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Multilevel governance for local climate action

Examining multilevel climate governance in the Indian cities of Rajkot, Thane and Nagpur

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Abstract

Numerous studies have discussed the importance of multilevel governance for enhancing climate action at the urban level. However, there remains limited knowledge on the proliferation of multilevel climate governance in the Global South. Addressing this gap, this study aims to explore the implementation of multilevel climate governance at the urban level through a case study analysis of three Indian cities, namely, Rajkot, Thane and Nagpur. It focuses on multilevel climate governance facilitated through the Urban-LEDS II project, implemented by ICLEI and UN-Habitat, supporting local governments in the development and implementation of low emission development strategies (LEDS). In more detail, this study seeks to answer the questions of how multilevel climate governance is implemented at the city level, the perceived barriers and enabling factors and the role of intermediaries. An analytical framework, developed based on a review of multilevel governance literature, further structures the analysis highlighting the role of local, state and national actors, the modes of urban climate governance and the challenges affecting intermediation. Document analysis and semi structured interviews were used to collect data. The results show that climate action in all three cities was driven by local ambitions, with minimal influence from higher level mandates, indicating a hybrid multilevel governance framework. The strategy formulation and implementation were coordinated by cross-sectoral steering committees consisting of both state and non-state actors, indicating a multilevel policy making approach. However, this was challenged by factors such as limited technical and financial support from national and state governments. Intermediaries sought to address this gap by strengthening technical and financial capacities, promoting knowledge dissemination and facilitating interaction between multiple governance levels. Finally, recommendations to further strengthen multilevel climate governance in the three cities are provided, including, enhancing the capacity of state governments to govern local climate action, establishing a central climate funding framework and mainstreaming national-local interaction.

Keywords: Multilevel governance, climate change, urban, low emission strategies, intermediaries

Executive Summary

Problem Definition

Following the Brundtland Report of 1987 which established the crucial role of cities in meeting sustainable development targets, cities have become test beds for urban climate governance experimentation. Against this background, the role of multilevel governance, i.e.; governance encompassing interaction between actors across vertical governance levels as well as horizontal governance spheres, in enhancing urban climate action has gained prominence. The impacts of climate change affect multiple levels of governance and multiple sectors, calling for a multilevel response. This involves interactions between national, state and city level governments as well as non-state actors such as international networks and academia. Based on a review of existing literature, it was evident that research on multilevel climate governance remained skewed towards the Global North, with limited research on the proliferation of multilevel governance in the Global South. Thus, more research is needed on multilevel climate governance in the Global South, especially in the context of countries like India, with a high mitigation potential owing to significant Greenhouse gas (GHG) emissions.

India can be described as a centralized quasi federal system, consisting of the national government, the state government and the local government. The main governance instrument at the national level is the National Action Plan for Climate Change (NAPCC), which provides a framework for integrating climate mitigation and adaptation aspects into development initiatives and promoting the implementation of climate and development co-benefits at the national level. Under the NAPCC, state governments are mandated to develop State Action Plans for Climate Change (SAPCC). Regarding multilevel climate governance in India, there is a need to examine the interlinkages of city level climate action within India's multilevel climate governance framework along with the associated barriers and enabling factors. Furthermore, the role of intermediaries, i.e.; organizations catalyzing transition processes by linking actors along with their skills and resources, in facilitating multilevel climate governance represents a burgeoning research field. Intermediaries collaborate with local governments, promoting knowledge transfer and strengthening governance capacities. Within this research field, there is a need to study the challenges affecting intermediation as well as strategies to promote the coexistence of multiple intermediaries.

Research aim and methodology

This study intends to contribute towards advancing knowledge on how local governments engage with multilevel governance for urban climate action in the Global South, through a case study analysis of three Indian cities, namely, Rajkot, Thane and Nagpur. The focus is on multilevel climate governance facilitated through the "Accelerating climate action through the promotion of Urban Low Emission Development Strategies (Urban-LEDS II)" project implemented by ICLEI and UN-Habitat. The project assists local governments in developing and implementing low emission development strategies (LEDS) with a focus on enhancing vertical and horizontal integration of climate actions. The study also contributes to advancing knowledge on intermediaries by examining the roles of three intermediaries, namely ICLEI, UN-Habitat and GIZ along with the challenges impeding city level intermediation. As for the three intermediaries, ICLEI and UN-Habitat were chosen as they are the implementing agencies for the Urban-LEDS II project. GIZ was chosen as they played a crucial role in the development of the Climate Smart Cities Assessment Framework (CSCAF), a nationally driven city level assessment framework. As part of the Urban-LEDS project, ICLEI assists the three cities with its implementation.

To advance knowledge on how local governments engage with multilevel climate governance in India, facilitated by the Urban-LEDS project, three research questions were formulated:

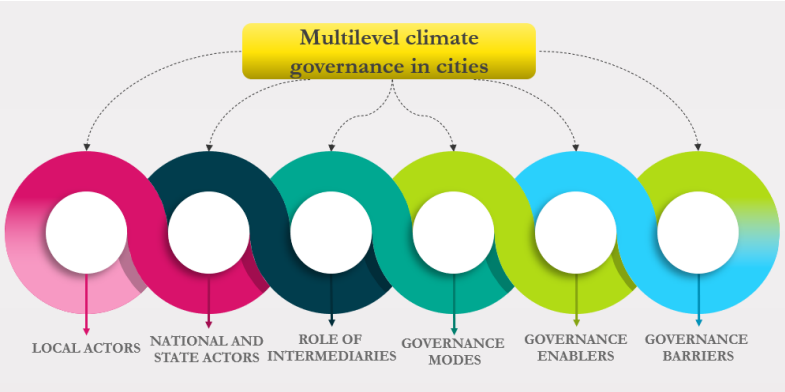
RQ 1 How is multilevel climate governance (targeting mitigation and adaptation) implemented at the city level through the Urban-LEDS II project?

- Who are the actors involved at the local level?
- What is the role of national and state levels?
- What are the modes of urban climate governance?

RQ 2 What are the perceived barriers and enabling factors for multilevel climate governance within the Urban-LEDS II project?

RQ 3 What roles do ICLEI, GIZ and UN-Habitat play as intermediaries facilitating multilevel climate governance in cities and what are the challenges they face? How do they contribute to strengthening governance capacities (such as information and knowledge, finance, coordination and cooperation and institutional capacities) at the national and subnational levels?

The study is framed by an analytical framework developed from a review of multilevel governance literature, which structures the study on multilevel climate governance through an analysis of (i) the local actors involved, (ii) the role of national and state level actors, (iii) the modes of urban climate governance, (iv) the challenges and enabling factors for multilevel climate governance as well as (v) the role of intermediaries in all three cities. Data collection comprised document analysis and semi structured interviews with local government representatives and intermediary organizations. The analytical framework is depicted below.



Findings and recommendations

The development and implementation of city level LEDS was primarily driven by local government ambitions, indicating substantial local autonomy for climate mitigation and adaptation initiatives. However, some of the low emission initiatives were supported and influenced by national level programs such as the Smart Cities Mission. Thus, the presence of both top down and bottom up elements indicated the existence of a *hybrid multilevel climate governance framework*. The strategy formulation in all three cities was driven by *stakeholder committees*, consisting of local government departments, city mayor, city commissioner, private companies, state government representatives, intermediaries and national government representatives. Furthermore, a *climate core committee*, comprising city departmental staff, was tasked with the implementation and monitoring of the LEDS. This cross-sectoral policy making approach led to the integration of low emission initiatives with urban development plans, although to a limited extent. Mainstreaming climate change objectives into infrastructural and development plans could further be enhanced through the use of tools such as the *climate lens* or the *multiple*

objectives framework. Local governance was executed mainly through self-governing, governing through enabling and governing through authority modes. As state governments control energy and water provision, there is a need to strengthen state level capacity and awareness, enabling them to govern local climate action, for example through the provision of utilities derived from low emission energy sources. SAPCCs should also include guidelines and mandates for the creation of local climate action plans. Furthermore, the study emphasizes the need for a greater involvement of the national government in terms of strengthening technical and financial capacity at the local level. The implementation of the *Climate Smart Cities Assessment Framework (CSCAF)* presents a first step in this direction.

This research represents one of the first studies on the CSCAF, a nationally driven framework targeting city level climate assessment, implemented by GIZ and the Ministry of Housing and Urban Affairs. The results of the study highlight the role of the CSCAF as a nationally driven enabling framework, guiding local action and inducing horizontal learning, thereby facilitating multilevel climate governance in India. By guiding local climate action, it promotes national-local policy integration as well as the upscaling of local initiatives. It serves as a one of a kind, holistic city level assessment framework, allowing cities to identify implementation gaps and chart out a roadmap. If complemented with the necessary technical and financial resources, this framework has the potential to build stronger linkages between cities and the existing multilevel climate governance framework in India, facilitate the horizontal and vertical diffusion of innovations and empower cities to contribute towards meeting national level mandates.

The main barriers challenging multilevel climate governance in the three cities were insufficient technical and financial capacities, limited national policy alignment, limited cross departmental integration and insufficient citizen involvement. Intermediaries played a crucial role in enhancing the financial and technical capacities of local governments through education, capacity building tools and frameworks as well as platforms facilitating increased access to funding sources. They also played the role of a connector by connecting cities and facilitating the exchange of knowledge on best practices. Within the Urban-LEDS, ICLEI was mainly involved with technical assistance and project implementation, while UN-Habitat was more involved with providing guidance and normative support. GIZ played a pivotal role in the development and implementation of the CSCAF. All three intermediaries mediated between local, state and national governments through interactive platforms such as the *Cities and Regions Talanoa dialogues*, allowing national governments to grasp local level challenges, thereby enhancing the implementation of national policies at the urban level. A main enabling factor supporting local climate action as well as the work of intermediaries was the presence of motivated and engaging political leaders, such as mayors and commissioners, who spearheaded initiatives at the local level. However, intermediary action was challenged by the frequent replacement of political leaders. Other challenges included, the influence of multiple intermediaries within the same city and the presence of outdated city planning guidelines. The study highlighted the need for initiatives such as the *Project Advisory Group (PAG)* and the *NDC partnership*, promoting the identification of synergies between multiple intermediaries, thereby enhancing overall local impact. It also highlights the need to examine new collaboration models between local governments and intermediaries that prevent the creation of unsustainable path dependencies, thereby ensuring consistent climate action even beyond the project timeframe.

On the whole, the results of the study evidenced that the three cities understood the relevance of multilevel climate governance and were attempting to implement the same within the Urban-LEDS project. Post Covid 19, the next phase of the Urban-LEDS project calls for an increased focus on adaptation, helping local governments integrate climate resilience and economic regeneration through a co-benefits approach.

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Abbreviations

Nationally Determined Contributions (NDCs)

Greenhouse gas (GHG)

National Action Plan for Climate Change (NAPCC)

State Action Plan for Climate Change (SAPCC)

Transnational Municipal Networks (TMN)

The United Nations Human Settlements Programme (UN-Habitat)

Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ)

Sustainable Development Goals (SDGs)

Urban Low Emission Development Strategies (Urban -LEDS)

Climate Smart Cities Assessment Framework (CSCAF)

European Union (EU)

Non-Governmental Organization (NGO)

Energy Service Company (ESCO)

Renewable Energy Service Company (RESCO)

United Nations Framework Convention on Climate Change (UNFCCC)

Rajkot Municipal Corporation (RMC)

Rajkot Urban Development Authority (RUDA)

The Energy and Resources Institute (TERI)

Local Renewables Model Communities Network (LRMCN)

Rajkot Urban Development Authority (RUDA)

GreenClimateCities (GCC)

Asian Development Bank (ADB)

Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

Ministry of New and Renewable energy (MNRE)

Public Private Partnership (PPP)

Transformative Actions Program (TAP)

Global Covenant of Mayors for Climate and Energy (GCoM)

Project Advisory Group (PAG)

Urban Local Bodies (ULB)

Special Purpose Vehicle (SPV)

Nagpur Smart and Sustainable City Development Corporation Limited (NSSCDCL)

Solar City Master Plan (SCMP)

carbon*n* Climate Registry (cCR)

Ministry of Housing and Urban Affairs (MoHUA)

National Institute of Urban Affairs (NIUA)

World Resources Institute (WRI)

World Wide Fund for Nature (WWF)

1 Introduction

As of 2019, India was the third largest Greenhouse gas (GHG) emitting country globally (Outlook, 2019). In accordance to India's Nationally Determined Contributions(NDC), which represents the emission reduction efforts pledged by countries post the Paris Agreement, the country aims to reduce its emissions by 33-35% from 2005 levels, by 2030 (The Energy and Resources Institute, 2018). This low emission transition is mainly driven by opportunities in renewable energy, electric vehicles, public mass transit systems and the introduction and use of zero emission industrial technologies (UNEP, 2019).

A large part of the efforts to transition to a low emission economy lies within integrating the efforts of the national and local governments. Local governments can be described as democratically elected bodies below the level of the state, province or region (Bailey, 1999). Local governments have a huge potential for climate change mitigation, owing to high energy consumption and GHG concentrations within urban areas. With a rise in unprecedented climate related catastrophes such as flooding, intense heat waves and exacerbated coastal erosion in cities, local governments have begun integrating climate adaptation and mitigation considerations in local climate policies (Adriázola et al., 2018). However, the response of local governments varies due to factors such as the level of commitment and awareness of city officials, the availability of national programs that support local initiatives and the city's participation in transnational and national networks(Kern & Alber, 2008).

According to Jörgensen et al.(2015), with the implementation of National Action Plan for Climate Change (NAPCC) and the State Action Plans for Climate Change (SAPCC), Indian states and cities are expected to become the main steering bodies behind reaching India's climate targets. National policies driving urban renewal, such as the Smart Cities Mission and the Solar City program, enabling energy efficiency and solar capacity in cities, are also denoting an increased focus on urban climate action (Khosla & Bhardwaj, 2019). The integration of subnational climate action is supported by the increasing awareness and research on adopting a multilevel climate governance approach (Khosla & Bhardwaj, 2019). Multilevel governance can be described as a governance structure encompassing both vertical interactions (Type 1) between multiple governance levels such as the international, national, state and city levels, as well as horizontal interactions (Type 2) between governmental and non-governmental agencies as well as amongst entities in the same governance level (Jänicke, 2015, 2017). It includes both non-state and state actors and assumes that each of the governance levels are dependent on each other for the successful implementation of climate goals (Adriázola et al., 2018). Non-state actors are those who remain autonomous from governmental control (Josselin & Wallace, 2001). Although the policies implemented by state governments in India are largely driven by national guidelines, some states have implemented innovative policy measures, showcasing a redistribution of power between the national and subnational governance levels. According to Jörgensen et al.(2015), India is witnessing a dominant involvement of non-state actors, especially transnational municipal networks within the urban climate policy realm. They collaborate with local governments and play a role in linking different cities nationally and internationally, providing knowledge on best practice, providing capacity building tools and increasing access to funding sources.

1.1 Cities and multilevel governance

The Brundtland Report of 1987 was instrumental in planting the notion that cities were central to meeting sustainable development targets (Bulkeley & Betsill, 2005). Cities have since become test beds for experiments on climate governance. Local authorities steer the implementation of

national policies and ensure that nationally driven mandates are implemented at the local level. Furthermore, successful urban scale experimentation can lead to bottom up diffusion, influencing other cities as well as the national and international levels. Thus, it is essential that national governments engage vertically with the state and local governance levels and empower them to address climate change. This will also help them to learn at parallel with the cities, testing the performance of policies in different local contexts (Corfee-Morlot et al., 2009). Leadership from the national level through the provision of financial or informational support can help strengthen the role of local pioneers and stimulate horizontal diffusion of best practices, city to city cooperation, collaboration and competition. Thus, collaboration between national, state and local levels can create new opportunities for climate friendly innovation and its diffusion (Jänicke, 2015). Intermediaries, i.e.; actors or organizations who influence transition processes by linking actors along with their connected skills and resources, thereby building momentum for change, can be helpful in providing collaboration and supporting both vertical (Type 1) and horizontal (Type 2) multilevel governance (Kivimaa et al., 2018). Intermediaries such as Transnational Municipal Networks (TMNs) are increasingly engaging with local governments, promoting horizontal interaction between cities as well as between national governments. They also mediate between the national and subnational levels, as well as between national and non-state actors, promoting vertical and horizontal policy diffusion and integration (Kanda et al., 2020; Kern & Bulkeley, 2009a)

A local government's capacity to implement climate policies is largely contingent upon the existing institutional framework, enabling national policies, resource availability, technical knowledge and political will (Beermann et al., 2016). It is considered that multilevel governance supports effective climate action by strengthening the governance capacities of different governance levels (Adriázola et al., 2018). Governance capacity is context dependent, depending upon the interaction between actors and how that affects common problem solving. Governance capacity for climate change can be seen as a set of conditions that is required to effect change that accelerates the development of effective solutions (Koop et al., 2017). According to Adriázola et al. (2018), the main types of capacity prominently described in research include; the capacity to gain adequate knowledge and information, the capacity to access financial resources, the capacity for effective coordination and collaboration and finally, institutional and human resources capacity. Hölscher, Frantzeskaki & Loorbach (2019) developed a capacities framework, facilitating transformative climate governance, enabling climate mitigation and adaptation initiatives and driving cities towards low carbon objectives. The main capacities highlighted in this framework include; the ability to anticipate and respond to emerging issues (stewarding capacity), the ability of actors to divert away from unsustainable path dependencies (unlocking capacity), the ability to foster innovations and facilitate their mainstreaming (transformative capacity) and the ability to coordinate multi-stakeholder processes, tapping into synergies and minimizing trade-offs (orchestrating capacity). Access to knowledge and technical information are important aspects of urban capacity building and can be strengthened through vertical and horizontal collaborations with different governance levels as well as with non-state actors (Pierre, 2019). The above discussed governance capacities can be strengthened through the implementation of *multilevel climate governance instruments,* described as platforms, tools or action plans that are implemented to enable effective multilevel climate governance (Adriázola et al., 2018; Bouwma et al., 2015). For example, monitoring and reporting instruments can help track the state of climate change action at different levels and identify implementation challenges (Adriázola et al., 2018)

In India, most of the non-state actors engaging with urban climate activities in cities were a part of international or transnational networks (Khosla & Bhardwaj, 2019). *Transnational Municipal Networks (TMNs)* connect local governments and promote the dissemination and sharing of strategies aimed at combating climate change and enhancing resilience in cities and regions.

They act as intermediaries, facilitating knowledge transfer and the translation of experiences across different contexts (Fenton, 2015). They connect multiple actors along with the resources and skills associated with them, thereby strengthening technical capacities and promoting knowledge sharing (Kanda et al., 2020). TMNs not only act as an information warehouse, providing access to technical knowledge and best practices from other cities, they also represent local governments in international forums (Bothello & Mehrpouya, 2019). Research has shown that TMNs are compatible with multilevel governance, thriving in environments with relaxed institutional hierarchies. Together, TMNs and multilevel governance have engendered an arena for cities that fosters collaboration as well as competition (Pierre, 2019). However, there is the drawback that with direct international access facilitated by the network, cities can fail to represent the common interests of the national government, thus reducing policy coherence (Adriázola et al., 2018; Pierre, 2019).

1.2 Problem definition

Owing to the "glocal" nature of climate change, climate governance calls for the engagement of a multitude of actors across different scales, within policy making and implementation(Gupta et al., 2007). Research on multilevel governance for climate change has grown over the past decade. However, some research gaps still remain. There is a need to extend research beyond national- supranational relations and explore national-subnational interaction along with the associated barriers and enabling factors, especially in the Global South, which remains geographically underexplored (Di Gregorio et al., 2019). There is also a need to explore the motivations that cause non-state actors to engage in multilevel climate governance (Tortola, 2017). Moreover, there is a need to shift focus from the policy rhetoric and understand how multilevel governance is implemented as a theoretical concept that can be falsified through empirical methods (Piattoni, 2009).

With respect to multilevel climate governance in India, there has been a number of studies focusing on the role of Indian states in the initiation, experimentation and implementation of climate policy, within India's centralized federal system (Jörgensen, 2011). However, there is limited emphasis on the interlinkages of city level climate action within India's multilevel governance framework (Hale, 2018; Jörgensen, Mishra, & Sarangi, 2015). Urban climate action in Indian cities is an emerging new area of study (Beermann et al., 2016). Governance in cities is often characterized by sectoral silos and complex interaction of laws, with poorly coordinated plans between sectors. Local governments have limited control outside implementation and lack the institutional and financial capacities for innovative climate action that is not driven by national or state objectives (Khosla & Bhardwaj, 2019). Thus, the ability of Indian cities to function as laboratories of experimentation remains constrained by financial and institutional bottlenecks (Jörgensen, Jogesh, et al., 2015). However, these limitations are being addressed by the recent influx of non-state actors, who collaborate with local governments to bridge state capacity, data and finance gaps (Khosla & Bhardwaj, 2019). These actors are most commonly a part of international and transnational municipal networks such as the C40, an international consortium of city mayors and the UN backed network ICLEI. India is also seeing a rise in national programs such as the Smart cities mission, National Mission on Sustainable Habitat (NMSH) and the Solar cities program, focused on implementing climate change mitigation and adaptation initiatives at the urban level, thereby facilitating national-local engagement (Khosla & Bhardwaj, 2019). These developments exemplify the need to understand how Indian cities engage with multilevel governance for climate change. Knowledge of the associated barriers and enabling factors will also contribute to addressing governance gaps and furthering research within the field of urban climate governance (Khosla & Bhardwaj, 2019)

The role of intermediary organizations within the multilevel climate governance framework is another relevant topic of study, contributing to the burgeoning research on the role of intermediaries in sustainable transitions. There is a need to further expand knowledge on the types of roles that these organizations can play within a multilevel climate governance framework (Kivimaa et al., 2018). The current research on intermediary action provides an idealistic picture of the role of intermediaries in strengthening subnational climate efforts without shedding light on the challenges they face. There remains a need to delve deeper into the practical challenges impeding intermediation. The complex, cross-sectoral and multidimensional nature of a wicked problem such as climate change necessitates the involvement of an ecology of intermediaries within the same city or region, resulting in a complex web of interaction. Thus, there is a need to develop and implement initiatives that harness synergies between multiple intermediaries, thereby enhancing their overall impact (Kanda et al., 2020; Mignon & Kanda, 2018).

1.3 Aim and research questions

The aim of this study is to explore how local governments engage with multilevel climate governance in India along with the challenges and enabling factors affecting the same. The focus will be both on vertical multilevel governance (Type 1) and on horizontal multilevel governance (Type 2). It also identifies the various roles played by three main intermediary organizations, namely ICLEI, UN-Habitat and GIZ and discusses some of the on-ground challenges faced by the above intermediaries. ICLEI- Local Governments for Sustainability (ICLEI) is one of the largest TMNs in the world, advancing sustainability initiatives in more than 1750 local and regional governments and enabling the diffusion and upscaling of local sustainability innovations (Bothello & Mehrpouya, 2019; Frantzeskaki et al., 2019). The United Nations Human Settlements Programme (UN-Habitat) is a program under the United Nations, aimed at promoting sustainable urban development with focus areas such as urban economy, urban planning and design, poverty and risk reduction and urban land, legislation and governance to name a few. They play a dual role through both normative and operational programs, strengthening the capacities of countries and guiding them on good urban management, working to improve universal living conditions in line with the Sustainable Development Goals (SDGs) (Kassim et al., 2015; United Nations Evaluation Group, 2012). The Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH or GIZ is German company engaged in international cooperation for sustainable development, encompassing fields such as economic development, promotion of employment, environmental protection and climate change, education and health along with democracy and governance. Commissioned by the German Federal Ministry for Economic Cooperation and Development , they collaborate with governments within and outside Germany (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, n.d.).

This research seeks to explore the implementation of multilevel climate governance facilitated through the "*Accelerating climate action through the promotion of Urban Low Emissions Development Strategies* (Urban-LEDS II) project, which assists local governments in developing low emission development strategies (LEDS) with a focus on enhancing vertical and horizontal coordination in support of local and national strategies. This project represents the Phase II of the Urban-LEDS project and is co-implemented by UN-Habitat and ICLEI. It is currently operational in 8 countries including India. The project supports two to three "model" cities and four to six "satellite" cities in each country. Satellite cities learn from the experiences shared by model cities. In this study the focus will be on exploring the implementation of multilevel governance in the Indian cities of Rajkot, Thane and Nagpur, the model cities under the Urban-LEDS project (ICLEI, 2016a). As for the three intermediaries, ICLEI and UN-Habitat were chosen as they are the implementing agencies for the Urban-LEDS project. GIZ was chosen as they played a crucial role in the development of the "Climate Smart Cities Assessment Framework (CSCAF)",

a city level climate assessment framework implemented by the National Government of India which acts a self-assessment tools for cities to analyze their climate efforts (Ministry of Housing and Urban Affairs, Government of India, 2019a). The CSCAF is linked to the Urban-LEDS project as ICLEI was involved with the development of the framework and as part of the Urban-LEDS II project, ICLEI assists the model cities in the implementation of the framework.

To advance knowledge on how local governments engage with multilevel climate governance in India, facilitated by the Urban-LEDS project, three research questions were formulated:

RQ 1 How is multilevel climate governance (targeting mitigation and adaptation) implemented at the city level through the Urban-LEDS II project?

- Who are the actors involved at the local level?
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RQ 2 What are the perceived barriers and enabling factors for multilevel climate governance within the Urban-LEDS II project?

