Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Webinar
Local Climate Action Planning – Experiences from India

29 June 2015, 11:00 UTC/GMT



Transformation - Urban Opportunities - Climate Change (TUrbOCliC)

Cross-sectoral group of the TUEWAS and SNGA network of GIZ

Programme

- **Welcome**
  Eva Ringhof, Social Development Specialist and Joint Speaker of TUrbOCliC
- **Presentations:**
  - **Promoting Low Emission Urban Development Strategies in Emerging Economy Countries**
    Soumya Chaturvedula, ICLEI-SA, Urban-LEDS, Energy and Climate Program Coordinator
  - **Climate Proofing Vulnerable Costal Communities**
    Mr. Manjeet Singh Saluja, GIZ Technical Advisor, AdaptCap
  - **Sustainable Urban Habitat Action Planning for Nashik**
    Vaishali Nandan, GIZ, Senior Advisor and Joint Speaker of TUrbOCliC
- **Discussion and Wrap-up**

URBAN LEDS
URBAN LOW EMISSION DEVELOPMENT STRATEGIES

Promoting Low Emission Urban Development Strategies in Emerging Economy Countries
Urban-LEDS

Local Climate Action Planning – Experiences from India

ICLEI South Asia

June 29 2015

ICLEI Local Governments for Sustainability

UN HABITAT FOR A BETTER URBAN FUTURE

This project is funded by the European Union.
The views expressed on this document can in no way be taken to reflect the official opinion of the European Union.

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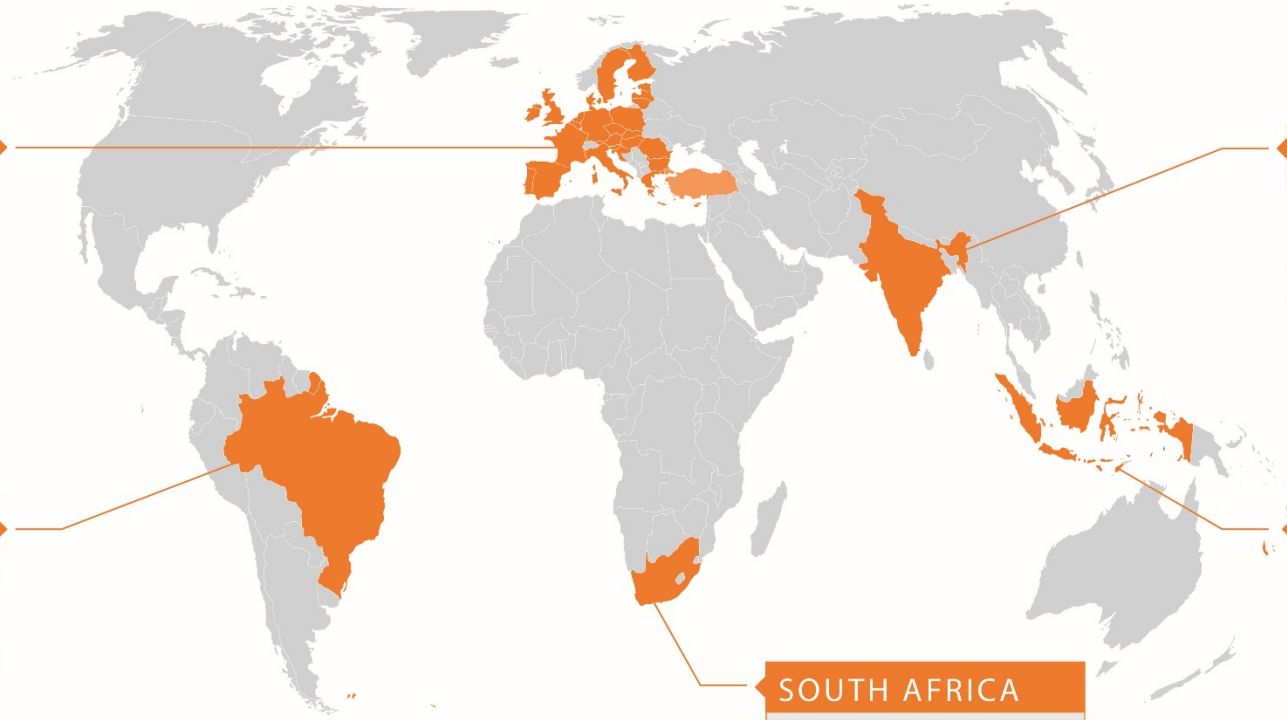
URBAN LOW EMISSIONS DEVELOPMENT STRATEGIES

Urban-LEDS March 2012 – August 2015



EUROPE

Almada, Portugal
Bologna, Italy
Copenhagen, Denmark
Gaziantep, Turkey
Hannover, Germany
Helsinki, Finland
Warsaw, Poland
Zagreb, Croatia

BRAZIL

MODEL CITIES
Fortaleza
Recife

SATELLITE CITIES
Betim
Belo Horizonte
Curitiba
Porto Alegre
Rio de Janeiro
Sorocaba

SOUTH AFRICA

MODEL CITIES
Steve Tshwete Municipality
Kwa Dukuza Municipality

SATELLITE CITIES
Mogale City Local Municipality
Nelson Mandela Bay Municipality
Saldanha Bay Municipality
Sol Plaatje Municipality
uMhlathuze Local Municipality

INDIA

MODEL CITIES
Rajkot
Thane

SATELLITE CITIES
Coimbatore
Gwalior
Nagpur
Panaji
Pimpri-Chinchwad
Shimla

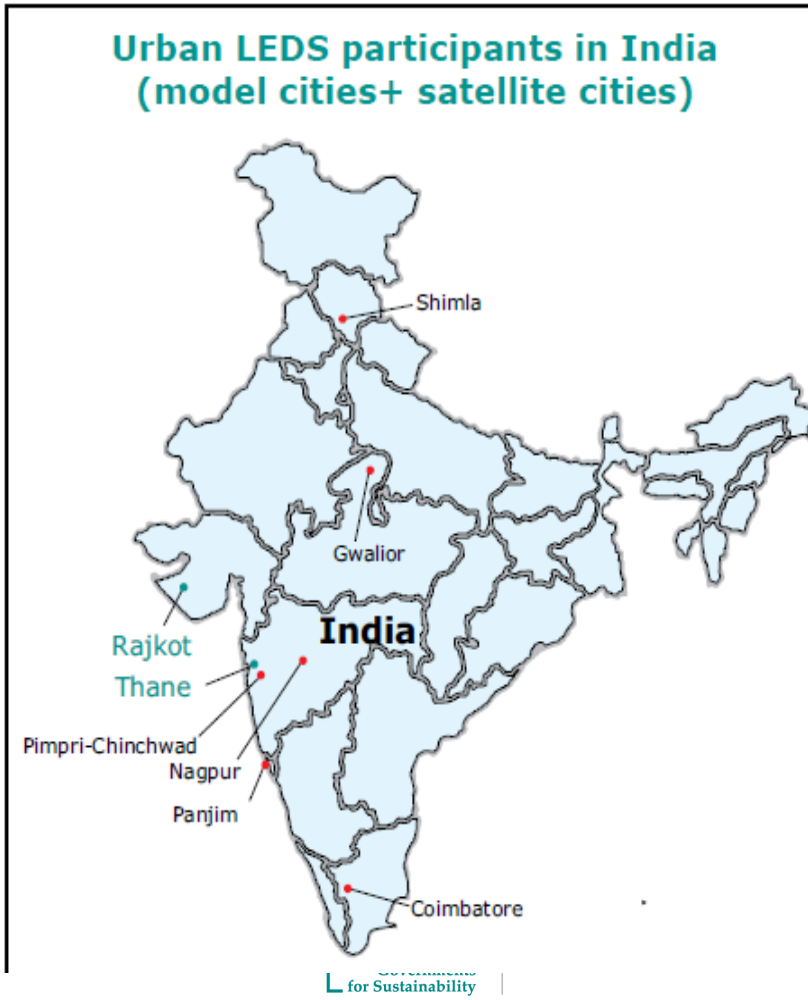
INDONESIA

MODEL CITIES
Balikpapan
Bogor

SATELLITE CITIES
Bontang
Kabupaten Bogor
Tangerang Selatan
Tarakan

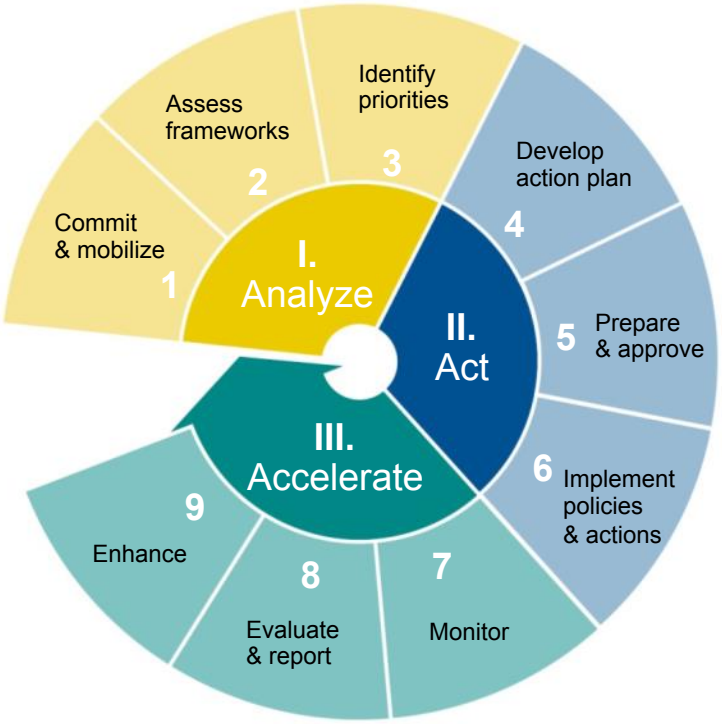
Project Cities

- **Project Countries:** Brazil, South Africa, **India** & Indonesia
- **8 Model cities**
  - Recife and Fortaleza (Brazil)
  - **Thane and Rajkot** (India)
  - Middelburg and KwaDukuza (South Africa)
  - Balikpapan and Bogor (Indonesia)
- **21 Satellite cities**
  - 6 cities from India including Shimla, Coimbatore, Gwalior, Panaji, Pimpri-Chinchwad and Nagpur
- **8 European cities** to facilitate and promote cross – learnings



GreenClimateCities methodology

GreenClimateCities
LOW EMISSION. LOW RISK. LIVEABLE!



Working methodology to help Local Governments create an adequate institutional framework for long-term **Urban Low Emission Development Strategy**, planning and projects.

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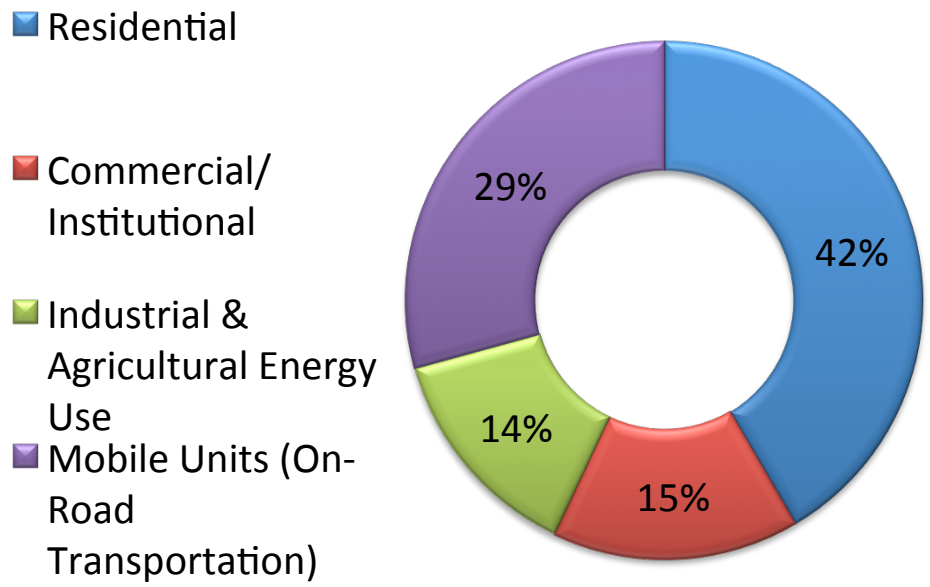
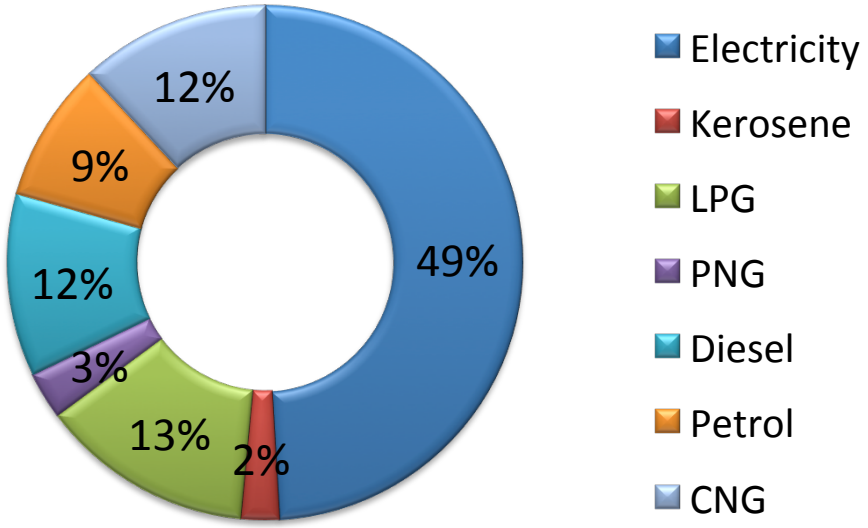
Thane City Baseline Energy Use, 2012-13

