ENABLERS OF MULTI-STAKEHOLDER COLLABORATIONS THAT FACILITATE URBAN CLIMATE CHANGE RESILIENCE: EXPERIENCE FROM SURAT, INDIA

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Abstract: Planning for climate change resilience is one of the most complex challenges that cities face at present. Creation of functional multi-stakeholder collaborations is a critical component in a city's resilience effort. The disaster-prone city of Surat has developed effective working collaborations in the area of public health post the 1994 flood and the subsequent plague outbreak. We studied the institutionalised multi-stakeholder collaboration "Surat Climate Change Trust (SCCT)" and other collaborative efforts. By thematic analysis of semi-structured interviews with key informants, such as officials of Surat Municipal Corporation (SMC), SCCT members, academics, and citizens, we have identified operational, situational and cultural enablers of such collaborations. Understanding these enablers has significant policy relevance to help design interventions that nurture multi-stakeholder collaboration in cities.

Keywords: Multi-stakeholder collaborations, Climate Change, Urban Resilience, Urban Management, Surat.

1 INTRODUCTION

The term "urban climate change resilience" is gaining importance in academic discourses and public policy in the face of frequent catastrophic climate events. The global concern of rising frequency in deadly natural disasters is mounting.[1-5] Planning for climate change resilience is an intricate challenge especially for "cities" due to their rapid growth and high proportion of vulnerable groups.[6] Urban areas represent complex systems and concentrate risk. Failures in urban governance compound the effects of rapid and slow onset disasters.[7] In response, collaborative activities are evolving as the potential approach in overall urban governance.

In this paper, we examine possible factors which have encouraged such collaborative activities in the city of Surat (India). We also intend to provide the conceptual categorisation framework for such kind of analysis.

In vulnerable and growing cities such as Surat, the challenges posed by climate change are very acute.[8] As a response to massive floods and resurgent infections in Surat, collaborations have been developed over the time for building the city's resilience. For example, the 2006 flood resulted in 90% of the city being flooded, an industrial economic loss of rupees 160 billion, and an outbreak of leptospirosis. In contrast, in 2013, though the amount of water that got released from the dam was similar compared to 2006, only 30% of the city was flooded and the case fatality rate due to leptospirosis was at 6.2 compared to 11.3 in 2006. The incidence of malaria P. falciparum has significantly reduced over this time period.

In this paper, we assess what factors enabled formation of multi-stakeholder collaboration (MSC) in the city, such as the Surat Climate Change Trust (SCCT) and other collaborative efforts between various stakeholders including the government, academia, citizens, NGOs, funding agencies, expert groups and the private sector. The paper first outlines importance of MSCs. It then introduces MSCs in Surat and discusses what factors have encouraged these MSCs. Three categories that emerged for enablers of MSCs, namely, situational, operational and cultural are discussed.

2 MSCs: AN EMERGING APPROACH FOR RESILIENCE

The Intergovernmental Panel on Climate Change (IPCC) defines 'resilience' as 'the ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity of self-organisation, and the capacity to adapt to stress and change'.[9] According to Tylor's Urban Climate Resilience Framework, resilience in urban contexts is focused on the interactions between people, the existing systems on which they rely such as electricity, water and ecosystems, and the institutions that connect systems to people, such as land tenure systems, legal frameworks and planning processes.[6]

Collaborative activities have become more prominent and extensive in all sectors across nations in the past decades, resulting in a "stunning evolutionary change in institutional forms of governance" since the 1980s.[10] They are being promoted as potential approaches to jointly address challenges such as economic development, education, healthcare, poverty alleviation, community capacity building, and environmental sustainability. Platforms that influence global environmental discourses, such as the World Summit for Sustainable Development in Johannesburg 2002, speaks the language of building consensus, sharing common goals and promoting partnerships.[11] The United Nations International Strategy for Disaster Reduction (UNISDR), for example, include multi-stakeholder platforms as a mechanism that serve as an advocate for disaster risk reduction (DRR) for the coordination, analysis and advice on areas of priority needing concerted action.[12]

In the Indian context, climate change and health policies have started recommending collaborative activities. (See Table 1).