RQ 3 What roles do ICLEI, GIZ and UN-Habitat play as intermediaries facilitating multilevel climate governance in cities and what are the challenges they face? How do they contribute to strengthening governance capacities (such as information and knowledge, finance, coordination and cooperation and institutional capacities) at the national and subnational levels?

1.4 Scope and limitations

This study is limited to analyzing multilevel climate governance within the scope of the Urban-LEDS project and is geographically limited to the three cities of Rajkot, Thane and Nagpur. This collaboration with ICLEI and in particular with the Urban-LEDS project, implemented by both UN-Habitat and ICLEI, was chosen for the following reasons: (i) ICLEI is currently the largest transnational municipal network promoting subnational climate action, (ii) they work in close proximity with city governments, providing technical advice and support on a day to day basis, (iii) through the Urban-LEDS project, they have well established relationships with government officials within the three Indian cities and help them develop low emission development strategies with a large focus on promoting multilevel collaboration between different vertical governance levels as well as between state and other non-state actors and (iv) there is a lot of peer reviewed material available on ICLEI and their role as an intermediary. The Climate Smart Cities Assessment Framework and the role of GIZ was chosen as it was the first of its kind, nationally driven framework targeting city level action. It was an interesting maiden attempt to implement a top down assessment framework targeting local climate action in India. Furthermore, ICLEI assists cities with its implementation as part of the Urban-LEDS II project.

As this study is part of a master thesis, time remains a significant limitation. Moreover, the author faced some limitations with respect to data availability and collection owing to the Covid 19 pandemic. The topic of exploring multilevel climate governance in Indian cities and the perceived barriers and enablers is justified by the need for further research into how multilevel governance is being implemented and understood at the city level and how this is being facilitated by intermediary organizations. The aim of this thesis is to provide a description of the multilevel governance structure including actors and modes of governance along with the role of intermediaries. However, it does not aim to analyze the effectiveness of multilevel governance, as there is still no consensus on a single indicator for effective governance (van der Heijden, 2019). Moreover, a major limitation of this research is the use of a collective case study approach, which comes with limited generalizability. The outcomes from this thesis cannot be

used to draw generalizations about multilevel climate governance in other cities or within India as a whole as multilevel governance outcomes are highly context specific and are contingent upon the perspectives and priorities of the actors involved (Di Gregorio et al., 2019)

1.5 Ethical considerations

Ethical considerations were taken into account at every stage of the research process. As this research was in collaboration with ICLEI, it was consciously ensured that outcomes were not influenced by them and remained predominantly the author's views and efforts. An important ethical consideration during my research was the compliance with the ethical standards of both the host organization as well as Lund University.

During data collection through semi structured interviews, participants were made aware of the purpose of the interviews and its intended outcomes. Participant consent for recording of interviews was made explicit and the participants were asked to state their preference regarding the inclusion of their details in the public document. Information from literature was appropriately cited using APA format guidelines.

1.6 Audience

The outcome of this research is aimed at three types of audiences, namely researchers, policymakers and intermediaries. First, the study aims to contribute to the existing literature on multilevel urban climate governance by providing more insights into the less explored national-subnational interaction and the role of cities especially in the Global South. The study intends to contribute towards intermediary research by advancing knowledge on the role of intermediaries, the challenges affecting intermediation and initiatives to foster synergies between multiple intermediaries.

Second, the study is aimed at improving the knowledge on national-subnational interaction within India and the interlinkages between cities and India's multilevel climate governance framework, for policy makers and government officials. By identifying existing barriers and enabling factors as well as the challenges faced by intermediaries, the study aims to facilitate dialogue and direct policy making towards addressing the identified gaps and improving overall multilevel governance. Being one of the first studies on the CSCAF, this thesis aims to provide the national government with better insights on how cities perceive this framework along with the enabling factors and challenges affecting its implementation, thereby contributing towards its improvement.

Third, the research paper is also aimed at providing ICLEI, UN- Habitat and GIZ with a better understanding of how multilevel climate governance is facilitated through the Urban-LEDS project. This can serve as a starting point to facilitate discussions on multilevel climate governance with project stakeholders. By analyzing the challenges impeding intermediation, the study can help intermediaries develop strategies to address these gaps as well as promote the coexistence of multiple intermediaries, thereby improving the overall city level impact.

1.7 Disposition

The thesis is structured into 8 chapters:

Chapter 1 provides an introduction to the concept of multilevel governance, its relevance for urban climate action and the current state of multilevel climate governance research within the Indian context. The research questions guiding this thesis, derived from the existing research gaps are described, along with the scope and limitations of the study.

Chapter 2 provides a review of the existing literature and research gaps around urban climate governance, multilevel governance, its enabling factors and barriers, the role of intermediaries and multilevel governance in India.

Chapter 3 describes the methods for data collection and analysis used in this case study research along with the associated limitations. The analytical framework, derived based on the results of the literature review is also described in this chapter.

Chapter 4 provides an introduction to the Urban-LEDS project as well as the three case cities of Rajkot, Thane and Nagpur.

Based on the data collected, *Chapter 5* uses the analytical framework to answer research questions one and two, describing the multilevel climate governance structures seen in the three cities through an analysis of the actors involved, the governance modes along with the associated barriers and enabling factors, all within the lens of the Urban-LEDS project.

Chapter 6 uses the analytical framework to answer research question three, i.e.; discussing the roles of the three intermediaries, ICLEI, UN-Habitat and GIZ in facilitating multilevel climate governance in the three cities. It also discusses the challenges affecting intermediation.

A brief discussion follows in *Chapter 7*, interpreting and discussing the research findings. This section also highlights a set of recommendations provided by the author based on the discussion of results.

Chapter 8 concludes the thesis with a summary of the research findings followed by the implications of this study for researchers, policymakers and intermediaries.

2 Multilevel governance in theory

The following section presents a literature review structured so as to provide an overview of the existing literature and research gaps around 1) urban climate governance, 2) the concept of multilevel governance, its relevance to climate change along with the associated challenges and enabling factors, 3) the role of intermediaries and how they strengthen multilevel governance capacities and finally, 4) multilevel climate governance in India.

2.1 Urban climate governance

Governance can be defined as "the complex interrelationships between stakeholders and societal coordination processes" (Gogoi et al., 2017). The growing consensus that cities are platforms where urban governance and climate change governance intertwine has catalyzed widespread research in urban climate governance. This research is altering the way policy makers, researchers and other stakeholders engage with policy making and implementation, calling for more coordinated approaches. Climate change action is also transcending national boundaries to involve international and trans local actors, especially through international networks. Political leadership continues to play a major role in driving urban climate governance innovations (Wolfram et al., 2019). The policies and measures implemented in cities vary globally, but largely focus on mitigation rather than adaptation. The co-benefits approach remains the most common, leading to solutions that have economic, social as well as sustainable benefits. Research describes multilevel governance as the platform on which urban climate governance experiments are carried out, with municipal networks shaping urban governance capacity. However, despite innovative policy responses tackling climate change at the city level, driven by research spanning nearly two decades, there still remains a persistent gap between policy rhetoric and action (Bulkeley & Betsill, 2005a; van der Heijden, 2019). The modes through which municipalities can govern urban climate action differ in their governance capacities. Research and analysis of urban climate governance highlights four main governing modes. These are; self-governing, where governments effect changes within themselves, governing by enabling which refers to the role of governments in enabling voluntary action from the public and private sectors, governing by provision, referring to governance by providing certain types of resources or services and governing by authority, which refers to governance through the use of mandates and regulations (Kern & Alber, 2008).

Van der Heijden (2019) uses a systematic qualitative review of 260 research papers between 2008 and 2019 to understand how urban climate governance research has progressed over the last decade and what current research gaps remain. The discussions revolve around four predominant challenges that existed in 2008, namely, the gap between policy research on urban climate governance and the corresponding activity levels observed on the ground, the need to examine cases beyond the Global North, the need to improve knowledge on city level enabling factors affecting climate governance and the need to systematically assess urban climate governance outcomes. The results of the paper provide some important insights into the current research gaps within the field of urban climate governance. The challenge of limited studies focused on the Global South remains from a decade ago, necessitating the need to examine climate governance in Global South cities and their use in peer-to-peer learning. There is also a bias towards successful cases and less information on the governance barriers or the factors leading to failed governance experiments. The study also claims that there is a need to link governance frameworks, such as that of multilevel governance, to the actual outcome in cities.

2.2 Multilevel governance

First introduced in 1992 as a useful concept to understand decision making processes within the EU, multilevel governance can be described as a governance structure that not only involves government actors but also a multitude of other non-state actors from the local, regional, national and international levels (Adriázola et al., 2018; Jänicke, 2017; Piattoni, 2009).

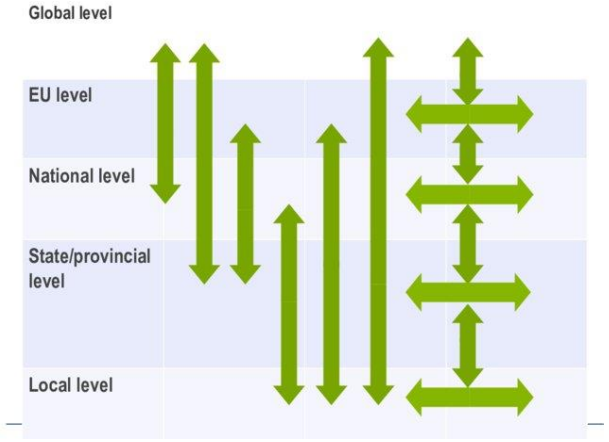

Figure 1: Multilevel governance: possible vertical and horizontal interactions

Source: (Jänicke, 2015)

Generally speaking, multilevel governance can be described as politics without a center (Bendlin, 2019):

"Instead, variable combinations of governments on multiple layers of authority – European, national, and subnational – form policy networks for collaboration. The relations are characterized by mutual interdependence on each other's resources, not by competition for scarce resources" (Hooghe, 1996, p. 18).

It refers to the interaction of actors across different vertical governance levels and between different horizontal spheres of governance as depicted in Figure 1, facilitating effective coordination in order to implement national and subnational goals (Jänicke, 2015). The different vertical levels are usually the international level, the national level, the state level and the local government or city level. Citizens and civil society are sometimes considered to be the micro level of the multilevel climate governance system (Jänicke, 2017). Multilevel governance emphasizes creating links between national and international levels, between national and state level entities and between the subnational and local level as well as with non-governmental agencies to strengthen the effectiveness and inclusivity of climate action (Liesbet & Gary, 2003). It can be seen as a type of governance where every governance level is dependent on each other. The national government is for example dependent on the state and the local governments for the execution of national levels mandates such as the NDCs (Adriázola et al., 2018; Jänicke, 2017). Horizontal collaboration refers to interactions within metro regions, interaction between governments and non-governmental actors and networking between cities (Kern & Alber, 2008). There are two types of multilevel governance, mainly, Type 1 and Type 2. Type 1 governance approach focuses on the multiple power sharing and distribution structures amongst vertical levels. Type 2 approach focuses on examining governance interconnections involving horizontal spheres of authority (Bulkeley & Betsill, 2005b).

The Type 1 multilevel governance approach emphasizes that national governments cannot implement policies in isolation and must collaborate with the state and local levels (Jänicke,

2017). Local national policy linkages are important due to a number of reasons. Firstly, local governments drive the implementation of national policies at the urban level and interacting with national governments allows for tailoring national policies to suit the local context. This prevents gaps in information flows that could lead to a misinterpretation of national policies at the local level. Second, interacting with local governments is crucial to understand how local authorities perceive national mandates and the challenges and gaps at the urban level affecting the implementation of these mandates. Third, ambitious local experimentation can propel the bottom up diffusion of initiatives, even leading to implementation at the national level (Adriázola et al., 2018; Corfee-Morlot et al., 2009). Subnational governance levels are seen to have an increasing sense of autonomy, although their authoritative power is embedded within the institutional and legal framework. For example, in India, the provision of urban services lies within the central and state governments, leaving the local governments with very little power apart from implementation (Khosla & Bhardwaj, 2019). However, to make up for this shrinking domestic resource base, sub national governments are exploring collaborations with horizontal actors such as international networks which act both national and locally. Multilevel governance has expanded the access of cities to new transnational spaces such as international networks, thereby propelling their policy learning and knowledge building activities (Pierre, 2019).

Multilevel governance has been extensively researched within the field of climate governance as climate change can be seen as a glocal problem, i.e.; a problem that is global in nature but resulting in effects at the local level. The impacts of climate change affects multiple levels of governance and multiple sectors, calling for a coordinated response (Gupta et al., 2007). Multilevel governance provides a framework to understand the interactions between national, state and city level governments as well as non-state actors such as international networks and academia, steering the development and implementation of climate change mitigation and adaptation policies (Corfee-Morlot et al., 2009). A meta-analysis of 47 case studies spanning North America and Western Europe, tested a number of hypotheses about the influence of multilevel and participatory governance on environmental decision making. The study suggested that participation of non-state actors in most cases lead to more environmentally rational decisions as compared to a top down approach. However, it was contingent upon the goals and interests of the actors. The study also suggested that a multilevel form of governance involving multiple horizontal and vertical governance levels gave higher environmental outputs in comparison to monocentric governance (Newig & Fritsch, 2009). Multilevel governance is serving as a platform to enable cities to join international networks specific to climate change, thereby strengthening their technical and institutional capacities to tackle climate change issues (Pierre, 2019). Horizontal collaboration refers to not only interaction with non-state actors, but also to the coordination amongst different interdepartmental sectors. The multilevel governance lens stresses on overcoming institutional fragmentation between governmental sectors as well as local jurisdictions within the same metropolitan or rural area in order to effectively tackle cross cutting climate change problems (Corfee-Morlot et al., 2009).

Multilevel climate governance literature has focused predominantly on national-supranational interactions while national-subnational interactions remain less explored. Moreover, a majority of the studies have explored cases in the Global North, especially in the EU. There remains limited research on the proliferation of multilevel governance in the Global South (Di Gregorio et al., 2019). It is anticipated that multilevel governance in the Global South would see a dominant involvement of international actors mainly as sources of finance. Studies have remained biased towards successful governance cases, with limited emphasis on the contextual challenges affecting multilevel climate governance. Thus, the role of local governments as pioneers within the largely centralized governance framework, the role of non-state actors and the challenges impeding multilevel climate governance in the Global South requires further

exploration (Bulkeley, 2010; Bulkeley & Betsill, 2005b; Chan et al., 2018; Di Gregorio et al., 2019; Gogoi et al., 2017; Piattoni, 2009; van der Heijden, 2019).

2.2.1 Enabling factors for multilevel governance

According to Van der Heijden (2019), considerable progress has been made over the last decade, in exploring and analyzing the factors that enable effective climate governance in cities. The presence of a supportive legal context and sufficient autonomy for cities enable them to tailor effective climate responses to local conditions, while adhering to the boundaries of a larger national governance framework. However, in the context of decentralization, power given to cities should be accompanied by the simultaneous transfer of financial capacity enabling cities with access to adequate funding (Bai et al., 2009). The presence of a local climate entrepreneur was also found to be an important enabler for effective urban climate governance. For example, the motivation and knowledge of the mayor was instrumental for the early implementation of the eco-city plan in Rizhao, China (Westman et al., 2019). On the whole, the openness of city level administration towards external collaborations and support was found to positively influence their capacity to implement climate initiatives (Hickmann & Stehle, 2019). Coordination across all departments and agencies within a city is another important enabling factor. This can be facilitated through a central climate action committee or through specially trained personnel dedicated towards implementing climate initiatives within each city level department (Kern & Alber, 2008). Apart from intra city collaboration, external collaborations with capacity building and learning networks, funding agencies and other non-state actors can also contribute to improving the outcomes of urban climate governance (Adriázola et al., 2018). However, in the case of city networks, there is the risk that cities can act as free riders without committing to the goals of the network. Thus, city networks risk becoming an end in themselves rather than the means to an end. Collaborating with a multitude of stakeholders also comes with the risk of vested interests hijacking the decision-making process, leading to the further repression of marginalized groups and delayed outcomes (van der Heijden, 2019).

2.2.2 Barriers for multilevel governance

In terms of vertical collaboration, there is a tendency for organizations at the same level to interact with each other rather than with organizations at different levels. This can lead to information asymmetries in policy making and implementation, leading to a failure in adapting national policies to local contexts (Bai et al., 2009; Charbit, 2011; Di Gregorio et al., 2019). Climate change issues predominantly fall under the purview of environmental departments, although stakeholders in emission intensive sectors such as energy and transport have a major influence in the city's GHG emission contribution. The lack of awareness about the cross-sectoral nature of climate issues is a barrier that often leads to a fragmented, siloed approach towards climate governance within cities (Westman et al., 2019). For example, a study of 59 spatial plans in Indian cities found that climate change and environmental concerns were given the least priority within the sampled spatial plans. The failure to integrate climate change within the spatial plans was attributed to a low level of awareness and limited analytical capability (Kumar & Geneletti, 2015). Apart from a lack of awareness, insufficient analytical capability of local governments barres their understanding of climate change and its impacts, further impeding cross-sectoral coordination (Bulkeley, 2010; Westman et al., 2019). There is a need for human and expert resources to be made available at the local level. However, despite the availability of resources, another challenge is to create and maintain a local knowledge base that guides decision making processes (Corfee-Morlot et al., 2009). The fiscal gap between the different governance levels, leading to inadequate funds for effective subnational climate action remains another common barrier for multilevel governance. This forces governments to raise municipal funds or look for external funding sources (Charbit, 2011).

In a case study analysis exploring the importance of horizontal and vertical linkages for sustainable transition pathways in Asian countries, two types of barriers for vertical linkages were identified, namely, barriers for the upscaling of local initiatives and barriers affecting the downscaling of national level policies (Bai et al., 2009). Regarding barriers for the upscaling of local initiatives, some successful interventions at the local level might have resulted in externalities, making it difficult to be duplicated at higher levels. Successful interventions are usually a result of strong political will, knowledge and skill at the local level. A lack of equally effective governance at higher levels often impedes successful upscaling. Moreover, upscaling small scale interventions comes with greater financial, capacity and resource needs which is often challenging to obtain. The main barrier to downscaling of national policies is the failure to adapt national level goals and targets to specific local realities. Lack of implementation capacity in terms of technical and financial resources at the local level can further lead to misinterpretation of national policies (Bai et al., 2009). The objective gap, which arises due to a conflict of interest between national and subnational governments as well as competing interests between sectors within the same governance level is another factor challenging effective national-local coordination (Adriázola et al., 2018; Charbit, 2011)

2.3 Multilevel governance and the role of intermediaries

Sustainability transitions represent changes in existing socio-technological systems, shifting towards more sustainable pathways. This can be achieved through a diffusion of sustainability-oriented innovations complemented by governmental policies supporting actors with the required capital, knowledge and experience. Recent literature on sustainability transitions have elucidated the potential of intermediaries as catalysts and facilitators. They play a number of roles such as, the mobilization of resources, providing technical advice for the implementation of technologies, facilitating cooperation between actors which otherwise may not have happened , supporting the development and upscaling of new climate friendly innovations and pushing for new policies or regulations (Bothello & Mehrpouya, 2019; Matschoss & Heiskanen, 2017; Mignon & Kanda, 2018). Intermediaries can be defined as actors that create new spaces and possibilities within a system, mediating and creating relationships between different people or things. A variety of actors can play the role of intermediaries, including but not limited to organizations such as NGOs, governmental agencies, consultants, academia, councils, network platforms and individuals (Warbroek et al., 2018). By increasing access to external funding and technical inputs, intermediaries can act as platforms for ambitious local climate innovations, strengthening technical and financial capacities and making up for a dearth of resources from higher governance levels (Matschoss & Heiskanen, 2017). Intermediaries can also act as knowledge aggregators and distributors, consolidating knowledge and experience from a multitude of local and non-local actors in the form of materials like case studies or best practice handbooks and further distributing them for horizontal learning in other contexts. They also assist in the upscaling of local initiatives by bridging financial and administrative gaps that often accompany decentralization (Matschoss & Heiskanen, 2017; Warbroek et al., 2018). Transnational Municipal Networks (TMNs) are an example of an intermediary connecting local governments and consisting of three components, an international secretariat, political decision-making boards and local government stakeholders from member cities. These networks benefit member cities by improving access to project-based funds, facilitating knowledge sharing, bringing in technical capacity and enabling links between local, national and international governance levels. The ability to access and learn from examples in other cities is a key factor motivating cities to join such networks. However, TMNs are critiqued for being "networks of pioneers, for pioneers", focusing only on ambitious and resourceful cities, leaving out the laggards (Fenton, 2015; Kern & Bulkeley, 2009b). Moreover, some cities act as freerides, using TMNs as an end in itself, rather than the means to an end (van der Heijden, 2019).

Despite the growing literature on intermediaries, inconsistencies remain regarding the definition and types of intermediaries and the nature of their activities. In an attempt to address this research gap, Kivimaa et al. (2018) distinguishes between different types of intermediaries playing a role in sustainability transitions, classifying them into; systemic intermediaries, regime intermediaries, niche intermediaries, process intermediaries and user intermediaries. *Systemic intermediaries* catalyze system level innovation with the aim of transforming the existing socio-technical regime. Socio-technical regimes constitute the current institutions and the way of realizing societal functions (Smith et al., 2010). Regime intermediaries on the other hand also operate between actors on a system level but within the boundaries of the existing regime. Niches can be described as spaces fostering path breaking innovations (Smith et al., 2010). *Niche intermediaries* facilitate the development and diffusion of niches, often connecting local innovations to the outside world. They can do so by identifying common issues and enabling factors amongst a group of projects and disseminating that information, allowing learning for subsequent innovations. *Process intermediaries* facilitate and support individual processes that together help shape transitions. They often work with local project managers on a day to day basis, developing context specific projects aligned with the ambition of a long-term transition. They seek to influence a local climate champion who can help elevate their influence. They develop connections between multiple actors by adopting a neutral stance and advance information exchange aiding transitions. In large projects, they also take up a brokering role between local-national priorities, facilitating horizontal and vertical interactions. Finally, *user intermediaries* play two key roles. First, they connect novel technologies and innovations with citizens. They promote these technologies and inform users about their characteristics. They can be associated with a particular niche or with several niches. Second, they also act as feedback mechanisms between users and niches. Owing to the multidimensional nature of climate change, a single intermediary can be described using multiple categories. Encompassing all these intermediary types, transition intermediaries can be described as actors who positively influence transitions by; interlinking multiple actors and their resources, connecting opinions and demands from actor groups to the existing regime, thereby gaining momentum for change, creating collaborations inside and across niches and trying to disrupt the dominant socio-technical regime.

The role of intermediaries is often described using role theory. According to role theory, a role refers to a person's activities within a particular social setting. Although role theory places actors as the primary unit of analysis, it can also be used to analyze the roles of organizations as key actors (Hollis-Sawyer & Dykema-Engblade, 2016; Nyström et al., 2014). The role of non-state actors, such as intermediaries in influencing sustainability transitions is not devoid of criticism. Chan et al. (2019) presents the criticism around four main assumptions. One, it is assumed that more non-state action can lead to addressing more mitigation gaps left as a result of insufficient government prioritization. However, with the interplay of multiple actors, there is the risk of double counting and an overestimation of impacts, leading to the national government assuming that targets have been met, erroneously. Second, through collaborations, knowledge transfer and strengthening capacities, it is assumed that non-state actors overcome the shortcomings of traditional governance and benefit all the participating actors. However, in the course of intervening especially in developing countries, non-state actions could positively address one objective while resulting in negative externalities that nullify the overall effect, thus benefiting some actors but negatively affecting others. Third, intermediation by non-state actors though mostly benefiting local governments by bridging resource gaps, also comes with risks that need to be recognized. The main risk is the creation of dependencies leading to inaction once the actors stop intervening. If left unaccounted for, this could result in the perpetuation of governance gaps. Finally, biased implementation of some actions over others by non-state actors can lead to politically controversial outcomes and imbalanced impact. One way of addressing these risks is to ensure the engagement of a maximum number of actors not just limited to

pioneers or front runner cities. Secondly, inclusive spaces can be created in order to enable the exchange of experiences, build trust amongst actors and create shared understandings of needs and priorities. Finally, it is essential to have a feedback mechanism from the international arena, keeping a check on the progress of non-state actors and ensuring that they meet internationally mandated sustainability targets.

The complexity and multi-actor orientation of sustainability transitions necessitates the inclusion of multiple intermediaries who may differ in their functions and the resources they provide. The coexistence of multiple intermediaries can lead to both competition and collaboration for resources, mandates and acceptance. Thus, important areas for future research include understanding the practical challenges faced by intermediaries and formulating policies and initiatives aimed at fostering a mix of intermediaries working on multiple system levels with different roles and activities (Kanda et al., 2020; Kivimaa et al., 2018).