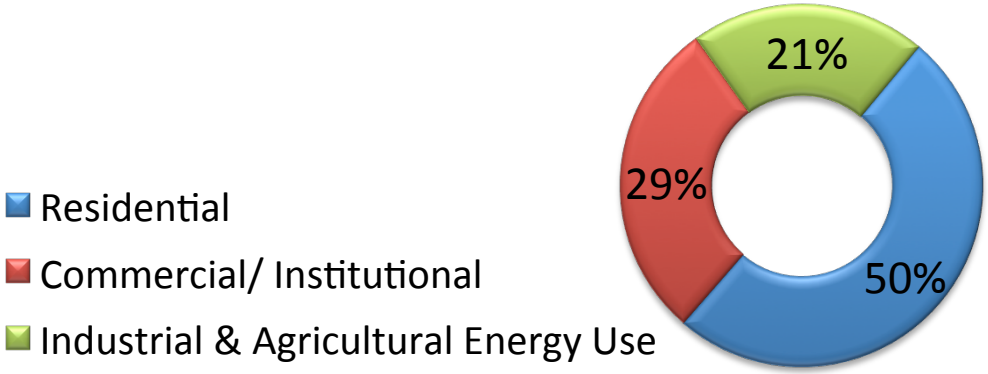
Energy Use by Sector



Energy Use by Source



Electricity Consumption per Sector



I.C.L.E.I Local Governments for Sustainability
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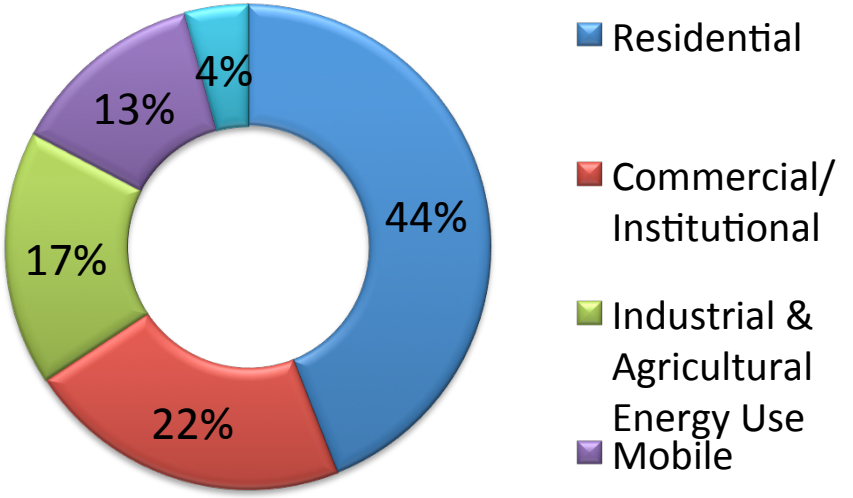
Thane City Baseline GHG Emission, 2012-13

Sectoral GHG Emissions



Sector	GHG Emission (Tonnes of CO2e)
Residential	817458.06
Commercial/ Institutional	403058.72
Industrial & Agricultural Energy Use	316034.669
Mobile (On-Road Transportation)	242660.23
Waste	77897.08
Total	1857108.765

Particular	Unit	Number
Total Energy Consumption	GJ	1,21,85,583
Per Capita Energy Consumption	GJ	6.06
Total GHG Emission	Million Tonnes of CO2e	1.86
Per Capita GHG Emission	Tonnes of CO2e	0.92

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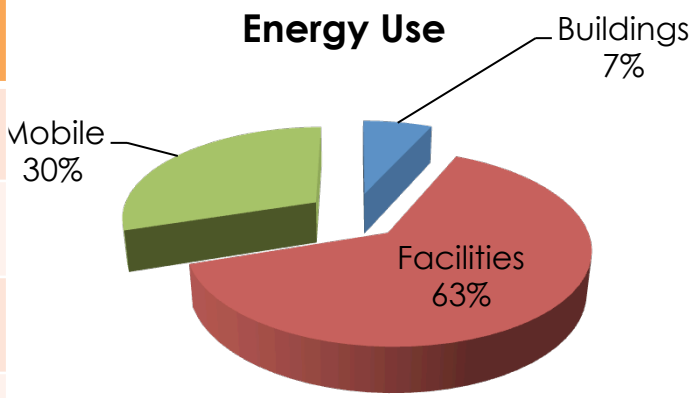
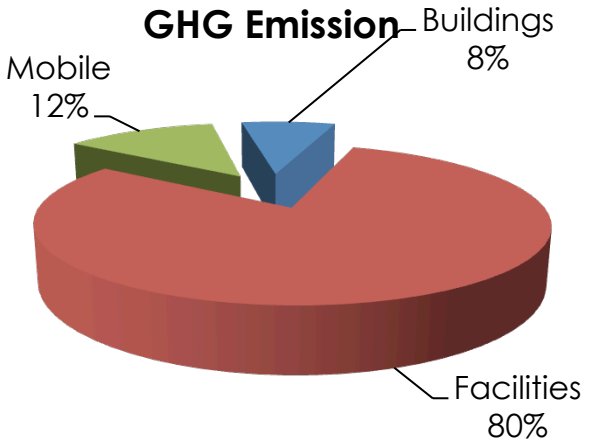
Government Inventory module

Government Module Sector	Energy Use (GJ)	GHG Emission (Tonnes of eCO2)
Buildings	23,486.80	4893.96
Facilities	2,18,609.17	49951.24
Mobile	1,03,825.05	7830.15
Total	3,45,921.02	62675.36





- Total Government level operations consumed 345921.02 GJ of energy and emitted 62675.36 of eCO2 Tonnes in the year 2012-13

- Municipal facilities generated 79.70 %, whereas municipal transportation and buildings accounted 12.49% and 7.81 % respectively of total local government module emissions.

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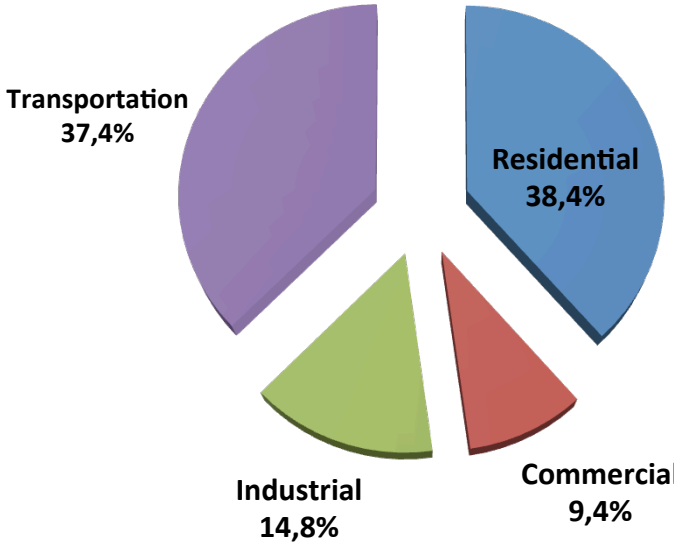
Pilot Project Implementation - Thane

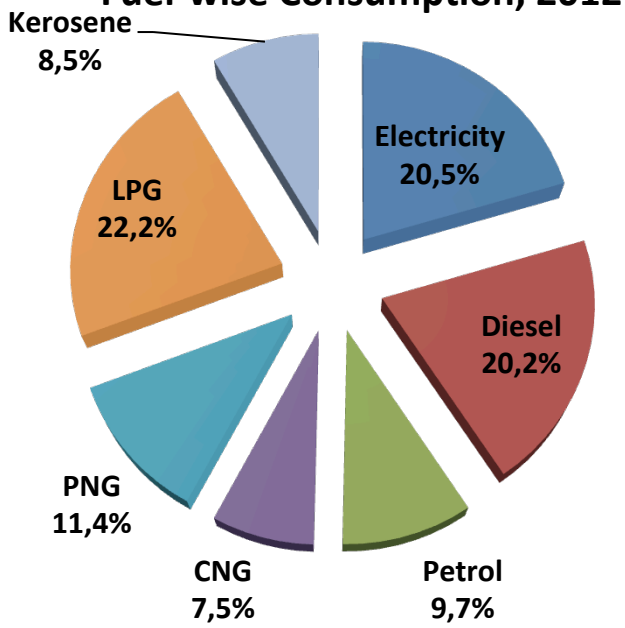
1. Energy efficient street lighting through Energy Service Company (ESCO)
2. Awareness program on Climate Change and Low Carbon practices in Schools
3. Installation of Energy Efficient LED lights in selected slum areas
4. Low emission interventions in TMC School
5. Drivers Training Program for Thane Municipal Transport department (TMT) for emission reduction through fuel conservation/efficiency

Rajkot City Baseline Energy Use

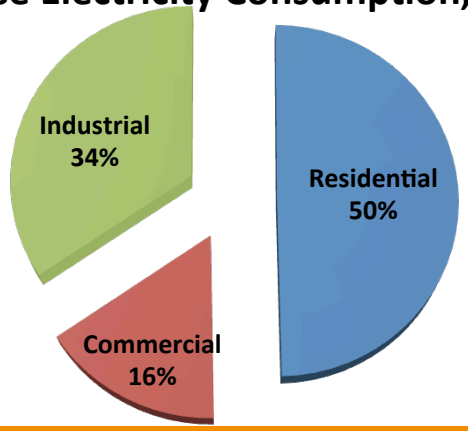
Sector-wise Energy Consumption, 2012-13



Fuel-wise Consumption, 2012-13



Sector-wise Electricity Consumption, 2012-13



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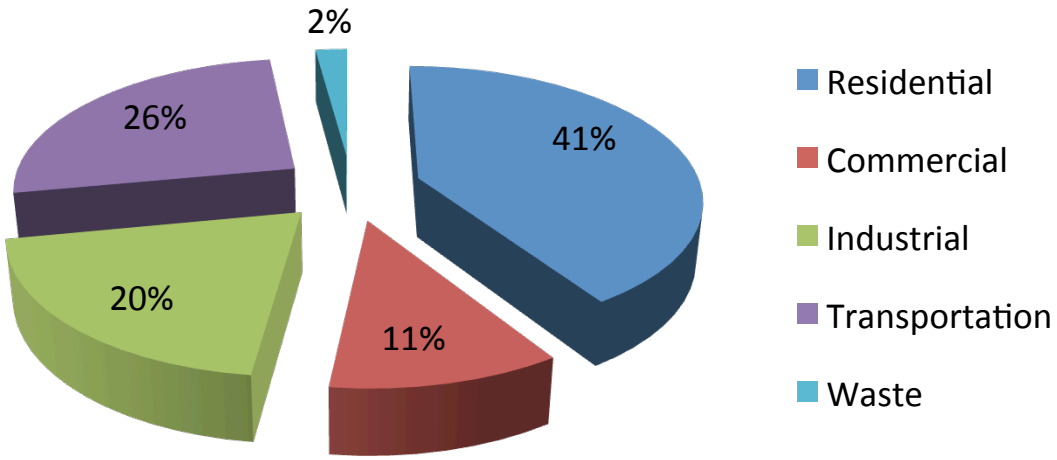
Rajkot City Baseline GHG Emission

Rajkot Sectoral GHG Emission, 2012-13



Sector	GHG Emission (Tonnes of CO2e)
Residential	7,10,551.32
Commercial	1,85,710
Industrial	3,45,054
Transportation	4,32,030
Waste	29,565
Total	17,02,912

Particular	Unit	Number
Total Energy Consumption	GJ	16,332,841
Per Capita Energy Consumption	GJ	11.72
Total GHG Emission	Million Tonnes of CO2e	1.7
Per Capita GHG Emission	Tonnes of CO2e	1.22

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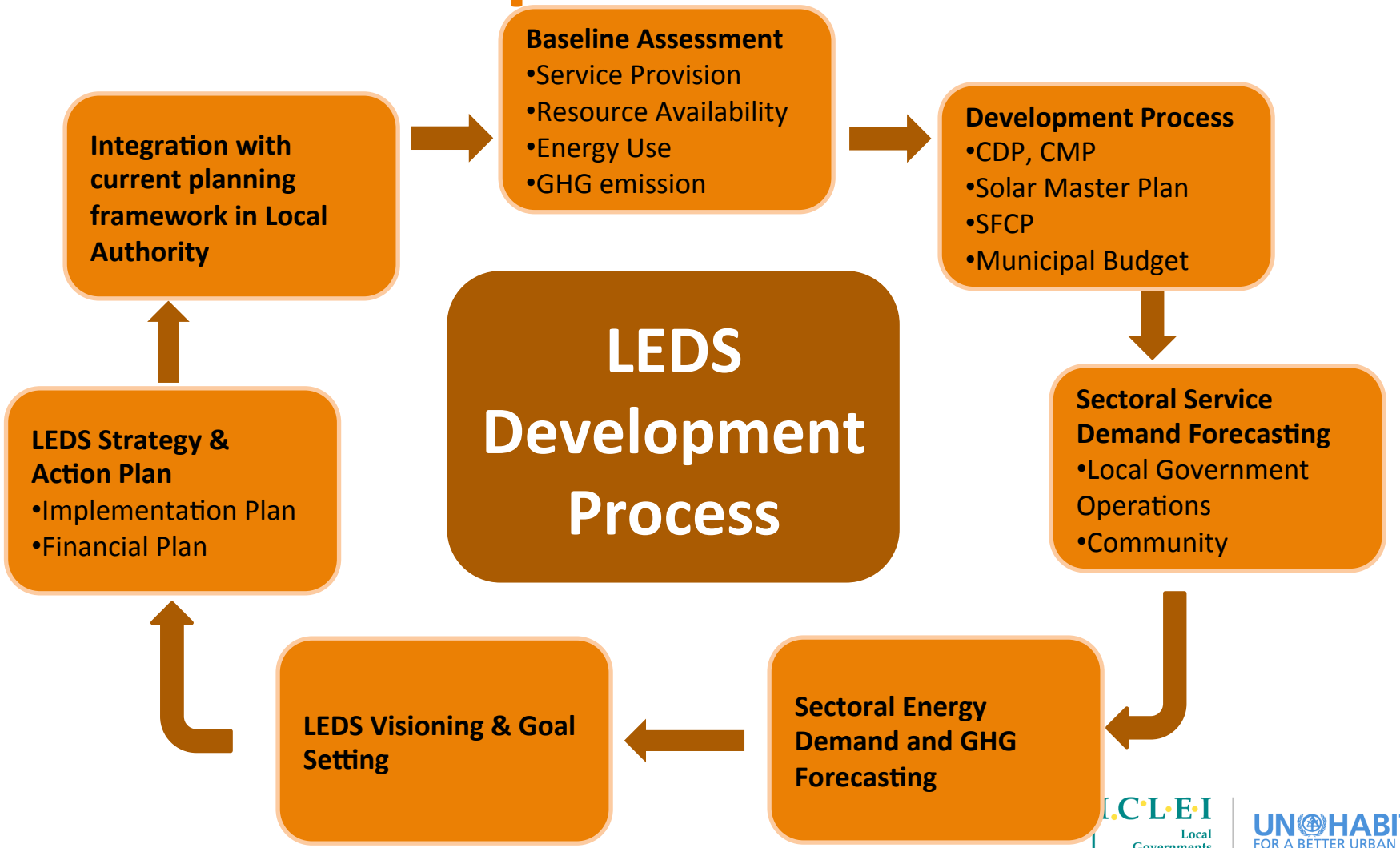
LEDS Development Process



