Thane Municipal Corporation, India

Advancing a low emissions city: The roles and responsibilities of stakeholders

ICLEI Local Governments for Sustainability

Thane has begun implementation of its city-wide low emissions development strategy with the support of the ICLEI Urban-LEDS project. Early outcomes indicate that stakeholder engagement is increasingly shown to be a crucial factor for lasting climate action. This is a key underpinning principle of the Green Climate Cities methodology, which has guided the formation of a stakeholder committee that will empower Thane on its climate journey.

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Summary

Thane Municipal Corporation (TMC) has successfully undertaken numerous innovative energy efficiency and renewable energy initiatives, and has several more actions planned as part of the Thane Solar City Master Plan. TMC has joined ICLEI's Urban Low Emissions Development Strategy (Urban-LEDS) program to help support its progressive climate action trajectory. The city is working with an energy service company (ESCO) to implement LED street lighting for over 10,000 street lights, and intends to install over 250 LED street lights in impoverished parts of the city. TMC also plans to conduct a climate change awareness program to expose students from 15 schools to low carbon lifestyles. Thane prioritizes stakeholder engagement as a key tenet of its climate strategy, and recognizes that strong stakeholder relations will be integral to the success of the Urban-LEDS program. This case study documents the starting point for TMC's involvement in Urban-LEDS, and provides a framework for exploring the roles and responsibilities of stakeholders in this project.

The importance of stakeholder engagement in Thane

TMC has a rapidly growing population, and this growth has been accompanied by increased demand for municipal services and energy. Thane recognizes that it must improve its energy efficiency to meet the needs of its growing population, and hopes to accomplish this through encouraging behavioral change, adoption of more efficient technologies, and the use of renewable energy sources. The TMC recognizes stakeholder engagement as an underpinning principle of lasting climate action, and will thus utilize its base of stakeholders to identify and implement workable energy efficient alternatives. TMC Additional Commissioner Mr. Shyamsundar Patil has noted that his citizens are generally motivated to engage in civic initiatives. Yet although cities recognize the benefits of engaging stakeholders in their actions, stakeholders themselves do not always understand their roles or responsibilities in the process.

As part of Thane's Solar City Master Plan process, various energy efficiency and renewable energy initiatives were identified thanks to the insight of key stakeholders. TMC's involvement in the Urban-LEDS project will facilitate the implementation of these initiatives by building capacity for municipal officers in different departments, as well as within stakeholder groups. Stakeholders must accept a certain level of responsibility for the implementation of the Urban-LEDS project, as effective engagement is fundamental to ensuring realistic and robust initiatives are achieved.

Facts & Figures

Population / Land area
1.80 million / 128 km² (2011)

Municipal budget
$ 343.00 million (2014)

GHG inventory available
2012-2013

Community's total GHG emissions in $MtCO_2e$/year
77,900 $MtCO_2e$ in 2012-2013

URBAN LEDS
URBAN LOW EMISSION DEVELOPMENT STRATEGIES

UN HABITAT
FOR A BETTER URBAN FUTURE

Thane has been a member of ICLEI since 2008, and is one of the eight Indian cities participating in the Urban-LEDS project.

The Urban-LEDS Project

An Urban Low Emissions Development Strategy (Urban LEDS), or Low Emissions Urban Development Strategy, defines a pathway to transition a city to a low emission, green and inclusive urban economy, through its integration into city development plans and processes.

The Urban-LEDS project, funded by the European Commission, and implemented by UN-Habitat and ICLEI, has the objective of enhancing the transition to low emission urban development in emerging economy countries by offering selected local governments in Brazil, India, Indonesia and South Africa a comprehensive methodological framework (the GreenClimateCities methodology) to integrate low-carbon strategies into all sectors of urban planning and development.

Thane in context

The city of Thane, one of the major industrial towns of the state of Maharashtra in India, is part of the Mumbai Metropolitan region and serves as the administrative center for Thane district. Its population has grown 44 percent in the last decade, and the 2011 census listed the city's population at 1.82 million. Primary, secondary, and tertiary sectors all contribute to Thane's economic prosperity, with the small-scale engineering and mechanical sector increasingly growing in significance.

This growth in population, commerce, and industry has led to an increased demand for the municipal services provided by the TMC, as well as the increased need to provide energy to power this growth. Energy use in the city has increased steadily; electricity consumption alone increased 25 percent between 2008-2012.

