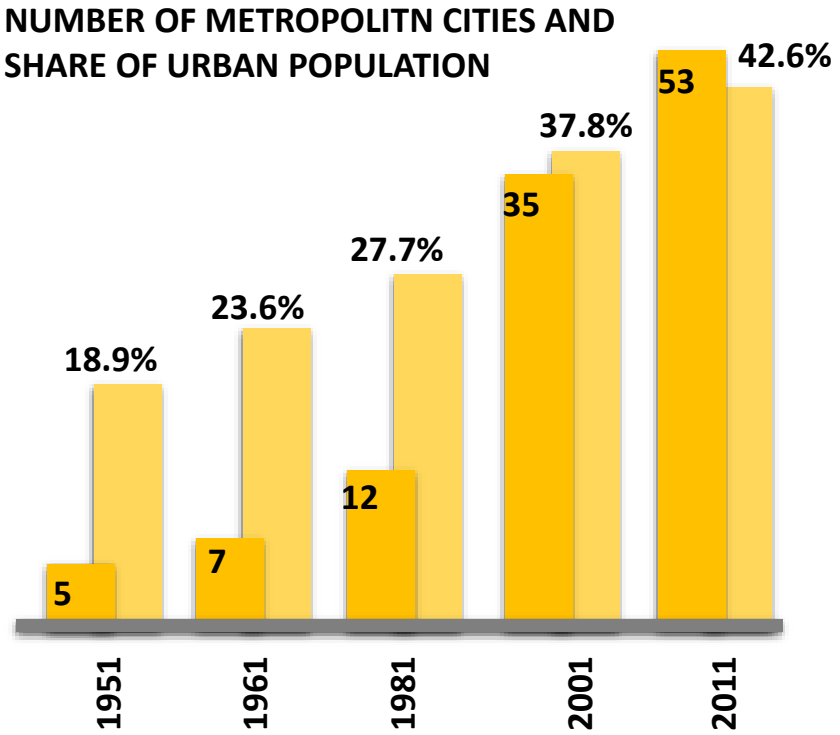


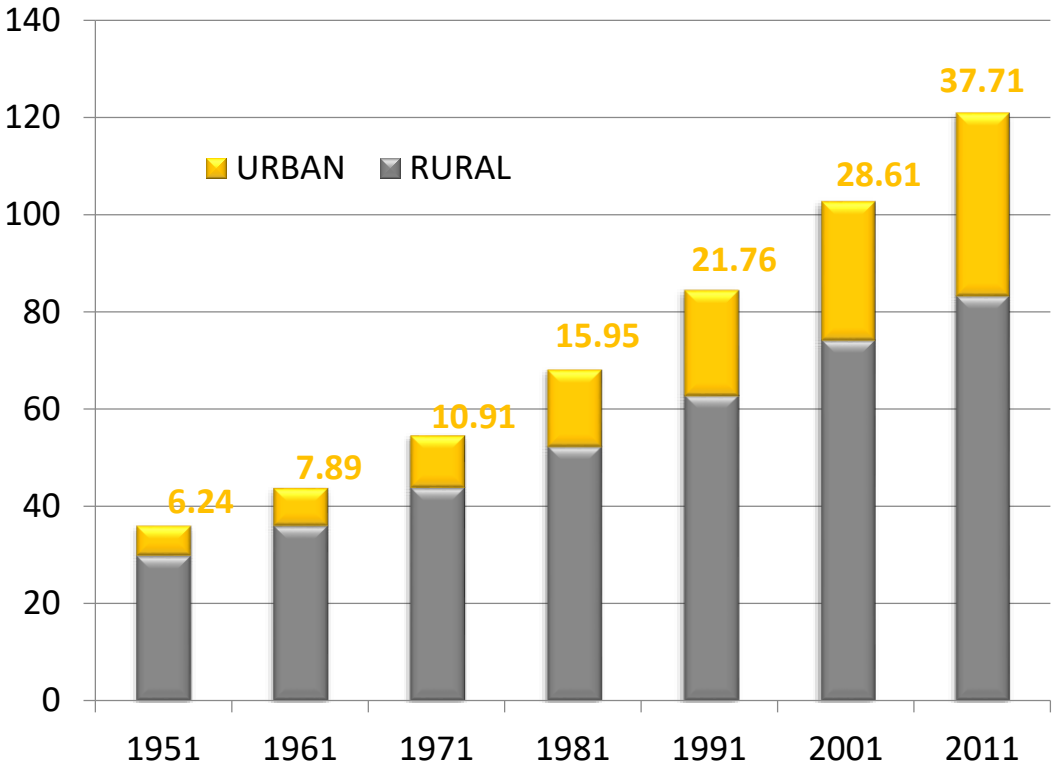
DEVELOPMENT PRESSURE IS CONCENTRATED IN METROS

EVIDENT FROM INCREASE IN

- NUMBER OF METROPOLITAN CITIES
- SHARE OF URBAN POPULATION







RAPID PACE OF URBANISATION POSES AN UNPRECEDENTED MANAGERIAL AND POLICY CHALLENGE

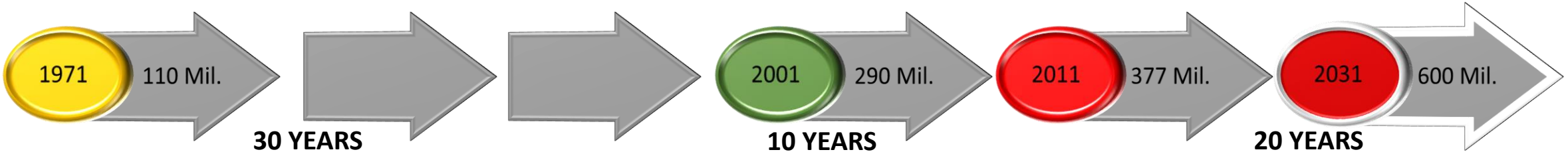
- POPULATION OF INDIA : 1210.2 MN.
- LEVEL OF URBANISATION : 31%*
- URBAN POPULATION : 377.10 MN.
- INCREASE IN URBAN POPULATION : 15X