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Energy Demand & Service Provision Forecast

Time Series Data of Sectoral Energy Consumption, Demography, Land Use & Existing Service Levels

Identify & predict influencing parameters (e.g.: PNG consumption: Cost of PNG, No. of Connections)

Statistical Analysis to forecast energy demand & future service level demand

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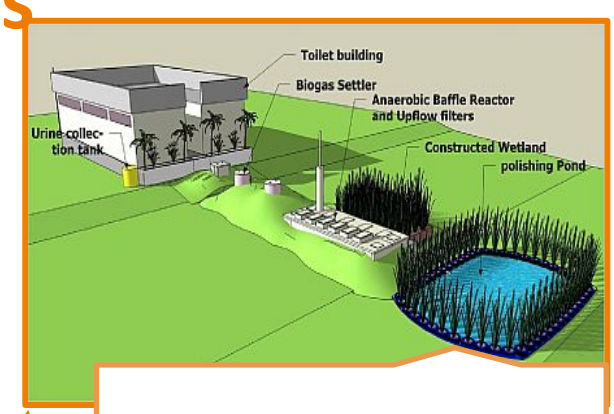
Solutions Gateway

http://www.solutions-gateway.org

- Solution Packages
- Solutions
  - Benefits
  - Reality-check
  - Workflow
  - Enabler actions
  - Required actions
  - Multiplier actions
  - Mitigation potential
  - Resources
- Case studies
- Pool of Experts
- Finance tool
- Supporter organizations

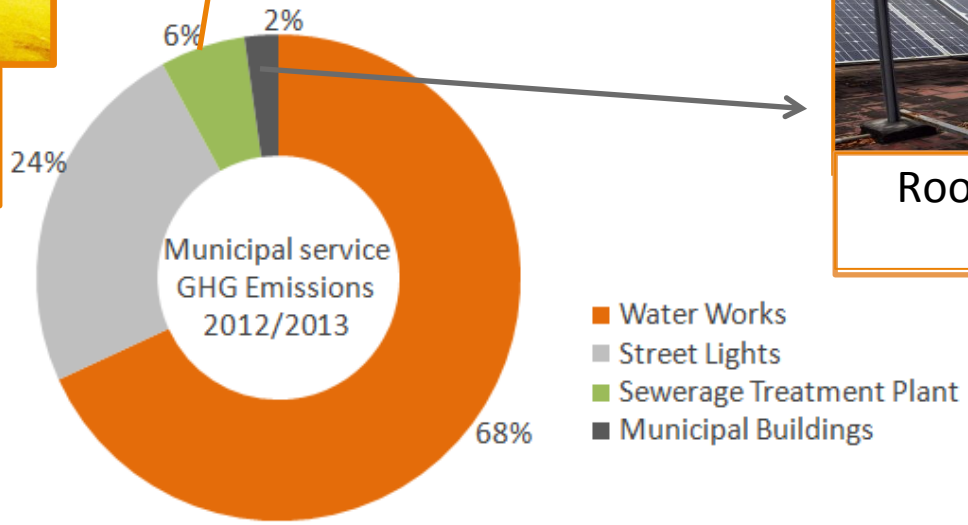
Pilot Project For Reducing GHG Emissions of Municipal Services

Energy efficiency in Street lighting



Installation of DEWATS

Rooftop SPV installation at Municipal School



Pilot Project Implementation - Rajkot

1. Energy efficiency in street lighting by replacement of sodium lights with LEDS
2. Installation of DeWAT system at Jilla Garden with energy generation (biogas/electricity)
3. 20 kW grid SPV installation at Sarojini Naidu Municipal School
4. Revamping of Energy Park

carbonn Climate Registry (cCR)

- carbonn Climate Registry (cCR) global reporting platform

  As of 15 Feb 2015 the 37 Urban-LEDS cities had reported:
  - 28 commitments
  - 379 actions
  - 33 community-scale GHG inventories (performances)
  - 31 government GHG inventories
- Earth Hour City Challenge 2014/2015 recognized 2 Urban-LEDs cities as country finalists:
  - Belo Horizonte and Thane

3 areas of reporting

Commitments (Climate and Energy)

Performances (GHG inventories)

Actions (Adaptation and Mitigation)

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Financing LED Actions… TAP

- Local and subnational governments
- Development Agencies
- Funding bodies and banks
- National governments (multi-level cooperation)

- Climate Action Reporting (Compact of Mayors, Carbon*n*, …)
- TAP online platform
- TAP Pavilion at COPs

TAP the potential of local and subnational climate action!

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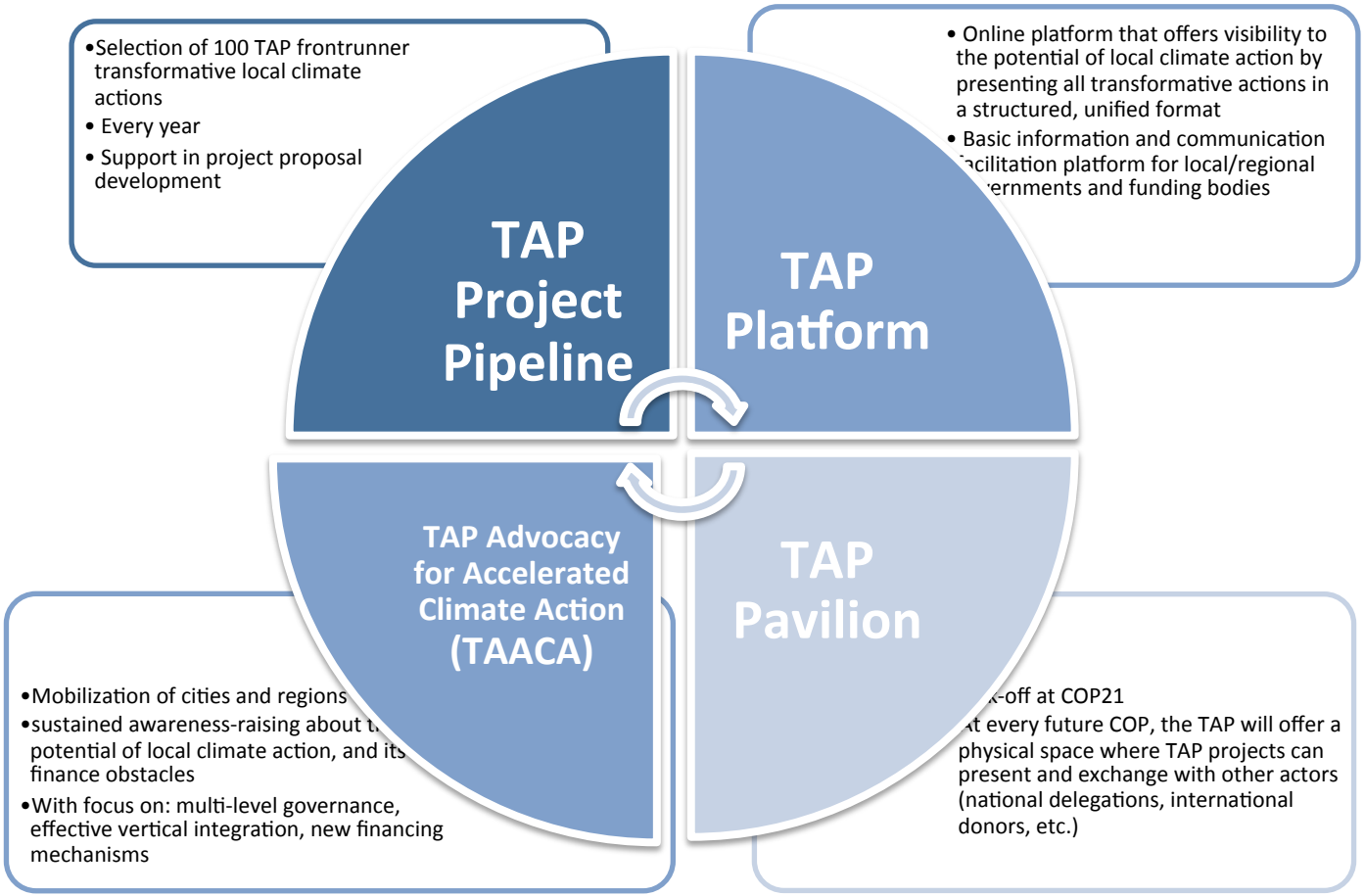
The 4 Action Pillars of the TAP



TAP the potential of local and subnational climate action!

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THANK YOU

- ICLEI – Local Governments for Sustainability at: www.iclei.org
- ICLEI – Local Governments for Sustainability, South Asia at: www.iclei.org/sa
- Urban-LEDS: http://urbanleds.iclei.org
- Solutions Gateway: www.solutions-gateway.org
- cCR reporting: carbonn.org
- ICLEI Climate Roadmap: www.iclei.org/climate-roadmap
- Email: soumya.chaturvedula@iclei.org

Adapt Cap

Climate Proofing
Vulnerable Coastal Communities

- Manjeet S Saluja
GIZ India

Adapt Cap

Climate Proofing
Vulnerable Coastal Communities

Project at a glance

- Funding: EuropeAid (European Commission)
- Duration: 3 years
- Location: 18 rural villages, 6 cities (in Andhra Pradesh & Tamil Nadu, India)
- Partners: GIZ (lead), adelphi, ICLEI , Academy of Gandhian Studies (AGS), AVVAI Village Welfare Society (AVVAI)
- Key activities:
  - Vulnerability & needs assessment (V&NA)
  - Pilot projects and replication thereof
  - Capacity building
  - Locally adapted CCM and CCA guides
  - Assistance strategy to local authorities
  - Visibility & networking

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Adapt Cap

Climate Proofing
Vulnerable Coastal Communities

Goal

- Reduce the vulnerabilities of coastal communities and cities in Tamil Nadu and Andhra Pradesh, India, to climate change and strengthen capacities of local authorities and the population on climate change adaptation (CCA), climate change mitigation (CCM) and disaster risk reduction (DRR).

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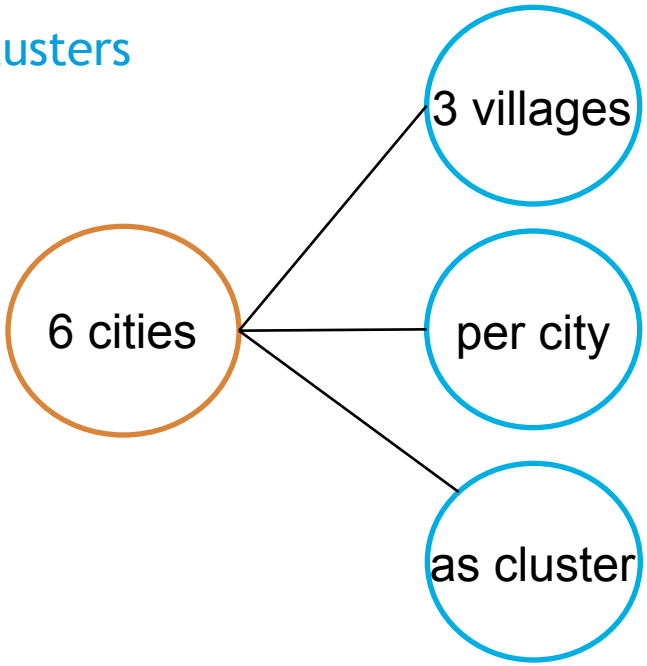
Adapt Cap

Climate Proofing
Vulnerable Coastal Communities

Locations

6 cities and 18 villages forming 6 clusters



Andhra Pradesh cluster cities: Vishakapatnam, Ongole, Kavali

Tamil Nadu cluster districts: Cuddalore, Nagapatinam, Thiruvallur

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Adapt Cap | Climate Proofing Vulnerable Coastal Communities

AdaptCap - The Urban Approach

City Level

Engagement →
- Introduce the project
- Formal consent through MoU
- Formation of a City Task Force & Stakeholder Group
- Engaging stakeholders

City level climate change research and needs assessment → Developing a detailed city profile and collation of data which would support further processes