2.4 Multilevel climate governance in India

India can be described as a centralized quasi federal system, meaning that despite having a federal government structure, the central government is predominantly involved in policy development and implementation (Adriázola et al., 2018; Jörgensen, 2011). The main governance levels include a national/central government, state government and local governments. The provision of urban services and the management of parastatal organizations such as the electricity supply boards, disaster management and pollution control boards are carried out by the central and state levels, with cities having minimal influence aside from implementation (Khosla & Bhardwaj, 2019). The main governance instrument at the national level is the National Action Plan for Climate Change (NAPCC), which provides a framework for integrating climate mitigation and adaptation aspects into development initiatives, promoting the implementation of climate and development co-benefits at the national level. It encompasses eight missions including, the National mission on sustainable habitat, National solar mission, National mission on sustainable agriculture, National mission on enhanced energy efficiency, National Water mission, National mission on strategic knowledge for climate change, National mission for sustaining the Himalayan ecosystem and the National mission for a Green India. An advisory council, headed by the prime minister and composed of national sectoral ministries, academia, civil sectors and industry was set up to aid the implementation of the NAPCC, although it was not active until reconvened recently. Moreover, the exclusion of a comprehensive stakeholder consultation process during the drafting of the NAPCC faced criticism. The working of the advisory council is further aided by the Executive Committee on Climate Change , comprising ministry level secretaries (Adriázola et al., 2018). In order to strengthen the scientific foundation for climate policy, the Indian Network for Climate Change Assessment, a network of scientists tasked with the publishing of climate change related research, was established (Jörgensen, Mishra, & Sarangi, 2015).

Countries can implement different multilevel governance frameworks according to their political and institutional contexts. In a top down framework, the national government is the main source of regulations and provides the resources for implementing them. In a bottom up framework, local governments have considerable autonomy to blaze the trail for policy innovations in the absence of a top down influence. The third type, a hybrid multilevel governance framework, consists of both top down and bottom up elements. State and local governments not only try and implement national policy guidelines but, in some cases, can also become pioneers with innovative policies. Climate governance in India is seeing a shift away from a centrally driven governance approach with a greater emphasis on the role of states (Adriázola et al., 2018). At the state level, every state is mandated to implement the NAPCC through individual SAPCCs. Although this denotes a top down policy approach, there are visible differences in how states engage with climate policy through their state climate action plans. For

example, although India does not have a national policy for the uptake of electric vehicles, some states like Andhra Pradesh and Karnataka have implemented electric vehicle policies (Government of Andhra Pradesh, 2018). Studying the increasing role of states in the development, experimentation and implementation of innovative climate policy as well as the potential for multilevel climate policy in India remains an important area for future research (Jörgensen, 2012). Figure 2 illustrates an overview of the multilevel climate governance instruments in India.

National frameworks and policies set by international bodies like the United Nations Framework Convention on Climate Change (UNFCCC) have not yet infiltrated into the regional and local governance contexts (Gogoi et al., 2017). Despite not having a formal climate action plan at the local level, the national government has slowly started supporting urban integration since the implementation of the Indian Peer Experience and Reflected Learning program in 2007, a platform to facilitate city to city learning for urban infrastructure development. With respect to climate action at the city level in India, climate mitigation and adaptation initiatives remain linked with local development benefits. Moreover, there has been an influx of non-state actors, collaborating with cities to help overcome the shortage of resources from the national and state levels (Khosla & Bhardwaj, 2019). Although climate change responses and integration in cities is in the nascent stages, the interlinkages of city level initiatives within the multilevel climate governance framework in India remains an important area for future research (Jörgensen, Mishra, & Sarangi, 2015; Khosla & Bhardwaj, 2019).

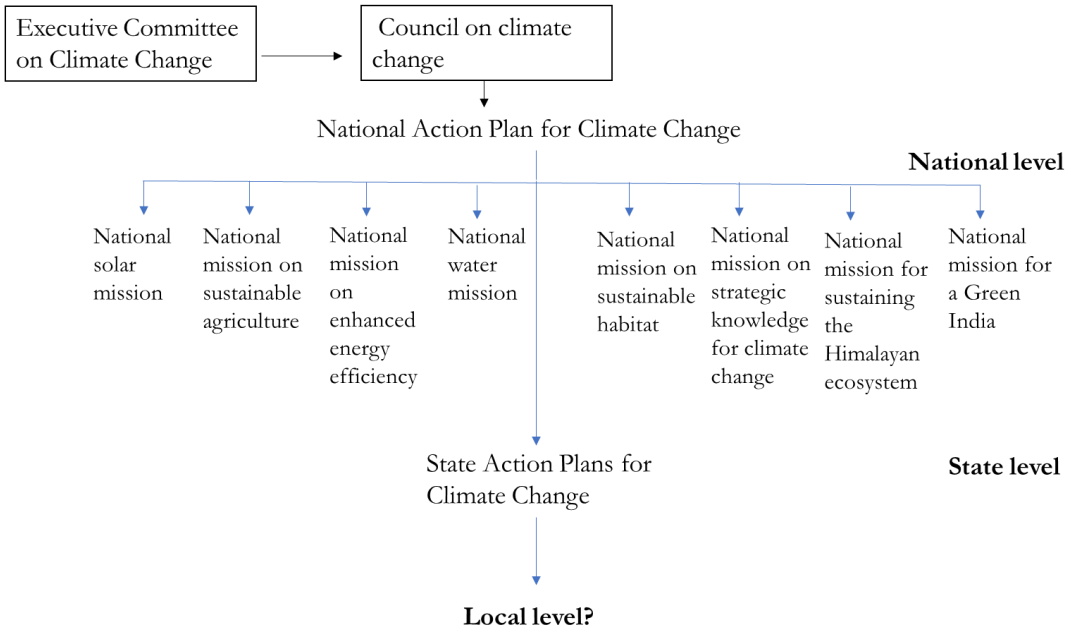

Figure 2: Overview of the key multilevel climate governance instruments in India

3 Methodology

This chapter first describes the case study research design method used for this study along with its limitations and how the author seeks to address them. Then, it describes the analytical framework, developed based on the literature review and implemented in the analysis of multilevel climate governance in India, presented in Chapter 5 and 6. This is followed by a description of the two main methods of data collection, namely document analysis and semi structured interviews followed by the analysis of the collected data.

3.1 Research design

A case study design was adopted for this study. It is the ideal research design choice when the research focuses on contemporary events with the researcher having no control over the behavior of stakeholders (Yin, 2014). Case studies are suitable when the research seeks to address exploratory or descriptive questions, providing an in-depth understanding of a complex phenomenon in real life (Crowe et al., 2011; Yin, 2011). Since the research questions in this study focus on describing the implementation of the contemporary phenomena of multilevel climate governance at the local level, a case study was deemed fit for the thesis design. A collective case study is one that uses multiple cases to provide a general understanding of a broader phenomenon. The common theme is to begin with analyzing individual cases followed by a cross case analysis of commonalities and differences (Harling, 2012; Yin, 2011). This thesis is an example of a collective case study as it examines the implementation of multilevel climate governance in Indian cities, through the Urban-LEDS project, by using the cities of Rajkot, Thane and Nagpur as study cases (Crowe et al., 2011; Gill et al., 2008; Yin, 2014).

There are several limitations that come with using a case study method which needs to be addressed. Using multiple cases can result in too much data with too little time, reducing the depth of the study. The case study methodology is often criticized for lacking rigor and systematic analysis (Aberdeen, 2013; Crowe et al., 2011). To address this, maximum transparency has been ensured by being explicit about the case study selections, the reasons for choosing the data collection methods and the level of involvement of the researcher in data collection and interpretation, documenting information at every stage. Case studies are also associated with the inability to draw accurate generalizations. This is especially relevant with this thesis, as the topic of multilevel governance is highly context specific and the results in the three cities cannot be translated into other contexts within India or elsewhere. However, this concern is not limited to case studies and is valid for single experiments as well (Yin, 2014). The aim of this thesis is to contribute to a broader appreciation of national-subnational policy integration within India and to understand the role of cities within a multilevel climate governance framework. The results of this thesis are not representative of other cities within India or India as a whole.

3.2 Analytical framework

This thesis seeks to describe how multilevel climate governance, driven by the Urban-LEDS project, is implemented in the three cities. Through a review of existing literature, it was evident that multilevel climate governance is essentially a functional process which involves connecting actors across international, national, subnational and the local levels along with the inclusion of non-governmental actors, together achieving stronger climate action (Zen et al., 2019). Intermediaries assist in creating these connections by mediating between multiple actors and bridging their resources, knowledge and skills in order to enhance collective policy outcomes (Kanda et al., 2020). Thus, the inclusion of diverse actors encompassing multiple governance levels along with non-state organizations including intermediaries, is an important characteristic of multilevel climate governance. Within urban climate governance, the diverse governing

modes, namely self-governance, governance by enabling, governance by provision and governance by authority, employed by national and subnational authorities play an important role in the development of mitigation and adaptation policies. Thus, governance modes can be used to understand the different initiatives preferred by local governments and how it affects multilevel climate governance outcomes (Kern & Alber, 2008). It is also important to understand the contextual factors enabling and challenging multilevel climate governance in cities in order to address governance gaps and enhance local climate efforts (Beermann et al., 2016; van der Heijden, 2019). Thus, an analytical framework was developed to provide a systematic approach to analyzing multilevel climate governance in Indian cities. This framework, depicted below in Figure 3 is used to describe multilevel climate governance in the cities using 6 key attributes which were deemed relevant for assessing multilevel climate governance, based on a review of literature. These include:

1. Actors involved at the local level
2. Role of actors at the state and national governance levels
3. Modes of urban climate governance
4. Barriers for multilevel climate governance
5. Enabling factors for multilevel climate governance
6. Role of intermediaries

The results obtained upon using this analytical framework for the analysis of multilevel climate governance in the three Indian cities are depicted in Chapters 5 and 6. A city wise analysis of the local actors involved, the role of national and state governance levels and the modes of urban climate governance; followed by the common barriers and enabling factors for multilevel climate governance across all three cities, is presented in Chapter 5. Chapter 6 presents the analysis of the roles of intermediaries in facilitating multilevel climate governance, across all three cities.

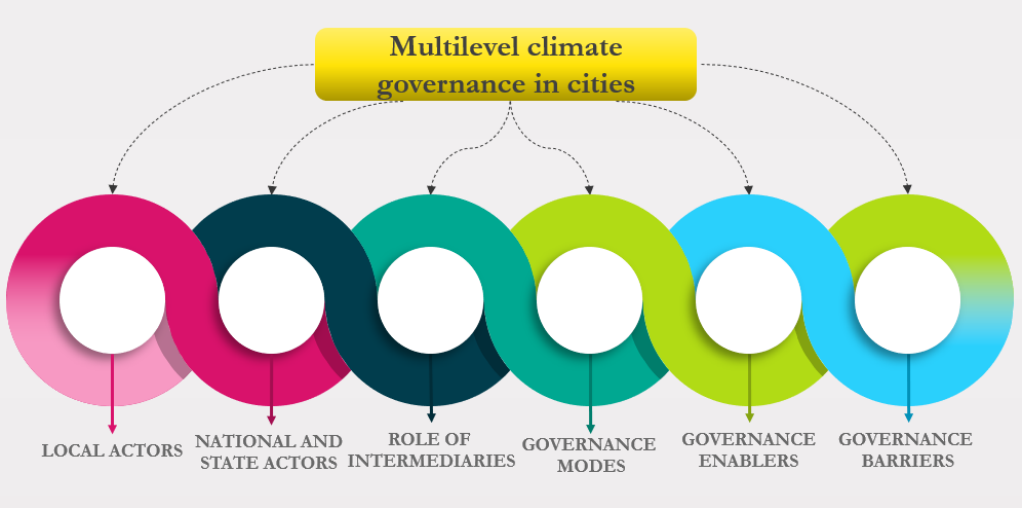

Figure 3: Analytical framework for analyzing multilevel climate governance in cities

3.3 Data collection

This thesis is informed by two sources of data collection namely document analysis and semi structured interviews. The first source of data collection consisted of document analysis. Document analysis refers to the systematic evaluation of both printed and electronic based documents. The main advantage of this method is that document analysis overcomes the problem of reflexivity often attached to qualitative research (Bowen, 2009). Public documents as well as peer reviewed research papers pertaining to the following topics were studied; (i) components of ICLEI'S Urban-LEDS project (ii) Climate Smart Cities Assessment Framework and its components (iii) LEDS as well as ICLEI case study documents from Rajkot, Thane and Nagpur and (iv) the role of intermediaries in sustainability transitions.

Semi structured interviews constituted the second source of data collection. Semi structured interviews provide the researcher with the freedom to control the direction of the interview with additional questions. However, there is a need to structure the interview using simple terms as interviewees, especially government representatives, may not be too familiar with certain terminology. There is also the possibility of leading questions resulting in biased answers (Gill et al., 2008). I have tried to address these limitations by using simple and general questions, reducing the possibility of biased responses. The interviewees were chosen in collaboration with ICLEI South Asia. The date and time for the interviews were fixed with the interviewees through communication via email. In order to gain a range of perspectives from different state and non-state actors, interviewees included representatives from both local governments and intermediary organizations. Furthermore, within local governments, both higher level government officials as well as city level personnel were interviewed, thereby gathering diverse perspectives. A separate questionnaire was prepared for local government representatives and representatives from intermediary organizations. Owing to Covid 19 constraints, only one local government representative was interviewed in each city, although more were preferred. The list of interviewee designations is provided in Appendix A. Figure 4 provides a complete list of the interviewee organizations. The semi structured interview format allowed for descriptive answers guided by a common question followed by additional inputs when needed. It is advisable that data sources from different cases in a collective case study analysis remain broadly comparable to aid cross case analysis and generalizations (Crowe et al., 2011). Hence, a similar questionnaire was provided to interviewees in the same category. The interviews were recorded after seeking prior permission from the interviewees and later transcribed using an online transcription tool. Interviewees are referenced using alphabets to maintain anonymity. In all, 10 semi structured interviews were conducted, each lasting roughly 40 minutes. Interviews were conducted either on skype, zoom or through telephone, based on the preference of the interviewees. The initial plan of conducting in person interviews did not go through owing to Covid 19 restrictions. The interview questionnaire, provided in the Appendix B was formulated based on the research questions in line with the analytical framework, aimed at gaining diverse perspectives on the multilevel governance structure within the three cities, the role of intermediaries and the perceived barriers and enabling factors for multilevel climate governance

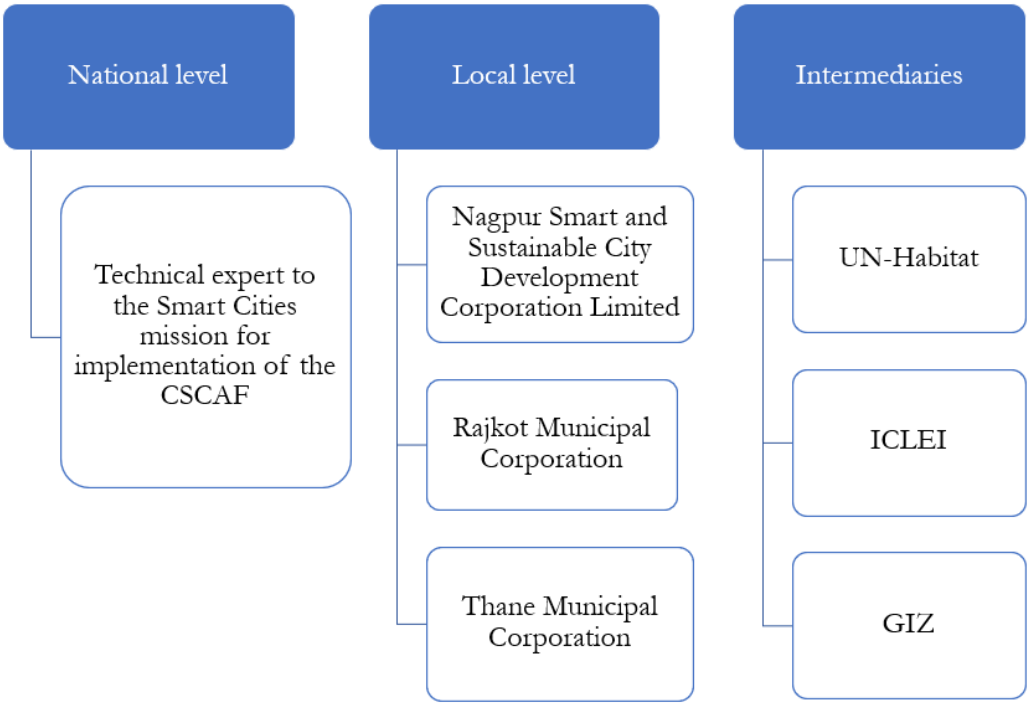

Figure 4: List of organizations represented by interviewees

3.4 Data analysis

The data obtained from the semi structured interviews and documents was analyzed through a thematic content analysis modelled using the developed analytical framework. Data from documents supplemented the information from interviews and was combined to generate the findings and present them under each thematic heading. Thematic content analysis refers to the descriptive presentation of qualitative data based on a set of identified themes (Anderson, 2007). The data from interviews was first transcribed using an online transcribing software. The information was then coded and analyzed using categories based on the analytical framework, namely; the local actors involved, the role of national and state actors, modes of urban climate governance, barriers and enabling factors for multilevel climate governance and the role of intermediaries. The results from the analysis are elucidated in Chapters 5 and 6.

4 Background on Urban-LEDS and the case cities

This chapter presents a brief overview of the Urban-LEDS project and the three cities under study. An overview of each city's geographical characteristics, key emission intensive sectors and functions of the main local governing body is provided along with a snippet of both the city's and their respective state's climate ambitions.

The "*Accelerating climate action through the promotion of Urban Low Emissions Development Strategies (Urban- LEDS II)"* project facilitates low emission and climate resilient transition in project cities through the development and implementation of Low Emission Development Strategies (LEDS). A Low Emission Development Strategy (LEDS) can be defined as a pathway for cities to yield immediate, direct and scalable GHG emission reductions, paving the way for the transition towards a green, low carbon and inclusive economy (ICLEI, 2016a). The project is co-implemented by ICLEI and UN-Habitat and is funded by the European Commission. Phase I of the project took place between 2012-2016 while phase II extends from 2017-2021. Through the provision of technical guidance and tools, the project aims to improve local climate action planning, capacity building for local leaders and municipal staff, engagement with the national government to improve multilevel governance, and peer-to-peer knowledge exchange between cities. The first phase of the project led to the finalization of 8 LEDS including that of Rajkot. The LEDS for Thane were also prepared and submitted for approval (ICLEI, 2016a). Phase II of the project seeks to further expand the goals as well as the geographical reach of the project (ICLEI, 2017). The three cities, highlighted in blue in Figure 5, were chosen for this thesis as they are the model cities under the Urban-LEDS II project, selected by ICLEI through an initial screening process based on criteria such as population, evidence of pre-existing commitment to low emission development, alignment with national strategies, regional connectivity and political and institutional context (ICLEI, 2016a).Within the Urban-LEDS II project, the three cities are assisted in implementing the CSCAF, the nationally driven city level assessment framework explored within this study, jointly implemented by GIZ and the Ministry of Housing and Urban Affairs (MoHUA).

4.1 Rajkot, Gujarat

The city of Rajkot is the fourth largest city in the state of Gujarat with a population of 1.3 million as of 2017. Rajkot's GHG emissions amounted to 2 million tonnes of CO_2 equivalent between 2015-2016, with the residential building sector having the highest contribution followed by the transport and manufacturing sectors. Rajkot is one of the cities under the Government of India's Smart Cities Mission, striving to achieve its sustainability goals by improving energy efficiency and maximizing the use of renewable energy, catalyzed by international collaborations. The main body overseeing the provision of urban services is the Rajkot Municipal Corporation (RMC) while the Rajkot Urban Development Authority (RUDA) governs urban development and planning (Bhardwaj & Khosla, 2017). Rajkot is a signatory to the Global Covenant of Mayors for Climate and Energy (GCoM) and has been a member of ICLEI since 2006 (ICLEI, 2016). Under phase I of the Urban-LEDS project, Rajkot developed its LEDS in 2016 and is currently participating in phase II of the project.

The state of Gujarat has established its leadership through policies and programs tackling climate change challenges and simultaneously addressing sustainable development goals. It has implemented policies for the development of wind and solar energy, introduced a bus rapid transit system, green credit scheme and urban greening programs. The Gujarat State Action Plan for Climate Change, prepared by The Energy and Resources Institute (TERI) a leading research think tank, and approved in 2015, contained initiatives under sectoral themes such as agriculture, water resources, forests and biodiversity, urban development and health. In terms of local

governance, Gujarat has been working on the empowerment of village level institutions through capacity building and has been implementing a decentralized district planning program with greater district autonomy (Government of Gujarat, 2014).

4.2 Nagpur, Maharashtra

The city of Nagpur is the second capital and the third largest city of the state of Maharashtra. It is bordered by some of Asia's largest industrial centers, making it an integral commercial hub contributing to significant GHG emissions (Majumdar & Gajghate, 2011). In 2007, Nagpur was one of the pioneer Indian cities to develop low carbon city level policies as well as policies targeting renewable energy and energy efficiency. Studies have also highlighted the city's global collaborations, such as the exchange between Nagpur and Freiburg as part of ICLEI's "Local Renewables Model Communities Network" (LRMCN) which took place between 2005-2012. This collaboration contributed to the several initiatives and achievements within the clean energy development sphere (Beermann, 2017). Nagpur is also a signatory of the GCoM. Under the Urban-LEDS project, Nagpur is in the development stage of its LEDS and has signed on to participate in phase II of the project.

The state of Maharashtra released the "Assessing Climate Change Vulnerability and Adaptation Strategies for Maharashtra: Maharashtra State Adaptation Action Plan on Climate Change (MSAAPC)" in 2014, also prepared by TERI. The main areas of focus were agriculture, health, ecosystems, water resources, energy and infrastructure. Moreover, a state council for climate change, composed of the state department officials, NGOs, private sector and was set up to ensure coordinated interdepartmental efforts. In a study by the Climate Group, both Gujarat and Maharashtra were among the list of top performing states in terms of climate actions, with a lower emissions intensity, higher energy efficiency and a larger growth in percentage of forest cover (Nawaz et al., 2019)

4.3 Thane, Maharashtra

The city of Thane, coming under the jurisdiction of the Mumbai Metropolitan region, is a major industrial town in Maharashtra. Under the Thane Solar City Master Plan (SCMP) adopted as part of the nationally driven Solar Cities Program, the Thane Municipal Corporation (TMC) has implemented several energy efficiency and renewable energy initiatives through internal and external stakeholder collaboration. Aligned with further accelerating its ambitious climate trajectory, the city of Thane has been a member of ICLEI since 2008 and had published its draft LEDS in March 2016. It is currently participating in Phase II of the project (ICLEI, 2015; Thane Municipal Corporation, 2016).

Figure 5: Map of India with case study cities depicted in blue

Source: (YOU Broadband, n.d.)

5 Analysis of multilevel climate governance in Indian cities

In line with the overarching aim of this thesis and using the analytical framework introduced in Chapter 3, this chapter presents the city wise results of research question 1 (see 5.1,5.2,5.3 and 5.4) and the results of research question 2 aggregated across all three cities (see 5.5 and 5.6).

- RQ 1 How is multilevel climate governance (targeting mitigation and adaptation) implemented at the city level through the Urban-LEDS II project?
    - Who are the actors involved at the local level?
    - What is the role of national and state levels?
    - What are the modes of urban climate governance?

- RQ 2 What are the perceived barriers and enabling factors for multilevel climate governance within the Urban-LEDS II project?

The state and non-state actors involved at the local level, the role of national and state levels and the modes of urban climate governance in each of the three cities are first presented, followed by an assessment of the perceived barriers and enabling factors for multilevel climate governance within the Urban-LEDS II project, across all three cities.

5.1 Multilevel climate governance in Rajkot

Rajkot's LEDS, implemented since 2016, was predominantly driven by city level ambitions, spearheaded by the Rajkot Municipal Corporation (RMC) (Interviewee A, personal interview, March 9, 2020). However, national level mandates, such as the Smart Cities Mission and state level policies such as Gujarat's wind and solar power policies, acted as enabling frameworks for the city to implement effective low emission solutions. The Smart Cities Mission, rolled out by the Government of India in 2015 is an important policy targeting urban climate action. It aims to develop 100 smart cities through initiatives that integrate information and communication technology with urban renewal projects (ICLEI, 2016; Praharaj et al., 2018). City level LEDS also aims to contribute to meeting India's NDCs (ICLEI, 2016b). Thus, Rajkot's LEDS was not only driven by local ambitions but was also interlinked with policies at the state and national levels.

5.1.1 Actors involved at the local level

The low emission development strategy was driven by ICLEI's GreenClimateCities(GCC) program, which provides an operational methodology that guides local governments in embedding a low emission development pathway, through three phases; Analyze, Act and Accelerate (ICLEI, 2016b; Marques et al., 2016). The GCC methodology is depicted in Figure 6. The first phase began with the preparation of a GHG inventory accounting for emissions from the residential, industrial, commercial, transport, construction, agriculture, forestry and waste sectors. This phase also involved gaining support from key local officials and identifying other relevant stakeholders for the development of the LEDS. Significant work around the mobilization of stakeholder commitment was already carried out earlier, during the development of Rajkot's Solar City Master Plan (SCMP) (ICLEI, 2016b, 2016). The role of stakeholders in each phase of the GCC is depicted in Table 1.