  25 MN.(1901) TO 377.10 MN. (2011)
- INCREASE IN NO. OF URBAN SETTLEMENTS : 4X

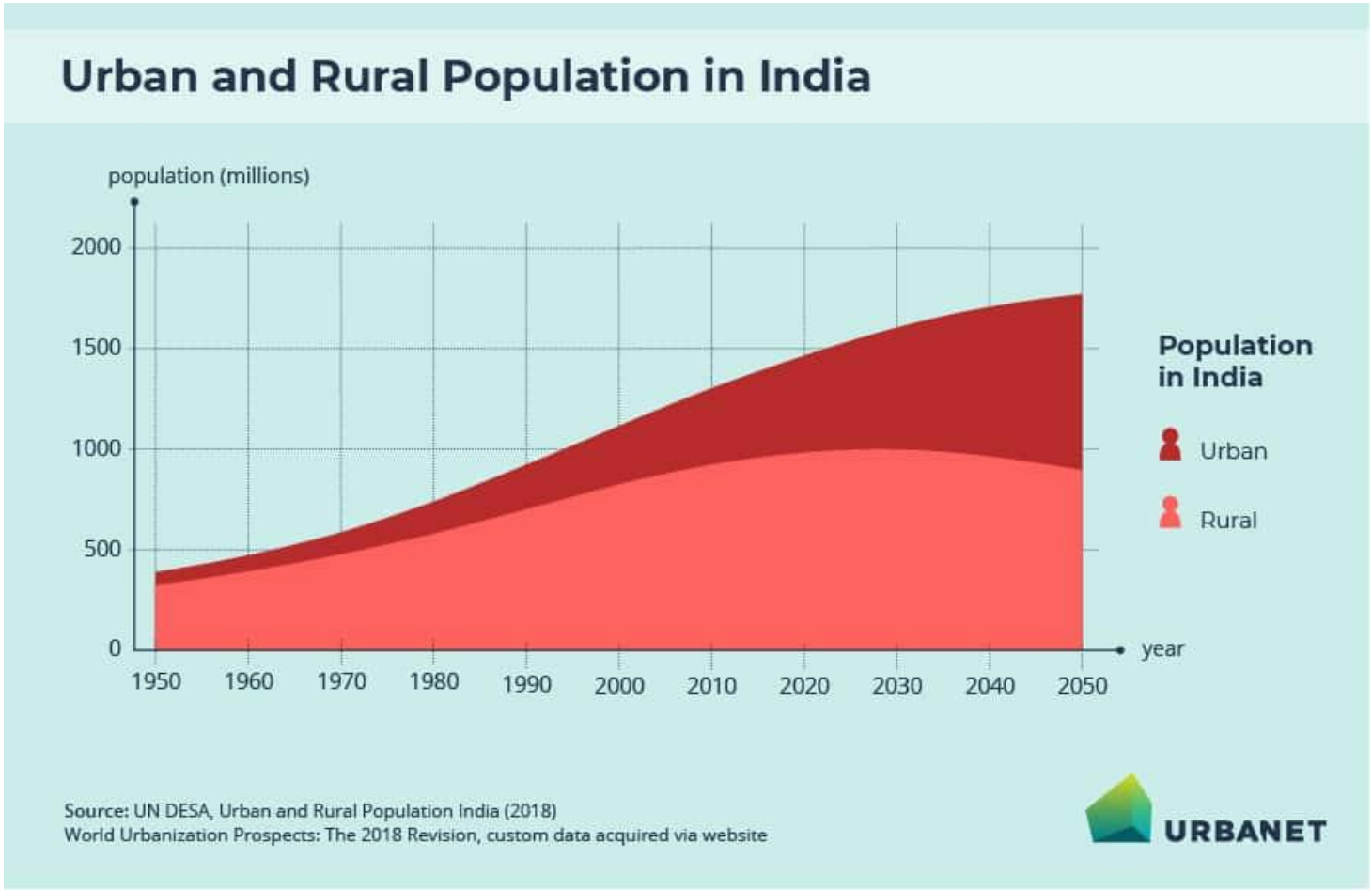
  1967 (1901) TO 7935(2011)

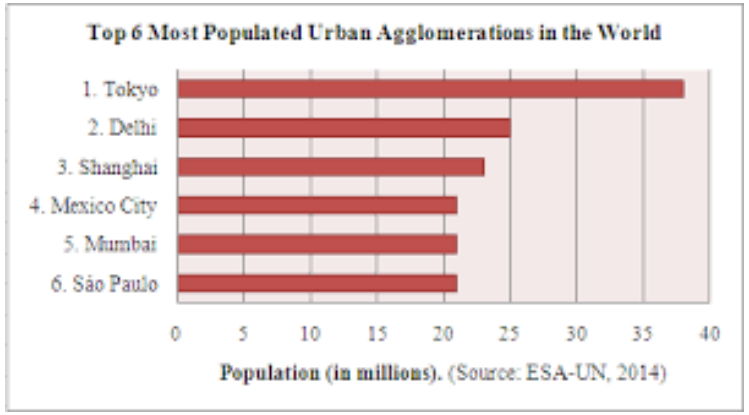
**Much lower than in other major developing countries, e.g. 45 per cent in China, 54 per cent in Indonesia, 78 per cent in Mexico, and 87 per cent in Brazil.*

RAPID PACE OF URBANISATION IN INDIA



State of Urbanisation





Status of welfare & development schemes

Smart Cities Mission

100 Smart Cities across India with focus on planned urbanisation and sustainable development as a support system for the neighbouring cities. It also involves the development of high-quality infrastructure with provision of basic amenities, education, health services, IT accessibility, digitisation, e-governance, sustainable development, safety and security

Pradhan Mantri Awas Yojana (PMAY) (Urban) or Housing for All

Swachh Bharat Mission - Urban (SBM - U)

AMRUT (Atal Mission for Rejuvenation and Urban Transformation)

AMRUT scheme was on infrastructure creation that has a direct link to provision of better services to the citizens. the scheme includes provision of water supply facilities, sewerage networks, stormwater drains, urban transport, and open and green spaces, across the selected 500 Indian cities.

Jawaharlal Nehru National Urban Renewal Mission (JNNRUM)

National Urban Sanitation Policy (NUSP)

Status of welfare & development schemes

•**National Cyclone Risk Mitigation Project (NCRMP)** Andhra Pradesh & Odisha
Component A – Last Mile Connectivity
Component B – Structural and Non-Structural Measures
Component C - Technical Assistance for Cyclone Hazard Risk Mitigation, Capacity Building and Knowledge Creation
Component D – Project Management and Implementation Support.
Outcome: The broad outcome of the project is a provision of **cyclone forecasting, cyclone risk mitigation and capacity building in multi-hazard risk management.**
The major infrastructure, which is being constructed under the project includes **multipurpose cyclone shelters (including shelter-cum-go-down) and approach roads/bridges to habitations and saline embankments.**
Creation of National Disaster Response Reserve (NDRR)
•**National Emergency Communication Plan (NECP)**
During the major disasters of Odisha Super Cyclone, 1999 and Gujarat Earthquake 2001, it was observed that the break-down of telecommunication linkages resulted in loss of invaluable time in mobilizing National & state resources for effective response.
Accordingly, a **National Emergency Communication Plan (NECP)** was developed to be implemented in two phases to set up reliable communication links between the decision maker and various levels and operational response team at disaster site.

Present Day Challenges

1. Sector-specific challenges
    1. Transportation
    2. Waste management
    3. Health
    4. Land Use & Land Planning
    5. Building Code & its implementation
    6. More..
2. Balance of population growth, economy, development

Present Day Challenges

1.Transportation

Road congestion: As more people travel over longer distances on regular basis for employment and education purposes, will inevitably lead to road congestion.

Parking problems: ...

Air pollution: ...

Deteriorating road safety:

2.Waste management

Waste to Energy Plant. Waste power plants do not really help generate energy when the energy giving waste is only 13% of total of metro city waste. ...