The services provided by the TMC are comprehensive: health care (hospitals, immunization programs, blood bank services, ambulances), street lighting, water purification and supply, sewerage treatment, waste management, schools, municipal markets, leisure and recreation facilities, and fire-rescue services. Additionally, transportation also falls within the city's purview, as the TMC manages 45 bus routes throughout the city. Across this diverse array of sectors, there exists considerable potential for improving the efficiency of services through integrated and coordinated low-emissions development. The Urban-LEDS project will support Thane in delivering innovative, cross-sectoral energy efficiency and renewable energy initiatives.

The majority of the energy efficiency and renewable energy initiatives within TMC, including implementation of the Solar City Master Plan and the Urban-LEDS project, are the responsibility of the Electricity Department. The department has the authority and support to undertake the technical work necessary to increase energy efficiency, such as installing more energy efficient technology, or upgrading street lights to LED standard. That being said, behavioral change, such as pre-sorting waste to facilitate efficient waste-to-energy technology implementation, is also necessary. The Head of the Electrical Department has noted that the Department has the challenge of not only developing external understanding of the services provided by the municipality, but also of building the capacity of the Department staff to effectively engage with stakeholders about these issues and implement new technology successfully. The Urban-LEDS project will help TMC to engage staff and stakeholders in the energy efficiency and renewable energy processes, thereby ensuring that realistic and robust initiatives are prioritized and maintained.

History of policies and work to date

The Government of India (GOI) has provided specific directives to urban local bodies to focus on energy efficiency and renewable energy initiatives. It has enacted legislation to improve energy conservation in the country and released a National Action Plan on Climate Change (NAPCC). The Energy Conservation Act (2001) and the Energy Conservation Amendment Act (2010) detail a raft of measures to address energy efficiency and renewable energy implementation across the country. The NAPCC, released in 2008, outlines eight core 'national missions' to address climate mitigation and adaptation through a range of policies and programs.

Combined, these legislative acts and missions provide an enabling framework, guidance, and (in certain cases) resources for both states and cities to enact energy efficiency and renewable energy programs.

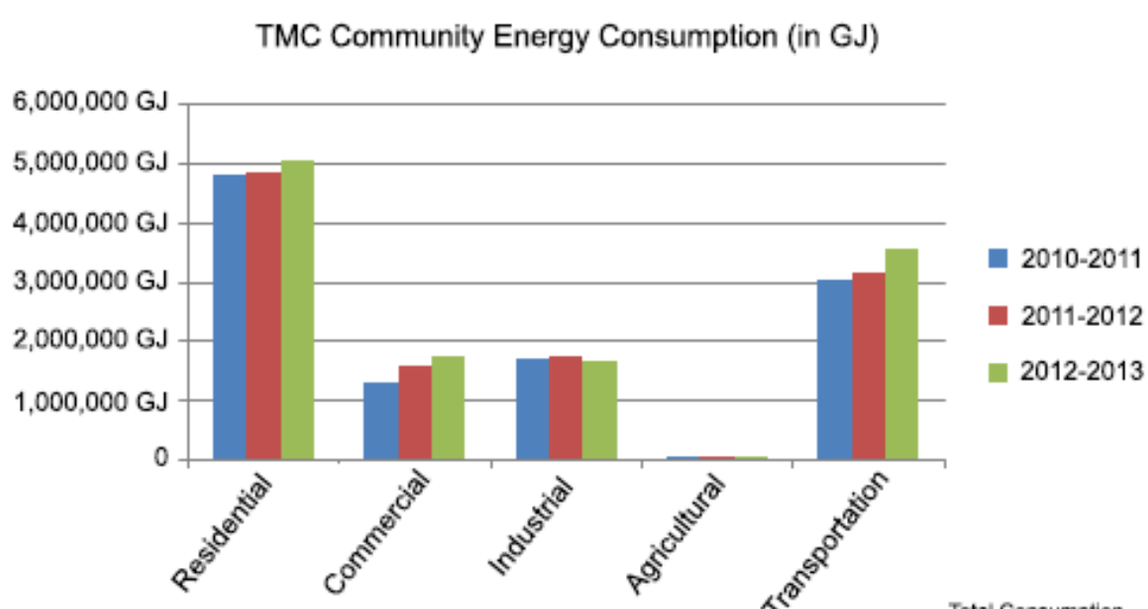
Thane has participated in several national initiatives, including the Solar Cities Program managed by the Ministry of New and Renewable Energy (MNRE). This

particular program provided resources and assistance to local urban bodies to prepare a Solar City Master Plan, and included directives for engaging with internal and external stakeholders. Additionally, TMC has been very proactive in trialing new energy efficiency and renewable energy initiatives, assessing their effectiveness, and then scaling them up across the municipality. These initiatives include:

- Undertaking a comprehensive greenhouse gas (GHG) inventory (2012-2013), supported by the British High Commission and ICLEI South Asia
- An LED street lighting pilot project (funded by the national Bureau of Energy Efficiency)
- Developing a climate protection policy
- Policy intervention to promote solar water heating (2006)
- Demand shifting thermal storage air conditioning (R.G. Gadkari Auditorium)
- Waste to energy bio-methanation plant at C.S.M. Hospital
- Solar air conditioning at C.S.M. Hospital
- Energy efficiency in water supply system
- Energy efficient street lighting (including improved Almanac timers, GSM-based management system, HPSV light installations, LED and induction lighting)
- Solar street lighting, blinkers and traffic signals
- Energy efficient lighting in parks/public areas (e.g. bus terminals)

Table 1: Thane's energy profile

Thane's Energy profile indicators	
Energy consumption per inhabitant:	**12,060,087 GJ / 1,818,872 inhabitants** **(6.63 GJ per inhabitant per year, 2012-2013)**
Percentage of overall community GHG emissions from local government:	**3.43% (2012-2013)**
Annual municipal emissions:	**62,675 tCO_2e/yr (2012-2013)**
Annual municipal energy use:	**12,060,087 MJ (2012-2013)**



	Residential	Commercial	Industrial	Agricultural	Transportation	Total Consumption
2010-2011	4,834,430	1,311,183	1,713,563	324	3,039,721	10,899,221 GJ
2011-2012	4,843,958	1,585,578	1,742,752	432	3,170,610	11,343,331 GJ
2012-2013	5,059,673	1,761,895	1,671,891	180	3,566,446	12,060,087 GJ

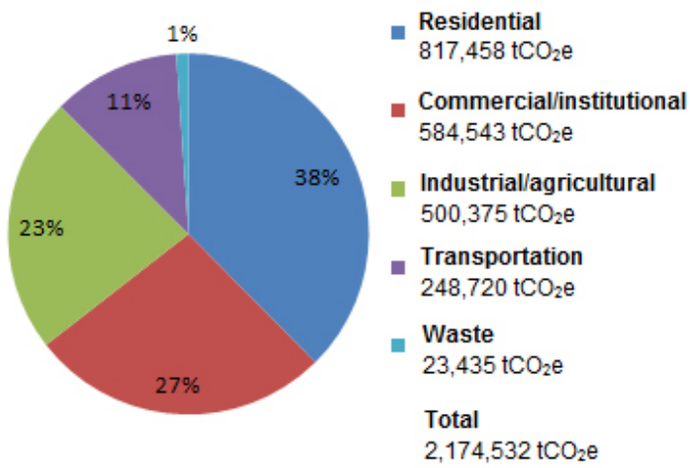
MRV: Measurable, Reportable, Verifiable

A key directive of the Urban-LEDS project is to ensure that appropriate MRV - Measurable, Reportable, Verifiable - verification processes are established in each project city.

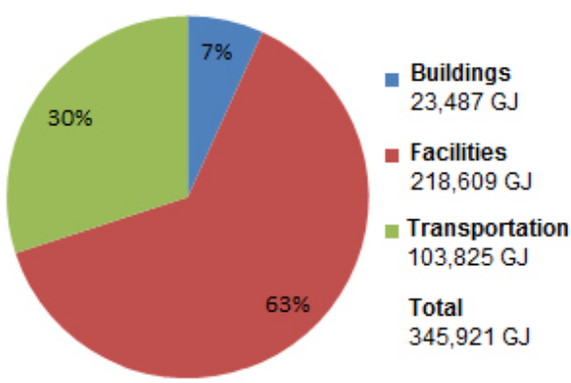
Urban-LEDS project cities receive technical support through the Heat+ greenhouse gas emissions quantification and monitoring software and the carbonn Cities climate Registry (cCCR) global reporting platform.

Thane's most recent GHG emissions inventory and energy consumption audit were completed in 2013, and reflect TMC's commitment to a measurable, reportable, and verifiable climate journey.