Community Level

Identification of vulnerable areas & Community vulnerability and needs assessment →
- To identify the most vulnerable areas of the city
- To carry out a community needs and vulnerability assessment in these areas.
- Engaging stakeholders in the process

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Urban Tools

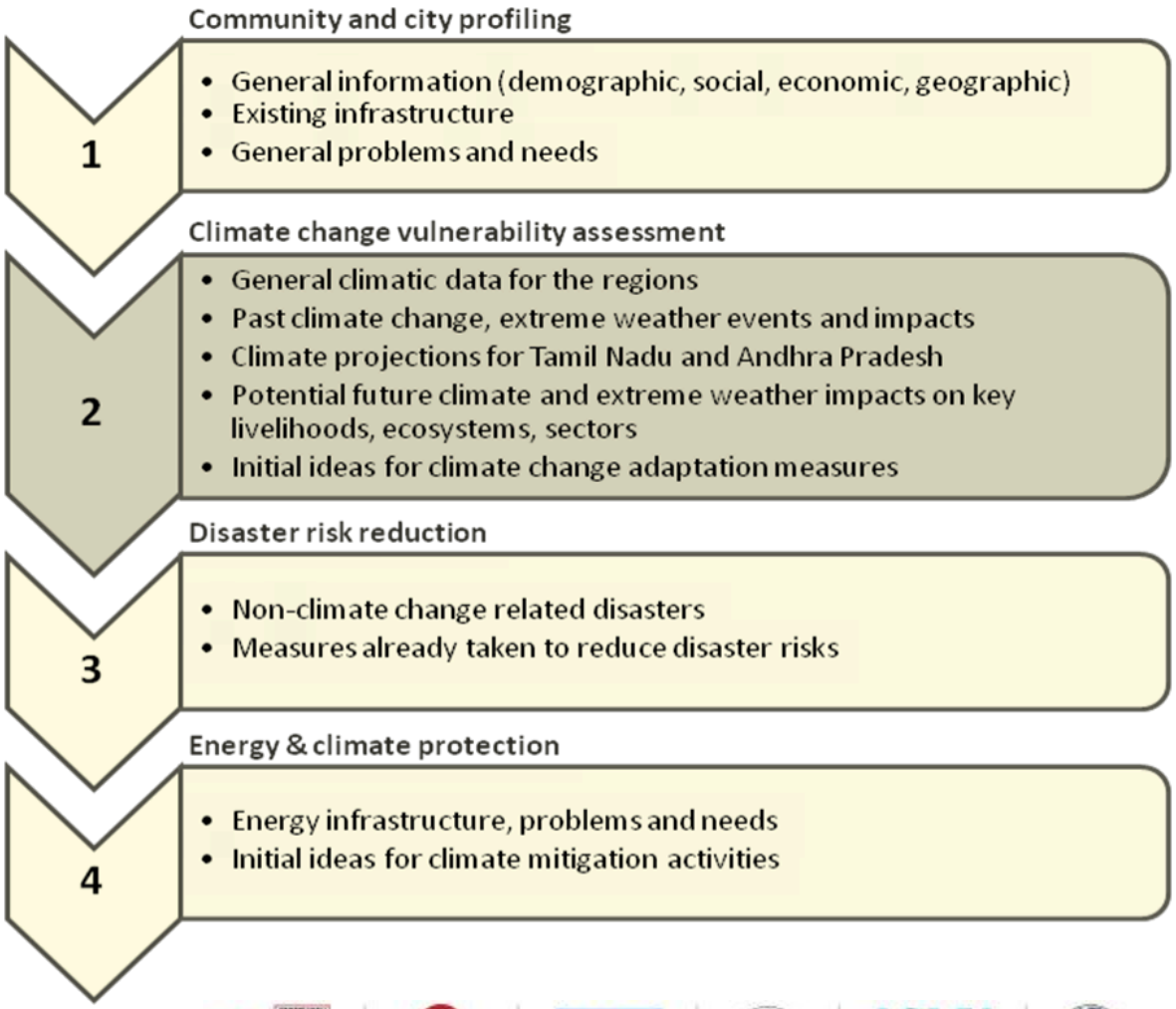
Shared Learning Dialogue Process

- SLD helps both decision-makers and those with a stake in outcomes to have a fuller spectrum understanding of factual conditions and operational constraints and recognises the available sources of information and its quality.

- The SLD meeting was planned to be a half day event divided into five parts:

Urban Tools

City Level Climate Change Research



Urban Tools

Local Adaptation and Mitigation Guides

- Local adaptation and mitigation guides developed for all the 6 six cities based on the vulnerability and needs assessment done in these cities.
- These LAMGs had the following structure:

Urban Tools

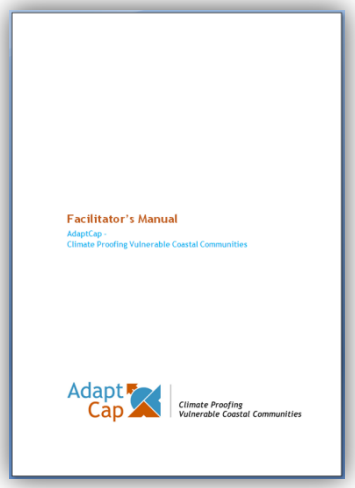
Adapt Cap — Climate Proofing Vulnerable Coastal Communities

Awareness raising and capacity building

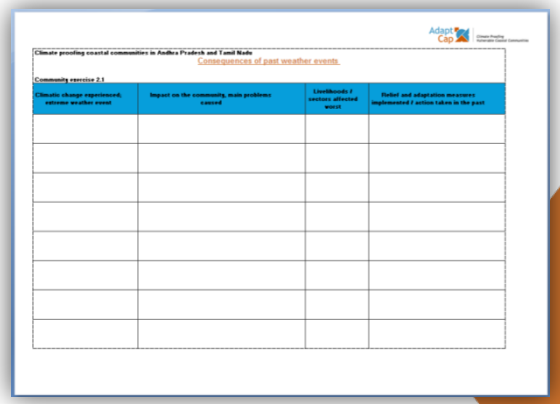
- Training material has been developed for capacity building of local authorities

Training modules as presentation

Training manual document



Accompanying training workbook (Excel)



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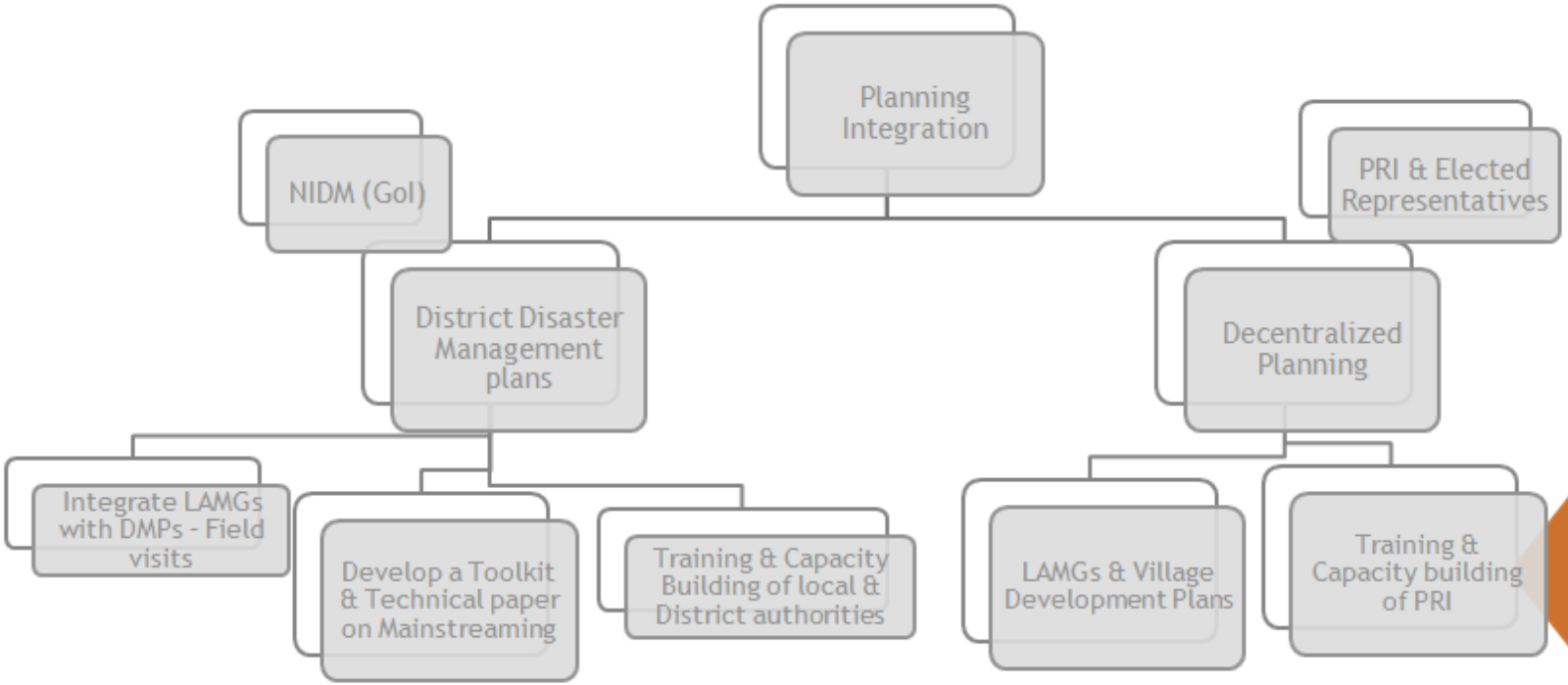
Planning Integration

- Top – down Planning: State Action Plans for Climate Change
- Bottom – up Planning: District and PRI level for mainstreaming



Outputs

- Formation of the City Task Force in each city for identification of core issues, review existing schemes and initiatives and identify potential measures and financial schemes
- In Ponneri Town Panchayat, VNA replicated in 18 wards for assessing the needs and is being presented to the Chief Minister, TN by the Chairman
- In Kavali, the measures suggested in the LAMGs are being taken up by the RDO and Municipal Commissioner
- The DC, Vizag, DC,Thiruvallur and Relief Commissioners AP and TN nominated nodal officers for supporting the development of VDMPs and DDMPs with NIDM, GoI
- Implemented a pilot for Ongole municipality, AP on solar backup for RO plant

Learnings

- Opportunities
  - Cities are large economies and growth is critical to Climate change
  - Local leaders on the front line of climate change
  - Ability to mobilise resources
  - Freedom to innovate and try new solutions
- Challenges
  - Different Layers of Policy making
  - Convergent action missing among different departments
  - Lack of local climate data for decision making
  - lack of capacity, resources and forward-thinking planning
- Drivers for Action
  - Vulnerability assessments – participatory, trusted and communicated well
  - Bottom-up pressure/support from community groups
  - A *crisis* can create political will
  - Put forward the *business case* for action

Sustainable Urban Habitat Action Plan (SUHAP) for Nashik

Supported by GIZ under Indo German Environment Partnership (IGEP)

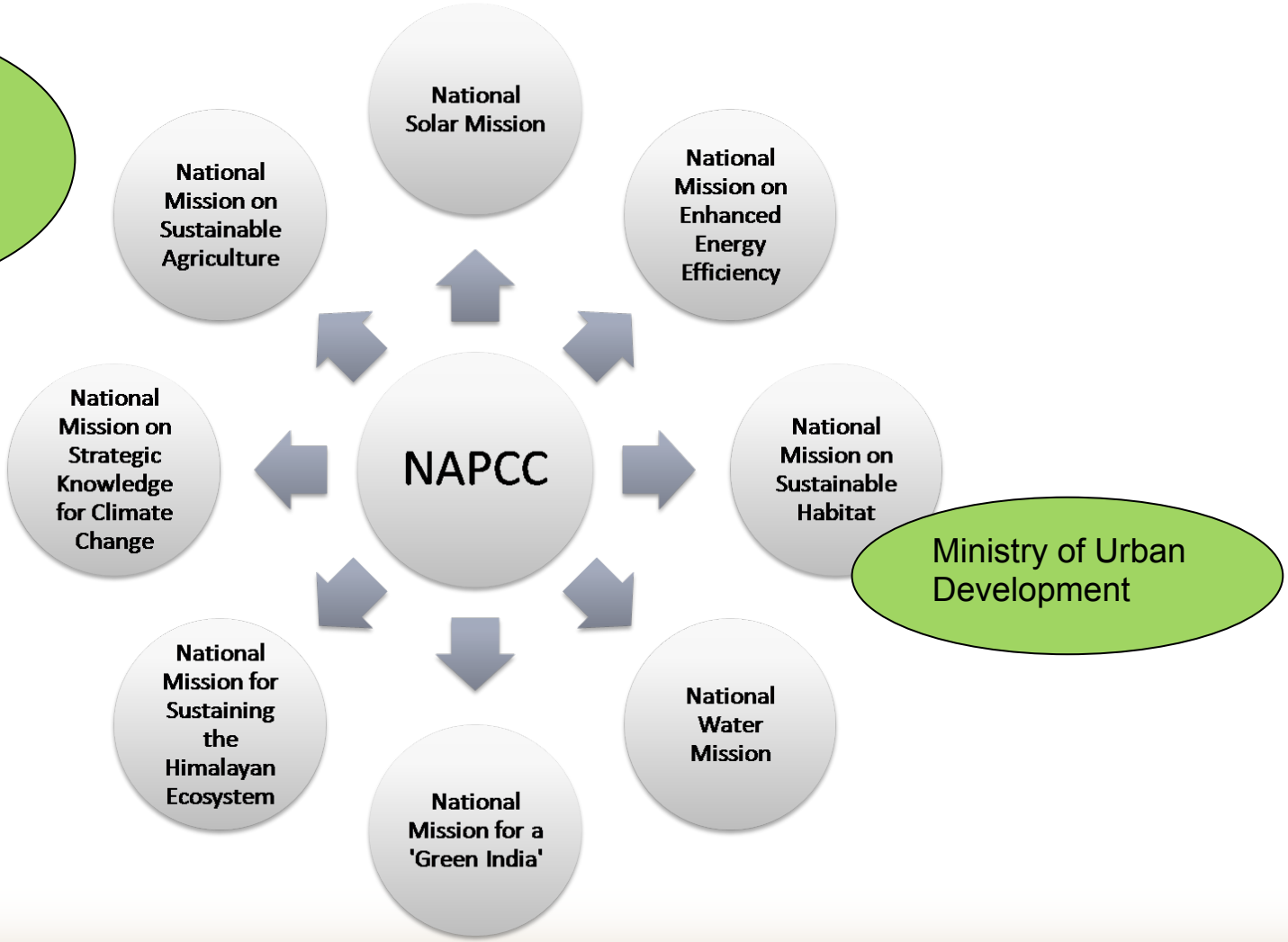
Vaishali Nandan
Senior Advisor, GIZ-IGEP