A city level stakeholder committee as well as a climate core committee was established to facilitate interdepartmental coordination. The stakeholder committee consisted of both state and non-state actors, including, representatives from all local departments including but not limited to environment, health, land development, water, electricity and administration, the municipal commissioner and mayor from the RMC, project coordinator from ICLEI, RUDA, relevant state government representatives and industry representatives. The aim of the committee was to coordinate the development of city level climate initiatives, including the LEDS (ICLEI, 2016). The climate core committee was composed of RMC departmental staff and tasked with implementing the LEDS and monitoring its sectoral impacts. This involved employing monitoring frameworks and providing training to municipal staff on the identification of impacts. The climate core committee was also entrusted with identifying and solving implementation challenges and discussing these on a yearly basis, before the municipal budget was decided to allow for necessary financial allocations (ICLEI, 2016). Both the stakeholder and the climate core committees are examples of governance instruments facilitating intermunicipal coordination. Governance instruments are platforms, tools or action plans enable effective governance (Adriázola et al., 2018)

Through the development of the LEDS, Rajkot has demonstrated an integrated approach by mainstreaming and interlinking some of the interventions within the LEDS, into existing local development policies. For example, one of the low emission measures under the residential sector was the replacement of geysers with solar water heaters in residential buildings. This was further incorporated as a mandate, wherein new buildings had to install solar water heaters in order to get an approved occupancy certificate, under the Draft Development Plan of the RUDA. Another example is the integration of city level interventions such as the replacement of street lights and decentralized solid waste management into the broader "Smart Society Scheme", initiated by the Rajkot Municipal Corporation (ICLEI, 2016b) On the whole, climate change is slowly being woven into every planning process at the city level, with every new project being implemented only after taking into account its associated climate related benefits and negative effects (Interviewee A, personal interview, March 9, 2020).

Figure 6: The GreenClimateCities process

Source: (ICLEI, 2015)

Table 1: Indicative stakeholder involvement in the GCC

Phase 1: ANALYZE	
Commit and Mobilize	• Securing initial commitment from elected representatives, senior staff and management from relevant departments. • Mapping stakeholders and establishing stakeholder and climate core team
Assess frameworks	• Determining general awareness of local stakeholders • Data collection involving internal and external stakeholders
Identify development and climate priorities	• Engaging experts to identify links between climate change and socio-economic development • Identifying priorities through workshops • Ratifying recommended strategies by key stakeholders
Phase 2: ACT	
Develop action plan	• Developing potential LED solutions with stakeholders • Fine tuning of solutions with stakeholders including experts and department heads • Establishing targets and key performance indicators with relevant stakeholders
Prepare and approve	• Undertaking detailed planning of priority projects with experts and department representatives, developing a clear business case • Presenting the projects to elected body for approval
Implement	• Long term capacity building with staff and other stakeholders • Forming alliances and partnerships with stakeholders for project delivery
Phase 3: ACCELERATE	
Monitor	• Monitoring and development of a monitoring, reporting, verification system with stakeholders
Evaluate and report	• Reporting and disseminating results and achievements through stakeholder networks
Enhance	• Involving stakeholders in a bi-annual review of the GHG inventory and priority actions

Source: Adopted and modified from (ICLEI, 2015)

5.1.2 The role of national and state levels

The development and implementation of LEDS mainly involved local stakeholders with national and state levels playing a negligent role. An interviewee perceived that the national and state governments usually remain unaware of local level issues and requirements. However, they readily intervene when assistance pertaining to a specific sector or intervention is requested by the local government (Interviewee A, personal interview, March 9, 2020). Although the national and state governments were not directly involved with the development and implementation of the LEDS, they played an important role as sources of finance. Grant funding as part of national and state level schemes targeting urban renewal such as the Smart Cities Mission, Swachh Bharat Mission and the Atal Mission for Rejuvenation and Urban Transformation (AMRUT) was an important financial source for Rajkot's LEDS. The Faster Adoption and Manufacturing of (Hybrid &) Electric Vehicles in India scheme, implemented by the Department of Heavy Industry at the national level, provides funding for the manufacturing and deployment of electric vehicles. The city also utilized funds under this scheme for the electrification of local public transport (Interviewee A, personal interview, March 9, 2020). Subsidies provided by the Ministry of New and Renewable energy (MNRE) was another nationally driven financial source (ICLEI, 2016b). Municipal budgets, public private partnerships (PPP) and the use of green bonds were

some of the other sources of finance utilized by the local government. The national and state governments were also indirectly involved in the LEDS through platforms such as the Cities and Regions Talanoa Dialogues and the Project Advisory Group (PAG), which acted as governance instruments enabling national-local policy integration (Adriázola et al., 2018). The Cities and Regions Talanoa Dialogues initiative is a series of climate consultations which provide a platform for bringing together national and subnational government representatives in countries (ICLEI, 2018). This initiative will further be elaborated in section 6.1.3. The main stakeholders involved in these dialogues were city level officials such as the mayor and chairman of the standing committee and experts from the national and state level such as the Chief Secretary of Gujarat. This platform enabled the city of Rajkot to discuss existing gaps with regards to local climate initiatives and brainstorm solutions to address them. The dialogue was also crucial in gaining the commitment and support of high-level city officials. Despite representation of national and state levels within these dialogues, the decision-making power was retained at the local level (Interviewee A, personal interview, March 9, 2020). The PAG was formulated to gather inputs and feedback regarding the performance of the Urban-LEDS project. It comprised expert advisors from the national government along with a myriad of organizations such as UN-Habitat, GIZ, EU delegation to India, Schneider Electric India Pvt. Ltd, Swiss Development, Planning Commission, etc. (ICLEI, 2016). Within the LEDS, the national government also plays a critical role through the implementation of the CSCAF, which serves as an enabling framework for the development of low emission initiatives. The CSCAF is further elaborated in section 6.3.

Figure 7 depicts an overview of the key state and non-state actors involved in the development of Rajkot's LEDS along with the governance instruments through which they interact. The dotted lines represent an indirect connection to the strategy. This could be either through financial support, capacity building or through project feedback supporting implementation.

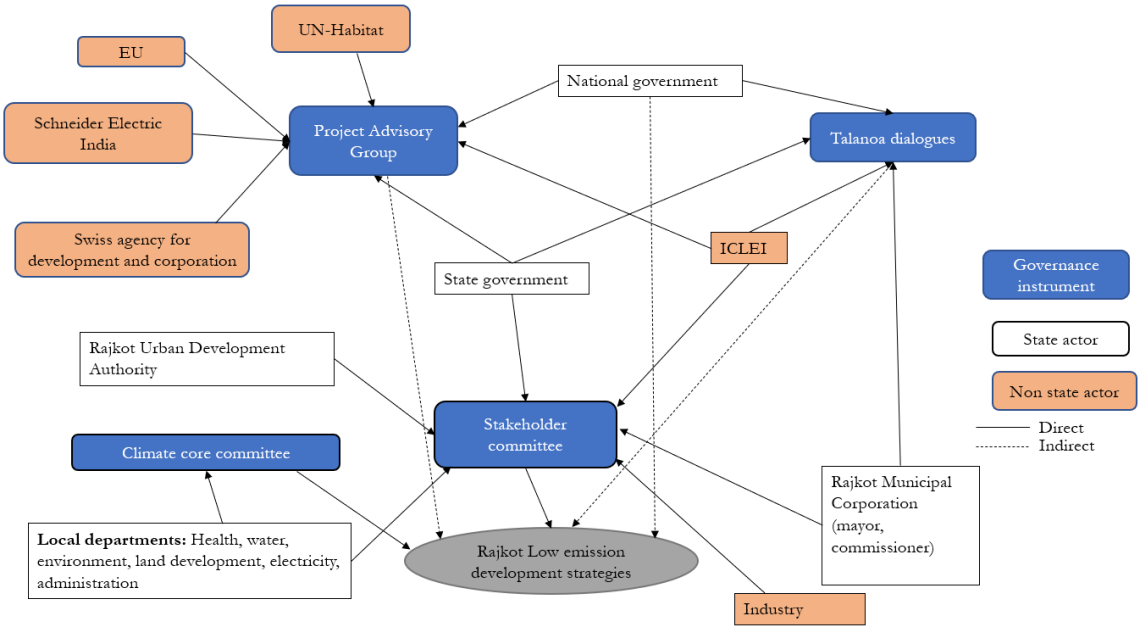

Figure 7: Actors and governance instruments within Rajkot's multilevel climate governance framework

5.1.3 Modes of urban climate governance

Multiple modes of urban climate governance are visible within the context of Rajkot. Self-governing refers to the capacity of the local government to effect changes in its own internal activities (Kern & Alber, 2008). Self-governance in RMC was visible through dedicated low emission initiatives targeting municipal services and infrastructure, within the LEDS. Examples of such initiatives include installing roof top solar PV on municipal buildings, use of energy efficient pumps for sewage management and the provision of electric bikes for municipal field officers (ICLEI, 2016b). Governing by enabling refers to the creation of partnerships with the private sector as well as increasing community engagement to facilitate voluntary action and uptake of low emission solutions (Kern & Alber, 2008). In this regard, Rajkot's LEDS consisted of a number of nonstructural initiatives involving the private sector as well as the local community. This includes awareness campaigns on energy conservation and the uptake of energy efficient appliances as well as collaborations with suppliers of energy efficient household appliances to organize public drives to boost sales. The private sector was also involved in public-private partnerships for funding certain projects. Governing by enabling initiatives were also a part of municipal self-governing initiatives such as conducting workshops for municipal staff on the importance of energy efficiency and renewable energy utilization. Governing by provision can refer to either providing certain types of public services or utilities or providing incentives to facilitate their uptake. This depends on the municipality's level of control over certain services such as transport or energy. This was exemplified in Rajkot through incentivizing the uptake of energy efficient measures through the provision of fiscal incentives such as property tax rebates. The plan to include a public bicycle sharing system was also included in the strategy, enabling commuters to take up this low emission transport mode. The local government also exhibits governing by authority, through regulations or sanctions directing a shift towards the use of low emission technologies. For example, Rajkot issued a mandate for the provision of solar water heaters in new buildings as well as a ban on diesel goods vehicles (ICLEI, 2016b; Kern & Alber, 2008)

5.2 Multilevel climate governance in Nagpur

The LEDS in Nagpur, which is still in its development stage, were mainly driven by Maharashtra's SAPCC and the NAPCC, as the state and national levels in India govern major policies and instruct the Urban Local Bodies (ULB). There was a strong link between certain local level initiatives such as those related to energy efficiency, water quality and solar energy, with relevant policies at the national level. However, there was also evidence of the bottom up diffusion of local initiatives, influencing the state level and leading to subsequent higher-level implementation. Nagpur was the first city to reuse treated sewage water for cooling thermal power plants within the city. The Government of Maharashtra subsequently introduced a policy mandating all municipalities to do the same (Interviewee D, personal interview, March 30 2020). This example elucidates how the bottom up diffusion of local initiatives can steer regional policymaking, within a multilevel governance framework (Corfee-Morlot et al., 2009)

5.2.1 Actors involved at the local level

The Special Purpose Vehicle (SPV) is the main city level executing body for the smart cities mission and is equipped with a certain level of autonomy, although it is still dependent on state level agencies for the implementation of infrastructure projects (Praharaj et al., 2018). In Nagpur, the SPV is termed as the "Nagpur Smart and Sustainable City Development Corporation Limited (NSSCDCL)". The Government of Maharashtra and the Nagpur Municipal Corporation each have a 50% share in the NSSCDCL. Thus, this organization represents a local-state-national collaboration and is mainly tasked with implementing projects in association with local bodies as well as city wide projects under the Smart Cities Mission. In collaboration with ICLEI, they played a main role in facilitating city to city partnerships along

with the development of the LEDS (Interviewee D, personal interview, March 30 2020). As a first step towards developing the low emission strategy, a GHG emission inventory was created, following which 2 projects were identified under the LEDS, namely, the assessment of existing biodiversity and its emission reduction potential in collaboration with World Wide Fund for Nature (WWF) and the implementation and upscaling of rainwater harvesting initiatives. A climate vulnerability assessment was also underway (Interviewee D, personal interview, March 30 2020).

To promote cross-sectoral collaboration and city level horizontal coordination, a stakeholder committee as well as a climate core committee were formed, similar to the case of Rajkot. However, in this case, the role of the climate core committee was to advise and guide the stakeholder committee. The climate core committee comprised top political leaders such as the mayor and the commissioner, administrative as well as technical stakeholders and experts. Research organizations such as the CSIR-National Environmental Engineering Research Institute and engineering universities were also a part of the stakeholder committee. Non-state actors were also instrumental in improving financial capacity at the city level. For example, the Investment Company of America (ICA) and the Agence Française de Développement (AFD) were the main funding agencies for river restoration programs in Nagpur (Interviewee D, personal interview, March 30 2020).

5.2.2 The role of national and state levels

The pivotal role of Nagpur's SPV in the governance of local climate initiatives exemplifies strong ties between national and local governments. The state government remains an important shareholder within Nagpur's SPV, further playing a role in the development of the LEDS. The city of Nagpur has also been successful in utilizing national level grants from programs such as AMRUT, Smart Cities Mission and the Swachh Bharat mission to finance its climate initiatives. This is complemented with corporate social responsibility funds, PPPs as well as municipal budgets. The city also tries and obtains funding by participating in inter-city competitions such as the Cities program and Global climate city challenge (Interviewee D, personal interview, March 30 2020). Similar to Rajkot, the national and state governments were also indirectly involved in the low emission development strategy through the Cities and Regions Talanoa dialogues and the PAG. Nagpur is also working with the CSCAF and was ranked 2nd in the previous year's city level assessment. Figure 8 depicts an overview of the key state and non-state actors involved in the development of Nagpur's LEDS along with the governance instruments through which they interact. The dotted lines represent an indirect connection to the strategy. This could be either through financial support, capacity building or through project feedback supporting implementation.

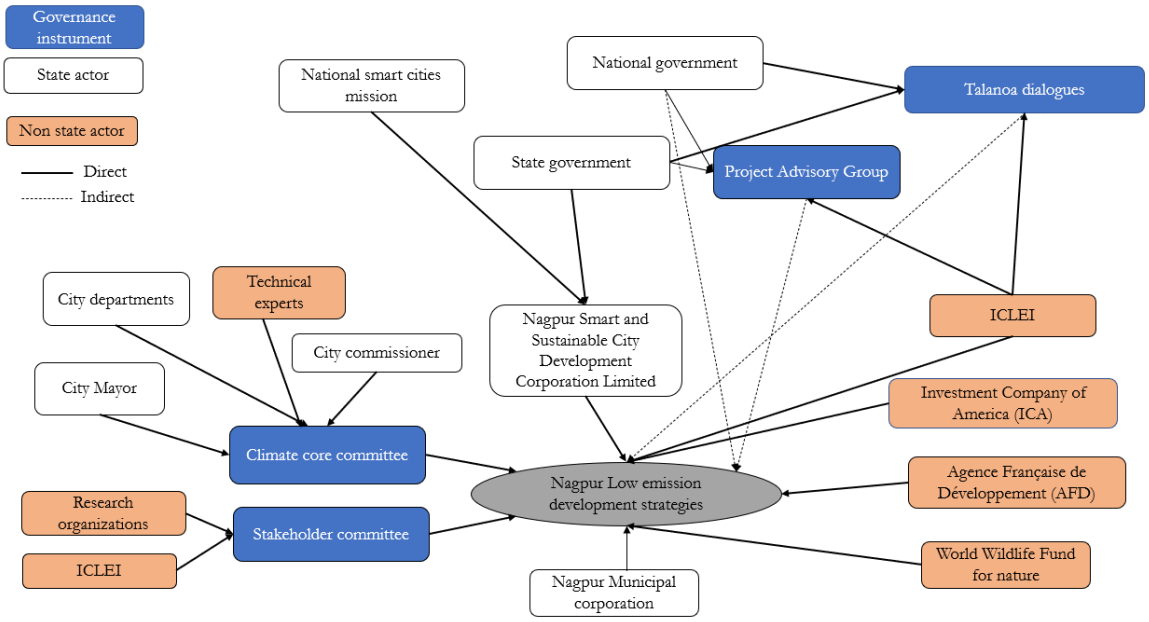

Figure 8: Actors and governance instruments within Nagpur's multilevel climate governance framework

5.2.3 Modes of urban climate governance

Horizontal collaboration between cities and regions, considered to be a form of self-governance, leads to the sharing of best practices and competencies, crucial for translating successful interventions (Kern & Alber, 2008). Nagpur has been active in instigating collaborations with other cities, both on a national and international forum. As part of the LRMCN implemented between 2005-2012, the clean energy partnership between Nagpur and the city of Freiburg in Germany was the only Indo-German city partnership facilitated by ICLEI at that time. The dissemination of case studies and exchange visits between the two cities resulted in a positive impact within the city of Nagpur. This collaboration also had national level repercussions, when Nagpur was chosen as a model city for the Solar Cities program, a national initiative, designed along the lines of the LRMCN (Beermann et al., 2016). Apart from this, the city is currently partnered with Karlsruhe in Germany for the bicycle sharing and non-motorized transport initiative. Facilitated by GIZ and the Urban Mass Transit Company Limited, this collaboration is helping Nagpur implement non-motorized transport initiatives based on success stories from Karlsruhe (Interviewee D, personal interview, March 30 2020). The municipality is working on releasing a user-friendly guide for consumers on how to integrate energy efficiency and water efficiency initiatives into new construction projects (Interviewee D, personal interview, March 30 2020). This can be seen as an enabling form of governance, seeking to increase community awareness around low emission practices. With the completion of the LEDS, it would be possible to identify more climate governance modes within the municipality.

5.3 Multilevel climate governance in Thane

The Thane Municipal Corporation (TMC) was proactive in undertaking several energy efficiency and renewable energy initiatives, including developing a climate protection policy mandate to promote solar water heating in 2006 and setting up a comprehensive GHG emission inventory in 2012, supported by the British High Commission and ICLEI South Asia. They also implemented the SCMP in 2011 in collaboration with ICLEI (ICLEI, 2015). These ambitious initiatives were implemented at a time when local governments were mainly concerned with the implementation of urban services and had a limited understanding of climate change and its relevance at the local level (Interviewee H, personal interview, April 9, 2020). Although the local

climate drive came from within the city during the initial stages, it was later influenced by national and international policies such as the Smart Cities Mission and the Solar Cities Program, indicating vertical policy integration (Interviewee H, personal interview, April 9, 2020).

5.3.1 Actors involved at the local level

The TMC recognized the importance of stakeholder engagement for long lasting climate action. However, the challenge was in ensuring that stakeholders understood their roles and accepted a certain level of responsibility within the Urban- LEDS project (ICLEI, 2015). The work carried out under the SCMP set the stage for the LEDS, the draft of which was released in 2016. A stakeholder committee performed a careful analysis of the strengths, weaknesses, opportunities and threats identified during the stakeholder consultation process, before its inclusion in the SCMP. Thus, the familiarity with comprehensive stakeholder engagement and the co-production of knowledge allowed for a "collective ownership" of the Urban-LEDS program (ICLEI, 2015). Within the city, a majority of energy efficiency and renewable energy initiatives including the SCMP and the LEDS comes under the responsibility of the electricity department. The TMC was another pivotal stakeholder for the development of the LEDS. They played a key role in the capacity building of both the municipal staff and external stakeholders.

In accordance with the first step of the GCC methodology, the TMC personally approached elected representatives and executive management at the city level to confirm their participation within the Urban-LEDS project. The strong portfolio of impactful and cost-effective projects had enabled the electricity department to gain a high level of trust and respect amongst municipal stakeholders. Thus, their involvement with the development of the LEDS drew commitment from other key stakeholders (ICLEI, 2015). The municipality was also able to bring in external stakeholders such as WWF and UNEP by virtue of their collaboration with ICLEI (Interviewee H, personal interview, April 9, 2020). The highlight of the second phase of the GCC, was the formation of a climate core committee. Chaired by the additional commissioner, this committee consisted of municipal departments including by not limited to, the electrical department, solid waste management, town planning and transportation. The various roles of the climate core committee included (i) bringing in financing, (ii) contributing to enhancing staff capacity, (iii) coordinating external data and information when required, (iv) regular communication of the progress to key stakeholders and (v) identification of implementation barriers and developing solutions (ICLEI, 2015; Thane Municipal Corporation, 2016). Aside from the climate core committee, a stakeholder committee was also formulated. The role of this committee was to oversee the development and implementation of projects under the Urban-LEDS initiative. Unlike past climate initiatives which were implemented in a siloed manner, there was an increased awareness around the need for the holistic inclusion of state and non-state actors within the Urban-LEDS project. Thus, aside from power supply utilities, the stakeholder committee also included representatives from power and petroleum companies, user-side stakeholders, housing developers, NGOs, media and other organizations. The committee engaged in informal and formal meetings. The stakeholders within the committee referred to new potential stakeholders who could take part in the project, leading to a "snowball effect" during the different project phases (ICLEI, 2015).

5.3.2 The role of national and state levels

The main role of national and state level stakeholders was limited to the provision of finance as well as enabling policy frameworks. The main push for the SCMP came from the Solar Cities Program at the national level. A few of the projects under the strategy were financed through subsidies provided by the MNRE. Similar to Rajkot and Nagpur, the national and state levels played an indirect role in the strategy through the Cities and Regions Talanoa dialogues and the PAG. Thane is also working with the CSCAF guided by ICLEI. Figure 9 depicts an overview

of the key state and non-state actors involved in the development of Thane's LEDS along with the governance instruments through which they interact. The dotted lines represent an indirect connection to the strategy. This could be either through financial support, capacity building or through project feedback supporting implementation.

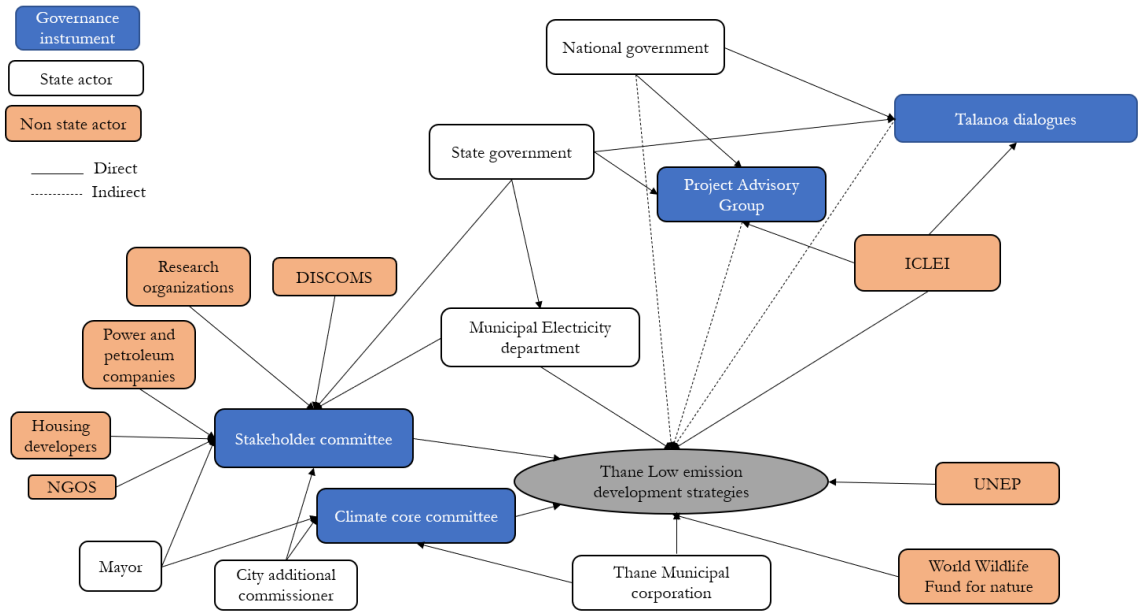

Figure 9: Actors and governance instruments within Thane's multilevel climate governance framework

5.3.3 Modes of urban climate governance

The low emission development strategy included several nonstructural initiatives targeted at increasing consumer awareness and the involvement of private sector actors, indicating governance by enabling. Examples include awareness campaigns about the benefits of energy efficient residential appliances, encouraging the uptake of solar water heaters by ensuring quality through agreements with private manufacturers and collaboration with a local power distribution company to drive the demand for energy efficient appliances through bulk purchasing from suppliers and subsidized sales to consumers (Thane Municipal Corporation, 2016). While awareness campaigns predominantly constitute a city's enabling activities, building partnerships with private actors for catalyzing low emission transitions is a less common approach under the governance through enabling mode (Kern & Alber, 2008). However, a majority of projects under the LEDS in Thane was funded through collaborations with Energy Service Companies (ESCO) and Renewable Energy Service Company (RESCO) models. An ESCO or an energy service company is an organization that provides consumers with energy efficient utility services through long term contracts. They are usually involved with the installation and financing of the projects and get paid back through the client's energy savings. Collaborating with such companies enables the government to effectively promote the uptake of renewable energy and energy efficient technologies at the consumer level (Hannon & Bolton, 2015; Vine, 2005)

Improving energy efficiency in municipal buildings and replacing municipal fleets with cleaner vehicles are two common ways in which municipalities exhibit local self-governing (Kern & Alber, 2008). An important initiative by the TMC was the conversion of municipal buildings into net zero energy buildings and the installation of rooftop solar on municipal schools. Similar to Rajkot, self-governance initiatives were coupled with governance by enabling measures

through workshops to increase municipal awareness on energy efficiency and renewable energy. An extensive awareness and publicity campaign focused on educating the public and stakeholders in relation to low emission development was also in the pipeline (ICLEI, 2015; Thane Municipal Corporation, 2016). Similar to Rajkot, the proposed introduction of a public bicycle sharing system and provision of tax incentives exemplified governing by provision. The energy sector is the easiest to regulate in terms of governing through authority for most municipalities (Kern & Alber, 2008). An example of such an initiative was the mandate to include solar water heaters in commercial buildings (Thane Municipal Corporation, 2016).