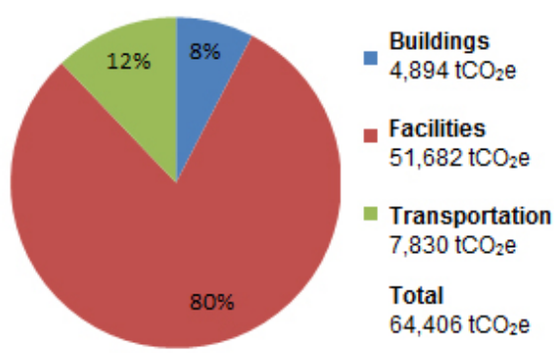
Community Energy Emissions



Government Energy Consumption



Government Energy Emissions



Renewable energy and energy efficiency potential in Thane

The development of the Solar City Master Plan included an extensive analysis of renewable energy and energy efficiency opportunities across the residential and commercial sectors, as well as a cursory analysis of the industrial sector. Additionally, a detailed analysis of options available to the Municipal Corporation was performed. This analysis has provided the TMC with a cost-breakdown of the opportunities available to both to reduce energy use and to change the energy mix, as well as a summary of the strengths, weaknesses, opportunities, and threats for renewable energy and energy efficiency in Thane.

Stakeholders have been key resources for providing the data which was analyzed in the creation of the Master Plan, as well as for determining the priorities of the TMC. Several key technical staff members within TMC have noted that the process of incorporating stakeholder-identified priorities in the Master Plan was very democratic.

The merits of each stakeholder identified strength, weakness, opportunity, and threat was discussed by the Stakeholder Committee before its inclusion in the plan was decided upon. This inclusive approach to stakeholder input has set the table for collaborative success in Thane, and can be built upon as the Urban-LEDS project continues.

Targets set in the Solar City Master Plan

The targets set in the Solar City Master Plan have been driven by the requirements of the National Government. The Government of India, through the Ministry of New and Renewable Energy, mandated Solar Cities to reduce the projected demand of conventional energy by a minimum of 10 percent over five years, through a combination of renewable energy and energy efficiency initiatives.

Table 2: Thane's low-carbon targets

Energy reduction target for 2013:	**Minimum 10% (set in 2008)**
Energy reduction target (million units):	**230.1 MU**
Method used for calculation:	**Reduction expressed as % of Business-as-usual projection, i.e. 10% less than projected energy use**
CO_2 reduction estimate:	**195,575 CO_2/per annum**
Method used for calculation:	**Business-as-usual projection, i.e.: 10% less than projected energy use**
Energy efficiency targets:	**5% reduction of energy consumption from 2008 to 2013 (against business as usual projection)**

In line with this requirement, Thane City's Solar City Master Plan Goal is to reduce energy by a minimum of 10 percent (compared with a business as usual projection for 2013, based on the city's development plan analysis). Table 2 details Thane's overall energy reduction target, as well as its methodology for setting renewable energy and energy efficiency targets.

Engaging Stakeholders in Urban-LEDS

Stakeholder engagement is integral to TMC's involvement in the Urban-LEDS project. TMC Additional Commissioner Mr. S. Patil noted that the TMC wanted the active participation of stakeholders so that they would have "collective ownership of the program". The city's involvement in Urban-LEDS is not so much a stand-alone initiative as it is a continuation of the work they are already undertaken on their energy efficiency and renewable energy journey. It provides a framework and process for them to implement many of the initiatives that were identified as part of their Solar City Master Plan. To implement effectively, TMC will engage with a range of internal and external stakeholders, and subsequently build the capacity of stakeholders to take on appropriate roles and responsibilities.

Engaging with stakeholders is an important aspect of ICLEI's Green Climate Cities methodology, which is the operational methodology adopted for the Urban-LEDS program. Figure 2 (following page) provides a snapshot of the Green Climate Cities methodology, while Table 3 (following page) lists indicative stakeholder involvement within each step.

Stakeholder engagement within ICLEI's Green Climate Cities methodology begins with the securing of commitment to participate in the project (through engagement with internal municipal stakeholders and elected representatives). Following this step, an assessment of staff and local leader awareness and capabilities in relation to climate change is performed, emission trajectories are analyzed, and energy efficiency and renewable energy options are identified and prioritized.

At each of these stages, various stakeholders may be asked to fulfil a different role, such as 'information

Figure 1: Solar Air Conditioning

Photo: S. D. Pote, Thane Municipal Corporation

Solar parabolic concentrators on the roof of the C.S.M. Hospital generate steam, which is fed to a vapour absorption machine. This saves 1,000.000 kWh per annum.