Municipalities do not consider all areas. ...

Lack of holistic waste management plan.

Present Day Challenges

Land Use & Land Planning

•Legislative and regulatory framing for land use planning like Development Control Rules, Land use plan

• Plans for managing land use, and development and growth; and the ongoing land use planning and implementation processes. Like Master Plan , Development Plan , Regional Plan and Local Area Plan

• Vulnerability due to Physical factors. e.g. poor design and construction of buildings, unregulated land use planning, Social factors, Economic factors and Environmental factors.

Building Code & its implementation

The main purpose of building codes is **to provide minimum standards to protect the public health, safety, and general welfare as they relate to the construction and occupancy of buildings and structures**.

Model building codes provide protection from tragedy caused by fire, structural collapse, and general deterioration

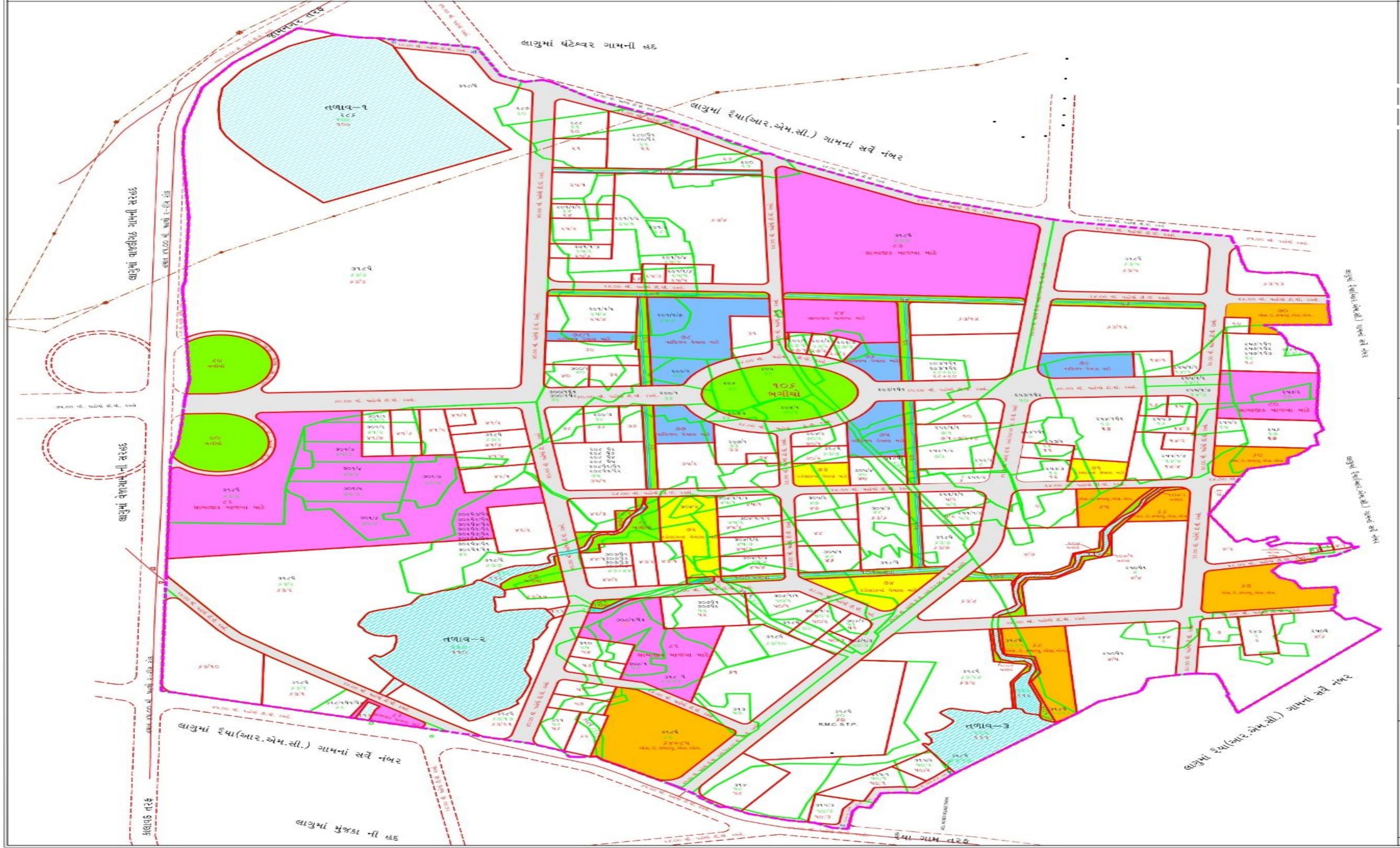
Balance of population growth, economy, development

Due to overpopulation, India has faced several problems like unemployment, excessive dependency, insufficient income rate, insecurities, loss of jobs, development failures, and social problems.

પ્રારંભિક નગર રચના યોજના નં.૩૨ (રૈયા)

મુળખંડ અને અંતિમખંડ દર્શાવતો નકશો

(નકશા નં–૩)



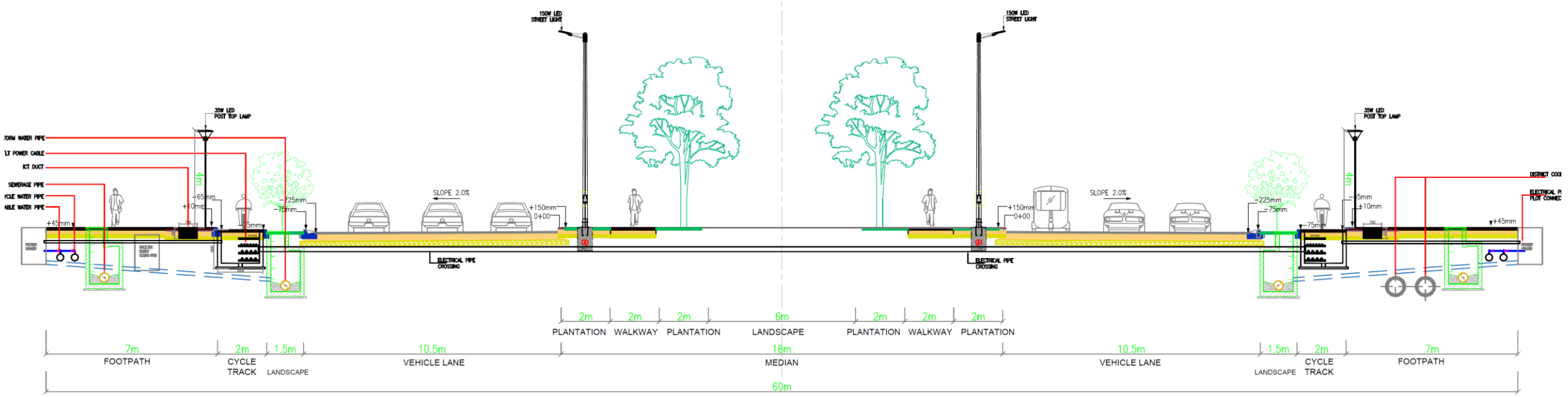
સમજુતી

- નગર રચના યોજનાની હદ
- રેવન્યુ સર્વે નંબરની હદ
- મુળખંડની હદ
- અંતિમખંડની હદ
- યોજનાના સુચિત રસ્તાઓ
- રેવન્યુ સર્વે નંબર
- મુળખંડ નંબર
- અંતિમખંડ નંબર
- વાણિજ્ય વેચાણ માટે
- રહેણાંકનાં વેચાણ માટે
- એસ.ઇ.ડબલ્યુ.એસ.એચ.
- સામાજીક માળખા માટે
- બગીચો
- હયાત તળાવ