5.4 Comparing modes of governance across all three cities

If municipalities are the major shareholders in local utility service providers within energy, transport, water or waste management services, they are in a pivotal position to influence local climate action. However, the liberalization of energy markets is proving to be a constraint for most municipalities to directly influence the supply side. This is the same in India, where the majority of power distribution is state owned and states manage parastatal bodies such as water supply boards, electricity utilities, pollution control boards, disaster management agencies and development agencies. There is also an increasing trend of privatization of utilities in Indian states. Thus, all three municipalities had limited potential to govern through the provision of urban services and instead opted for self-governing, governing through enabling and governing by authority (Alagh & Chairman, 2010; Kern & Alber, 2008; Khosla & Bhardwaj, 2019). Collaboration with the private sector was a common form of governance through enabling seen in all three cities. It was also exhibited that within a multilevel perspective, multiple governance modes tend to converge and complement each other. Table 2 provides a summary of the different modes of governance in the three cities.

Table 2: Modes of urban climate governance in the three cities

City	Self governing	Governing through enabling	Governing by provision	Governing by authority
Rajkot Municipal Corporation	• Solar rooftops on municipal buildings • Energy efficient pumps for sewage management • LED street lights • Electric bikes for field officers	• Awareness programmes for water usage • Free access to public transport for field officers • Cycle rallies	• Property tax rebates for existing buildings with solar heaters • Public bicycle sharing system • Introduction of electric buses and expansion of bus service network	• Rain water harvesting mandates in buildings • Mandate for solar water heaters in new buildings • Ban on diesel goods vehicle and replacement with CNG • Car free zones
Thane Municipal Corporation	• Rooftop solar in schools • Net zero energy municipal buildings • Solar PV system for waster water treatment • LED Street lights	• Energy efficiency awareness workshops • Attractive feed in tariffs to encourage solar uptake	• Public bicycle sharing system • 5% property tax rebate to houses segregating waste	• Mandate for solar water heaters in new buildings • Car free zones
Nagpur Municipal Corporation	• Collaboration with cities through study tours	• User friendly consumer guide for energy efficiency in buildings • Million tree app		

5.5 Barriers for multilevel climate governance

Insufficient financial capacity was found to be a common barrier across the three cities. Decentralization is often accompanied by a disproportionate distribution of financial resources , often challenging effective climate action at the local level (Jänicke, 2015). Moreover, budget constraints often lead to the deprioritization of climate change issues within municipal budget plans. It also challenges the upscaling and proliferation of innovative projects (Interviewee D, personal interview, March 30, 2020). The ULBs need to be assisted with the development of bankable project proposals and knowledge on the available types of funding. With limited budgets available for urban development sectors, climate financing becomes elusive (Interviewee C, personal interview, March 18 2020). Thus, accessing new modes of financing such as green bonds, national and international development funds and private sector funding, remains a barrier to urban climate governance that needs to be addressed.

There was an overall awareness about the impacts of climate change at the city level and the need for effective climate action. It was evident that city officials are motivated to effect change. However, this was not supported with adequate *technical capacity* in the form of guidance and training required to conduct baseline assessments, formulate strategies and mainstream climate change into municipal strategies and action plans (Interviewee C, personal interview, March 18 2020). Limited access to affordable technology and the need for more technology transfer as well as knowledge of best practices from affluent cities was another challenge perceived by cities (Interviewee D, personal interview, March 30, 2020).

The presence of a *policy gap* was another common barrier visible in the case cities. The policy gap refers to sectoral fragmentation between departments and the lack of a systematic approach to climate policy formulation (Charbit, 2011). Unlike the NAPCC and SAPCC, there are no similar overarching guidelines for cities to follow, leading to fragmented and piecemeal initiatives. Despite some level of sectoral coordination, the perception of climate change as a separate entity, rather than an issue that encompasses multiple sectors, still existed at the city level. This can further create *information asymmetries*, hindering cross-sectoral coordination within

the municipality and the mainstreaming of climate change into day to day planning processes. This gap existed even at the state level. Since the state governments govern a majority of urban resources, there was a need to sensitize them on how to integrate climate concerns into sector specific policies (Interviewee C, personal interview, March 18, 2020). Moreover, a challenge to cross-sectoral stakeholder coordination within the project was to delegate roles and responsibilities to the stakeholders, elevate their competencies and maintain long term commitment (ICLEI, 2015).

Analogous to an intermunicipal policy gap, there also existed a barrier in terms of *limited national policy alignment*. The limited influence of national governments in the development of the local LEDS, on one hand signals a high level of local government autonomy but on the other hand, it further disconnects national and local levels. This can result in territorial specificities being ignored by central decision makers during the formulation of subnational policies, leading to a misinterpretation of national policies at the local level (Bai et al., 2009; Charbit, 2011). Apart from motivated political leaders, the presence of an environmentally conscious civil society acts as an important driver for local climate action. However, a majority of civil society in most of the Indian cities are not aware of national targets and action plans such as the NDCs, NAPCC or the SAPCC. A *lack of awareness amongst citizens* and their limited sensitization and involvement with the low emission development strategies was another challenge that the three cities are working to address in the subsequent phases of the project (Interviewee D, personal interview, March 30, 2020).

5.6 Enabling factors for multilevel climate governance

Governance instruments are used to address various governance gaps and enhance governance capacity. The shape and function of instruments can vary according to the governance context (Adriázola et al., 2018; Charbit, 2011). The presence of *coordination instruments* such as the multi-sectoral stakeholder committee and the climate core committee in all three cities played an enabling role in addressing the identified policy gap, allowing for the identification of synergies and policy convergence, thereby improving the overall effectiveness of climate action (Adriázola et al., 2018; Charbit, 2011; Praharaj et al., 2018). These instruments played a role in helping cities implement cross cutting, inclusive and long-term climate mitigation goals. Sectoral coordination was easier in smaller, compact cities such as Rajkot (Interviewee A, personal interview, March 9, 2020). An important enabling factor for ICLEI and other stakeholders was the fact that the constitution of the climate core committee remained the same across both the phases of the Urban-LEDS project (Interviewee I, personal interview, April 9, 2020). This elucidates the importance of continuous and consistent stakeholder collaboration for multilevel governance.

In Thane, this inclusive stakeholder involvement helped provide the TMC with an array of cost cutting solutions focused on reducing the energy use and altering the energy mix. Key technical staff had mentioned that the process of incorporating and accounting for stakeholder identified priorities was highly democratic, ensuring equal weightage and representation. By including the aspects of representation, participation and deliberation, the three mechanisms of democratic governance, the activities of Thane's stakeholder committee tries to address the challenge of ensuring democracy within multilevel climate governance (Lidskog & Elander, 2010). The presence of specific state level climate change units like in Gujarat was also an important enabling factor for city level action (Interviewee F, personal interview, April 1, 2020). Similar to intermunicipal coordination, the *Cities and Regions Talanoa dialogues*, facilitated by ICLEI is a platform enabling interaction across different vertical governance levels, allowing national governments to better gauge local implementation challenges and gather feedback on national level policies (Adriázola et al., 2018). This contributes to addressing the challenge of limited national policy alignment observed in the cities.

Technical assessment and reporting tools provided by ICLEI, such as the *GCC* and the *Harmonized Emissions Analysis Tool plus* (HEAT+) software were key enabling factors for improving the technical capacity of cities to record their GHG emissions through inventories, identify priority sectors through stakeholder consultations and formulate relevant policies. The usage of these tools resulted in an improved knowledge of energy data categorization and consolidation (ICLEI, 2016). The municipal officials were also given training through workshops conducted by ICLEI, strengthening their capacity to continue the long-term implementation of the LEDS (Interviewee A, personal interview, March 9, 2020). ICLEI also provided training on how to report data on the carbon*n* Climate Registry (cCR), the leading global platform for subnational governments to voluntarily report their commitments, actions and performance, enhancing the credibility and accountability of their efforts (ICLEI, 2016a). Since April 2019, ICLEI's cCR has been integrated with CDP's reporting platform and under Urban-LEDS II cities are provided training to report to the CDP-ICLEI unified platform. Sharing information on impacts online can improve public acceptance and further mobilize local level participation (Nakano et al., 2017). A key enabling factor for improved technical capacity was the presence of dedicated ICLEI staff and experts in each city, providing the necessary support right from the evaluation to the monitoring stages and building capacity on a day to day basis (Interviewee F, personal interview, April 1 2020).

The *Climate Smart Cities Assessment Framework*, implemented by the MoHUA although not directly a component of the Urban-LEDS project, was another factor that strengthened the capacity of cities to evaluate their climate progress, understand their challenges and develop an evidence base to drive future policy directions (Adriázola et al., 2018). The development and implementation of this framework is further elaborated in section 6.3.

The *European study tour* conducted by ICLEI was another enabling factor for peer-to-peer learning amongst cities. This initiative allowed political leaders and key technical stakeholders within Indian cities to visit and interact with stakeholders in European cities and learn about their best practices. Apart from this, the cities also took part in several other knowledge exchange programs, webinars as well as international and national conferences and networking events, enabling the dissemination of knowledge and the sharing of best practices (ICLEI, 2016).

ICLEI's *Transformative Actions Program* (TAP) plays a role in addressing the barrier of insufficient financial capacity in cities. TAP is a project pipeline led by ICLEI and driven by partnership. Some of its current partners include GIZ, C40 Cities Climate Leadership Group, European Investment Bank, UN-Habitat and the Global Fund for Cities Development. TAP serves as an incubator by supporting climate resilient and low emission development projects in local and regional governments through the mobilization of capital flows. It acts as a platform bridging local climate actors, technical experts and financial institutions. TAP provides a number of supportive tools and services including, (i) project screening to analyze and improve the overall transformative impact, (ii) identification of innovative climate financing sources in accordance to local demand, (iii) Technical assistance for the preparation of project proposals and feasibility studies and (iv) connecting local governments to potential investors and global or regional initiatives providing technical aid (ICLEI, 2019b). Through the Urban-LEDS II project, cities are supported in the development of projects that are submitted to the TAP project pipeline (ICLEI, 2019a). For example, Rajkot's submitted TAP projects include a bicycle sharing scheme targeting non-motorized mobility and the Smart Housing Society Scheme aimed at promoting environmentally friendly infrastructure (ICLEI, 2016a). Platforms such as the Cities and Regions Talanoa dialogues and the PAG also facilitated the conglomeration of donor agencies, improving access to external finance flows. Although Nagpur has not yet begun utilizing the TAP initiative, key nodal officers within Nagpur had attended events facilitated by the ICLEI

as part of the TAP initiative, where they presented city level projects and collaborated with potential funding agencies and donors. The city is in the process of preparing projects to be submitted to the TAP pipeline (Interviewee E, personal interview, March 30, 2020). An enabling factor for effective climate action in cities, with regards to Type 1 multilevel governance was the presence of supporting financial schemes from higher governance levels (Bulkeley & Betsill, 2005a; Hickmann & Stehle, 2019). Over the past decade, the rise in flagship national programs focusing on local level climate action such as the Smart Cities Mission, Swachh Bharat and AMRUT has indicated a positive trend in top down financial resources strengthening local capacity (Interviewee A, personal interview, March 9, 2020)

Finally, an important enabling factor across all three cities was the presence of *motivated local leadership*. Climate conscious mayors and key administrators with sufficient political authority to stimulate collective action have often driven effective local climate strategies in cities (Fuhr et al., 2018). Commitment from local leaders provides the necessary push for getting the approval for projects and mobilizing local resources. Within the three cities, the mayors and municipal commissioners were instrumental in driving the creation of stakeholder as well as climate core committees. In Nagpur for example, the mayor prioritized climate initiatives and even initiated a mayor innovation award in the city to boost local entrepreneurship and innovation. Rajkot's city engineers creatively integrated climate actions into city level development plans. For example, RMC's housing team along with local architects and technical experts integrated energy efficiency features such as passive cooling, energy efficient lighting and rain water harvesting into the building design guidelines (Bhardwaj & Khosla, 2017). In the case of Thane, the city's administrative staff had a high level of climate change knowledge and awareness. The mayor was instrumental in acquiring the collaboration with the British High Commission for the GHG inventory project in 2012 (Interviewee H, personal interview, April 9, 2020). Table 3 depicts an overview of the city level enabling factors, their role as well as the corresponding barrier that they contribute towards addressing.

Table 3: Overview of city level barriers and enabling factors for multilevel climate governance

City level enabling factor	Purpose	Associated barriers addressed
Stakeholder and climate core committee	Interdepartmental coordination within the municipality	Policy gap in the form of sectoral fragmentation
Cities and Regions Talanoa dialogues	Platform for national-local discussions	Limited national policy alignment and national-local engagement
Assessment and reporting tools (GCC, HEAT plus software)	Greenhouse gas reporting and identification of priority sectors	Insufficient technical capacity for conducting baseline GHG assessments, formulating stakeholder driven strategies and mainstreaming climate change into municipal strategies and action plans
Training on cCR until 2018 and the CDP-ICLEI unified reporting system from 2019 onward	Reporting city level targets and impacts	Insufficient technical capacity for reporting climate commitments and performance
CSCAF	City level GHG emission assessment framework	Insufficient technical capacity for conducting holistic city level climate assessments
European study tour, conferences, webinars	Peer to per learning and sharing of best practices	Limited transfer of technology and best practice knowledge from advanced cities
Transformative Actions Program	Enabling access to global climate finance	Lack of funding globally and insufficient capacity of local governments to develop bankable project proposals
Local pioneers	Central authority pushing for local level action	Policy gap in the form of sectoral fragmentation

6 Multilevel climate governance and the role of intermediaries

This chapter presents the results of research question 3, aggregated across all three cities.

- RQ 3 What roles do ICLEI, GIZ and UN-Habitat play as intermediaries facilitating multilevel climate governance in cities and what are the challenges they face? How do they contribute to strengthening governance capacities (such as information and knowledge, finance, coordination and cooperation and institutional capacities) at the national and subnational levels?

In accordance with the analytical framework presented in Chapter 3, the roles of the three non-state intermediaries, namely ICLEI, UN-Habitat and GIZ, in facilitating multilevel climate governance in all three cities is first described and summarized (see 6.1,6.2,6.3 and 6.4) , followed by an analysis of the common challenges they face during intermediation (see section 6.5) .

6.1 Role of ICLEI- Local Governments for Sustainability

ICLEI -Local Governments for Sustainability (ICLEI) is the largest international network of local and regional governments, established in 1990 and aimed at advancing sustainable development. The ICLEI network currently has more than 1500 members globally including small and large cities, metropolitan areas, capitals and regions and has been the largest city network globally for the past two decades (Bothello & Mehrpouya, 2019). They are an example of a Transnational Municipal Network, which is a network of municipal and regional governments focused on strengthening policy implementation within cities, towns and regions as well as increasing their access to knowledge about best practices from peers (Fenton, 2015). Cities receive assistance for achieving tangible GHG emission reductions in terms of tools, software training, funding mechanisms, policy assistance and national and international sharing platforms (Bothello & Mehrpouya, 2019; Corfee-Morlot et al., 2009). ICLEI can be considered to act in a dual capacity, not only providing support for local and regional governments but also representing them in the international arena (Bothello & Mehrpouya, 2019). Over the years ICLEI has gained the reputation of being a leading organization promoting local climate action. Within sustainable governance, they are committed to promoting diversity and inclusivity amongst communities, strengthening regional level cooperation, linking subnational levels directly to the international forum and steering partnerships between multiple governance levels as well as with international organizations, development agencies, academia and the civil society. They engage in orchestrated decentralization, building platforms to enable coordination amongst diverse stakeholders and integrating their cumulative expertise (Bothello & Mehrpouya, 2019). With regards to innovation, they aim to promote the sustainability driven-use of technology for codesigning solutions and ensure the credibility and transparency of policy at all levels through a close collaboration with the scientific community. They also drive participatory planning leading to the co-development and testing of ideas in practical settings. With regards to finance, they work towards ensuring equal access to funding opportunities for and all governance levels, ensuring appropriate distribution (ICLEI, 2018b).

They can be categorized as a niche intermediary as they strengthen and expand innovative sustainability initiatives through the collection and dissemination of best practices amongst local governments. They also act as a process intermediary, by building relationships with local government officials and working with local pioneers on a day-to-day project management basis. With regards to the aspect of working with multiple actors to drive sociotechnical change within the existing regime, they also act as a regime-based intermediary (Kivimaa et al., 2019). Bothello

& Mehrpouya (2019) also describe ICLEI as a "Rule Intermediary", which is an organization mediating between "rule makers" or those with regulatory power and "rule takers" or those actors who follow and implement the regulations.

Focusing on the different roles of ICLEI within the intermediating space provides an understanding of how they interact with city governments, national governments and other actors within a multilevel climate governance lens. The description of the various roles adopted by ICLEI within the three cities, through the lens of the Urban-LEDS project is modelled on the study conducted by Frantzeskaki et al.(2019), which explored the roles and activities of ICLEI in enhancing urban biodiversity conservation, through the application of role theory. The roles identified in this thesis are grouped into three categories, namely knowledge related roles, game altering roles and relational roles.

6.1.1 Knowledge related roles

The first category of roles identified were knowledge related roles. Access to knowledge is essential for local governments to strengthen their ability to effectively govern the complex, multi-sectoral and glocal (global and local) issue of climate change. This can contribute towards increased technical and financial capacity, enabling policy makers to make more informed decisions and direct funding in relevant areas in order to address implementation challenges (Frantzeskaki et al., 2019). The roles of ICLEI explored under this category include educator, integrator, knowledge aggregator and distributor and builder.

Educator

Cities are experiencing a drastic learning curve which demands a high level of knowledge and expertise. However, owing to the large costs associated with generating this knowledge internally, cities need to acquire this information from the market or from other cities. Procuring knowledge, expert advice and new information are the key components of urban capacity building (Pierre, 2019). In all three cities ICLEI played the role of an educator, exposing city officials to new ideas and educating them on scientific terms related to climate change, that were previously shrouded in ambiguity. City officials who were aware of these issues and were motivated to act upon them may lack the complementary technical know-how regarding modelling tools or novel innovations to assist them in the practical implementation of this knowledge (Interviewee F, personal interview, April 1, 2020). Making up for the knowledge gap in cities, ICLEI provided technical training on GHG emission calculation and inventory preparation which helped cities understand their overall and sector specific energy consumption. Knowledge on emission sources, their sector-wise distribution and links to economic activity will help cities develop cost effective mitigation solutions and also manage risks in tandem with the national and state governments (Corfee-Morlot et al., 2009). In Thane, this training helped the municipality realize that the municipal corporation's energy consumption constituted only 3% of the city's total consumption, which led them to shift their focus away from self-governing emission reduction initiatives within the municipality to governing residential and industrial energy consumption (Interviewee H, personal interview, April 9 2020). In another example from Rajkot, the training and workshops on green buildings provided by ICLEI improved the knowledge of both municipal staff as well as city level architects, builders, planners and engineers. These workshops were also instrumental in motivating the private sector to get involved within the Urban-LEDS project (Interviewee A, personal interview, March 9, 2020). ICLEI also organized workshops with external actors on relevant topics such as the utilization of green bonds for climate finance (Interviewee F, personal interview, April 1, 2020). Apart from evaluation tools, monitoring and reporting tools help cities track their progress, assess gaps at different governance levels and develop an evidence base to support the streamlining of future policy decisions (Adriázola et al., 2018). By training city officials on how to report their

progress and achievements on the cCR platform (and the CDP-ICLEI unified reporting platform as of 2019), they enabled them to demonstrate their capability as climate governance actors, further mobilizing external and local support (Adriázola et al., 2018; ICLEI, 2016) .

Integrator

City officials often lack the awareness on how to mainstream climate change into urban planning processes, leading to its deprioritization. Hence, climate change policies are predominantly sector specific and are decoupled from urban development strategies (Bai et al., 2009). ICLEI enabled cities to develop an integrated policy making approach through technical education and capacity building (Interviewee F, personal interview, April 1, 2020). They help cities develop low emission development strategies and climate resilient city plans and promote their mainstreaming into existing policies (Interviewee J, personal interview, April 22, 2020). In all three cities, ICLEI played the role of an integrator, bringing together multiple sectors within the municipality through climate core and stakeholder committees. Through focus group discussions with the stakeholder committee ICLEI helped identify priority sectors and formulate integrated strategies, drawing on local knowledge (Interviewee F, personal interview, April 1, 2020). This allows for the mainstreaming of a stakeholder inclusive policy development process within the local government (Djenontin & Meadow, 2018). By encouraging a holistic, cross-sectoral approach towards policy making, ICLEI brought about a change in the mindset of city officials regarding sustainability. They began looking at every initiative through a climate perspective, analyzing its climate related impacts and cross-sectoral linkages, moving away from an otherwise siloed approach (Interviewee D, personal interview, March 30, 2020). ICLEI was also tasked with documenting the progress of stakeholder activities within the stakeholder committee, analyzing their performance and keeping a track of changes in perspective regarding their relevance in the project (ICLEI, 2015).

Knowledge aggregator and distributor

Intermediaries working with local climate initiatives can consolidate and transfer lessons in three ways; amalgamating knowledge and experience from a multitude of actors, bringing in non-local knowledge from external sources and collecting knowledge on best practices from other advanced cities (Matschoss & Heiskanen, 2017). Enacting the role of a knowledge aggregator and distributor, ICLEI consolidated pioneering low emission initiatives from cities in the form of case studies which were made publicly available and shared through discussion forums. This allowed for peer-to-peer learning between cities and also allowed cities to showcase their ambition and capability in global forums. Providing access to best practices can also contribute to the replication of initiatives across cities and across different governance levels as pilot projects (Interviewee F, personal interview, April 1, 2020). ICLEI also played an aggregator role with respect to finance, where they aggregated project proposals from cities and exposed them to relevant funding and partnership opportunities through the Transformative Actions Program (Interviewee F, personal interview, April 1, 2020).

Builder

Builders create ties between internal and external actors (Heikkinen et al., 2007; Nyström et al., 2014). ICLEI provided the cities with outward exposure to financial actors, technical institutions and development organizations such as WWF, GIZ and other organizations (Interviewee H, personal interview, March 30, 2020). Through the TAP, ICLEI linked local governments with financial institutions, thereby increasing their access to climate finance. For example, through the Urban-LEDS II project, Thane is exploring funds through the TAP, such as the District Energy in Cities grant, in order to conduct a feasibility study on district energy. These organizations also played a key role within advisory groups and consultation platforms (Interviewee F, personal interview, April 1, 2020). ICLEI also linked city officials with public

actors such as local NGOs, industry and other local associations through stakeholder consultations. During these consultations, the action plan or strategy was presented and stakeholder feedback regarding the project relevance, feasibility and its associated challenges was obtained and later integrated into the project. These meetings also assisted in spreading awareness about city level climate action and gaining traction within the public sector (Interviewee F, personal interview, April 1, 2020).

6.1.2 Game altering roles

The second category of roles identified were game altering roles. This relates to roles that alter the way planning processes take place moving away from a hierarchical and narrow approach to a more coordinated and inclusive one. The imbibing of new actors, organizations and routines can lead to changes in urban planning and governance. The outcomes of these roles include inclusive participation, integration of ideas, experimentation and reshaping of agendas (Frantzeskaki et al., 2019). Under this category, the roles explored in this thesis include those of facilitators and path-breakers.

Facilitator

ICLEI played the role of a facilitator, by facilitating the co-creation of knowledge and ideas through strengthened cooperation amongst a diverse mix of stakeholders such as city officials, departments, businesses, scientific experts and civil society and including them within the planning and implementation of LEDS in cities (Frantzeskaki et al., 2019). Through the climate core committees they ensured that city level decision makers, non-state actors, the private sector along with the national and state governments, provided inputs to the Urban-LEDS project, coordinated its implementation and reviewed its progress through regular monitoring (ICLEI, 2015). This co-creation process was instrumental in identifying priority sectors and developing cost effective proposals (ICLEI, 2016).

The Project Advisory Group (PAG) was another important platform which facilitated the identification of challenges and the co-creation of solutions within the Urban-LEDS project. This group consisted of experts from the national government and other non-state agencies, and was tasked with monitoring the Urban-LEDS project, assessing its progress, identifying implementation gaps and providing feedback for improvement. In the first phase of the project, the National Institute of Urban Affairs (NIUA) had suggested that the city level LEDS should include a component targeting awareness amongst school children and youth. Incorporating this, cities like Rajkot and Thane included sustainability related demonstration projects as well as expert-led talks in schools as part of their strategy. As the impact of these projects was quite evident, the necessary budget was allocated in order to expand the initiatives to all the schools. Moreover, such initiatives can also get translated horizontally across cities in the long run (Interviewee F, personal interview, April 1, 2020). The PAG also allowed stakeholders to discuss the latest academic developments and emerging knowledge from their own fields, allowing for the co-creation and sharing of new knowledge (Interviewee C, personal interview, March 18, 2020).