SUHAP: An Unique Initiative

- A City Climate Action Plan in line with the MoUD's National Mission on Sustainable Habitat (NMSH)
- **Overall objective:**
  - Pilot test a replicable SUHAP process that would facilitate the application of the NMSH in an Indian city
  - Build the capacity of a regional training center to enable the replication
- SUHAP addresses both adaptation & mitigation
  - assess energy use and corresponding GHG emissions
  - Assess climate vulnerabilities in the city
  - develop appropriate action plans for sustainable habitats (SUHAPs)

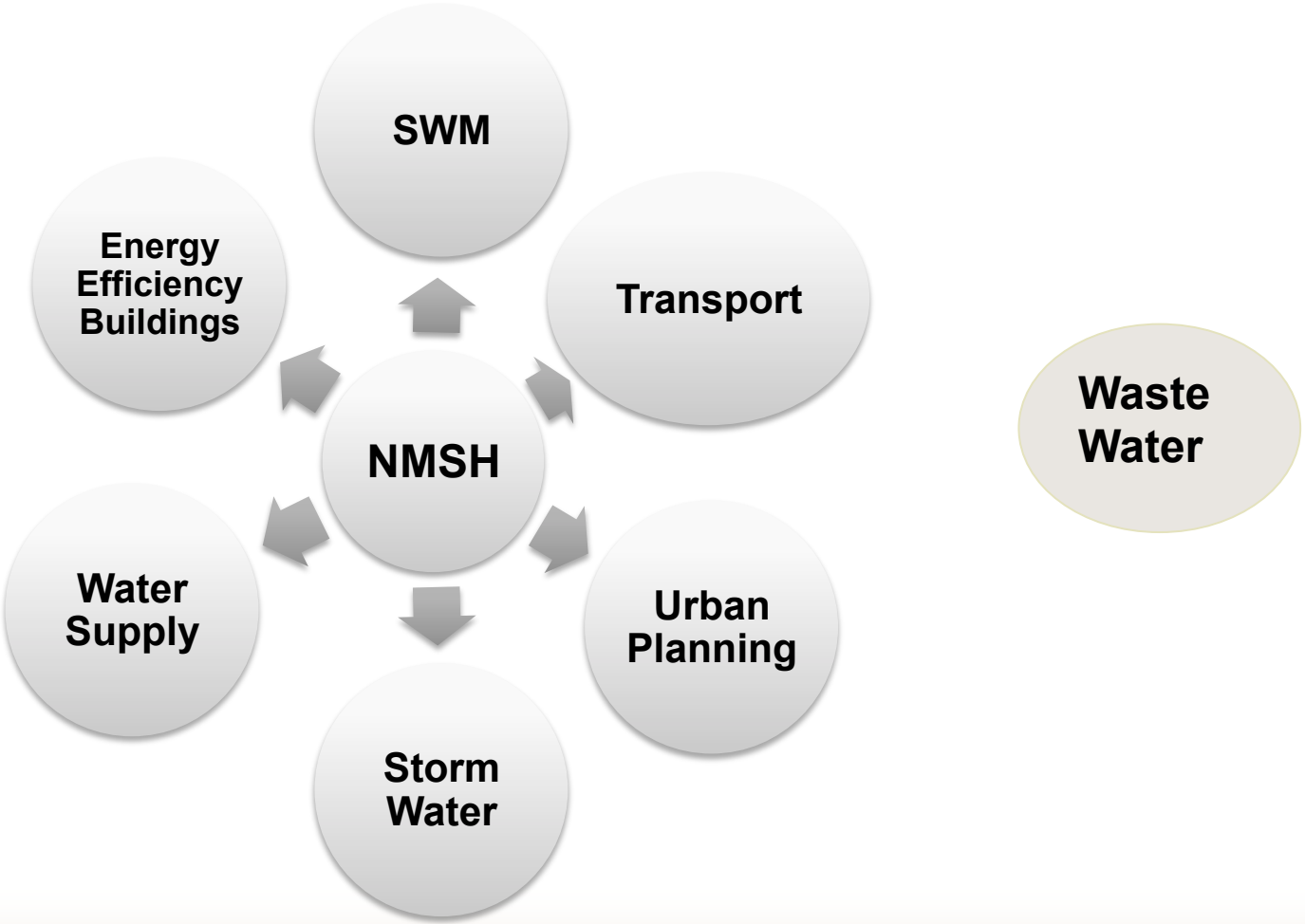
Enabling Framework: National Action Plan for Climate Change

8 Missions
Lead: Ministry of Environment Forests & Climate Change

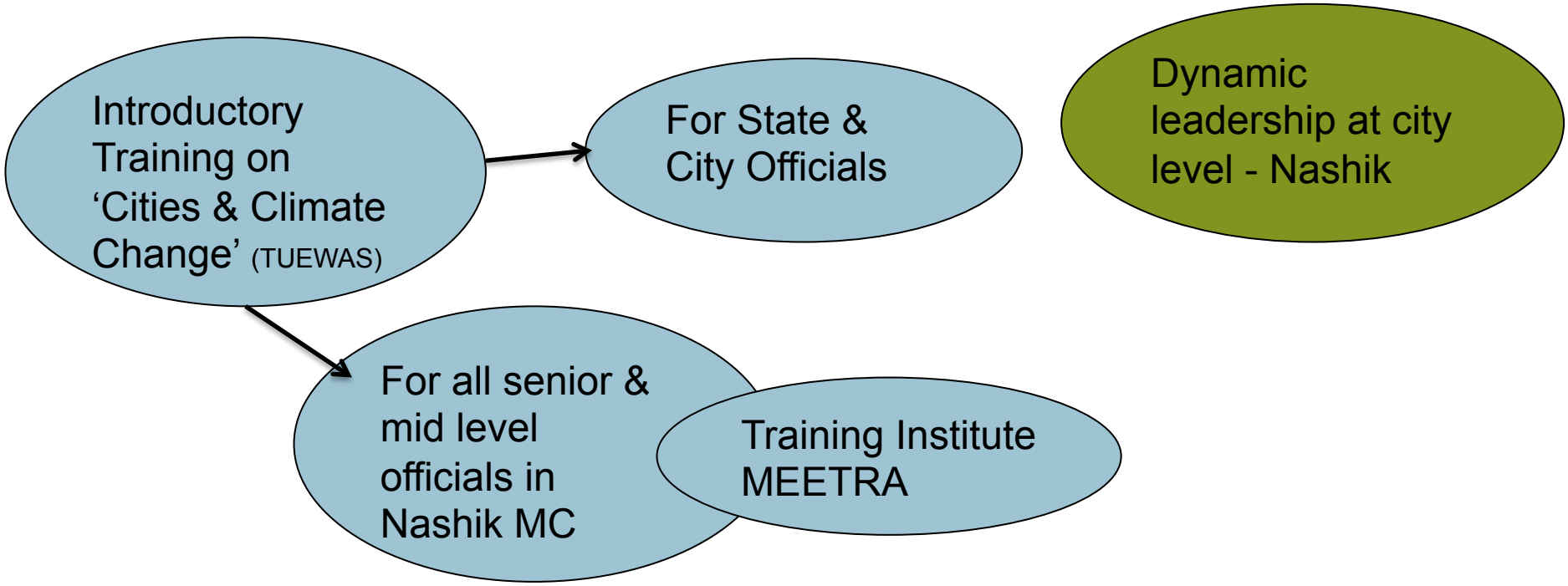


Ministry of Urban Development

Enabling Framework: National Mission on Sustainable Habitat



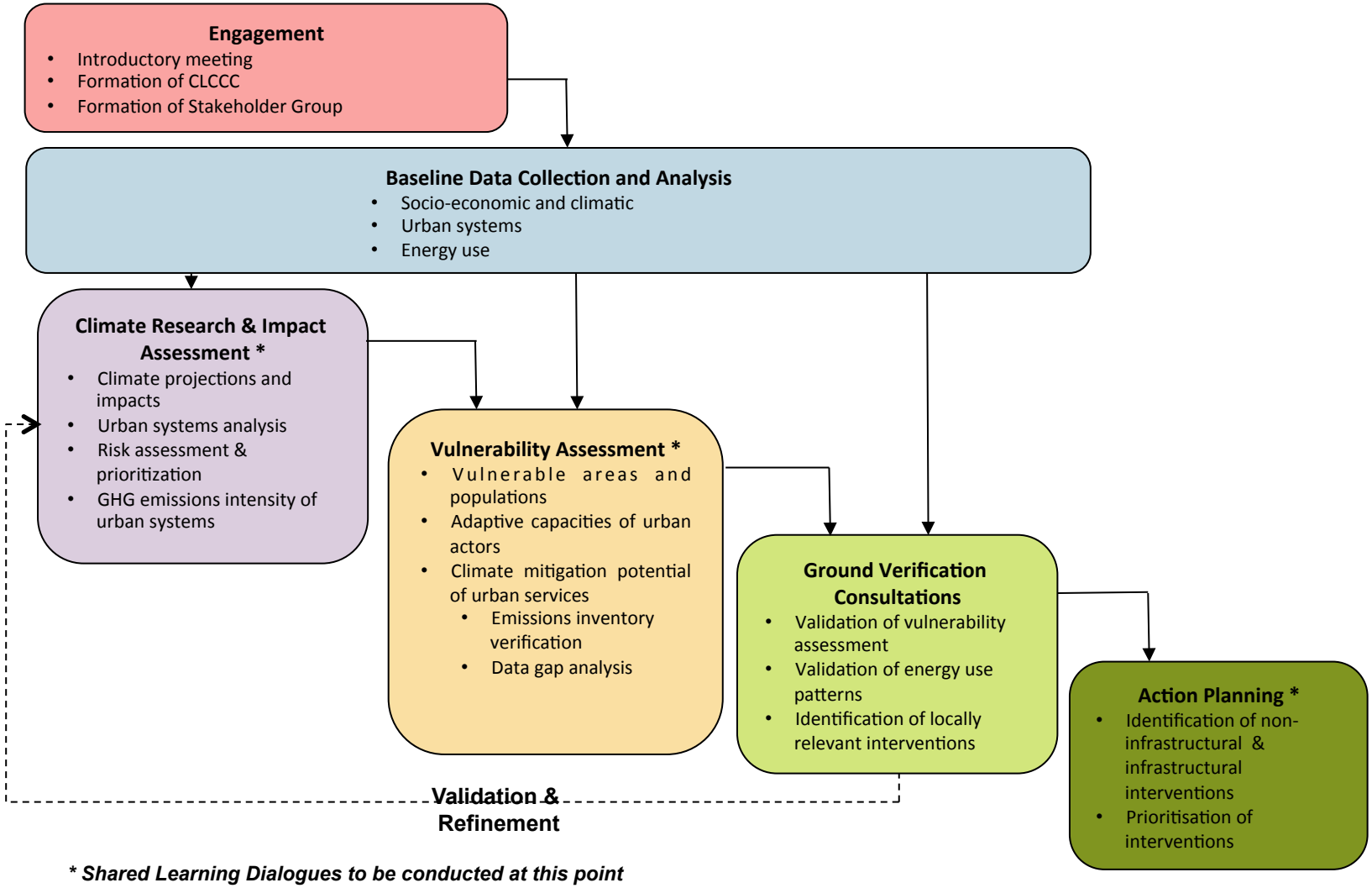
Introductory Training on Urban Climate Change
Why Nashik?