નગર રચના અધિકારી
પ્રવર નગર નિયોજક
રાજકોટ નગર રચના યોજના
રાજકોટ

નગર આયોજન અને મુલ્યાંકન ખાતુ – ગુજરાત રાજ્ય

60 MTR ROW


150W LED STREET LIGHT
35W LED POST TOP LAMP
SLOPE 2.0%
ELECTRICAL PIPE CROSSING
2m PLANTATION
2m WALKWAY
2m PLANTATION
6m LANDSCAPE
2m PLANTATION
2m WALKWAY
2m PLANTATION
7m FOOTPATH
2m CYCLE TRACK
1.5m LANDSCAPE
10.5m VEHICLE LANE
18m MEDIAN
10.5m VEHICLE LANE
1.5m LANDSCAPE
2m CYCLE TRACK
7m FOOTPATH
60m

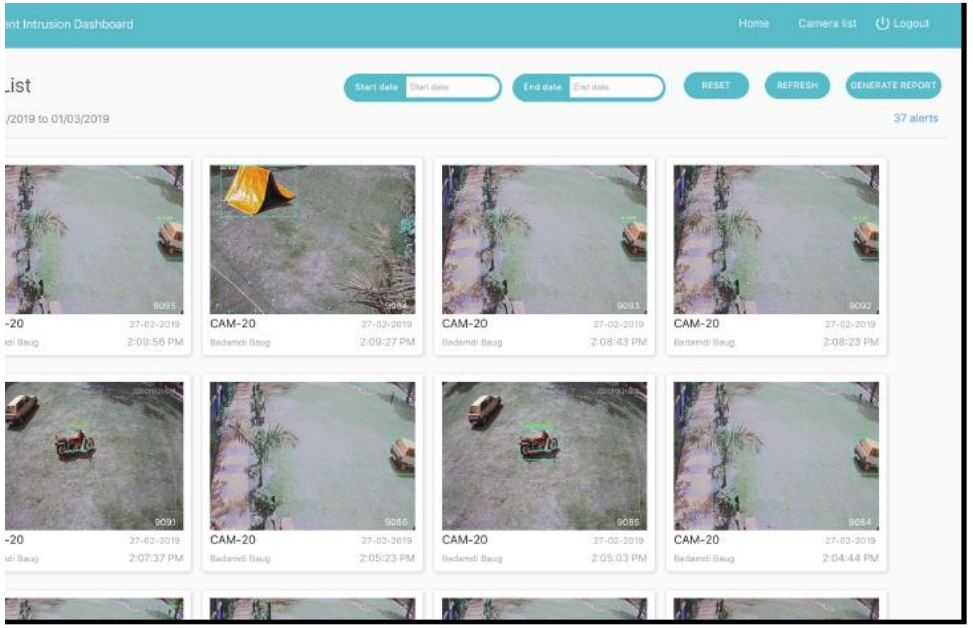
Master plan


LEGEND
1 - Atal Sarovar
2 - Racecoarse
3 - Convention Center
4 - Hospitality
5 - Transport Hub
6 - Central Park
7 - Knowledge Zone
8 - ICCC
9 - Sports Complex
10 - STP
11 - SWM
12 - UTILITY
13 - WTP
14 - LAKE 2
15 - LAKE 3
16 - SEWSH
17 - PARKING