Table 3: Indicative Stakeholder Involvement in each step of the GreenClimateCities Methodology

PHASE 1: ANALYZE	
Commit and Mobilize	• Engaging elected representatives, executive management, senior staff in relevant departments to secure initial commitment • Establish Core Climate Team (as part of institutional governance arrangements) • Map relevant stakeholders, and establish Stakeholder Committee (with internal and external representatives)
Assess Frameworks	• Determine general awareness of local leaders and relevant stakeholders • Data collection – involving both internal and external stakeholders and data holders
Identify Development and Climate Priorities	• Engage experts to explore links between socio-economic development and climate change • Identify priorities (this may be through a workshop process with stakeholders) • Consult with relevant stakeholders to help develop priority areas further • Recommended strategies should be ratified by key stakeholders, to gain a mandate for further action
PHASE 2: ACT	
Develop Action Plan	• Development of potential LED solutions/initiatives with relevant stakeholders, that meet development and climate priorities previously identified. • Fine tuning of LED solutions/initiatives with relevant stakeholders, including cross-sectoral experts and department heads • Establish targets and key performance indicators with relevant stakeholders
Prepare and Approve	• Undertake detailed planning of priority projects with experts and department representatives, ensuring a clear business case is developed • Presentation to Elected Body for approval – clear communications with and by stakeholders at this stage
Implement	• Long term capacity building with staff and other stakeholders • Form alliances and partnerships with stakeholders to deliver projects
PHASE 3: ACCELERATE	
Monitor	• Monitoring in collaboration with relevant stakeholders, including developing an appropriate Monitoring, Reporting and Verification process
Evaluate and Report	• Reporting and communicating results and achievements, through stakeholder networks
Enhance	• Involve stakeholders in a bi-annual review of the GHG inventory and priority actions

Figure 2: ICLEI's GreenClimateCities Methodology

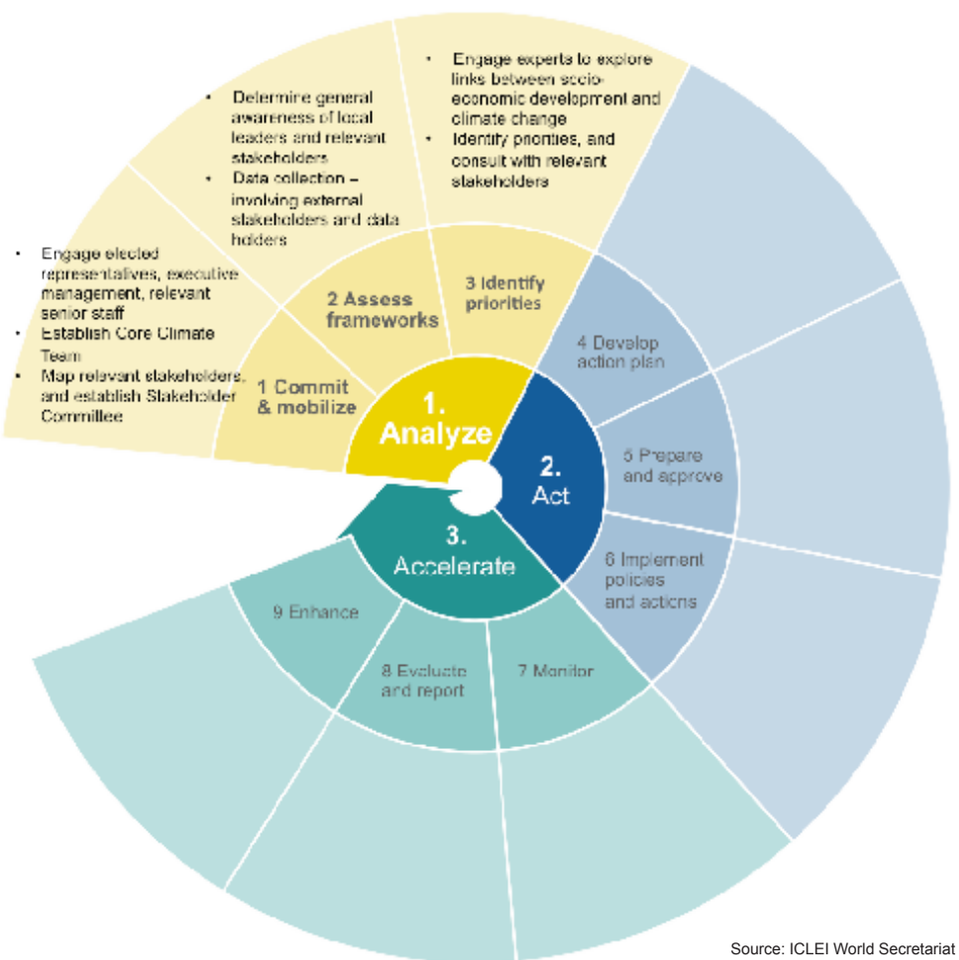
provider', 'technical reviewer', 'enabler', 'communication channel' and accept responsibilities such as 'to keep themselves informed', 'to actively contribute', 'to facilitate clear communication', 'to be responsive', and 'to follow through with commitments'.