Path-breaker

ICLEI advocates solutions that help local governments transition towards and establish new sustainable paths. They foster urban climate experimentation and its scaling up (Fuhr et al., 2018). Within a multilevel setting, experimentation serves as a novel governance mode that leads to innovative policies and solutions owing to its open ended and practical learning based nature (Hölscher et al., 2019). ICLEI works with cities through five cross sectoral, interconnected pathways facilitating a holistic approach to urban transformation. On the ground, these pathways incorporate global sustainable goals and try to maintain the balance between natural

systems, human life and the built environment. Synergies between multiple pathways are identified and harnessed in order to effect change on a systemic level. The low emission development pathway promoted by the Urban-LEDS project aims at minimizing the effects of climate change, providing new economic opportunities and enhancing the health of human and natural systems. Through this pathway, local governments identify and reduce GHG emissions across all sectors and transition towards renewable energy and nature-based solutions as an alternative to fossil fuels. This pathway promotes energy efficient solutions, people centered mobility, electric vehicles powered by renewable energy and clean fuel policies. The nature-based development pathway helps governments unlock the potential of nature and enhance ecosystems, through the application of nature-based solutions and blue-green infrastructure for a resilient development pathway. The circular development pathway brings in new consumption and production practices, accelerating the transition to a society that thrives on recycling and sharing business models. The fourth pathway aims at resilient development, helping cities anticipate, prepare for and prevent unprecedented climate shocks, improving their overall response structures. Finally, the fifth pathway focuses on building a people centered, inclusive society that promotes livability, safety, health and alleviates poverty. Through this pathway, local governments pursue initiatives that support inclusive development while preserving natural ecosystems (ICLEI, 2018a).

6.1.3 Relational roles

Relational roles represent the third role category and focus on fostering relationships and partnerships with multiple agents leading to the pooling of ideas and development of shared responsibility. Creating relationships with urban agents is crucial for introducing and creating new knowledge as well as strengthening the validity and effectiveness of strategy development (Frantzeskaki et al., 2019). The two main relational roles described in this thesis are that of connectors and mediators.

Connector

The role of a connector involves connecting different cities, allowing for peer-to-peer knowledge exchange and capacity building. The European study tour organized by ICLEI was instrumental in connecting cities in India with European cities, giving city officials the opportunity to see new technologies and interact with the pioneer cities that developed them. The study tour exposed city officials to new innovations and ideas as well as the enabling factors and challenges that affected their creation and implementation. This led to the translation of innovations into the Indian context. For example, Nagpur is on its way to implementing the "million tree app" which was inspired by a similar innovation from Warsaw. However, it would take more time to implement such digital innovations as compared to the European counterparts as Indian cities still lag behind with regards to basic technological infrastructure (Interviewee D, personal interview, March 30, 2020). Through the LRMCN program implemented by ICLEI between 2005-2012, Nagpur partnered with Freiburg in Germany. This collaboration provided the officials of Nagpur with insights into Freiburg's multi-sectoral emission reduction initiatives and simultaneously introduced Nagpur's achievements in energy efficient water management to Freiburg's city officers. As part of this project, the municipality of Nagpur along with ICLEI initiated a Renewable Energy and Energy Efficiency Resource Center within the city, serving as a stakeholder meeting point to coordinate city wide energy activities (Beermann, 2017). The city mayors act as advisors for ICLEI projects. These connecting platforms connect them with mayors from other cities within the network, resulting in the exchange of best practice information. Learning from other examples can motivate city leaders and this motivation further trickles down into the city level, enabling a new informed approach to climate actions (Interviewee F, personal interview, April 1, 2020).

Mediator

The exploration of national subnational linkages is a research area within multilevel governance that has gained traction over the recent years. National-local interlinkages can help national governments grasp local level needs and enhance the implementation of national mandates at the urban level. It can also facilitate the upscaling of local initiatives (Adriázola et al., 2018; Corfee-Morlot et al., 2009) Every component of ICLEI's programs tries to engage with the state and national governments. Thus, ICLEI acts as a mediator, connecting local, state and national governance levels, allowing for a two-way diffusion of knowledge and resources. They notify the respective state government sectors prior to the implementation of an initiative at the city level and initiate discussions to gather their inputs and suggestions regarding project feasibility and scope for improvement. For example, for energy efficiency projects, they would connect cities with state energy departments as well as the MNRE at the national level (Interviewee F, personal interview, April 1, 2020). This can lead to the upscaling of local solutions as well as a reformation of national agendas to better adapt with local needs (Frantzeskaki et al., 2019).

The *Cities and Regions Talanoa Dialogues* is the main platform through which ICLEI mediates between national and local governments. It is a series of country specific climate consultations, which bring together local and national actors, allowing for the creation of multilevel climate policies that harness the strengths and capacities of multiple governance levels. This platform also allows for the deliberative framing of climate issues. Deliberative framing refers to a process of public discussion that is both engaging and relevant for stakeholders, that allows for responsible decision making and drives further dialogue around the issues. Deliberative forums such as the Cities and Regions Talanoa allow participants to identify common and conflicting interests and develop multiple solutions that ultimately contribute to effective, long term decision making. These platforms can help integrate local insights into high level policy recommendations (Romsdahl et al., 2018).

The Cities and Regions Talanoa dialogues initiative is an offspring of the Global Talanoa Dialogues, launched at COP23 by the Government of Fiji and the Bonn-Fiji Commitment. The dialogue, initiated in February 2018 is spearheaded by ICLEI along with the GCoM and UN-Habitat who act as partners. The Talanoa is a form of dialogue practiced in Fiji and the Pacific, aimed at promoting inclusivity, representation and openness and is organized around three questions. The first question "*where are we?"* involves the participants reviewing the current NDCs along with the progress made at each governance level, discussing the extent to which sustainable urban development is featured in national climate policy and identifying challenges within local climate mitigation and adaptation efforts. The progress at each level is shared through the CDP-ICLEI unified reporting platform, for which ICLEI trains local governments. The second question "*where do we want to go?*" involves participants discussing their links to the SDGs and the national urban development policy along with how the NDCs can be strengthened through multi-sectoral and vertical collaboration, integrating national and subnational efforts. The dialogues encourage diverse participation not just from governmental actors but also universities, private investors, academia, development agencies, international organizations and networks. The third question of *"how do we get there?"* facilitates discussions on how national, subnational and non-state actors can coordinate and mobilize technical and financial resources, leading to new collaboration models. ICLEI synthesizes the dialogue proceedings and provides them as an input to the global Talanoa dialogues, thus feeding into international discussions (ICLEI, 2018).

Local level issues are often not fully prioritized in national level discussions. The Cities and Regions Talanoa dialogues brought these actors together on a common platform, shedding light on city level issues and their links to the national level. Cities also shared new technologies and success stories, enabling peer-to-peer learning and horizontal translation of solutions

(Interviewee E, personal interview, March 30, 2020). Cities were allowed to discuss their challenges and identify strategies along with the national government and other key actors (Interviewee A, personal interview, March 9, 2020). Platforms such as the Cities and Regions Talanoa Dialogues further strengthen other initiatives such as the CSCAF, by providing a novel space which brings together the local and national level actors, thereby acting as a feedback channel (Interviewee F, personal interview, April 1, 2020). ICLEI played a crucial role in combining such deliberative platforms with local policies and strategy formulation (Romsdahl et al., 2018). Moving on towards future Talanoa dialogues, national governments should integrate and institutionalize local collaboration within all national level missions. For example, they can motivate local governments to hold Talanoa- style dialogues within their jurisdictions and ensure the involvement of a diverse range of professionals within every local level consultation process (ICLEI, 2018). Table 4 depicts the various identified roles of ICLEI within the Urban-LEDS, their characteristics and outcomes, supplemented with excerpts from interviews.

Table 4: Identified roles of ICLEI within Urban-LEDS

Identified role	Characteristic	Outcomes	Excerpts from interviews
Knowledge related roles			
Educator	Training city officials and providing workshops on new technical and financial concepts	Technical Capacity building	"Many terms were not known in the city, like greenhouse gas, climate change, etc. Initially climate action was piecemeal. ICLEI helped the stakeholders think with a holistic perspective, not just focused on a few energy efficiency initiatives" (Interviewee H, Thane)
Integrator	Integrating multiple departments within the municipality	Capacity building, mainstreaming	"Through ICLEI's technical team, a focused approach has been enabled which has shifted the thought process. This is crucial because now, for every initiative we see how it generates benefits or negative effects from a climate action angle" (Interviewee D, Nagpur)
Knowledge aggregator, distributor	Aggregating and disseminating knowledge and best practices.	Horizontal translation, knowledge sharing	"We try to share lessons, experiences and outcomes. So, this can be replicated as well across different levels, across cities" (Interviewee F, ICLEI SA)
Builder	Creates relationships, bringing in external actors	Technical and financial capacity building	"Provided outwards exposure to institutions for expertise and funds at the national and international level. Like WWF" (Interviewee H, Thane)
Game altering roles			
Facilitator	Cocreating knowledge and solutions	Co-creation, collaborative policy making	"So, I recall, it was either NIUA and another institution who said that we should also target awareness in school children and youth. From that, we tried to engage this category and we did demonstration projects on solar and sustainability in general in schools in Rajkot and Thane, under Urban-LEDS" (Interviewee F, ICLEI SA)
Path breaker	Drives urban transition towards more sustainable pathways	Niche development, altering regimes	"Cities are also encouraged to commit to a carbon emission reduction and incorporate the low emission strategy to their local action plans" (Interviewee J, ICLEI SA)
Relational roles			
Connector	Connects cities, enables exchange of ideas and technology transfer	Peer-to-peer learning, translation, capacity building	"We even visited Malmö, and other European cities, saw the initiatives they implemented and they shared best practices. Even got trained in a software for GHG inventory" (Interviewee H, Thane)
Mediator	Promotes interaction between national and local governments	National policy alignment, vertical upscaling, capacity building	"I was exactly referring to the Talanoa dialogues, which provides a platform for cities and other tiers of the government to interact and it acts as a platform to show what the cities ambitions and goals are and acts like a feedback mechanism for national governments" (Interviewee F, ICLEI SA)

6.2 Role of UN-Habitat

The UN-Habitat is a United Nations program, aimed at promoting sustainable urban development and poverty reduction through five focus areas namely, advocacy and partnerships, collaborative urban planning and management, promoting affordable infrastructure for the poor, sustainable urban infrastructure and strengthening finance flows. The organizational structure consists of four sub programs targeting sustainable human settlement development and strengthening capacity at the regional level. These include, (i) the development of sustainable human settlements, (ii) monitoring the implementation of the Habitat agenda, (iii) facilitating regional cooperation and (iv) financing for human settlement development. UN Habitat's activities are both normative and operational. Through their normative activities, they assist countries with capacity building and guidance on improving policies and overall urban governance management structures. They also disseminate the latest research on human settlements. Through their operational initiatives, they implement the policies and strategies identified through their normative programs, providing on the ground assistance and maintaining a database of best practices (United Nations Evaluation Group, 2012). With regards to the Urban-LEDS project, UN- Habitat acts as a co-implementing agency, with less influence in the project in comparison to ICLEI.

Similar to the section on ICLEI, the description of the various roles adopted by UN-Habitat in the three cities, through the lens of the Urban-LEDS project is modelled on the study conducted by Frantzeskaki et al.(2019). The identified roles of UN-Habitat are classified into knowledge related roles, game altering roles and relational roles.

6.2.1 Knowledge related roles

Educator

UN-Habitat played the role of an educator around three main multilevel governance pillars, namely, coordination, policy making and financing. With regards to coordination, they advised and educated governments on how to effectively collaborate with different tiers of governance. Second, they assessed the degree to which national policies integrate urban climate issues and the degree to which local governments understood and were aware of national policies and mandates. Accordingly, they advised local governments how to engage with an inclusive and multi stakeholder driven policy framing approach. This contributed towards enabling a sense of responsibility and accountability within governments. With regards to financing, UN-Habitat educated governments on how to access climate finance sources like adaptation and mitigation funds, such as the Green Climate Fund, the world's largest climate dedicated fund aiding climate mitigation actions in developing countries, which was set up by the UNFCCC. An interviewee also expressed the need to educate local governments on mainstreaming climate criteria into existing urban finance streams, rather than specifically seeking out climate finance (Interviewee G, personal interview, April 7, 2020). Within the Urban-LEDS project, ICLEI was mainly involved with the operational aspects of the project while UN-Habitat played a normative role and did not engage with city level technical capacity building (Interviewee C, personal interview, March 18, 2020). The Cities and Regions Talanoa Dialogue, which is supported by UN-Habitat, also served as a platform to educate and spread awareness amongst cities regarding the urgency of climate change mitigation and adaptation and the associated global risks as well as the local level risks within India (Interviewee C, personal interview, March 18, 2020).

Knowledge aggregator

UN Habitat played the role of a knowledge aggregator by integrating heterogeneous inputs like knowledge, ideas or technologies from multiple actors (Nyström et al., 2014). This involved integrating information from national level entities such as the Ministry of Environment, Forest

and Climate Change (MOEFCC) and the MoHUA as well as local governments through data collection in the form of interviews. Aimed at gaining a holistic understanding, the information from interviews covered topics such as, the gaps impeding emission measurement, the allocation of resources within the respective organization, the presence of an established baseline, the organization's progress towards the implementation of NDCs, the relevant policy programs at each level and what the national or local governance levels perceived to be successful policies, all within the urban sector. At the local level, they gathered knowledge on the availability of financial and technical resources and the existing top down financial schemes, how this funding is mobilized and how much of it is allocated for climate related activities. They also assessed the institutional capacity of the local governments in terms of the presence of coordination and monitoring instruments such as climate steering committees and dedicated internal staff (Interviewee C, personal interview, March 18, 2020).

6.2.2 Game altering roles

Facilitator

Through the implementation of the PAG, UN-Habitat played the role of a facilitator by facilitating the co-creation of solutions and the provision of feedback to the Urban- LEDS project. Through this platform, they along with national and non-state stakeholders including other project intermediaries, discussed issues that arose during the implementation of the project and identified solutions to address them.

6.2.3 Relational roles

Mediator

This role is closely linked with UN-Habitat's role as a knowledge aggregator. The interviews with national and local governments helped assess the availability of financial, technical and institutional resources within the local level, the integration of urban policies within national level mandates and the extent to which urban governance issues were included within national level discussions (Interviewee C, personal interview, March 18, 2020). Thus, UN-Habitat played the role of a mediator by bridging resource and knowledge gaps between the national and local governance levels and identifying policy interlinkages. They also undertook a mediating role through the implementation of the Cities and Regions Talanoa dialogues. UN-Habitat acts as a supporting agency for the Cities and Regions Talanoa dialogues, with ICLEI being the main implementing agency. These dialogues were instrumental in helping cities understand the urgency of climate change action and the future trajectory that they need to embark on, while simultaneously addressing the role of the national governments in terms of resource provision, capacity building and policy development. It served as a platform to discuss priorities and requirements of different cities, such as the need for baseline assessment tools for cities in the nascent stages of policy development and the need for specific technical and capacity building inputs for the more advanced cities. An interviewee expressed the need to include more agencies and think tanks in subsequent versions of the dialogues (Interviewee C, personal interview, March 18, 2020). The identified roles of UN-Habitat are summarized in Table 5, along with the characteristics and outcomes, complemented by excerpts from interviews.

Table 5: Identified roles of UN-Habitat within Urban-LEDS

Identified role	Characteristic	Outcomes	Excerpts from interviews
Knowledge related roles			
Educator	Educating cities on how to improve coordination and policy making	Knowledge capacity building	"Some of the work is to look at and advise governments on how they can encourage cultured collaboration" (Interviewee G, UN-Habitat)
Knowledge aggregator	Pooling in knowledge from different sources into a single entity	Improved knowledge base, knowledge capacity building	"We had reached out to the MOEFCC, Urban ministry for the interview. Also interviewed local governments" (Interviewee C, UN-Habitat)
Game altering roles			
Facilitator	Cocreating knowledge and solutions	Co-creation, collaborative policy making	"To maintain that neutrality and to really understand what are some of the challenges, the composition of Stakeholders in the advisory group is a mix of technical experts and those in the program and the donors as it is important to get insights into what the financial agencies are looking for" (Interviewee C, UN-Habitat)
Relational roles			
Mediator	Mediating between national and local governments	National policy integration, vertical upscaling, capacity building	"What the dialogue did was it was a fine balance, on one hand we introduced the urgency of carbon emission mitigation and climate change and more evidence into the conversation that this is the global reality but also a reality for India, this is what's ahead for us and to change that trajectory, what's to be done, at the national scale what are we looking at in terms of the policies" (Interviewee C, UN-Habitat)

6.3 Role of GIZ and the Climate Smart Cities Assessment Framework

GIZ is a service provider within the arena of international cooperation facilitating sustainable development. With a rich experience of over 50 years spanning a myriad of fields such as climate change and renewable energy, economic development and peace, justice and security, their recipient base includes the German government, European Union and the United Nations along with the government and private sectors of other countries, especially within the developing context. Through a multi stakeholder approach, they work with the private sector, civil society, governmental agencies and other intermediary organizations, integrating multiple policy fields of work. Along with national governments and cooperation partners, they strive towards delivering solutions that improve living conditions and instigate the transition towards sustainable pathways. They currently work in 120 countries around the world. Climate and energy constitute a third of their work and they are the first organization outside the purview of the UN to have signed a declaration of intent with the UNFCCC (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, 2019).

Unlike ICLEI and UN-Habitat, GIZ does not play a direct role in implementing the Urban-LEDS project. Hence, this section is structured differently from the previous sections on ICLEI and UN-Habitat. The role of GIZ is explored within the lens of the Climate Smart Cities Assessment framework (CSCAF), which is a one of its kind top down city level climate assessment framework, implemented by the Ministry of Housing and Urban Affairs (MoHUA), Government of India and prepared and implemented in close collaboration with GIZ. The CSCAF is linked to the Urban-LEDS project as ICLEI was involved with the development and testing of the framework and as part of the Urban-LEDS II project, ICLEI assists the model cities in the implementation of the framework. Moreover, this framework assists the cities in implementing the LEDS by allowing the cities to conduct a holistic assessment of their climate mitigation and adaptation efforts, identify priority areas that need more focus and draft a roadmap to achieve their targets.

This section consists of two parts. The first part presents an overview of the CSCAF and the enabling factors and challenges affecting its implementation at the local level. The second part elucidates the roles played by GIZ in developing and implementing the framework, modelled on the study conducted by Frantzeskaki et al.(2019), similar to the sections on ICLEI and UN-Habitat. Since this thesis constitutes one of the first studies on the CSCAF, the data for this section has been derived only from interviews and public documents by the MoHUA due to the lack of peer reviewed research.

6.3.1 The Climate Smart Cities Assessment Framework

To provide local governments with a holistic approach to integrate climate change into urban development, the MoHUA initiated the Climate Smart Cities Assessment Framework in 100 smart cities, under the Smart Cities Mission in January 2019. This was a first of its kind, city level assessment framework, encompassing climate relevant parameters such as those within the recently released National Clean Air Program and aspects under the NMSH. The framework serves as a nationally driven roadmap for climate mitigation and adaptation efforts in cities (Ministry of Housing and Urban Affairs, Government of India, 2019a). Although a ranking of cities is provided based on their assessment using this framework, it is not considered to be a ranking system or a sub mission. Cities are also partnered with each other based on their ranking, enabling horizontal dynamics. For example, Nagpur was paired with Port Blair (Interviewee D, personal interview, March 30, 2020). Cities are expected to become more adept at developing credible, tangible and effective solutions using the results of such an assessment, further increasing their access to international and national funding.

The CSCAF consists of 30 indicators across five sectors namely, energy and green building, urban planning, biodiversity and green cover, air pollution and mobility, water resource management and waste management. A list of indicators in each sector is provided in Appendix 4. The assessment gives weightage to both adaptation and mitigation initiatives, providing cities with a holistic picture of the priority areas that they need to focus on. The sectors were chosen keeping in mind areas that are under the purview of local governments, allowing for easy assessment and data management at the local level. The indicators are progressive and evolve with climate developments, thereby enabling cities to assess their current state, identify gaps and develop future actions, thus contributing to enhanced climate resilience. The envisaged outcomes of this aspirational framework include benchmarking of cities, peer-to-peer learning, identification of city level capacity needs, promotion of citizen engagement and awareness and enabling indicator driven budget allocations for priority areas (Ministry of Housing and Urban Affairs, Government of India, 2019a, 2019b)

Cities perceived the framework to be highly beneficial and relevant as it was the first time that the national government had implemented an inclusive, multi-sectoral framework guiding

climate action in cities. This will allow cities to undertake mitigation and adaptation efforts in a more coordinated manner, as opposed to the previous segregated approach (Interviewee A, personal interview, March 9, 2020). Local stakeholders from cities as well as state governments provided feedback and inputs to the framework through stakeholder workshops. These city level inputs were integrated into the framework which was then modified after the first implementation phase. The city level inputs helped provide more flexibility to what initially resembled a top down regulatory guideline (Interviewee D, personal interview, March 30, 2020). By including sectors like biodiversity, which was previously not addressed in any assessment framework, along with sector wise action plans, this framework fostered an integrated approach towards urban climate action, providing an equal weightage to all sectors. Although the ranking was a good incentive for cities to take up this framework, it should be seen as a self-evaluation tool rather than a ranking system, fostering collaboration rather than competition (Interviewee D, personal interview, March 30, 2020). Driven by the mandate from the secretary of MoHUA, nodal departments were developed in each city and information on the data required from cities was circulated. The need to collect data from different departments within the city, specifically for this framework forced interaction and collaboration between city departments on a regular basis, something that was not a common routine. Furthermore, the cities got to interact with the state pollution control boards for the first time through a workshop initiated as part of the CSCAF, thereby enabling city-state coordination (Interviewee B, personal interview, March 12, 2020).

City level implementation challenges and enabling factors for the CSCAF

Owing to the novelty of this framework, it is essential to understand the existing city level challenges and enabling factors affecting its implementation, in order to allow for its improvement. The nodal agency at the city level for the CSCAF was the smart city spatial purpose vehicles (SPVs). SPVs in most cities were institutionally weak with very limited influence, thereby challenging the implementation of the CSCAF (Interviewee B, personal interview, March 12, 2020). On the other hand, an important enabling factor for the city of Nagpur was the presence of an institutionally strong SPV, with sectoral inhouse experts who educate local departments on the usage of indicators and the benefits of the CSCAF.

The main challenge stated by city officials was the task of coordinating and collecting data from multiple departments, thereby breaking existing sectoral silos. Although cities are acknowledging the relevance of this framework, they remain technically challenged when it comes to the implementation aspect (Interviewee D, personal interview, March 30, 2020). There is some support from the MoHUA in this regard, through video conferencing and regular meetings aimed at educating nodal officers on data collection and the usage of indicators. Cluster workshops were also conducted by ICLEI and other developmental agencies, to provide training on individual indicators and increase city level access to combined technical expertise. The challenge was in ensuring that these workshops included representation from the right city level officials with the necessary jurisdictional authorities to effect change (Interviewee F, personal interview, April 1, 2020). National government officials were also in regular contact with the city nodal officers through WhatsApp groups, clarifying issues and providing expert advice, thereby enabling cities to discuss and address implementation challenges. Budget allocation provided for the framework by the MoHUA during the second assessment phase was another factor that enabled city level implementation (Interviewee B, personal interview, March 12, 2020).

The MoHUA has also prepared a series of guidance documents for cities outlining tangible steps to improve their climate performance. Under that, cities were advised to formulate a *"climate alliance"* constituted by an amalgam of stakeholders such as academia, civil society, non-governmental organizations and other eminent individuals. It was anticipated that the climate

alliance would play the following roles, (i) assist cities with strategy planning based on the gaps identified through the CSCAF, (ii) assist cities with the development of an action plan with short, medium and long term actions, (iii) assist with data generation, implementation, monitoring and reporting, (iv) promote interdepartmental coordination and (v) ensure policy alignment with existing city level plans (Ministry of Housing and Urban Affairs, Government of India, 2019c). This alliance will be in direct contact with the MoHUA, creating a channel for cities to showcase their climate performance to the national government (Interviewee B, personal interview, March 12, 2020).

Citizens and civil society can be considered to be the micro level of the multilevel climate governance system, generating impacts through the mass mobilization of city level low emission initiatives (Jänicke, 2017). Sensitization of citizens remains another area to be addressed, enabling effective implementation of the CSCAF. The World Resources Institute (WRI) is supporting the MoHUA in this area and are set to initiate awareness programs this year (Interviewee B, personal interview, March 12, 2020). Another challenge was the lack of mechanisms to cross check the data submitted by the cities during the assessment phase, in order to rule out double counting and check for false data. In this regard, the interview expressed the need for the national government to conduct physical verification in cities (Interviewee B, personal interview, March 12, 2020). Table 6 provides an overview of the city level challenges and enabling factors for the implementation of the CSCAF.

Table 6: Challenges and enabling factors for the implementation of the CSCAF

Challenges	*Enabling factors*
• *Data collection* • *Institutionally weak spatial purpose vehicles (SPVs)* • *Representation of relevant stakeholders in workshops* • *Lack of proper monitoring and verification mechanisms* • *Lack of funding* • *Lack of awareness amongst citizens*	• National level support through workshops and WhatsApp groups • National-city feedback mechanisms through consultations • Cluster workshops conducted by ICLEI • Influential SPVs in cities • Allocated budget • National level guidance documents for cities • Inclusive multi stakeholder climate alliance • Sensitization of citizens

6.3.2 Role of GIZ in developing and implementing the CSCAF

The roles played by GIZ in developing and implementing this framework is modelled on the study by Frantzeskaki et al.(2019). The identified roles can be classified as knowledge related roles, mainly knowledge aggregator, translator, builder and knowledge advocate, game altering roles namely facilitator and instigator and relational roles namely mediator and connector (Frantzeskaki et al., 2019; Heikkinen et al., 2007).