Automated Land Encroachment Prevention System

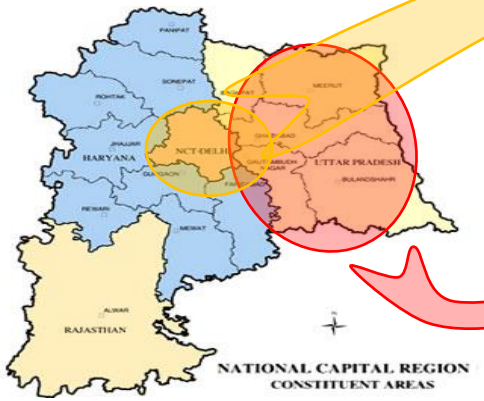
360 Degree Camera Setup

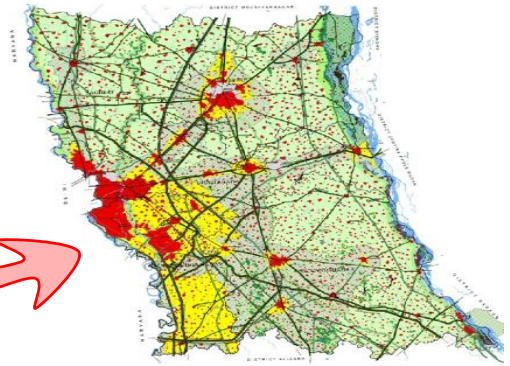
Mobile Alerts to encroachment officer

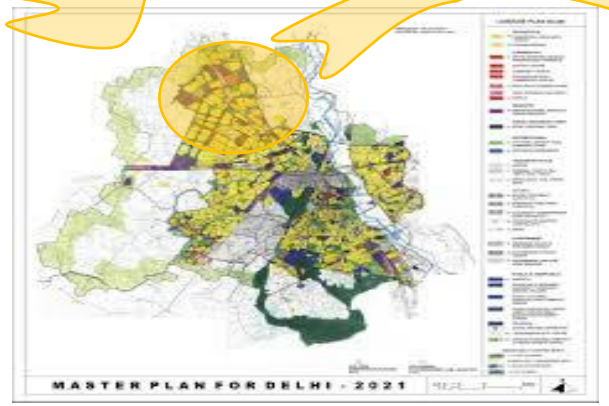


Encroachment Dashboard Alerts

PLANNING HEIRARCHY







REGIONAL PLANS

FORMAL / FUNCTIONAL AREA REGIONAL PLANNING

LEGISLATION: NCRPB ACT, MMRDA ACT

BROAD POLICY DOCUMENT OF DEVELOPMENT DIRECTION

SUBREGIONAL PLANS

JURISDICTION IS SUBSET OF REGIONAL PLAN

LEGAL PROVISION MADE IN REGIONAL PLANNING ACTS

DETAILS POLICIES FOR ALL SECTORS IN THE SUBREGION

MASTER PLANS

JURISDICTION IS MUNICIPAL AREA OR LARGER URBANISED/ URBANISABLE AREA

LEGISLATION UNDER STATE GOVERNMENT

DETAILS LAND USE ZONING AND DCR

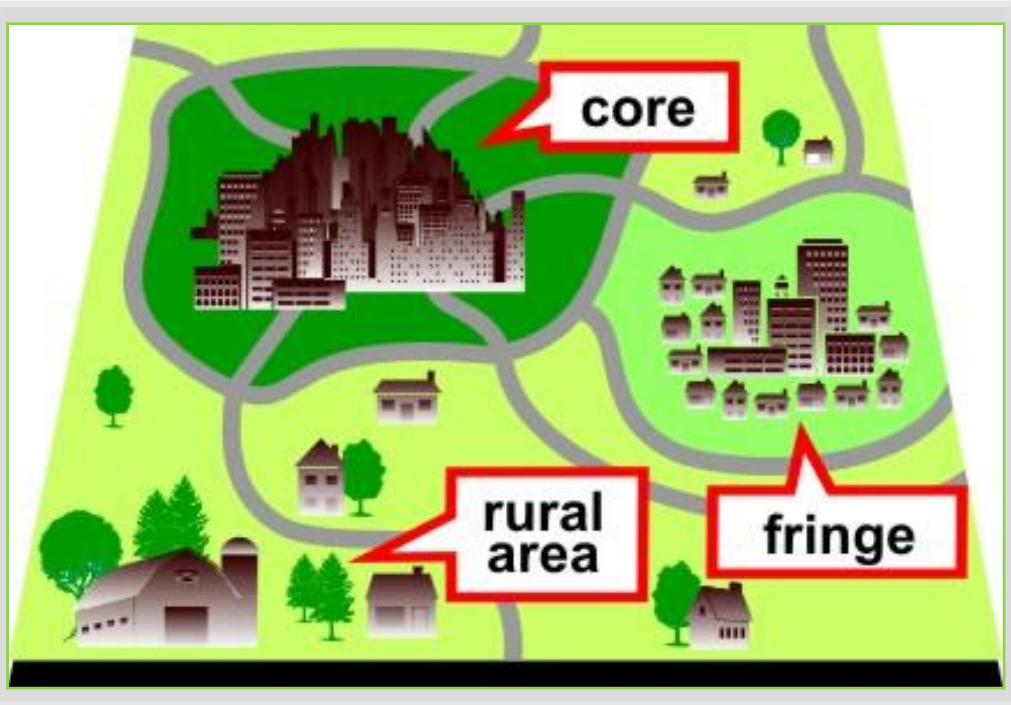
ZONAL / LOCAL AREA PLANS

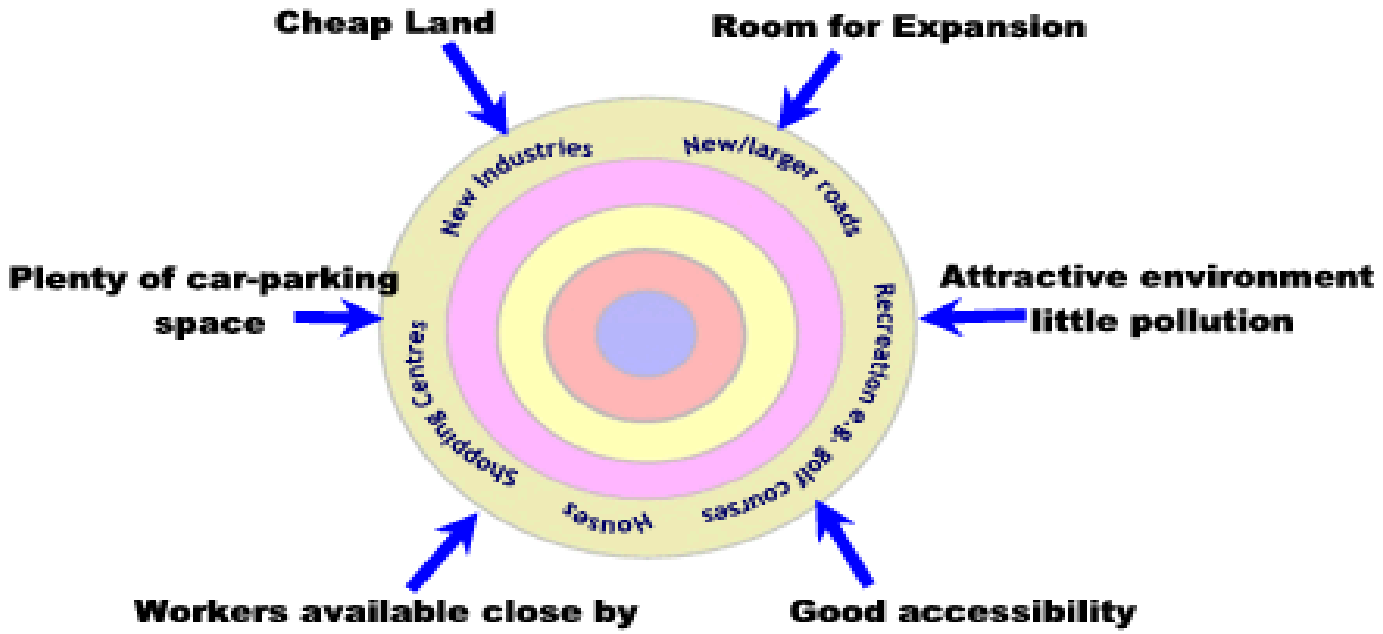
JURISDICTION IS SUBSET OF MASTER PLAN AREA

LEGAL PROVISION MADE IN MASTER PLAN LEGISLATION

DETAILS LAND USES, ACTIVITIES, SITE FOR INFRASTRUCTURE

RURAL URBAN FRINGE AREAS



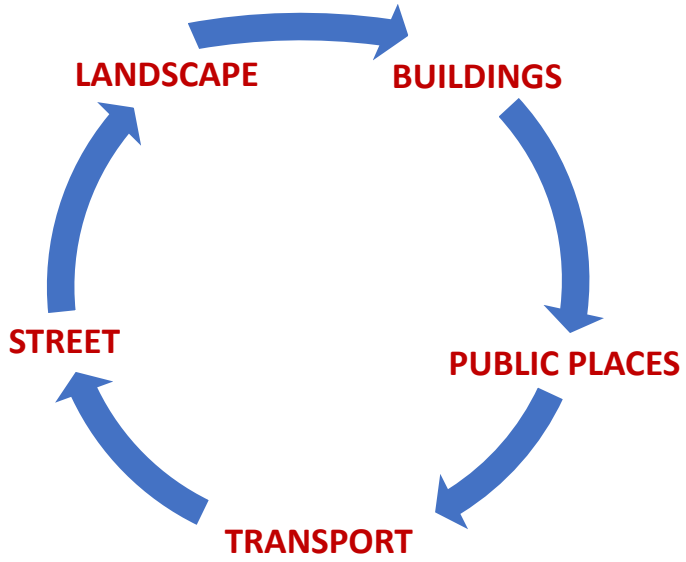


URBAN DESIGN

THE URBAN DESIGN IS A COMPLEX PROCESS OF GIVING FORMS AND SHAPES TO A CITY INVOLVING ARRANGEMENT AND DESIGN OF BUILDINGS, GREEN SPACES, PUBLIC SPACES AND TRANSPORT, BLENDING BUILDING AND LANDSCAPE ARCHITECTURE AND CITY PLANNING IN ORDER TO MAKE THE URBAN AREAS ATTRACTIVE, FUNCTIONAL AND AESTHETIC .