About Nashik: Socio Economic Data

Particulars	Unit	Data
Total population	Number	1.486 million (2011)
Population break up: gender: no of females/ 1000 males	Number	894 (2011)
Population density: average	No./ Sq.km	4016
No of households	Number	330,438
Average size of household	Number	4 – 5
Floating population	Number	1,000,000
Average literacy rate	Percentage	80.57%
Literacy distribution (M/F)	Percentage	M- 83.89% ; F- 76.86%
Population living in slums	Number	0.273 million (2011)

SUHAP Methodology



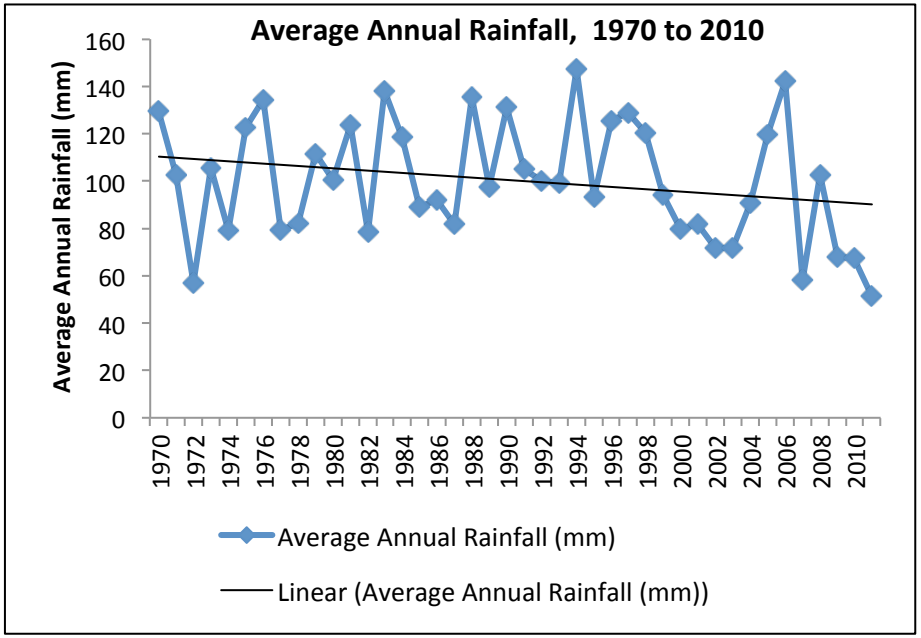
** Shared Learning Dialogues to be conducted at this point*

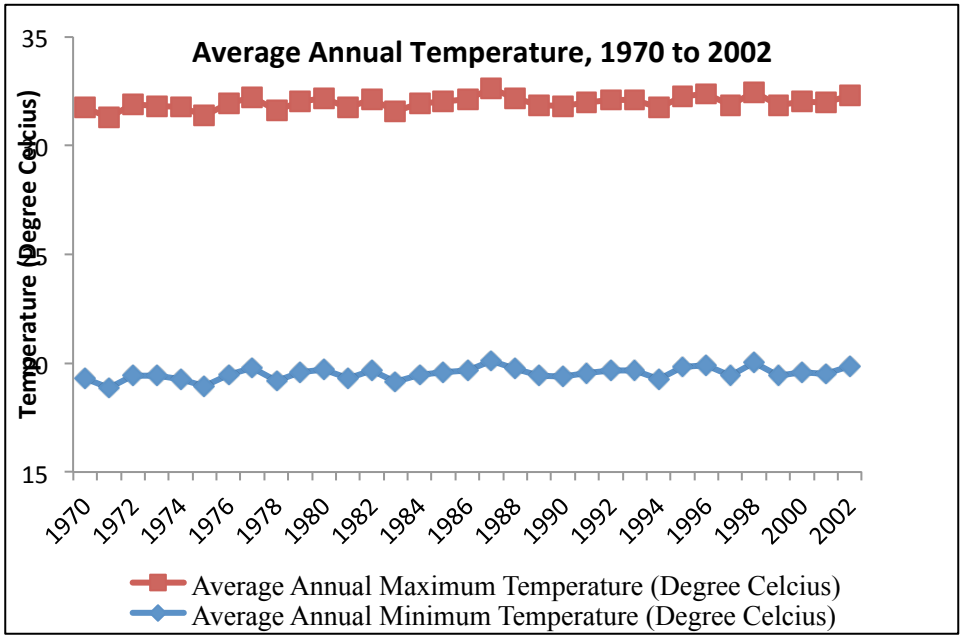
Sectors for Energy Consumption

- Energy Consumption in residential, commercial / institutional, industrial / other buildings
- Energy consumption in urban transport (fuel consumption)
- Energy consumption in water supply
- Energy consumption in waste water (sewerage)
- Municipal Solid Waste (MSW)

* Data Collection formats that combine adaptation and mitigation for each sector are used.

Average Annual Rainfall & Temperature



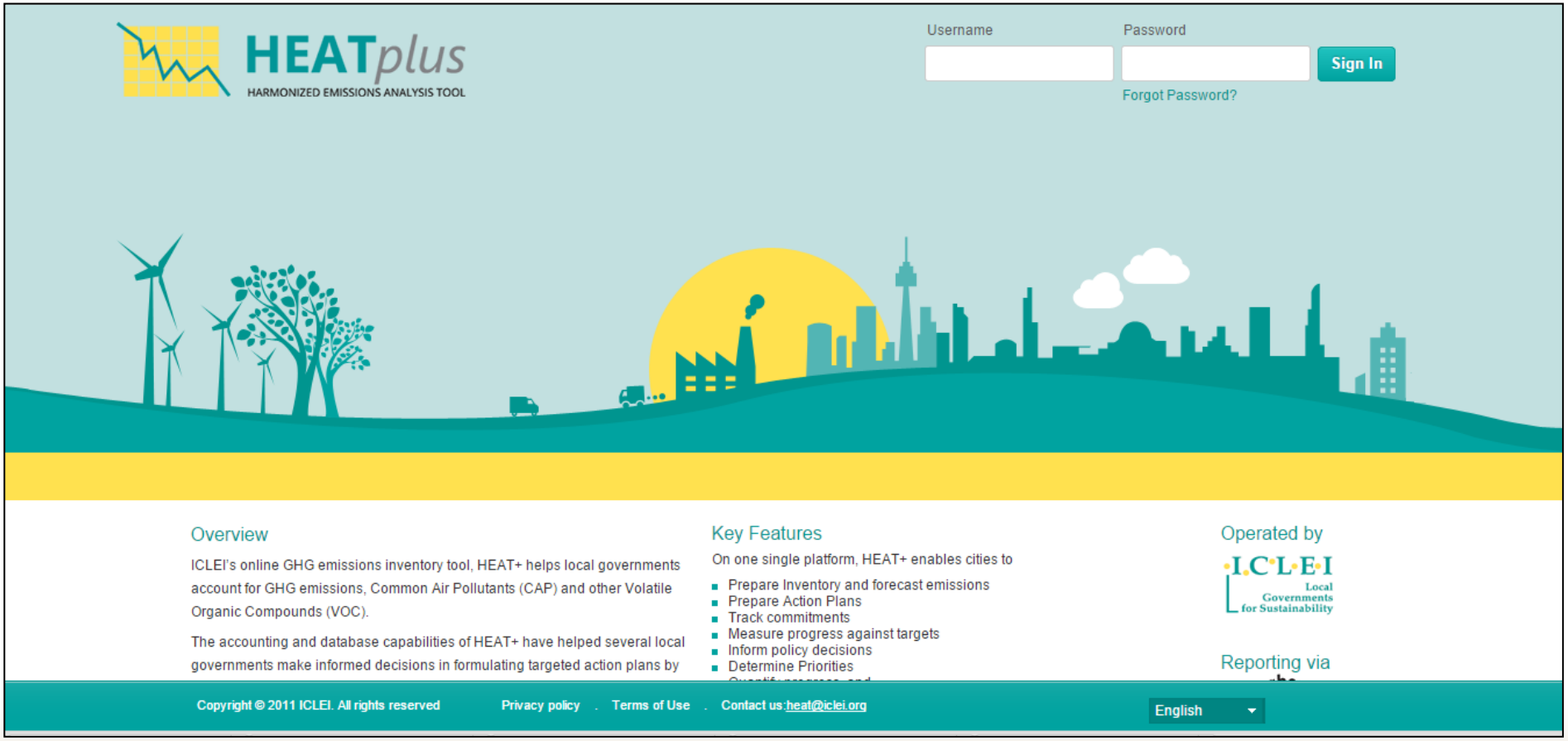


Source: IMD

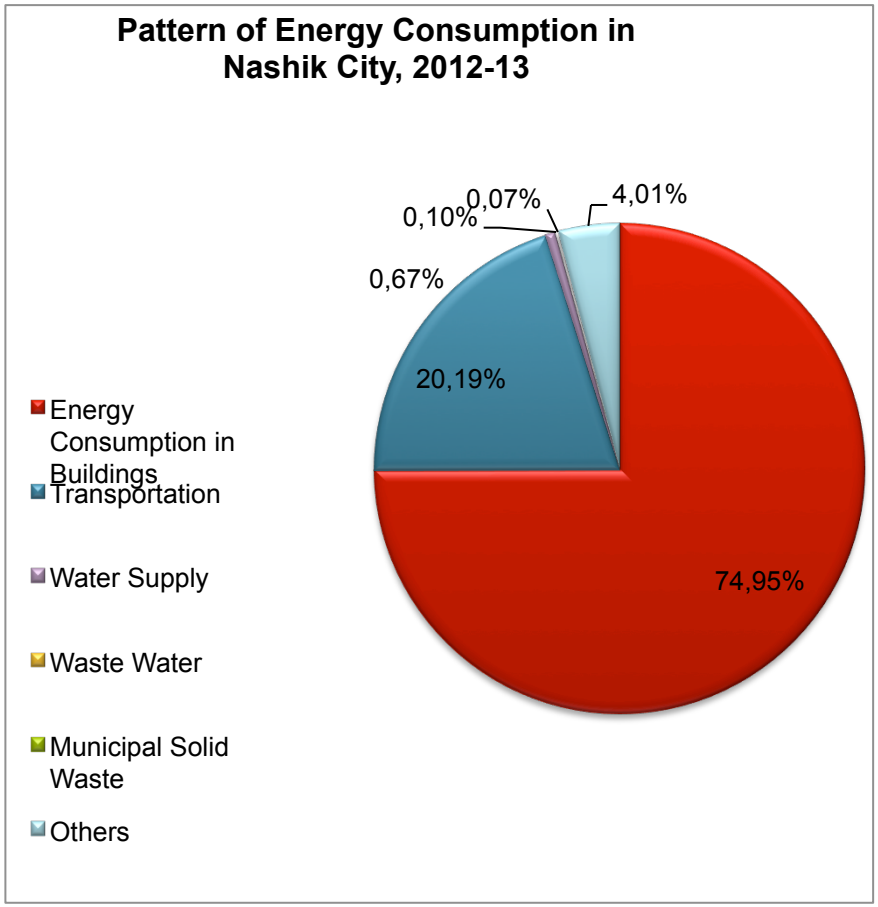
- The historical data shows a downward trend in annual rainfall from 1970 to 2010
- No significant change in the average annual maximum and minimum temperatures

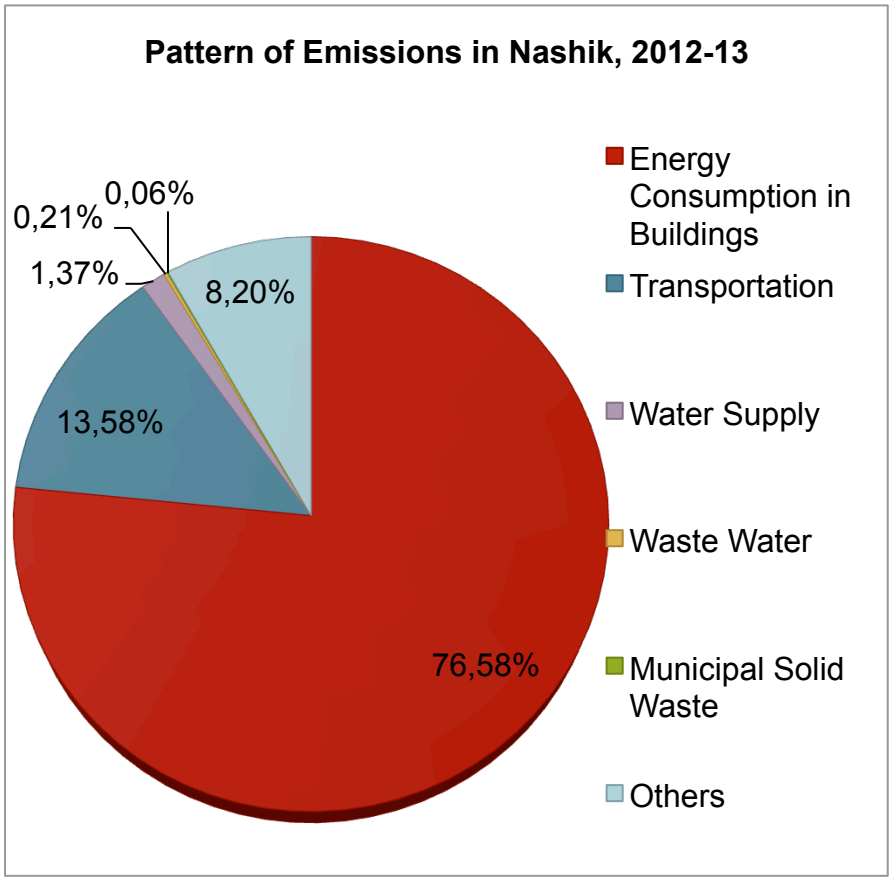
Heat Plus

A one stop tool for cities to calculate, mitigate and monitor the GHG emissions



Energy Consumption and Emissions





- The study reveals that all activities in Nashik city contributed 2.85 million tCO_2e in 2012-13
- Per capita emission for Nashik city is 1.7 t/ Year in 2012-13.