Policy/ Plan	Extracts highlighting the need of collaborations
National Action Plan on Climate Change, Government of India (2008)	....These national missions will be institutionalised by respective ministries and will be organised through inter-sectoral groups which include in addition to related ministries, ministries of finance and planning commission, experts from industry, academia and civil society... In order to respond effectively to the challenge of climate change, the government has created an advisory council on climate change, chaired by the prime minister. The council has broad-based representation from key stakeholders, including government, industry and civil society, and sets out broad directions for national actions in respect to climate change.[13] *(Source: 'Implementation of missions' in "National Action Plan on Climate Change, GoI" pg. no. 5)*
National Health Policy draft, India (2015)	The task of providing health care for all cannot be undertaken by the government alone. It would also require the participation of communities, who view this participation as a means and a goal, as a right and as a duty. It would also require the widest level of partnerships with academic institutions, not for profit agencies and with the commercial private sector and health care industry to achieve these goals.[14] *(Source: 'Key policy principles' in "National health policy draft, 2015, GOI" pg. no. 13)*
National Policy of Disaster Management	A holistic and integrated approach will be evolved towards disaster management with emphasis on building strategic partnerships at various levels. The themes underpinning the policy are: • Community-based Disaster Management, including last mile integration of the policy, plans and execution. • Capacity development in all spheres. • Consolidation of past initiatives and best practices. • Cooperation with agencies at national and international levels. • Multi-sectoral synergy [15] *(Source: 'Approach and objectives' in "National policy of disaster management 2009, GoI" pg. no. 9)*

Table 1: Policy discourse promoting collaborative activities

However, MSCs is still an emerging concept. It has a number of competing definitions and the term is frequently used interchangeably with other similar terminologies.[16, 17] One popular definition given by Steins and Edwards (1999) for Multi-stakeholder Platforms – *"Decision making bodies (voluntary or statutory) comprising different*

stakeholders who perceive the same resource management problem, realise their interdependence for solving it, and come together to agree on action strategies for solving the problem." [18] For sharing our research work, we consider the same definition.

Literature on MSCs talks about two properties: (a) the diversity of participants who represent different interests, sectors and backgrounds, and (b) the requirement that they come together to think and make decisions towards some specific objective.[19] The base of MSCs is considered as the recognition of importance of equity and accountability in communication between stakeholders, and the democratic principles of transparency and participation.[20]

While explaining the capacity of 'resourcefulness' of urban agents, the urban climate change resilience framework stresses upon collaborations. [6] Literature (for example, see Introduction chapter of [20] pp 2) suggests the need for a body of knowledge that can unfold the process-mechanics of MSCs.

We examine collaborative efforts in Surat, existing in institutionalised and non-institutionalised forms for a broader climate change resilience frame. Management literature elicits multi-dimensional possibilities in MSC research. Selsky and Parker (2005) categorise research directions into five arenas:

1. Theory, i.e., Strengthening the conceptual understanding of this field
2. The actual practice of partnerships
3. Macro or micro level processes involved
4. The methods used to study MSCs
5. Political or critical inquiry, for example, power dynamics [16]

SCCT is at an incipient stage. The functioning of SCCT, its initiatives and its impact can be better studied when it will mature as an institution in the long run. Considering the infancy stage of the institution, we focused on key analytical question as - "*What factors have encouraged bringing stakeholders together in the city of Surat?*" It fits more with the 'theory' and 'process' aspects of research directions mentioned above.

India is a climate-sensitive nation, and is ranked high amongst the nations exposed to climate change risks. A growing number of guidebooks are now available to support local governments in assessing climate change impacts and developing responses (see, for example, "The climate resilience framework: a tool for local planning" of [6] and "Introduction" of [21]). But the documentation of the practical local planning experience from cities where such initiatives are active will also benefit policy makers and urban practitioners. Surat is, perhaps, the only city in India which has institutionalised MSC to combat climate change. An inquiry into this can be the learning for other cities to create such platforms in the coming time and to orient urban practitioners with the idea of MSCs itself.

3   THE SURAT CITY CONTEXT

Surat is the fourth fastest-growing city in India with population of 4.5 million. The city is vulnerable to multiple stressors, such as repetitive floods owing to its location along the river Tapi, changing rainfall patterns, city limit extension, high population density, high immigrant population, rapid industrial development activities, high disease burden (vector and water borne), and resurgent infections. These stressors make the city vulnerable to climate change risks and health hazards.[8, 22-23]

Figure 1: Surat city map

Surat has experienced 23 floods in the last 100 years. The massive disasters experienced by the city in the past two decades include flooding in 2006 and epidemics in the post-flood period, plague (1994) and leptospirosis (2006 and 2013). The lessons learnt from the 1994 and 2006 episodes were used for subsequent post-flood public health interventions in 2013. The city has strong international partnerships in climate adaptation networks and has received much attention for its interventions in urban resilience planning.[8]

The collaborations in Surat city can be elaborated as follows:

3.1 Surat Climate Change Trust (SCCT)

The SCCT is an 'institutionalised' MSC in Surat. SCCT was established under the Bombay Public Trust Act, 1950 with the mandate to engage in policy advocacy regarding urbanisation and climate change, to assess urban growth scenarios and to advise the local government on sustainable habitat development. SCCT has diverse representatives, namely, local government – Surat Municipal Corporation (SMC), local elected representatives, leading multidisciplinary academic institutes such as Centre for Social Studies (CSS) and Sardar Vallabhbhai National Institute of Technology (SVNIT), individual technical experts, Southern Gujarat Chamber of Commerce & Industry (SGCCI), and the State Irrigation Department.