Thane's involvement of stakeholders in the 'Analyze' phase

The 'Analyze' phase of the Green Climate Cities methodology proposes three main steps:

- 1. Gaining commitment and mobilizing;
- 2. Assessing frameworks;
- 3. Identifying priorities.

Figure 3 (below) summarizes the anticipated key points of stakeholder involvement during the 'Analyze' phase of the project. The following paragraphs describe how these steps are being carried out in Thane.



Source: ICLEI World Secretariat

Figure 3: Stakeholder Involvement in the Analyse phase

Building trust to gain commitment

Before confirming participation in Urban-LEDS, TMC contacted elected representatives and executive management to ensure commitment to the project. This democratic approach is representative of business-as-usual in Thane. Moreover, the TMC Electrical Department and its leadership have developed a strong portfolio of successful and cost-effective projects, and this success has translated into a high level of trust in the projects proposed by the Electrical Department. The work of the Electrical Department involves identifying and researching initiatives, undertaking small pilot projects,

monitoring results, and then scaling-up projects to have greater, more wide-spread impacts. Relationships built on mutual trust and respect with stakeholders facilitates action in Thane, and is key to the TMC's early engagement in innovative programs such as Urban-LEDS and the Solar City Program.

Roles and responsibilities of the Core Climate Team

Role

- Provide input into the project
- Guide and the project
- Communicate to relevant stakeholders/authorities
- Critically review the project
- Facilitate acceptance of program by external stakeholder groups and decision-making bodies
- Secure financing
- Provide resources (such as staff capacity)

Responsibilities

- Commit to participate actively in regular meetings
- Commit to remain informed about the project
- Commit to undertake actions derived from meetings

Forming a Core Climate Team with clear roles and responsibilities

For major initiatives, such as the Solar City Program and the Urban-LEDS project, the TMC forms a Core Climate Team with representatives from across the organization. The departments represented for Urban-LEDS included (but were not limited to): Electrical, Solid Waste Management, Town Planning, and Transportation.

The Core Climate Team members take on the responsibility of progressing the project within TMC, which entails: securing financing, providing staff capacity for the project, sourcing data and information as required, and communicating details of the project to relevant parties. Team members commit to participate in regular meetings, and to undertake the actions that are decided upon in these meetings. The cross-sectoral nature of the Core Climate Team for the Urban-LEDS project demonstrates the priority areas that TMC wishes to progress within the parameters of the project. Moreover, TMC have demonstrated the internal significance of the project by requesting that the Additional Commissioner fulfil the role of Chairman of the Core Climate Team.

Establishing a Stakeholder Committee

Because the TMC had previously formed stakeholder committees for major climate projects, the City had a basic understanding of who might wish to be involved in the Urban-LEDS project. The Head of the Electrical Department noted that while prior projects were driven by stakeholders from the utility sector, Urban-LEDS required a more nuanced stakeholder base. Consequently, the TMC sought out (in order of priority) key interested stakeholders from power and petroleum companies, user-side stakeholders, developers (e.g. Maharashtra Housing Industry), NGOs, energy auditors, as well as other interested institutions.

Municipal officials noted that a 'snowball' effect occured over the life of the project, wherein initially identified stakeholders would recommend potential candidates for participation in the project. In this way, the initial stakeholder committee may change over time, as participants join and leave. The stakeholder committee for the Urban-LEDS project includes representatives from various external organizations (listed in Box on opposite page).