- **Comprehensive Flood Control Master Plan (CFCMP) shall be superimposed with Land use Plan of Third Master Plan of CMDA. Accordingly, many urban planning projects for flood mitigation can be identified for the implementation.**

Group Housing layout should indicate the system of storm water drainage, rain water harvesting structure and recharging well.



FACTORS WHICH MAKE CITIES:

1.LOCATION

(Connectivity, Topography, Climate, Accessibility)

2. RESOURCES

(Human Skills, Economic infrastructure, Water, Tradable Commodities, etc)

3.TECHNOLOGY

(Railways, Internet, Preservation, Medicine, Water Supply, etc.)

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Emergent Risks & Future Challenges

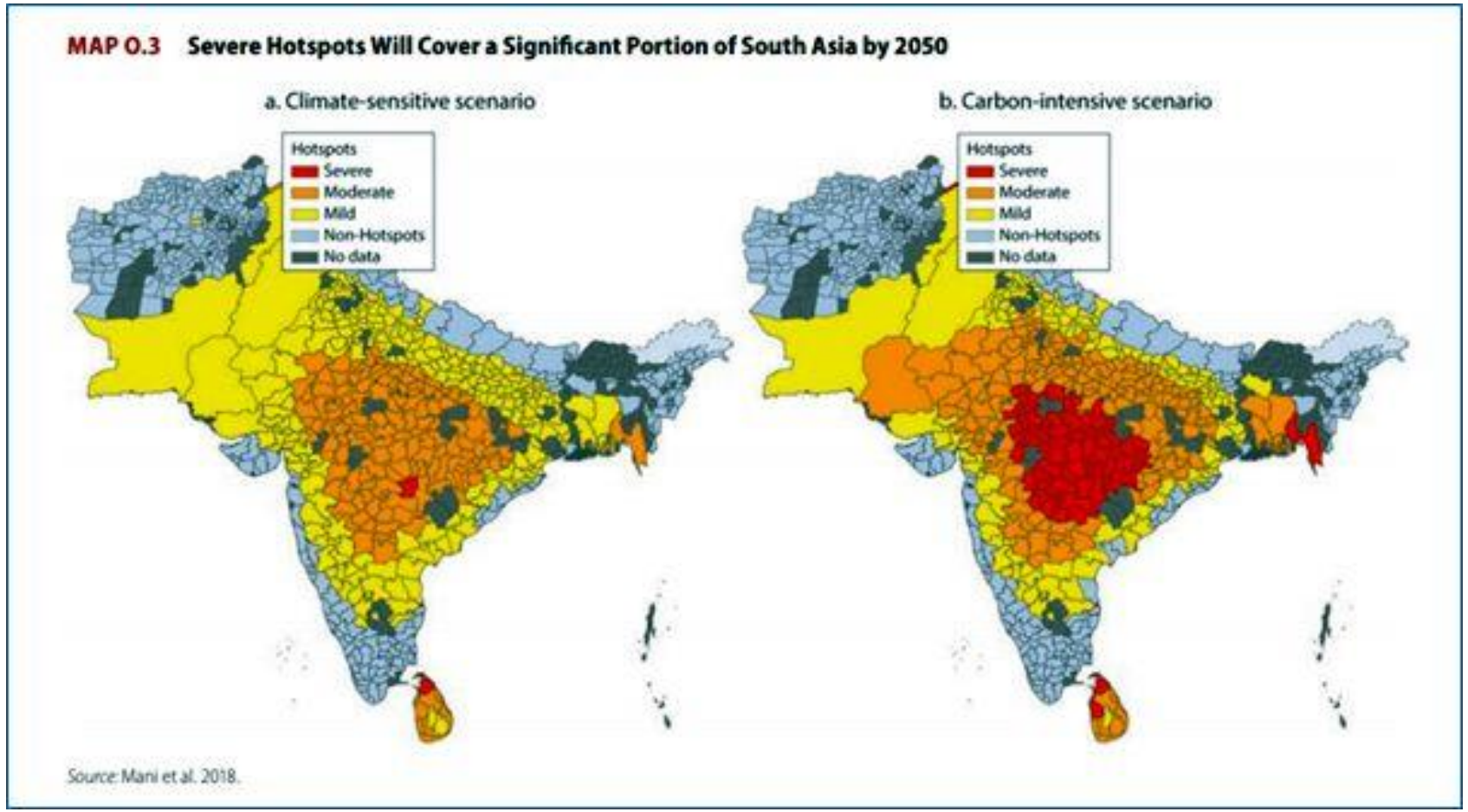
1. Climate Change Scenario
2. Climate Impacts (foreseen and unforeseen)
3. Steps taken towards climate action (climate change adaptation & mitigation)

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Climate Change Scenario



Heat waves frequency and intensity are increasing in India because of climate change.

Climate Impacts (foreseen and unforeseen)

- **Urban flooding**
- **Air pollution**
- **Water scarcity**
- **Urbanisation**
- **Storms, heat waves, rising sea levels, melting glaciers and warming oceans**