Knowledge related roles

GIZ played the role of a *knowledge aggregator* by creating a knowledge repository of the existing indicators and assessment frameworks and using this to derive ideas for the CSCAF. GIZ also played the role of a *translator* by translating scientific knowledge from literature reviews and experts into the policy domain, in the form of a framework that can be implemented and monitored at the city level (Frantzeskaki et al., 2019).

Acting as a *builder*, GIZ facilitated ties with ADB and ICLEI, who provided funding for the first set of city level assessments and provided technical assistance to test the indicators in cities, respectively. ICLEI used the model cities under the Urban-LEDS project as a testing ground for this framework and also provided technical assistance to cities for its implementation (Interviewee J, personal interview, April 22, 2020). A private company came in to support IT related work for the CSCAF while the WRI also pooled in resources to support the ministry in implementing the framework (Interviewee B, personal interview, March 12, 2020).

The MoHUA acted as the nodal agency for the framework, while GIZ and NIUA played the role of *strategic partners*. GIZ and NIUA also played the role of a *knowledge advocate*, someone who promotes and distributes positive information about innovations within innovation networks. Along with the ministry, they published and distributed a "best practices compendium" that compiled information on successful climate mitigation projects, initiatives and schemes from city governments. The limitations and success factors for all the best practices were provided, enabling the horizontal translation of innovations. According to an interviewee from ICLEI, the dissemination of best practices can enable cities to identify existing practices that come under the domain of climate change and further prioritize them (Interviewee F, personal interview, April 1, 2020). Street lighting projects in Thane and Rajkot, implemented under the Urban-LEDS project were also featured in this compendium (Heikkinen et al., 2007; Ministry of Housing and Urban Affairs, Government of India, 2019b)

Game altering roles

GIZ played the role of an *instigator*, one who influences the decision making processes of other actors (Heikkinen et al., 2007). They developed the CSCAF as part of their "Climate Smart Cities" project, commissioned by the German Federal Ministry for the Environment and aimed at integrating climate aspects into India's National Smart Cities Mission. This framework kindled the interest of the joint secretary and mission director of the MoHUA, following which they implemented the framework under the Smart Cities Mission.

GIZ also played the role of a *facilitator* by brainstorming the nuances of this framework along with the NIUA and the German Institute of Urban Affairs. They brought together 26 diverse non-state organizations through a workshop for co-creating and designing the various aspects of the framework such as the indicators and sectors to be included. This workshop promoted the participatory discussion of ideas for the development and implementation of the CSCAF. The recommendations based on this workshop included the need for the NIUA to consolidate a list of potential ministries, UN agencies and NGOs to collaborate with for this initiative along with the preparation of a detailed strategy and implementation plan, keeping in mind city specific issues. The organizations included, WRI, TERI, ICLEI, policy think tanks in India, Asian Development Bank, National Institute of Disaster Management, Rockefeller Foundation, United Nations Development Program, USAID India, Swiss Agency for Development and Cooperation, South Asia and the C40 to name a few. Expert guidance for this framework was provided through an expert committee constituted by the ministry.

Relational roles

Although the cities did not play a role in designing the initial version of the framework, their inputs were incorporated through stakeholder workshops with multiple cities and the state governments, and the second version of the framework was modified accordingly. This is an example where GIZ played the role of a *connector* by connecting city level representatives across multiple cities through the workshops. Moreover, under the CSCAF, cities were paired with other cities based on their ranking during the assessment, facilitating peer-to-peer learning and collaboration (Interviewee D, personal interview, March 30, 2020).

GIZ also acted as a *mediator* by bringing together the national, state and local governments through the workshop.

Table 7 provides an overview of the identified roles of GIZ and the corresponding characteristic and outcomes, supported with excerpts from interviews.

Table 7: Identified roles of GIZ in developing and implementing the CSCAF

Identified role	Characteristic	Outcomes	Excerpts from interviews
Knowledge related roles			
Knowledge aggregator	Compiling knowledge from multiple sources	Improved knowledge base, knowledge capacity building	"We also did some literature review, there are already some indices and frameworks available. We realized that it was better to take initiatives from these indices, as they were all there for a particular sector or set of programs, particular task" (Interviewee B, GIZ)
Translator	Translates scientific knowledge into policy practice	Capacity building	"We shortlisted the categories of sectors which would be appropriate for cities to demonstrate and take certain actions in the field of climate adaptation and mitigation" (Interviewee B, GIZ)
Builder	Creates relationships, bringing in external actors	Technical and financial capacity building	"So the first phase of assessment was run by ADB then when the indicators was drafted, ICLEI helped to test the indicators in 3 cities, CIS development corporation provided resources for IT related activities, and data inputs were managed by NIUA, these were the organizations who provided financial and technical inputs" (Interviewee B, GIZ)
Knowledge advocate	Promotes and distributes positive information about innovations	Peer-to-peer learning, capacity building	"I was the coordinator for the whole process, the best practices compendium, all the activities" (Interviewee B, GIZ)
Game altering roles			
Facilitator	Cocreating knowledge and solutions	Co-creation, collaborative policy making	"So, this was discussed in Dec 2018 and we started brainstorming with the national institute of urban affairs who was a partner for our climate smart cities project along with the German institute of urban affairs" (Interviewee B, GIZ)
Instigator	Altering decision making processes	Experimentation and reframing of agendas	"There were many existing frameworks like the smart cities, ease of living, from the beginning they wanted to come up with something for climate aspect, so when we presented our project to joint secretary and additional secretary, they realized it was needed from the national government side"(Interviewee B, GIZ)
Relational roles			
Mediator	Mediating between national and local governments	National policy integration, vertical upscaling, capacity building	"I was also a part of the stakeholder meetings, where they asked us for inputs on whether the framework was feasible or not and how it can be modified, when it was being developed. Many cities were involved in it. I represented Nagpur" (Interviewee D, Nagpur)
Connector	Connecting cities	Peer-to-peer learning, capacity building	"Based on that ranking, we have a city- city pairing, or sister city pairing concept where Nagpur is being paired with Port Blair" (Interviewee D, Nagpur)

6.4 A summary and comparison of intermediary roles

Within the Urban-LEDS project, both ICLEI and UN-Habitat played the role of educators. ICLEI focused on improving technical knowledge and capacity through workshops on topics such as GHG emission calculation and data reporting on climate reporting platforms, while UN-Habitat provided guidance and advice to cities on how to improve multilevel coordination. In contrast to ICLEI, UN-Habitat did not engage with on the ground technical capacity building. GIZ did not play the role of an educator during the development and implementation of the CSCAF. However, they played the role of a translator by translating scientific concepts from literature reviews and expert workshops into the policy arena through the development of a practical, holistic framework that can be applied at the city level. Compared to UN-Habitat and GIZ, ICLEI was more involved with the practical implementation of projects, acting as an integrator and facilitating cross departmental integration through the creation of climate core committees. ICLEI along with GIZ helped cities build external relationships with stakeholders such as developmental organizations, academia and funding agencies, thereby strengthening their financial and technical capacities.

Facilitated through its five development pathways, ICLEI assisted local governments in transitioning towards new sustainable pathways, playing the role of a path-breaker. GIZ played the role of an instigator, influencing and directing decision making at the national level towards more sustainable outcomes by developing a framework that was taken up and implemented by the national government to assess city level climate performance. All three intermediaries played the role of facilitators, fostering the co-creation of knowledge and ideas and giving rise to inclusive decision-making processes at the city level. With regards to facilitating horizontal interactions, ICLEI and GIZ played the role of connectors by instigating city-city pairing while all three cities promoted knowledge sharing and horizontal translation of innovations through their role as knowledge aggregators and disseminators. With regards to vertical interactions, all three intermediaries mediated between local, state and national governments, through common platforms for knowledge sharing and interaction, thereby strengthening vertical interlinkages and policy integration. Figure 10 compares and contrasts the various roles played by all three intermediaries.

Identified roles	Knowledge roles					Game altering roles			Relational roles	
	Educator (Training on new concepts)	Translator (science to policy)	Integrator(Integrates different sectors)	Knowledge aggregator and advocate	Builder(links with external actors)	Facilitator (enables co-creation)	Pathbreaker (shifts existing regimes)	Instigator (alters decision making processes)	Connector (connects cities)	Mediator(connects national and local levels)
ICLEI	✓		✓	✓	✓	✓	✓		✓	✓
UN-Habitat	✓			✓		✓				✓
GIZ		✓		✓	✓	✓		✓	✓	✓

Figure 10: Summary and comparison of intermediary roles

6.5 Challenges to intermediary action

Existing research on the role of intermediaries often presents an utopian picture, overlooking the challenges faced during intermediation (Kivimaa et al., 2018). The intermediaries within the Urban-LEDS project faced a number of on the ground challenges which needs to be addressed. With multiple intermediaries overlapping within the same city and approaching the city officials for collaborations, local governments can get fatigued, ultimately leading to ineffective

outcomes. Moreover, multiple intermediaries competing for the same funds also impedes an intermediary's access to funding (Interviewee G, personal interview, April 7, 2020). Thus, there was a need to identify and tap into synergies between multiple intermediaries and initiate collaborations (Interviewee F, personal interview, April 1, 2020). One way to do so is to interact with other stakeholder agencies prior to implementing a project and also during the implementation phase. The *Project Advisory Group* served as a platform for ICLEI to interact with other intermediaries, identify project synergies and maximize benefit at the city level (Interviewee J, personal interview, April 22, 2020). For example, organizations can share their projects and initiate collaborations within the same city. They can also engage in such a way that each intermediary coordinates the implementation of a particular phase within the same project (Interviewee G, personal interview, April 7, 2020). Intermediaries in Indian cities usually approach the commissioner or mayor for approvals prior to project implementation. In some cities, the commissioner or the mayor can act as an informal nodal point for coordinating the work of multiple intermediaries, directing them to other organizations with similar project portfolios, thereby instigating collaborations (Interviewee I, personal interview, April 9, 2020). Within the UN system, every country has a resident coordinator whose role is to coordinate the work of multiple UN agencies operating within that country. Although this is an important step towards addressing coordination between diverse intermediaries, it is imperative to have more than one such resident coordinator to increase the efficacy of this initiative (Interviewee G, personal interview, April 7, 2020). At the global scale, the *NDC partnership* initiative seeks to improve the technical capacity of cities and their ability to meet the NDCs by bringing in the right intermediary partners (Interviewee G, personal interview, April 7, 2020). It is a global coalition of over 150 countries and organizations, working directly with over 60 governments in developing countries, advancing their efforts to meet the NDC targets by providing the necessary resources and expertise. Governments utilize the NDC Partnership Plans to identify priority areas, initiate cross governmental interaction and propel their climate efforts by garnering support from intermediaries who assist development and implementation (NDC Partnership, 2019). The NDC partnership's development partners include government and donor agencies who support their work at the ground level, while implementation partners include intermediaries who, in response to the requests put forth by member countries to the Partnership, provide the required capacity building support (NDC Partnership, 2019). This represents an innovative bottom up approach where countries choose which intermediaries, they would like to work with based on the country level requirements, as opposed to intermediaries flooding the country representatives with their projects. Intermediaries also interact with each other in global platforms and initiatives such as World Urban Forum and Covenant of Mayors (Interviewee C, personal interview, March 18, 2020).

At the city level, the designing of master plans as a comprehensive strategy and integrating it with other aspects of urban development can play a key role in mandating and institutionalizing sustainable urban development (Peter & Yang, 2019). Thus, master plans provide a common gateway through which intermediaries can intervene and impact sustainable urban development. However, *outdated planning guidelines* and the need to get cities attuned to the latest global planning guidelines presents a challenge to intermediary action (Interviewee C, March 18, 2020). In all three cities, ICLEI's global reputation as the face of subnational climate action played an important role in gaining political support and city level commitment. However, despite commitment from climate conscious municipal leaders, the *frequent replacement of political leaders* during the course of a project was a common challenge for intermediaries in all three cities. The new official may have conflicting priorities, making it difficult to build a relationship and in turn affecting various aspects of the project such as getting the required approvals or budget allocations (Interviewee E, personal interview, March 30, 2020).

In India, climate action in cities commonly takes the form of project-based activities, with a proclivity to implement short term projects with clear timelines and goals rather than projects with a strategic long-term perspective. Intermediaries, most commonly TMNs assist cities with project implementation by providing day to day technical handholding and capacity building However, this model can lead to *unsustainable dependencies* between the city and the intermediary organization, resulting in inaction once the project is complete (Chan et al., 2019; Khosla & Bhardwaj, 2019) Thus, an important challenge for intermediaries who help cities with project implementation is to shift towards sustainable models that ensure motivation and persistent climate action even after the end of the collaboration (Interviewee C, personal interview, March 18, 2020).

7 Discussion

This chapter describes the contribution of this study in examining multilevel climate governance in the three Indian cities of Rajkot, Thane and Nagpur, formulated under topics such as national-local linkages, state-local linkages, barriers to multilevel climate governance and the role of intermediaries. Under national-local linkages it also discusses the role of the climate smart cities assessment framework in enabling multilevel climate governance in India. Finally, it elucidates some recommendations put forth by the author.

Based on a systematic analysis of urban climate governance literature conducted by van der Heijden(2019), it was found that empirical literature on urban climate governance still remained strongly skewed towards the Global North, with a need to examine urban climate governance structures in the Global South. There was also a need to study the barriers affecting urban climate governance, thereby leading to the observed mismatch between policy rhetoric and reality (Di Gregorio et al., 2019; van der Heijden, 2019). Moreover, with respect to subnational climate governance in India, there was limited literature on how cities engage with multilevel climate governance along with the enabling factors and barriers affecting the same (Beermann et al., 2016; Khosla & Bhardwaj, 2019). This thesis contributes towards addressing these gaps by examining how the three Indian cities implemented multilevel climate governance and the associated barriers and enabling factors for the same. The analysis of multilevel climate governance using an analytical framework developed from existing literature, attempts to link policy rhetoric to the actual outcome in cities. By presenting an overview of the challenges faced by intermediaries along with initiatives to facilitate interaction between multiple intermediaries, this study contributes towards addressing some of the existing research gaps within intermediary literature by advancing knowledge on both the challenges to intermediary action and the coexistence of multiple intermediaries (Kanda et al., 2020; Kivimaa et al., 2018).

7.1 Multilevel climate governance in the three cities

The development and implementation of LEDS in all three cities were primarily driven by city level ambitions with no direct mandate from the national government, indicating that local governments had substantial autonomy to implement climate mitigation and adaptation initiatives. However, there were a few supporting mandates from the national and state levels such as the Smart Cities Mission, Solar Cities Program and state level renewable energy policies which influenced and enabled the development of city level LEDS. This indicates the existence of a *hybrid multilevel climate governance* framework, comprising both top down and bottom up elements (Adriázola et al., 2018). City level initiatives such as the use of treated sewage water to cool thermal power plants led to the establishment of similar mandates at the state level, proving that a hybrid multilevel framework can lead to the diffusion and uptake of ambitious local level policies by higher governance levels.

With regards to implementing local climate action plans, two alternative approaches exist; 1) a *climate policy unit* can be established in each climate relevant department or 2) in case of limited staffing capacities, an *overarching climate policy steering group* with the appropriate capacities for mainstreaming climate change can be created (Kern & Alber, 2008). The second approach was visible in the three cities, through the establishment of cross-sectoral climate core committees, tasked with coordinating the implementation and monitoring of the LEDS. This was supported by the presence of dedicated political leadership in the form of climate conscious mayors or commissioners in all three cities who drove stakeholder engagement within the steering groups. However, frequent changes in electoral leadership challenges the functioning of the core committees as the new mayors may not prioritize climate initiatives. Therefore, *a recommendation* would be to train and institute at least one or two staff dedicated to climate change-oriented

initiatives within each department, who are also members of the climate core committees. This will ensure coordination of activities across all relevant sectors and policy areas, within the city administration, even with limited steering from the mayor. Moreover, presence of dedicated staff will be an integral enabling factor for local climate action, especially in Indian cities where officials are often burdened with non-climate responsibilities and priorities.

It was observed that the climate core committees and stakeholder committees included the mayor, commissioner, representatives from different municipal departments, the private sector, intermediaries like ICLEI and UN-Habitat along with other research and development organizations. Thus, the resulting low emission initiatives were the outcomes of negotiations between local government actors, who bring in local development concerns and a multitude of non-state actors, bringing in varied perspectives and priorities ranging from GHG mitigation, ecosystem conservation, economic development or green infrastructure development. This allowed for the co-creation of initiatives and the identification of cross-sectoral synergies. As a result, some of the low emission initiatives were linked to urban development plans, but this represented a very limited number. There still remained an inadequate integration of climate change into urban development plans. Owing to the complex interlinkages between development objectives such as air pollution, water management, waste management and energy to name a few; and climate change, cities have to handle multiple objectives, which often differ in priority amongst multiple actors, leading to inadequate mainstreaming of climate objectives (Corfee-Morlot et al., 2009). There are *two recommendations* from literature which seeks to address this and promote a systematic approach to integrate climate change with other urban sectors. One is the use of a *multiple objectives framework* which provides a structure for cities to analyze multiple priorities and identify the synergies and trade-offs between them. This allows them to implement holistic policy scenarios that maximize the benefits, steering away from a piecemeal approach and enabling the strategic integration of climate mitigation and adaptation aspects into urban development plans (Bhardwaj & Khosla, 2017; Khosla & Bhardwaj, 2019). The second, is the use of a *climate lens* in development planning. The climate lens is an analytical tool to examine a strategy, policy or regulation and analyze: (i) the extent to which the policy is vulnerable to climate risks; (ii) the degree to which climate risks were assessed during the policy formulation stage; (iii) the extent to which the policy might contribute to increasing vulnerability and (iv) the necessary changes to be included in the revision of preexisting plans in order to incorporate climate considerations. If the policy or plan is deemed to be at risk due to climate variability, the degree of risk should be assessed and appropriate recommendations should be drafted (Corfee-Morlot et al., 2009).

7.1.1 National-local interlinkages

This paper elucidates the importance of *national-local interlinkages* for effective climate policy making. In Nagpur, the SPV under the smart cities mission was a primary agency involved in the development of low emission initiatives. The SPVs play a role in tailoring the objectives of the National Smart Cities Mission to local conditions. The national government also provided funding for urban low emission initiatives through sectoral policies targeting urban renewal, such as the Smart Cities Mission, Solar Cities Program, AMRUT etc. However, these funding sources do not target climate change in specific, narrowing down the scope of eligible projects and driving a siloed implementation approach in cities. There remains a need for a *centrally driven financial framework* supporting climate initiatives in cities, allowing cities to apply for grants on a project basis (Corfee-Morlot et al., 2009). Attaching prerequisites for grant eligibility, such as the development of a climate strategy and an action plan at the city level will further propel local climate action. Within the exploration of national-local interlinkages, this study discusses the role of the CSCAF in facilitating multilevel climate governance, thereby providing a working example of multilevel climate governance in practice.

Climate Smart Cities Assessment Framework and multilevel climate governance

The CSCAF is an interesting example demonstrating multilevel governance for climate policy making. The development of the framework involved intermediaries, research agencies, NGOs as well as national, state and local governments. This highlights the contribution of strong vertical and horizontal linkages between different governance levels as well as between state and non-state actors, towards the development and implementation of effective policy instruments. A nationally driven mandate for the creation of local climate action plans does not seem like a likely reality in the near future. However, this framework comes closest to such a mandate, enabling the creation of local climate action plans analogous to the NAPCC and SAPCCs. A common barrier found in Asian countries for the integration of national policies with the local level was the presence of competing interests and a lack of coordination across different governance levels (Bai et al., 2009). This framework tried to address this issue by allowing the cities and states to be a part of the design phase through workshops and consultations and integrating their feedback in order to tailor the framework according to the local context.

Although the level of climate ambitions within cities have increased over the last decade, cities need to introduce rigor and structure within their climate efforts, a lot of which remains disjointed and lacking coordination. One prerequisite can be to develop a common set of metrics through which cities can compare and discuss their progress. An agreed upon reporting framework can enable cities to assess their performance, compare themselves with other cities and share examples of best practices within urban mitigation initiatives (Corfee-Morlot et al., 2009). The CSCAF can be seen as an example of such a top down enabling framework, guiding cities to assess their climate performance and integrate climate change considerations into urban policies. By providing a common set of indicators as well as a ranking system, it allows cities to compare and discuss progress. Climate change policies in cities are still predominantly sector based rather than cross-sectoral(Bai et al., 2009). By including areas like biodiversity, which were previously not addressed in any assessment framework, this framework fosters an integrated approach towards urban climate action, playing a role in addressing the commonly seen policy gap in cities (Charbit, 2011).

The CSCAF exemplifies that political leadership from higher levels can foster the upscaling and translation of climate innovations across all levels (Corfee-Morlot et al., 2009; Jänicke, 2015; Kern & Alber, 2008). It also serves as a knowledge base, contributing to national inventories and emission targets. With a standardized local measurement system, city level policies could be eligible for certification schemes under the Kyoto Protocol, such as the Clean Development Mechanism, allowing cities to harness low cost options for emission reductions (Corfee-Morlot et al., 2009). Furthermore, the first version of the CSCAF was revised after incorporating feedback from local governments. This evidences that interlinkages between national and local governance levels allows for the modification and tailoring of national frameworks in accordance to the local context, thereby preventing misinterpretation and ineffective implementation of national policies at the local level (Adriázola et al., 2018; Bai et al., 2009). This also allowed the national government to grasp the local level challenges, such as insufficient technical capacity for the data collection and coordination required to implement the framework. To address this, the national government has advised cities to develop a multi stakeholder climate alliance in order to aid the implementation of the CSCAF. The climate alliance can be integrated with existing stakeholder forums like the climate core committee or the stakeholder committee, enabling local governments to identify synergies between multiple projects.

Figure 11 provides an overview of how the framework facilitates multilevel climate governance in India. A central guiding framework such as the CSCAF can also serve as a tool to get a broad

idea of *the outcomes of multilevel climate governance* by assessing the overall urban emission reductions achieved through the framework. However, this initiative has to be complemented with awareness creation about the framework at the local level and the provision of the necessary technical, institutional and financial capacities for city level implementation The CSCAF should also be accompanied with a related funding scheme. Moreover, interviewees were of the opinion that the national government should set up a monitoring and verification system to cross check the credibility of data submitted by cities. It is also essential to ensure that the city level initiatives have an equal focus on adaptation and mitigation. Post Covid 19, this framework can be used to guide cities in developing initiatives that achieve both climate and economic benefits.

On the whole, the CSCAF has an immense potential for invigorating local climate efforts, although it will take some time for the framework to be mainstreamed within cities. If properly implemented, the CSCAF has the potential to build stronger linkages between cities and the existing multilevel climate governance framework in India, enable national-local policy integration, facilitate the horizontal and vertical diffusion of local innovations and empower cities to contribute towards national level mandates.

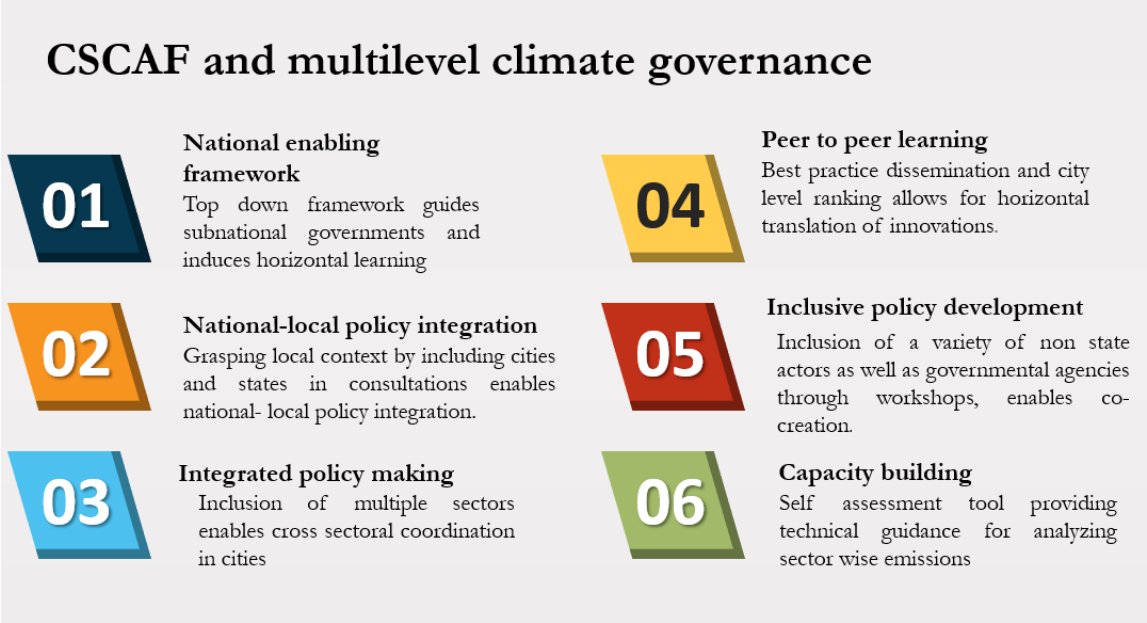

Figure 11: 6 factors linking the CSCAF and multilevel climate governance.