It is more challenging to define the roles and responsibilities of these stakeholders than it is to do so for the Core Climate Team; stakeholders do not always accept responsibility for their role in the project, and they can choose not to participate for whatever reason. Working to retain and enhance stakeholder involvement by expanding the capacities of both internal and external stakeholders is a primary directive of the Urban-LEDS project.

Figure 4: Stakeholder engagement

Photo: S. D. Pote, Thane Municipal Corporation

Stakeholders learning about solar rooftop power generation.

Expectations of stakeholders in remainder of the 'Analyze' phase

The 'Analyze' phase is about understanding the status of a city in regard to its energy use and its development priorities. It is therefore important that the key stakeholders keep themselves informed of the project by reading distributed information, as well as by talking to others about development, climate, and

energy related topics.

The 'Analyze' phase is also, importantly, about gathering data and information. Stakeholders, both in the Core Climate Team and as part of the Stakeholder Committee, will be asked to provide data and information, and, on occasion, critically analyze this data. Thus, establishing stakeholder commitment to the project is fundamental.

The TMC has noted that the commitment to engage with stakeholders has come from the highest levels of government in Thane. If a department head or project director emphasizes stakeholder engagement, then officers will make it a priority. That being said, limits to capacity can see stakeholder engagement de-emphasized; the Core Climate Team will need to help keep engagement 'on the agenda' for the duration of the project.

Stakeholder roles and responsibilities in the 'Act' and 'Accelerate' phases

As TMC progresses through the Urban-LEDS project, the roles and responsibilities of key stakeholders will be tracked by ICLEI. Whether stakeholders' perspectives have changed throughout the project, how they have performed in their roles, and how they perceive the benefits of their involvement will be documented.

The Solar City Master Plan notes that renewable energy and energy efficiency strategies in Thane will be implemented jointly; each the TMC, the residents of Thane, and it's industrial, commercial, and institutional organizations must play a part. An extensive awareness and publicity campaign is outlined in the Plan to help inform, educate, and encourage these different groups to get involved.

Additionally, various national and state government agencies will be important stakeholders in the process, providing enabling frameworks through legislation, policies, and access to financing.

Organizations on the Stakeholder Committee

- TMC Commissioner
- TMC Mayor
- Maharashtra State Electricity Distribution Company Limited (MSEDCL)
- Maharashtra Pollution Control Board (MPCB)
- VPM Polytechnic
- Thane Small Scale Industries Association (TSSIA)
- Envirovigil (NGO)
- Maharashtra chamber of Housing Industry (MCHI)
- Petroleum Conservation Research Association (PCRA)
- Maharashtra Solar Manufacturer Association
- Maharashtra Energy Development Agency (MEDA)
- PRAYAS (NGO)
- Veermata Jijabai Technological Institute (VJTI)

Expected results

There is optimism among key staff in TMC about what involvement in the Urban-LEDS project will deliver. The hope is it that the Urban-LEDS project will strengthen their work, provide valuable leadership training, and build the capacity of the TMC staff and stakeholders to engage actively on the topic of climate change. With increased involvement in renewable energy and energy efficiency initiatives, there is a widespread belief that the TMC will have the necessary increased technical capacity (including management and operational capacity) to implement strategic energy initiatives in the city.

Costs and financing

The budget for the Urban-LEDS project is linked to the Solar City Master Plan, which outlines a budget of approximately 140.25 Million USD, to be spent over five years.

Additionally, through the Urban-LEDS project, Thane is receiving 100,000 Euro in support from the European Commission.

"[we want stakeholders to have] collective ownership of the program"

- Mr. Shyamsundar Patil
Additional Commisioner, TMC

Lessons learned

This case study lays the foundation for developing robust stakeholder roles and responsibilities that will facilitate ongoing climate action. Following the completion of the project, analysis may wish to investigate and include the following:

- Did the institutional arrangements (of the Core Climate Team and Stakeholder Committee) assist with consistent engagement of stakeholders?
- How engaged were nominated members of the Core Climate Team and Stakeholder

Committee? Did they actively contribute to the progression of the project? What was their involvement? Did they understand their role in the process?

- Did cross-organizational representation assist in ensuring the agenda for Urban-LEDS in Thane reflected a broad base of expertise?
- How did stakeholders shape the project in Thane?
- By the end of the project, did stakeholders display a level of ownership and/or responsibility for the project outcomes?
- Was the capacity of stakeholders to engage on low emission development for Thane improved as a result of the project? What other benefits did stakeholders believe were generated as a result of their participation?

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