Expected Climate Impact Trends in Nashik

Increase in temperature: greater number of days with high temperatures expected by 2030

Changes in precipitation pattern: higher frequency of high intensity precipitation events expected

Sources: Mainly secondary data

- 4x4 Assessment Report of GoI (2010)
- Study by TERI and the Hadley Centre for Climate Prediction and Research
- Local perceptions and experience

Anticipated Climate Impacts on Urban Systems

Sectors	Potential Climate Impacts
Solid waste	• Improper disposal of solid waste can cause blockages in drainage systems resulting in a potential increase in water logging incidences due to high intensity rainfall events • Rising temperatures increase the risk of landfill fires
Storm water	• Climate projections indicate an increase in the number of days with rainfall greater than 25mm/day. As a result increased incidences of waterlogging can be expected even though currently this is not a threat. This could lead to increased maintenance costs for the Municipal Corporation
Urban planning	• Increasing temperatures coupled with the ongoing urbanisation process will cause energy and water demands to increase beyond what may be planned for. • Further, increasing high intensity rainfall events could lead to greater chances of water logging if land use plans do not take into consideration natural / constructed drainage systems as well as the preservation of water recharge zones
Water supply	• With an expected increase in average temperature and a greater frequency of days with extremely high temperatures, the demand for water could exceed the projected figure that the new water supply scheme is targeting.
Sewerage	• Improper disposal of sewerage can compound health problems of local communities, especially those in slums, during water logging incidences caused by high intensity rainfall events.
Transport	• Increased traffic leads to increased local emissions
Energy	• Increased average temperatures and greater incidences of days with extremely high temperatures would lead to increased demands on energy for cooling, disrupting the existing demand-supply balance

Risk Assessment

- **Risk = Likelihood x Consequence**
- **Likelihood** of occurrence of each of the impact
- **Consequence** in terms of impact on the urban system and the city government if the impact does take place

Summary of a Risk Matrix

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Medium (RS* = 5)	Medium (RS = 10)	High (RS = 15)	Extreme (RS = 20)	Extreme (RS = 25)
Likely	Low (RS = 4)	Medium (RS = 8)	High (RS = 12)	High (RS = 16)	Extreme (RS = 20)
Possible	Low (RS = 3)	Medium (RS = 6)	Medium (RS = 9)	High (RS = 12)	High (RS = 15)
Unlikely	Low (RS = 2)	Low (RS = 4)	Medium (RS = 6)	Medium (RS = 8)	Medium (RS = 10)
Rare	Low (RS = 1)	Low (RS = 2)	Low (RS = 2)	Low (RS = 4)	Medium (RS = 5)

Summary: Sector-wise Climate Risk Profile

Sectors	Associated Impacts	Perceived Risk Status	Additional Associated risks (Mitigation)
Urban Planning	Vertical expansion.	High	NA
	Pressure from peri- urban areas.		
	Lack of green belts.		
	Lack of land allocation for service infrastructure / utilities		
Water Supply	Unaccounted for water.		It accounts for 1.07% of total city GHG emissions
	Increased water demand due to increase in temperature.		
Transportation	Lack of efficient public transport system for peri-urban areas		It accounts for 10.68% of total city GHG emissions of which 9.86% is due to fuel used in transportation and 0.81% is due to street lighting electricity consumption
	Traffic congestion.		
Sewerage	River pollution due to sewerage outfall.		It accounts for 0. 16% of total city GHG emissions
	Lack of sewerage system in slum areas.		
Solid Waste Management	Inadequate solid waste processing (Segregation, C&D, Processing plants).		It accounts for 0.05% of total city GHG emissions of which 0.01% is due to waste processing and 0.04% is due to waste transportation.
	Solid waste dumping in open natural drains.		
Energy	Increase in energy demand due to increase in temperature.		It accounts for 60.18% of total city GHG emissions
Storm Water	Water Logging - Rainfall beyond 27 mm/hour	Medium	NA

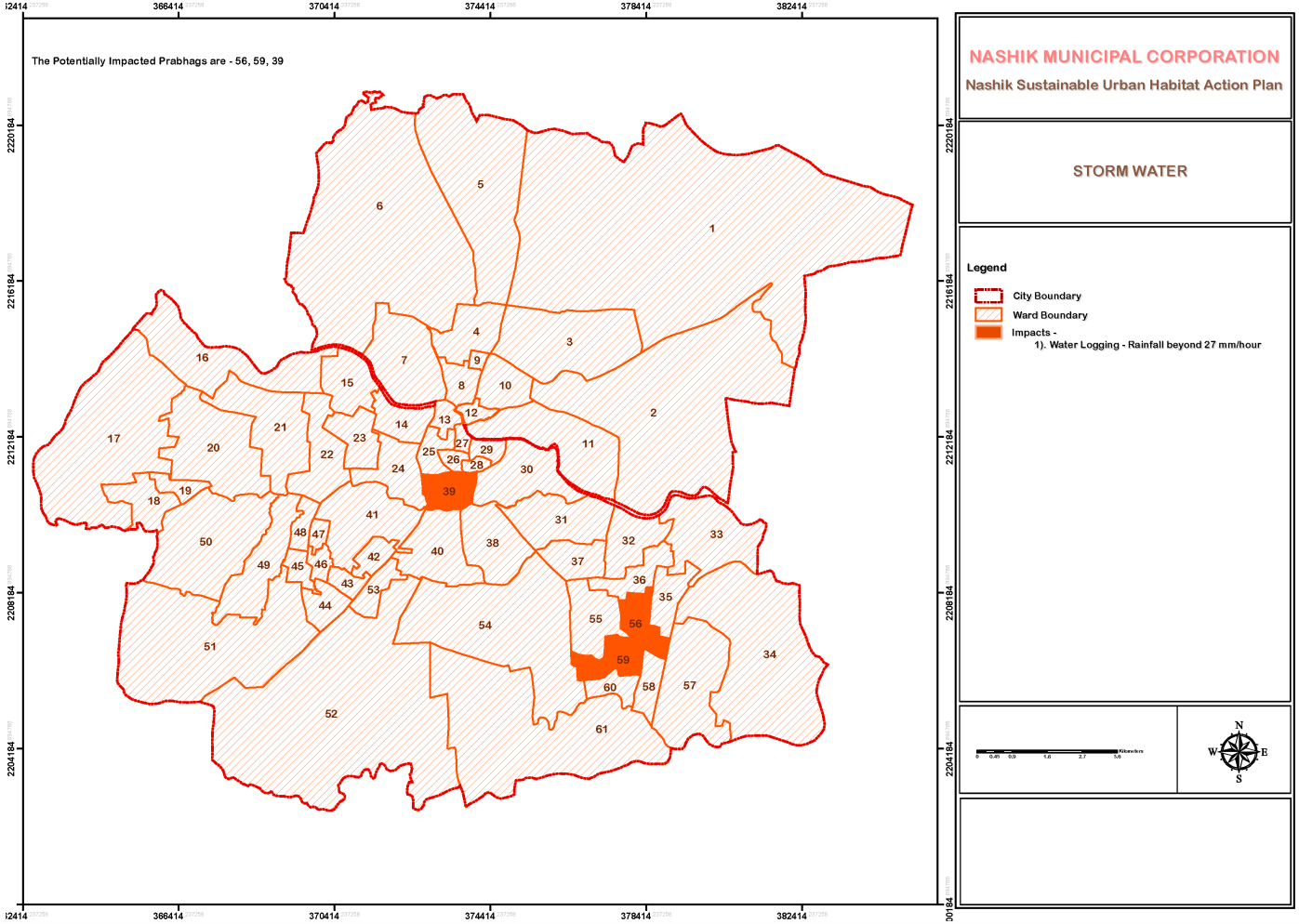
Vulnerability Assessment: Areas & Social Groups

- Identification of affected areas and urban actors
- Assessment of adaptive capacity of each urban actor based on

Key Capacities of Actors	Score
Responsiveness	
Low capacity to organize and re-organize in response to threat or disruption	1
Medium capacity to organize and re-organize in response to threat or disruption	2
High capacity to organize and re-organize in response to threat or disruption	3
Resourcefulness	
Low capacity to identify and anticipate problems, establish priorities and mobilize resources for action	1
Medium capacity to identify and anticipate problems, establish priorities and mobilize resources for action	2
High capacity to identify and anticipate problems, establish priorities and mobilize resources for action	3
Capacity to Learn	
Low capacity to avoid repeated failures, and innovate to improve performance	1
Medium capacity to avoid repeated failures, and innovate to improve performance	2
High capacity to avoid repeated failures, and innovate to improve performance	3

Urban Actors Analysis

Example: Urban Storm Water Drainage



Actors

Vulnerable

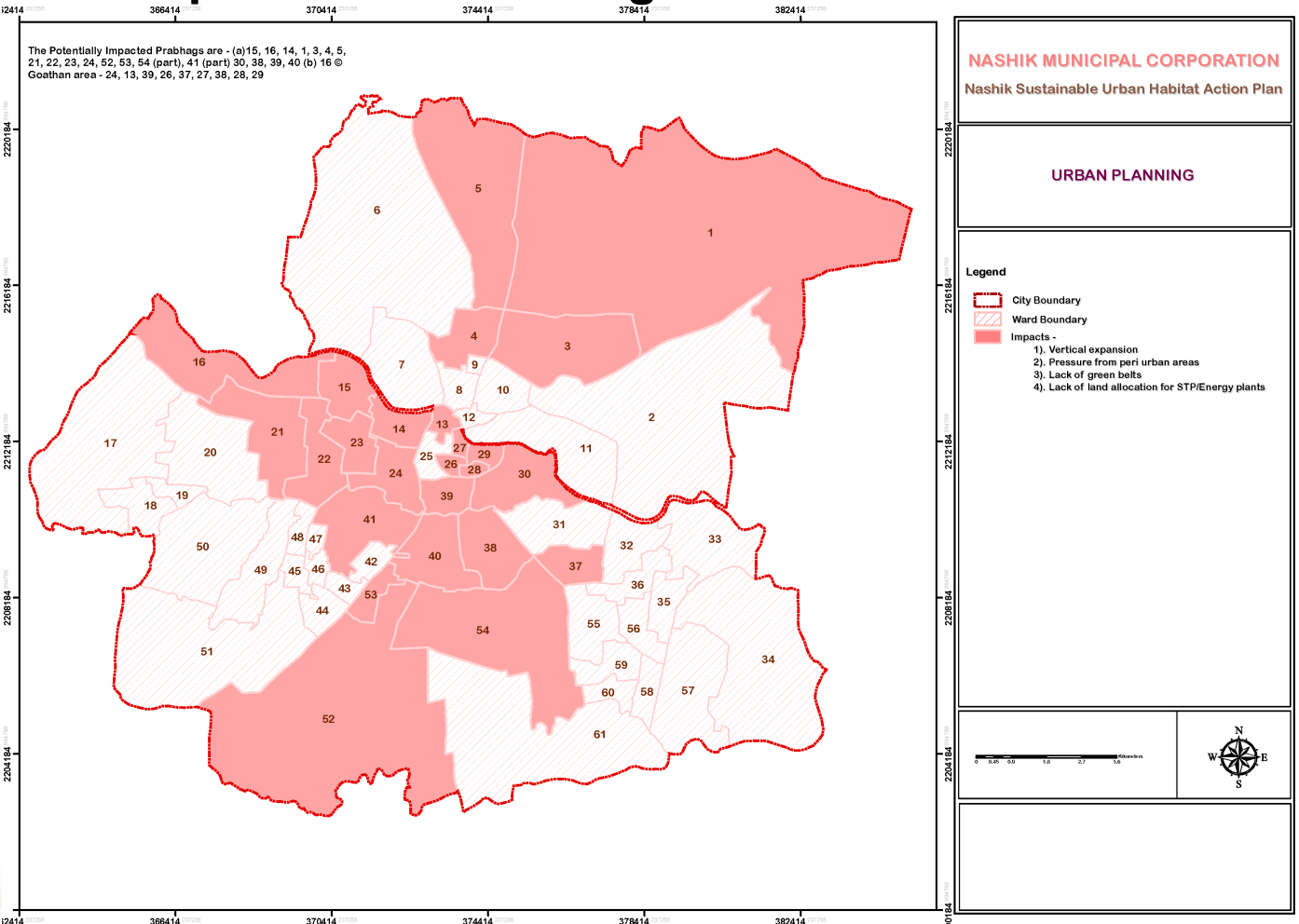
- Slum dwellers on river bank and near major city nallahs.

Supporting

- Public Works Department (NMC)
- Drainage Department (NMC)
- Irrigation Department

Urban Actors Analysis

Example: Urban Planning



Actors

Vulnerable

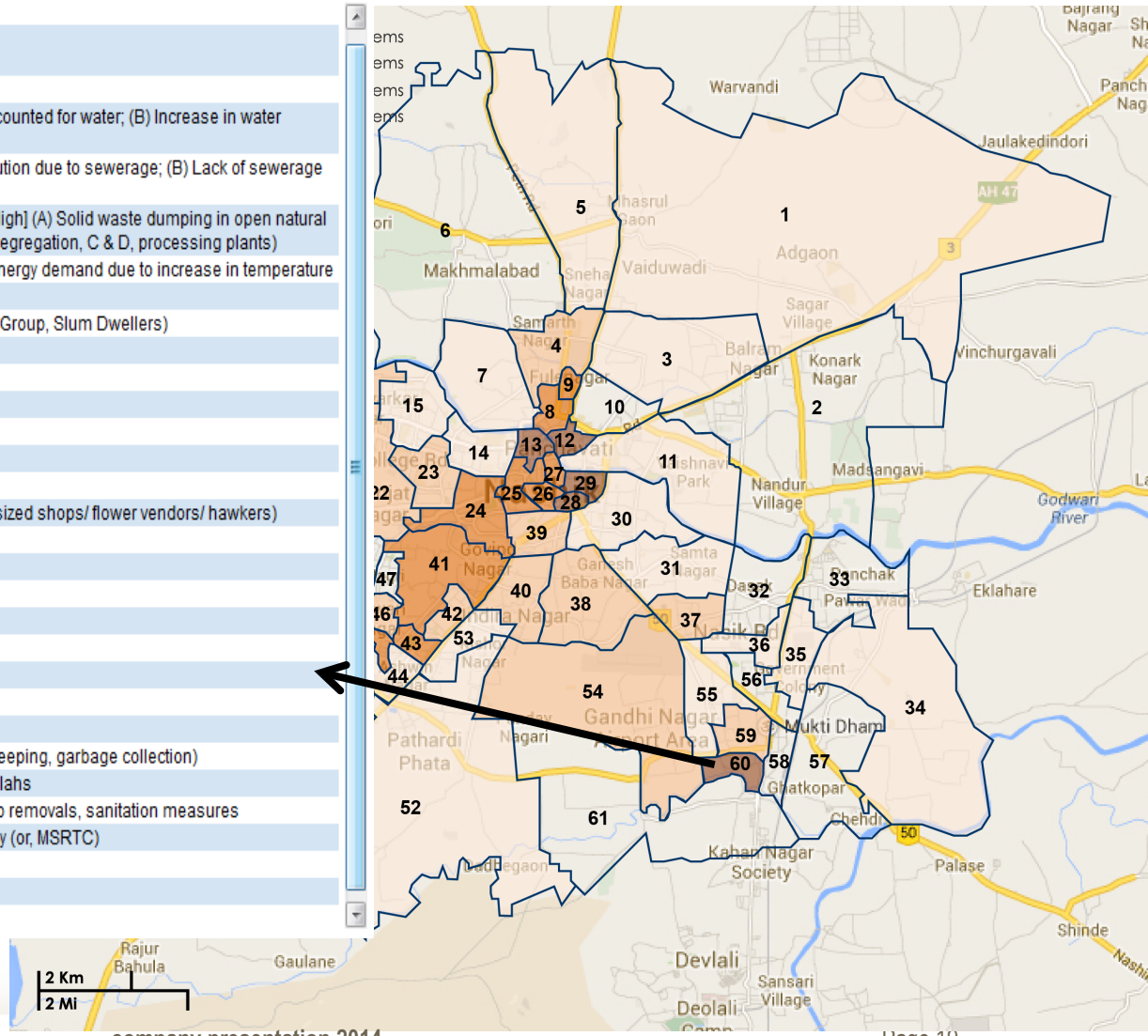
- Citizens of Nashik in general
- Industries
- Maharashtra State Electricity Distribution Co. Ltd