7.1.2 State-local interlinkages

It was observed that, as members of the stakeholder committee, state government representatives were also involved with developing the city level LEDS. The 74th amendment to the Indian Constitution was characterized by a shift in certain responsibilities from the state to the ULBs, entrusting them with functions such as urban planning, land use regulation, construction of buildings and roads, public health and waste management (Kumar & Geneletti, 2015). However, State governments still control and manage electricity provision, water supply boards, disaster management and pollution control boards. Moreover, they still play an important role in transferring funds and functions as well as providing an enabling legislative environment for local governments (Ahluwalia, 2019; Khosla & Bhardwaj, 2019). Hence, it is crucial that the three cities continue engaging with state governments during the policy planning and implementation phases. According to an interviewee, setting up a *state level entity* to strengthen state capacity for climate action and for overseeing the coordination with local bodies within the state remains a key area that intermediaries like UN-Habitat should focus on

(Interviewee C, personal interview, March 18th, 2020). State governments should develop a *multi stakeholder climate steering committee* similar to the climate core committees in cities. For example, the Odisha government has developed a "climate change cell" as a single window contact to coordinate climate change activities within the state, an initiative other states can take inspiration from (Jörgensen, Mishra, & Sarangi, 2015). Including legal mandates and guidelines for the creation of *city climate action plans* within the respective SAPCCs will further strengthen vertical coordination amongst states and cities, provide guidelines for city level administrative staff and ensure increased climate efforts by cities.

This study also highlighted that urban climate governance was implemented predominantly through governance by enabling, governance by authority and self-governing modes. This differentiation serves as a tool to analyze urban climate governance and the type of initiatives preferred by municipalities. The study reinforced the limited ability of local governments to govern through the provision of utilities. Unlike local governments, state governments control the provision of electricity and have the ability to govern by provision by ensuring the supply of electricity derived from renewable energy sources. At present, the state of Gujarat only utilizes 6.9% of its renewable energy potential while Maharashtra is utilizing a mere 4.3%. This emphasizes the need to improve the knowledge, technical and financial capacities of state governments to effectively harness their renewable energy potentials, thereby driving changes in the energy mix of local governments.

7.1.3 Barriers for multilevel climate governance

The barriers affecting multilevel climate governance in the three cities were in tune with those identified in literature, such as insufficient financial and technical capacities and a policy gap in terms of limited cross-sectoral coordination (Charbit, 2011). There was also a need to increase citizen involvement in policy making, ensuring better uptake of initiatives such as the use of energy efficient equipment, public transport, maintenance of public green spaces, etc. In India, citizens are provided with an opportunity to comment on draft policies. This should be further strengthened at the local level. One *recommendation* would be to involve citizens in the co-creation of solutions, taking in their feedback on the feasibility and existing support for policies, through workshops and consultations at the city level. Local governments can also implement joint management models, involving citizens in the management of public initiatives.

In a study of intersectoral and cross level policy interaction within Brazil and Indonesia's land use sector, it was identified that jurisdictional boundaries created barriers to cross level interaction (Di Gregorio et al., 2019). This was also identified in the cities under study, where limited jurisdictional authority and absence of interjurisdictional interaction impeded sufficient data collection to support policy making (Interviewee H, personal interview, April 9, 2020). Thus, cities need to extend climate action beyond these boundaries and incorporate an understanding of *peri-urban and hinterland dynamics* through a multilevel climate governance approach (Khosla & Bhardwaj, 2019). In order to assess implementation barriers, local governments can conduct a *holistic gap analysis* using tools such as "mind the gaps", a tool to diagnose capacity and coordination challenges, and tailoring it to assess governance gaps in each sector (Charbit, 2011). A holistic assessment can help identify solutions that address multiple gaps simultaneously. The tool is depicted in Appendix 3.

7.1.4 Role of intermediaries in enabling multilevel climate governance

Intermediaries played an important role in all three cities in assisting local governments with capacity building, policy development and funding. This observation was in line with the conclusion derived by Di Gregorio et al.(2019) wherein they anticipated that international actors would play a significant role in steering climate policy in the Global South mainly as sources of

finance. Within the Urban-LEDS project, intermediaries enabled local governments through increased access to funding, knowledge and awareness creation and improved technical capacities. By mediating between state and non-state actors within multiple governance levels, they facilitated national and subnational policy integration, the co-creation of knowledge and cross-sectoral policy making. In line with the roles described by Warbroek et al.(2018), intermediary organizations like ICLEI and GIZ engaged in knowledge aggregation and distribution through the dissemination of case studies and best practices. They also connected cities through platforms such as the European study tour, enabling them to learn new technologies and emulate best practices from different contexts. The impact of transnational municipal networks is contingent upon the type of intermediation between the network and the broader local policy networks within the city (Betsill & Bulkeley, 2003). Networks usually influence cities through an *"intermediary actor"* as the connecting point. In the case cities, this was usually the mayor or the commissioner. The governing capacity of networks is highly dependent on the level of influence that these "intermediary actors" have within local policy networks. In all three cities, these intermediary actors were open to external collaboration and were highly influential actors, thus enabling better uptake and implementation of transnational network initiatives within cities. The existence of political entrepreneurs such as city mayors was a key enabling factor influencing the network's governing capacity, as these actors have a strong decisive influence on the ground and act as windows through which the network can assess its progress (Kern & Bulkeley, 2009c).

Cities in developing countries often face budget constraints that limit their ability to broaden their climate portfolios. Local climate action is dependent upon regional, national and international regulatory frameworks and the associated resource flows. This was observed in the three cities as well. Studying the expansion and upscaling of local climate policies represents an upcoming research strand focused on bridging this gap. It identifies three types of upscaling, namely horizontal upscaling, vertical upscaling and hierarchical upscaling. The results of the study indicated the evidence of *horizontal upscaling* in the three cities, a form of upscaling based on good practice transfer through bilateral city to city connections. This was primarily catalyzed by the ICLEI, through their role as a knowledge aggregator and disseminator. Horizontal upscaling was also visible within the CSCAF through the dissemination of the best practice compendium which aggregated initiatives from pioneer cities. The influence of *vertical upscaling* was also evident, though to a smaller extent in comparison to horizontal upscaling. Vertical upscaling between cities, states and the national government is enabled by the establishment of regional institutions, national guidelines or funding programs, stimulating innovations in cities and towns which can then translate to upper levels. This results in the three governance levels mutually influencing each other. Vertical upscaling of local innovations was mainly enabled through the CSCAF and nationally driven missions such as the smart cities mission and AMRUT, targeting sustainable development at the urban level. The third type, *hierarchical upscaling* leads to local climate action through higher level mandates and legally binding targets, pushing even laggard cities to action. The NAPCC in India mandates states to prepare state action plans for climate change, but does not provide any common guidelines for doing so. Furthermore, the SAPCCs do not provide any mandates or guidelines for local climate action. Thus, there is very little interplay of hierarchical upscaling in the Indian context. The combination of horizontal, vertical and hierarchical upscaling within a multilevel context gives rise to a new governing mode known as *embedded upscaling***.** This concept, currently studied in the EU, can prove to be an important analytical tool to study the proliferation and mainstreaming of local climate actions in the context of developing countries (Chan et al., 2019). Figure 12 depicts embedded upscaling within multilevel climate governance

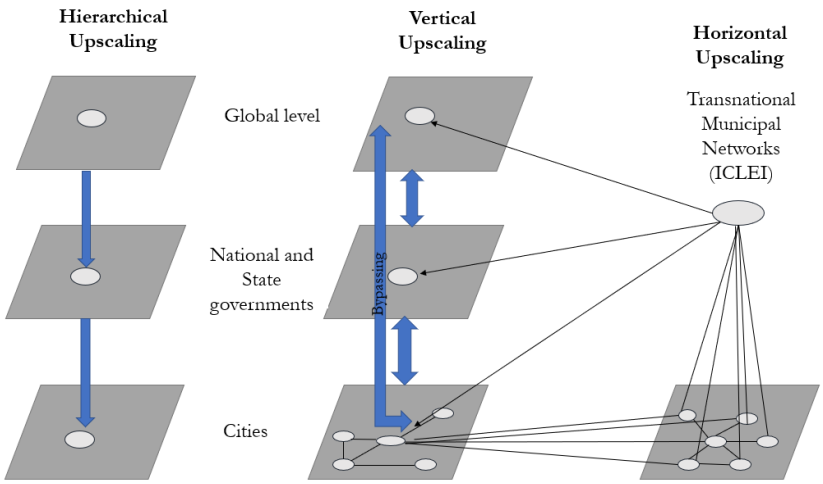

Figure 12: Embedded upscaling within multilevel climate governance

Source: Adopted and modified from (Chan et al., 2019)

The study highlighted that frequent changes in leadership proved to be a challenge for intermediaries due to the difficulty in reestablishing relationships with new leaders, who may not share similar perceptions. One *recommendation* to address this would be to focus on empowering and building ties with civil society. A climate conscious civil society can contribute towards electing like-minded political leaders. The complexity and multidimensional nature had resulted in the proliferation of *multiple intermediaries* working together within the same city. There is a need to ensure coherence and avoid overlaps by instigating partnerships and collaborations amongst intermediaries. This paper identifies the need for *interactive platforms* such as the PAG which allows multiple intermediaries within the same country or city to interact with each other and identify ways in which they can pool in their resources and collaborate, thereby ensuring systematic climate action (Interviewee J, personal interview, April 22, 2020). Another *recommendation* would be to identify a single point of contact like an individual or an agency within cities which coordinates the work of multiple intermediaries. For example, all intermediary projects can go through the mayor or a central climate core committee, who can keep track of multiple projects and direct intermediaries towards others working in similar areas. Cities can also approach intermediaries through an organization similar to the NDC partnership, but at the local level. This facilitates a bottom up approach where cities choose the intermediaries based on their local needs.

Areas for future focus within intermediary action

In terms of gaps to be addressed in the future, the interviewed intermediary representatives identified the need to increase the focus on adaptation, integrating both adaptation and mitigation initiatives within city LEDS (Interviewee F, personal interview, April 1, 2020). A *recommendation* would be to strengthen awareness amongst local officials about ICLEI's various projects at the city level and identify common synergies and tradeoffs, allowing for a more holistic implementation approach. An interviewee also felt that, as a result of better exposure to technologies, city level ambitions rose continuously, pushing intermediaries to consistently propose smarter solutions (Interviewee F, personal interview, April 1 2020). Thus, intermediaries are required to constantly keep up to date with existing research and innovations. With regards to the PAG, an interviewee felt the need for a better balance of participants between the technical and management side, including city level technical experts and donors, aside from political leaders, in order to gain insights into the priorities of financial agencies and municipal staff (Interviewee C, personal interview, March 18, 2020). This would enhance the

problem-solving capacity of the initiative. Moving on post Covid 19, an interviewee anticipated the further de-prioritization of climate change with an increased focus on rebuilding the economy (Interviewee G, personal interview, April 7, 2020). Thus, intermediaries need to focus more on enabling local governments to integrate climate resilience and economic regeneration, thereby implementing a co-benefits approach towards climate action.

The recommendations provided by the author in this section are summarized in Figure 13.

Recommendations for enhanced multilevel climate governance in the three cities

1. Training and institution of staff dedicated to climate change initiatives within each city level department.
2. Use of tools such as the multiple objective framework and climate lens for integrated policy making by city officials.
3. Conducting a city level holistic gap analysis using tools such as the "mind the gaps".
4. Development of a centrally driven holistic financial framework for urban climate action and modelling the funding scheme for the CSCAF on similar lines
5. Integrating the climate alliance under the CSCAF with existing climate core committees
6. Strengthening citizen involvement in development and implementation of local solutions
7. Enhancing mechanisms allowing citizens to comment on draft city level policies.
8. Setting up state level climate steering committees similar to the climate core committees in cities
9. Increasing the focus on enhancing citizen awareness of intermediary actions and local climate strategies to influence the election of climate conscious political leaders.
10. Appointing a single point of contact within the city to coordinate the work of multiple intermediaries
11. Institution of an organization similar to the NDC partnership at the city level
12. Enhancing the awareness of city officials regarding multiple strategies implemented by the same intermediary in the city, allowing for the identification of synergies.

Figure 13: Summary of recommendations provided by author

8 Conclusion

This final chapter concludes the thesis by summarizing the answers to the three guiding research questions and briefly highlighting some of the implications of this study for government officials, researchers and intermediaries.

RQ 1 *How is multilevel climate governance (targeting mitigation and adaptation) implemented at the city level through the Urban-LEDS II project?*

The strategies in all three cities were developed, implemented and monitored through a multi stakeholder approach driven by ICLEI's GCC tool, involving local government officials, private companies, state government representatives, intermediary organizations, national government representatives and academia. This collaboration was coordinated through cross-sectoral climate steering groups, allowing for the integration of certain low emission initiatives within urban development policies, although to a limited extent. The LEDS of cities were mostly driven by city level ambitions with limited influence from nationally enabling policies, indicating a hybrid multilevel climate governance framework. The national and state governments also provided feedback to the LEDS through platforms such as the PAG and Cities and Regions Talanoa dialogues. Local climate governance was mainly implemented through self-governing, governing through enabling and governing by authority modes, with limited governing through provision, as the control over electricity and water utilities lies within state governments.

RQ 2 *What are the perceived barriers and enabling factors for multilevel climate governance within the Urban-LEDS II project?*

Climate action in all three cities was driven by climate motivated leaders who were instrumental in the formation of climate core committees. Although this allowed for cross-sectoral policy integration, the sectoral fragmentation of climate initiatives still remained a barrier at the local level. There was also a need for increased engagement and policy alignment with the national and state levels. Targeting this, platforms facilitated by ICLEI and UN-Habitat enabled vertical collaboration and national-local policy integration. In line with existing literature, local climate action was also challenged by the limited flow of technical and financial resources from the higher governance levels. Intermediaries played a role in addressing this gap through the provision of technical capacity building tools and enhanced access to climate finance, guiding local governments through the stages of policy development, implementation and monitoring. Furthermore, within the Urban-LEDS II project, cities were assisted with the implementation of the CSCAF, a framework that enabled cities to assess their climate related performance, identify gaps and chart out a roadmap for the future.

RQ 3 *What roles do ICLEI, GIZ and UN-Habitat play as intermediaries facilitating multilevel climate governance in cities and what are the challenges they face? How do they contribute to strengthening governance capacities (such as information and knowledge, finance, coordination and cooperation and institutional capacities) at the national and subnational levels?*

Within the Urban-LEDS project, ICLEI played the role of an educator, improving local knowledge on climate related topics and enhancing technical capacity through training and workshops, engendering a holistic approach towards local climate action. They also connected cities, allowing for the transfer of technical knowledge and best practice information. As a builder, they helped improve financial capacity by connecting cities to funding organizations. UN-Habitat provided cities with advice and guidance on strengthening multilevel climate governance, with less focus on project implementation. GIZ played an instrumental role in developing the CSCAF, bringing multiple actors together on a common platform. They further

facilitated the testing and implementation of the framework, enabling national-local interlinkages and feedback loops. All three intermediaries facilitated the co-creation of climate policies at the local level through a multilevel approach, promoting horizontal knowledge dissemination amongst cities and facilitating vertical interaction between national, state and local governments. They faced a number of challenges during intermediation such as changing political leadership, influence of multiple intermediaries and outdated local planning guidelines. The PAG, implemented by ICLEI acts as a platform to enable synergies between multiple intermediaries within the same city.

8.1 Implications and recommendations for future research and practice

8.1.1 Implications for researchers

The findings of this thesis provide a broader description of how the three Indian cities implement multilevel climate governance, the associated barriers and enabling factors and the role of intermediaries in empowering local climate action, thereby contributing towards advancing research on multilevel climate governance in the Global South and highlighting the role of cities within India's multilevel governance framework (Beermann et al., 2016; Di Gregorio et al., 2019; Khosla & Bhardwaj, 2019; van der Heijden, 2019). This study uses the role theory to elucidate the multitude of roles played by the three intermediaries in advancing urban low emission development within the Urban-LEDS project. It presents a novel addition to the study examining ICLEI's roles in enhancing urban biodiversity conservation, conducted by Frantzeskaki et al.(2019), by analyzing the roles of intermediaries within the new context of low emission development and identifying additional roles. The roles identified in this thesis can serve as a starting point for future studies in this field. Although the study highlights the role of intermediaries towards enhancing multilevel climate governance, it also warrants further research, exploring the downsides of intermediary action and identifying alternate action models that eliminate the creation of unsustainable path dependencies between intermediaries and local governments. The initiatives fostering collaboration between multiple intermediaries along with the challenges impeding intermediation, highlighted in this paper adds to the limited literature on these topics and should be researched further (Kanda et al., 2020; Kivimaa et al., 2018).

8.1.2 Implications for policymakers

As evidenced by the results, it was clear that the three cities understood the need for a multilevel climate governance approach and were attempting to implement the same within the Urban-LEDS project. With respect to policy implications, this study emphasizes the need for greater involvement of state and national levels in terms of financial and technical capacity building at the urban level. It calls for enhancing state level capacity to govern climate change, especially through the provision of utilities derived from low emission energy sources. Furthermore, States should also include mandates and guidelines for local governments to develop mitigation and adaptation strategies and provide budget allocations for the same. This thesis represents one of the first studies examining the novel Climate Smart Cities Assessment Framework and provides the national government as well as GIZ with a better insight into how cities perceive the framework, the challenges and enabling factors for its implementation at the city level and recommendations for its improvement. Implementing a harmonized urban GHG emission inventory framework like the CSCAF, will allow the national government to assess performance and compare across urban locations within a nation to help policy makers understand the nationwide mitigation potential and overall progress. By presenting an overview of how the framework facilitates multilevel climate governance in India, the study tries to bridge theory with practice, providing policymakers with an idea of how the multilevel governance theory can be implemented in reality. The implementation of the CSCAF as a tool to facilitate multilevel

climate governance and guide local climate action should be strengthened, harnessing its full potential and constantly improving it through continuous city level feedback loops and learning from similar instruments in other contexts.

8.1.3 Implications for intermediaries

This study attempts to provide a holistic understanding of how the Urban-LEDS project facilitates multilevel climate governance in India and the various roles undertaken by intermediaries. This can serve as a starting point to kickstart discussions with project stakeholders regarding the topic of multilevel climate governance and its relevance. By shedding light on some of the existing challenges and enabling factors perceived by intermediary representatives and local government stakeholders, this study allows intermediaries to address these gaps and focus on strengthening the enabling factors, thereby improving overall project effectiveness. Intermediaries should continue focusing on improving the CSCAF as well as the local capacity required for its implementation. Further research should delve into how national governments can institutionalize mechanisms for subnational interaction and mobilization of climate funding, thereby reducing the dependency on intermediaries, taking inspiration from platforms such as the Talanoa Dialogues. Moving on to the third phase of the Urban-LEDS project, this study emphasizes the need to shift the focus towards integrating adaptation and mitigation and assisting cities in adopting a co-benefits approach. Harnessing both climate and economic benefits will become an integral part of rebuilding urban economies post Covid 19.

With the increasing influx of intermediaries focused on enhancing multilevel climate governance at the local level, supported by the growing awareness and efforts of the national government, it is likely that Indian cities will continue to make headway in strengthening climate action through a multilevel governance approach.

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Appendix A: Interviewee list

Interviewee name	Designation	Organization	Interview date
Interviewee A	Deputy Commissioner	Rajkot Municipal Corporation	March 9th 2020
Interviewee B	Technical Expert	GIZ	March 12th 2020
Interviewee C	Program Manager	UN -Habitat	March 18th 2020
Interviewee D	General Manager (Environment)	Nagpur Smart and Sustainable City Development Corporation Limited	March 30th 2020
Interviewee E	City Project Officer	ICLEI South Asia	March 30th 2020
Interviewee F	Manager-Energy & Climate	ICLEI South Asia	April 1st 2020
Interviewee G	Consultant	UN-Habitat	April 7th 2020
Interviewee H	Ex- Deputy City Engineer (Electrical)	Thane Municipal Corporation	April 9th 2020
Interviewee I	Sr. Project Officer - Sustainability Management	ICLEI South Asia	April 9th 2020
Interviewee J	Deputy Manager, Energy and Climate	ICLEI South Asia	April 22nd 2020

Appendix B Interview questionnaire

Questions for local government representatives

1. Is the low emission development strategy a city initiative or is it driven by the National or State policies?

2. Who are the stakeholders involved in drafting and implementing the Low emission development strategy (LEDS) for your city?

3. How do you interact and coordinate?

4. What governance instruments (such as platforms for stakeholder consultation, Talanoa dialogues, frameworks, etc) are used in the drafting and implementation of LEDS?

5. What have been the benefits of being a part of ICLEI's URBAN low emission project?

6. How is the Climate Smart Cities Assessment Framework (CSCAF) being implemented in the city?

7. What are the challenges and drivers for implementing the CSCAF framework?

8. What were the key takeaways from the city-city Talanoa dialogues? What were the challenges and drivers for engaging with these dialogues?

9. What are the main sources of funding for the city in order to implement low emission initiatives?

10. What are your current priority needs for continuing implementation of climate ambitions in your city?

Questions for ICLEI

1. How do you perceive your organization's role within a multilevel governance framework?

2. How do you interact with cities, national and state govts for the URBAN LED project?

3. One problem highlighted in research was how different intermediary organizations effectively work with each other and coexist. How do you effectively work with other organizations to avoid overlaps and ensure each organization has unique contributions?

4. In terms of the Urban- LEDS project, what did you find to be the main challenges and enabling factors in facilitating multilevel governance in cities?

5. What do you think are the enabling factors for cities and for national and state governments for effective implementation of the Urban- Low emission development strategy?

6. You are always referred to as a relevant example for a transnational municipal network. What are the strengths and weaknesses of your transnational municipal network for climate governance?

7. What are the benefits of the talanoa dialogues? (for cities, for you, for other actors)

8. How were you involved with the CSCAF? If so, what do you think are the benefits of this platform for cities?

9. What do you think were the key takeaways from the Project Advisory group meeting? What can be improved for the future meetings?

10. What is the need of the hour for Urban-LEDS II, moving forward from phase 1?

Questions for UN-Habitat

1. How do you perceive your organization's role within a multilevel governance framework?

2. How do you interact with cities, national and state govts for the Urban- LEDS project?

3. One problem highlighted in research was how different intermediary organizations effectively work with each other and coexist. How do you effectively work with other organizations to avoid overlaps and ensure each organization has unique contributions?

4. In terms of the Urban-LEDS project, what did you find to be the main challenges and enabling factors in facilitating multilevel governance in cities?

5. What do you think are the enabling factors for cities and for national and state governments for effective implementation of the Urban Low emission development strategy?

6. Were you part of the Talanoa dialogues? If so, what do you think are the benefits of this platform?

7. Is UN Habitat involved with the CSCAF? If so, how do you think this framework benefits cities?

8. Did you take part in the first PAG? What do you think were the key takeaways from the Project Advisory group meeting?

9. What is the need of the hour for Urban -LEDS II, moving forward from phase 1? (current priority needs)

Questions for GIZ

1. What vertical level and horizontal level actors do the national government engage with for developing and implementing the CSCAF? (state and non-state)

2. How will CSCAF improve the coordination and implementation of the smart cities mission?

3. Who are the national and local stakeholders involved in implementation of the CSCAF?

4.What instruments are used? (like consultation platforms, technical workshops, surveys, etc.)

5.What are the challenges for collaborating with local governments within this framework?

6.What are the enabling factors facilitating the implementation of this framework?

7.What do you think are the enabling factors that will help the city implement this assessment framework?

8.How are non-state actors like ICLEI and GIZ facilitating city collaboration?

Appendix 3 Mind the gaps: A diagnostic tool for coordination and capacity challenges

Information gap	Asymmetries of information between different stakeholders (Need for instruments for awareness and information)
Capacity gap	Insufficient scientific, technical and infrastructural capacity of local actors particularly for the design and implementation of strategies (Need for capacity building instruments)
Funding gap	Unstable or insufficient revenues undermining effective implementation of subnational responsibilities and cross-sectoral policies (Need for shared financing mechanisms)
Policy gap	Sectoral fragmentation across ministries, agencies and departments (Need for mechanisms to create multidimensional/systemic approaches at the sub national level and to exercise political leadership and commitment)
Administrative gap	Mismatch between functional areas and administrative boundaries (Need for instruments for reaching effective scope)
Objective gap	Divergent rationalities creating obstacles for adopting integrated targets (Need for instruments to align objectives)
Accountability gap	Difficulty to ensure transparency of practices across multiple constituencies (Need for institutional quality measurement, need for instruments to strengthen the integrity framework at the local level, need for instruments to strengthen citizen involvement)

Appendix 4: Indicators within the CSCAF

Energy and green buildings	Urban planning, green cover and biodiversity	Mobility and Air	Water Resources Management	Waste management
Percentage of electrical power in the city derived from renewable energy	Climate action plan	Low carbon mobility	Water resources management and assessment	City demonstrates reduction in waste generation in the last 5 years
Per capita and per area electricity consumption for municipal services	Disaster resilience	Low carbon buses	Extent of non-revenue water	Extent of recyclables recovered and SCF/RDF utilized
Per capita fossil fuel consumption for municipal services	Rejuvenation and conservation of urban environment	Extent of increase in public transport ridership	Flood risk assessment and management	Recycled aggregates and recycled concrete aggregates derived from city construction waste
Energy efficient street lighting in city	Proportion of green cover	Percentage of non-motorized transport network coverage in the city	Wastewater recycle and reuse	GHG emission reduction due to improved municipal waste processing and treatment facilities
Level of compliance procedures in place for green buildings	Proportion of native tree species	Clean air action plan	Energy efficient wastewater management system in city	Scientific landfill available with city as per SWM Rules 2016
Percentage of buildings securing third party green building certification	Urban biodiversity coverage	Level of air pollution	Energy efficient water supply system in the city	Scientific landfill gas management