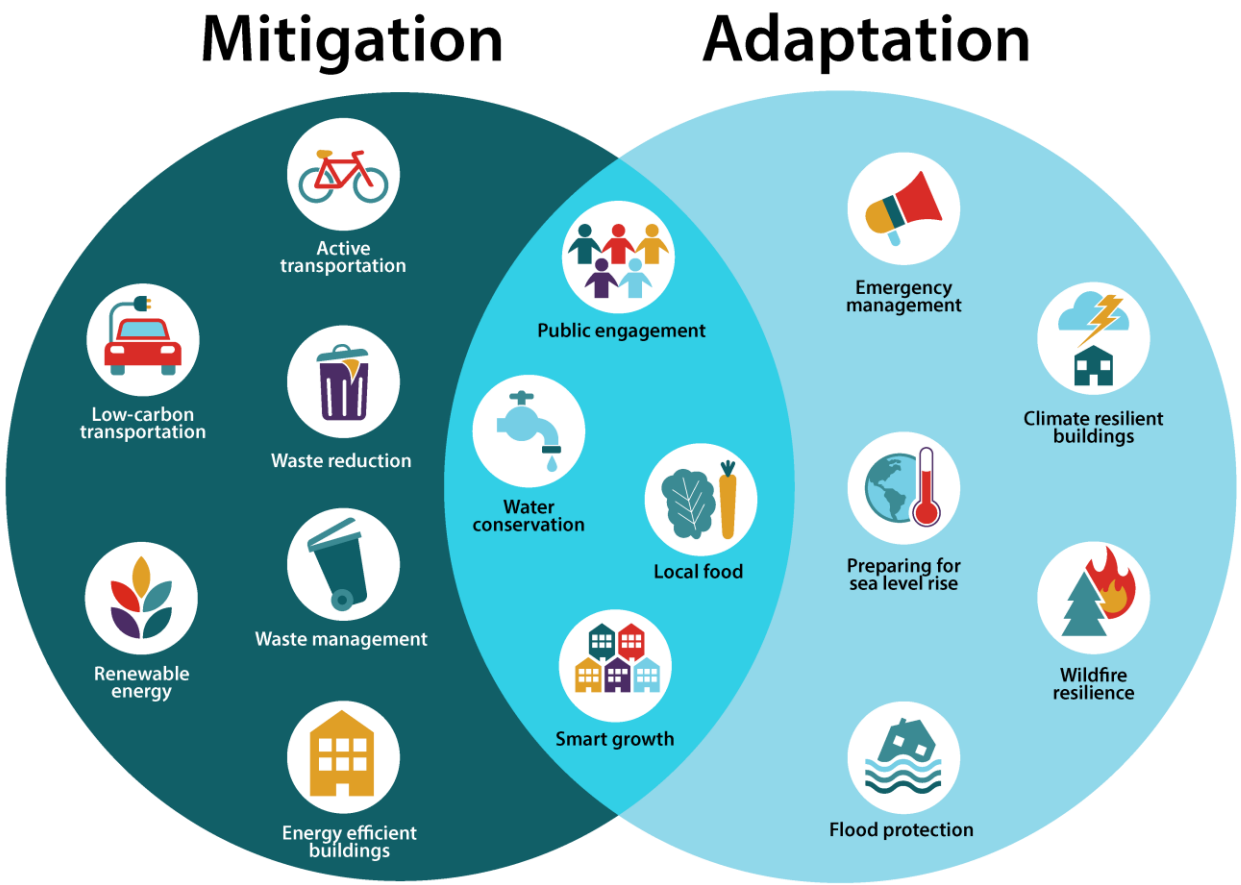
More than 40% of India's population may face **water scarcity** by 2050 and at the same time the country's coastal areas, including big cities like Mumbai, will be affected by rising sea levels. **Severe landslides and floods are projected to become increasingly common in such states as Assam**.

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Steps taken towards climate action (climate change adaptation & mitigation)



Mitigation and adaptation to climate change

1. **Practice Energy efficiency.**
2. **Greater use of renewable energy. Solar Power , Reuse of waste water ,Wind Energy**
3. **Electrification of industrial processes.Recharg point is an issue**
4. **Efficient means of transport implementation: electric public transport, bicycle, shared cars ...**
5. **Carbon tax and emissions markets.** . India does not levy an explicit carbon price. Fuel excise taxes, an implicit form of carbon pricing, cover 54.7% of emissions in 2021,

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

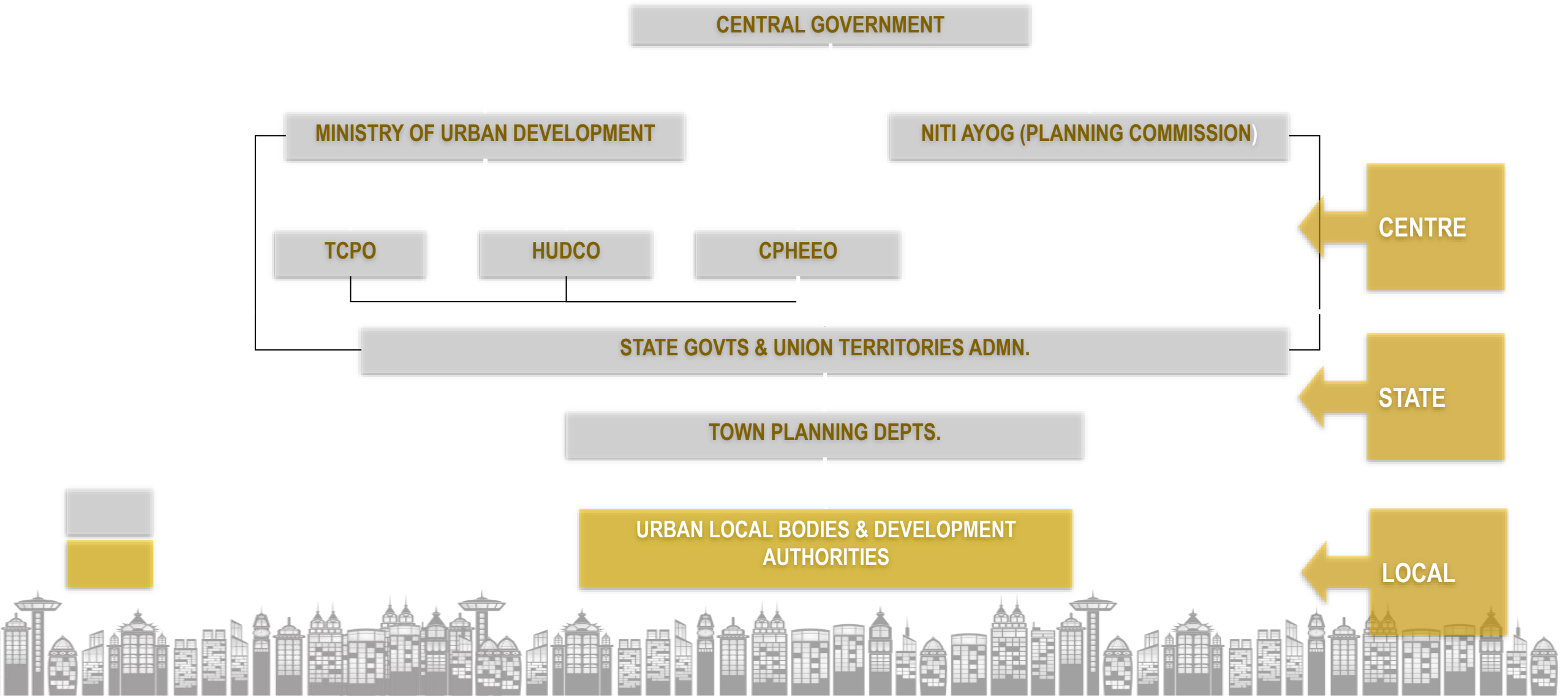
UNDRR
UN Office for Disaster Risk Reduction

Steps taken to ensure risk-informed development & resilience

1. Support from the National Government to the Local Governments to foster disaster risk reduction (DRR) & climate action
2. Good cases of risk-informed development
3. Good cases of community-driven / multi-stakeholder driven DRR or climate action initiatives

PLANNING IS AN INTERVANTION TO MANAGE URBANISATION AND DEVELOPMENT

INDIAN PLANNING SYSTEM



SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Support from the National Government to the Local Governments to foster disaster risk reduction (DRR) & climate action