Supporting

- Nashik Municipal Corporation
- Government of Maharashtra
- Builders and real estate developers
- Financial institutions

Climate Risk Mapping

Ward_No	60
OVERALL RISK - No. of Sectors with (of 7 Sectors) "HIGH" deg. of Risk?	4
SECTORs & POTENTIAL IMPACTS	
1	WATER SUPPLY [Degree of Risk: High] (A) Unaccounted for water; (B) Increase in water demand due to increase in tempertaure
2	SEWERAGE [Degree of Risk: High] (A) River pollution due to sewerage; (B) Lack of sewerage system in slum areas
3	SOLID WASTE MANAGEMENT [Degree of Risk: High] (A) Solid waste dumping in open natural drains; (B) Inadequate solid waste processing (segregation, C & D, processing plants)
4	ENERGY [Degree of Risk: High] (A) Increase in energy demand due to increase in temperature
VULNERABLE ACTORS	
1	Residential Sectors (High/ Medium/ Low Income Group, Slum Dwellers)
2	Tourists/ Pilgrims/ Floating Population
3	Builders and Developers
4	Hotels/ Private offices
5	Hospitals
6	Educational Institutions
7	Industries (Small/ Medium/ Large scale)
8	Commercial establishments (medium or, small sized shops/ flower vendors/ hawkers)
9	Students
10	Employees (Government/ Private sector)
11	Educational Institutions
12	Farmers
13	Regular/ Irregular Laborers
POTENTIAL SUPPORTING ACTORS	
1	Nashik Municipal Corporation (or, NMC)
2	Water Supply Department, NMC
3	Health Department, NMC - (for daily cleaning, sweeping, garbage collection)
4	Public Works Department, NMC - for cleaning nallahs
5	Drainage Department, NMC - for regular choke up removals, sanitation measures
6	Maharashtra State Road Transportation Company (or, MSRTC)
7	Maharashtra Pollution Control Board (or, MPCB)
8	Slum Dwellers (all age group)
9	Government of Maharashtra



Urban Systems Analysis

Urban Planning

Issues:	• Vertical expansion of the city is being planned, which will require the provision of basic services – this could be a challenge. • Lack of land allocation for infrastructure that would support improved provision of basic services • Pressure from peri-urban areas on urban services is growing due to increase in population in the outer periphery areas of the city. In future there are chances of these areas merging into the city limit, which will necessitate the supply of urban services by the corporation to these areas.
Existing / Planned Measures:	• The Development Plan and City Development Plan for Nashik are being revised
Potential Climate Impacts:	• Increasing temperatures coupled with the ongoing urbanisation process will cause energy and water demands to increase beyond what may be planned for. • Further, increasing high intensity rainfall events could lead to greater chances of water logging if land use plans do not take into consideration natural / constructed drainage systems as well as the preservation of water recharge zones

Findings: Ground Verification

Panchvati Division – Issues and Solutions

Relevant Sector	Critical Issues	Potential Solutions
Urban Storm Water Drainage	Water Logging – beyond 70 mm / hour	• Reducing waste generation at source • improved systems for waste disposal • frequent maintenance of sewerage lines
Urban Storm Water Drainage; Solid Waste	Drainage system in Slum Areas – ward 8 & 9	• Reducing waste generation at source • Improved systems for waste disposal • Frequent maintenance of sewerage lines
Water Supply	Un – accounted / unmetered water supply in Slum Areas – ward 8 & 9	• Metering of water used for municipal purposes • rain water harvesting to be enforced in new building – retrofitting in community buildings
Energy	High energy use in ward no. 12 – community halls, lodges, ashrams	• Mandatory solar power in residential areas
Transportation	Road congestion due to parking / narrow streets	• Alternative parking • Comprehensive mobility plan • NMT plan • improved public transport • intermediate public transport
Sewerage	Awareness about Sulabh toilets	• Running awareness programs • Training for municipal corporation officials
Urban Planning	Open Spaces, maintaining of green areas and agriculture areas	• Tree Plantation • ground water recharge • urban agriculture – solar water pumps

Snapshot Action Plan

Water Supply

CLIMATE ACTION PLAN			
	Short / Medium / Long term*	**Indicative Capital Cost*** **(Low/Med./High)**	**Potential Co-benefits**
Policy / Non-infrastructural Measures			
A review of the functioning of the water metering system and undertake corrective measures for improving cost recovery	Medium	Low	Water conservation encouraged
Undertake regular checks to detect water losses in the system due to leakages and thereby reduce the amount of non-revenue water	Short & medium term	Low	Energy saved and emissions reduced due to more efficient pumping
Enforcement of rainwater harvesting byelaws to new *and old* constructions	Short term	Low	Potential for saving energy spent on pumping water
Awareness generation campaigns for the conservation of water resources	Short term	Low	Mobilizing community participation
Promote use of smart water saving fittings in residential and commercial complexes	Medium term	Low	
Implement the recommended actions for water supply as per the City Sanitation Plan for Nashik City, for example: • Implement automated SCADA based monitoring at WTPs and distribution stations for effective monitoring and baseline information capture on water flows • Install Bulk Metering at various points in the water supply network • Implement regular meter reading to effectively implement volumetric water tariffs	Medium Short Short	Low – Medium	
District water area maps should be generated	Short	Low	
Infrastructural Measures			
Existing unmetered water connections to be identified and water meters to be installed	Short term	Low (considering 95% coverage achieved)	Water conservation encouraged
Retrofitting of all institutional, offices and community buildings e.g.	Short term	Low	Reduced energy consumption for
Dharamshalas, Ashrams in Old Nashik area (parts of Nashik East and Panchavati Divisions) to harvest rainwater			pumping of water – reduced emissions
Timely and effective repair and maintenance of community taps to reduce wastage (esp. in slum areas)	Short term	Low	Improved cleanliness and resulting health benefits
Use of power saver devices in the pump houses based on regular water-energy audits in: • 2 raw water pumping stations (Gangapur and Darna) • 5 Water Treatment Plants (Nashik Road, Gandhinagar, Panchavati, Bara Bungalow, Shivaji Nagar) • Booster stations (spread across the city)	Short term	Low – Medium	Energy saving
Installation of variable speed drivers (VSDs) to adjust to the requirements of the water being used in pump houses, commercial and institutional complexes	Short term	Low	Energy saving
Use of star rated pump sets, motors and transformers for industries in Nashik	Short term	Low	Energy saving
Demarcation of natural drainage systems that traverse the city and undertake watershed management activities in the upstream sections to reduce runoff and increase groundwater recharge	Short - Medium term	High	Reduction in incidences of water logging
Assessment of old water supply lines and redesigning and by laying new ones, as appropriate, to cater to increasing demands (New Nashik and Nashik West Divisions)	Medium – Long term	High	
Develop supply network infrastructure to allocate type of water (treated, raw) according to the proposed use e.g. drinking / domestic use quality not to be used in home gardens – raw water to be used	Medium – Long term	High	Reuse of wastewater

*Note: **Short term:** 0-3 Years; **Medium term:** 3-10 years; &**Long term:** 10 + years

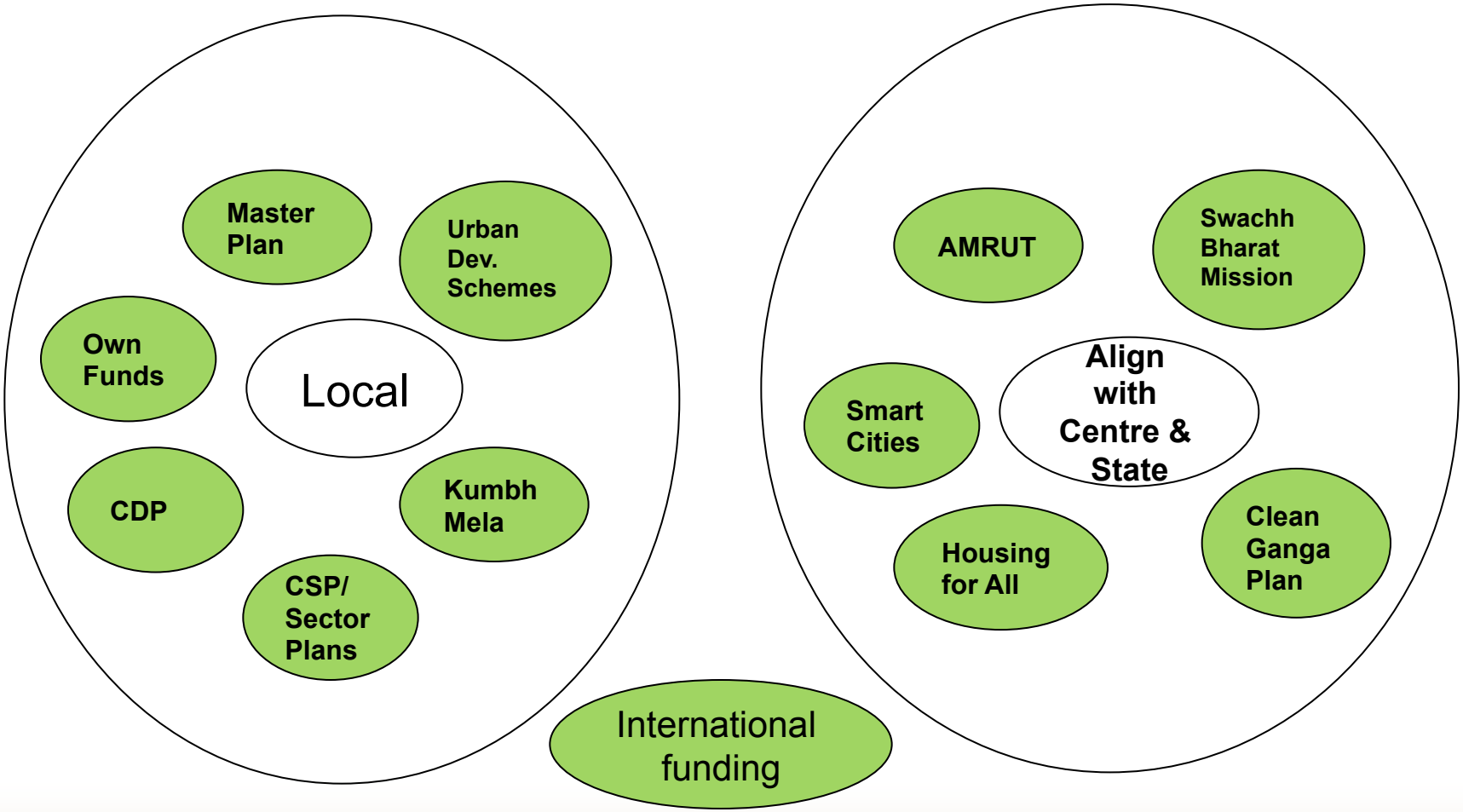
Low capital cost: covered by city budget; **Medium capital cost:** city requires partial financial support; **High capital cost:** city requires substantial financial support

Prioritized Actions and Indicative Costing

Energy Consumption in Buildings

Policy and Institutional Measures	Cost per unit and description	Rank	Total Cost (Lakh INR)
Exercise regular energy audits of the industrial units	For small scale industries	**1**	15
Enforcement of bye laws for the use of solar water heaters in domestic, commercial and industrial buildings	Cost of training 30 people for 3 days. It includes the cost of experts, training material etc.	**1**	2.4
Infrastructural Measures			
Installing Solar PV systems in 105 municipal schools in Nashik: - 1KW PV system for 80 schools that consume up to 1000 kWh of electricity per year - 2-3KW PV system for 20 schools that consume 1000-2000 kWh of electricity per year - 5KW PV system for 5 schools that consume more than 1000-2000 kWh of electricity per year	Rs. 100 / - per watt peak for the systems upto 100 kWp	**1**	165
Installing 5-15 KW Solar PV systems in various municipal office buildings: - Installation of a 5 KWp Solar PV system in 10 number of municipal office buildings. - Installation of a 10 KWp solar PV system each in 6 number of office buildings - Installation of a 15 KWp solar PV system in 3 number of municipal buildings	Rs. 100 / - per watt peak for the systems upto 100 kWp	**2**	155
Total			**337.4**
Budget available for the sector			**4614**
Percentage total cost of the budget for the sector			**7.31%**

Implementation & Way Forward…



THANK YOU