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

1. National Solar Mission
2. National Mission for Enhanced Energy Efficiency
3. National Mission on Sustainable Habitat
4. National Water Mission
5. National Mission for Sustaining the Himalayan Eco-system
6. National Mission for a Green India
7. National Mission for Sustainable Agriculture
8. National Mission on Strategic Knowledge for Climate Change

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Good cases of risk-informed Development

HAZARDS	RISKS	SOLUTION	PLANNING
WATER LOGGING	FLOOD	PROPER DRAINAGE	DRAINAGE NETWORK INFRASTRUCTURE
UNSTABLE SLOPES	LAND SLIDING	RETAINING WALLS AND AFORESTATION	LANDSCAPING AND SLOPE ANALYSIS
UNHYGIENIC AREAS	DISEASES	SEPTIC TANK, SOLID WASTE MANAGEMENT SYSTEM	SEWERAGE NETWORK AND SOLID WASTE MANAGEMENT SYSTEM
UNSTABLE BUILDINGS	BUILDING COLLAPSE	STRUCTURAL DESIGN	BUILDING APPROVAL
UNPLANNED GROWTH	TRAFFIC JAM, ENVIRONMENTAL RISK	PROPER SETBACK AND FSI, CIRCULATION	PROPER LANDUSE MAP AND POLICY
OUTDATED INFRASTRUCTURE	WATER, DRAINAGE AND CIRCULATION PROBLEMS	SCADA WITH TREATMENT PLANTS	SMART TECHNOLOGY

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Good cases of risk-informed Development–DISASTER RISK REDUCTION IN URBAN PLANNING

- CHECK UNPLANNED URBANISATION AND ENSURE SAFER HUMAN HABITAT AGAINST ALL FORMS OF DISASTERS.
- INTEGRATION OF LAND-USE PLANNING (MASTER PLAN) WITH DISASTER MANAGEMENT PLAN, ENVIRONMENTAL PLAN, HAZARD MAPPING AND VULNERABILITY ASSESSMENT.
- URBAN MAPPING OF INFRASTRUCTURE OF SPATIAL RESOLUTION USING GIS AND LINKED WITH DECISION SUPPORT SYSTEM (DSS) FOR MANAGING URBAN RISKS.
- DEVELOPMENT CONTROL REGULATIONS.
- BUILDING BYE-LAWS AND STRUCTURAL SAFETY FEATURES.
- IMPROVE URBAN DRAINAGE SYSTEMS WITH SPECIAL FOCUS ON NON-OBSTRUCTION OF NATURAL DRAINAGE SYSTEMS.
- MICRO-INSURANCE SCHEMES AND MARKET-BASED MECHANISMS.

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Steps taken to ensure risk-informed development & resilience

The National Disaster Risk Reduction Management Plan (NDRRMP) outlines the activities aimed at strengthening the capacity of the national government and the local government units (LGUs) together with partner stakeholders, to build the disaster resilience of communities and to institutionalize arrangements and measures for reducing disaster risks, including projected

- **Identification and measuring disaster risk.**
- **Education and knowledge development.**
- **Informing people about their risk (awareness raising)**
- **Incorporating DRM into national planning and investment.**
- **Strengthening institutional and legislative arrangements.**

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Community–driven / multi–stakeholder driven DRR or climate action initiatives

- Social empowerment and awareness tool;
- Bottom-up DRR planning;
- Establishment of emergency and maintenance funds;
- Innovative development of information, education and communication materials;
- Local resource-based bio-engineering interventions; ...

Movement of diesel-run heavy/medium goods vehicles in city banned;

- Diesel LMVs in Delhi and bordering districts of NCR (essentials exempted) also not allowed in the city.
- Construction not allowed at linear public projects such as highways and flyovers.
- Trucks not carrying essentials banned; only electric & CNG trucks are allowed in the city.

The rivers must be cleaned of garbage and encroachments, and wetlands protected at all costs.
The city's plans must be redrawn to make space for rainwater both on the ground and below the ground.

Besides cleaning and regular maintenance of drains, widening of waterways, moderating the River/storm water flow water flow, de-silting and dredging projects, hydrological examinations

Central Communication Center in each cities in the country . Effective communication is key and it can make or break the response measures.

- Shift from conventional / reactive approach to strategic approach on preparation of Master Plan and Disaster Plan. Mainly focus on Disaster Risk Reduction.
- Restoration of existing water bodies, natural drainage, resettle the encroachment, enforcement of rain water harvesting etc. to moderate the discharge.
- Disaster response has to be ‘people centric’. People with strong civic sense and resilience make all the difference

Sustainable Urban Drain (SUD) is essential to prevent urban flooding in Metropolitan Area. Water logging is one of the major water issues in cities and directly restricts urbanization processes.
The construction of Sponge City is an effective approach to solving the urban water issues, particularly for the water logging.
It was found that the current storm water management focused on the construction of **gray infrastructures** (e.g., drainage network and water tank) based on the fast discharge idea, which was costly and hard to catch up with the rapid expansion of city and its impervious surface, while **green infrastructures** (e.g., river, lake and wetland) were ignored. In order to mitigate the flood disaster in prime area, sponge area can be designed in and around Chennai along with storm water drain and by preserving existing water

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

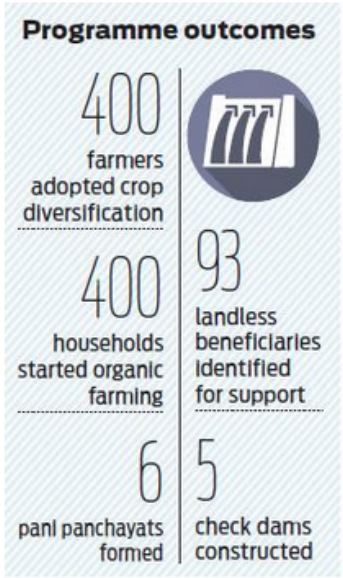
UNDRR
UN Office for Disaster Risk Reduction

Good cases of community-driven / multi-stakeholder driven DRR or climate action initiatives

For representational purposes

By Express News Service

BHUBANESWAR: The outcomes of the climate change projects taken up under the National Adaptation Fund for Climate Change (NAFCC) in Nuapada district have been found quite rewarding for the people.



"Five check dams have been constructed over Kharkhara nullah under the State and NAFCC funding. The groundwater level has increased in the villages nearby the project area. Six pani panchayats have been formed involving local farmers for irrigation planning," official sources said.

Around 400 farmers have adopted crop diversification methods by shifting from single paddy culture to horticulture. Organic farming has been started by 400 households. The farmers are being imparted training on crop diversification and sell of their products

Climate change projects script success in Odisha's Nuapada

Around 400 farmers have adopted crop diversification methods by shifting from single paddy culture to horticulture.

Published: 17th January 2020 09:37 AM | Last Updated: 17th January 2020 09:37 AM

A+ A A-

For representational purposes

By Express News Service

SAARC
Disaster Management Centre (IU)

MCR 2030 Making Cities Resilient

UNDRR
UN Office for Disaster Risk Reduction

Thank you