Initiatives of SCCT include:
1. Networking with local institutions and subject experts to address climate change impacts in an effective manner.
2. Inter-departmental convergence in terms of knowledge sharing and technical support
3. Advocacy within key government departments to mainstream climate change in future development plans
4. Convincing SMC to allocate a budget of INR 10 million for climate related activities

The Trust is spearheading two key interventions within the city.

3.1.1 End-to-End Early Warning System (EWS)
This intervention involves setting up an end-to-end EWS to reduce the intensity of floods and resultant flood damage in Surat city. The EWS will help provide timely flood information to the city administration.

3.1.2 Urban Health and Climate Resilience Centre (UHCRC)
The UHCRC is the first of its kind dedicated research centre to work on urban health and building climate resilience. The centre is expected to improve urban health management through evidence-based research, improved surveillance, and the development of operational procedures among the city's lifeline service departments.

3.2 Other collaborative activities in Surat

The MSC in focus for this study is the SCCT. However, SCCT cannot be studied in isolation and other collaborative activities between the SMC and other city stakeholders are essential to consider.

3.2.1 SMC and academia collaborations
The collaborations between SMC and local academic institutes exist on the basis of the situation and need, and there is no routine research practice followed. For example, mid-term evaluation of Door-to-Door Garbage Collection (DDGC) programme run by SMC was carried out by CSS in three municipal zones, or flood modelling studies were conducted by SVNIT after the 2006 flood. Another striking example of a need-based collaboration can be the disease surveillance activities carried out by SMC Health Department and the Government Medical College, Surat.

3.2.2 PPPs for Disease Surveillance
The partnership is a systematic one where medical doctors engaged in private practice and SMC are the active stakeholders. (See for example, "Public private partnership for medical care" documented in [24]) More than 380 private practitioners and several major hospitals in city share Vector Borne Disease data with SMC. They constitute a part of a passive disease surveillance system. SMC zone offices conduct timely workshops and pre-monsoon meetings with private medical associations to discuss disease trends, infections, possible actions and responsibilities in disasters.

3.2.3 PPP between SMC and Industry: Weir cum Causeway Project

The project (1992-1995) was a PPP between Hazira Area Industries Association (HAIA) and SMC. The project was executed and financed by HAIA and handed over to SMC for operation and maintenance. The reservoir of the weir serves both entities. It provides drinking water to the citizens of Surat and HAIA draws water for their industrial requirements. The weir has improved water supply for Surat by providing a standing pool of freshwater. It has also prevented the ingress of tidal water and drifting silt entering the infiltration well area during high tides.

3.2.4 Collaboration between SMC and informal stakeholders like citizens, volunteer groups

Disaster-specific citizen-SMC collaboration are evolving over time and becoming more formal. For example, community representation has been formally incorporated now in SMC Disaster Management Plan.[25] This collaborations can are 'situation-based'.

After sufficiently understanding this context of Surat city and existing collaborations, the discussion can be led further to enlist how and what enablers have caused these collaborations.

4 METHODOLOGY

Literature on methodology for stakeholder studies recommends the use of qualitative interviewing methods for stakeholder studies, highlighting its contrast with survey research methods.[26] Key informant interviews (KIIs), which utilized open-ended questions, served as the major data source for this research. The fieldwork was conducted in Surat between April 2014 and December 2014. Stakeholder mapping was conducted with the help of local subject experts while ensuring representation from the MSCs that were considered for the study. In all, 18 Key Informant Interviews (Refer appendix 2) were undertaken. Officials of SMC, SCCT members, academics, and citizens were the key informants.

Other data sources include participant observation in city-level meetings and events regarding climate resilience and secondary research. One of the institutions involved in carrying out this research is Urban Health & Climate Resilience Centre (UHCRC), which in itself is an initiative by SCCT. UHCRC had access to city-level meetings and events regarding climate resilience. The field notes were used as data source. Secondary research considered city-specific international reports, scientific investigations and press reports. The qualitative data were organised, manually coded into themes and analysed with consensus within the research team.

We see two limitations in present research – i) although we ensured representative sample in interviewed stakeholders, the sample size was relatively small. Higher sample size could have enriched the understanding. ii) UHCRC, being part of SCCT, might have brought a set of biases, although we have tried to mitigate that as far as possible.

5 FINDINGS AND DISCUSSION

5.1 Emergent categorisation of enablers for MSCs in Surat

The data analysis resulted in three emergent categories: situational, operational and cultural. The research team defined the emergent categories as follows:
1. Situational enablers: The trigger is within in particular situations, as in this case, it was disasters that provided the impetus to collaborate
2. Operational enablers: Originates in systems and their functioning
3. Cultural enablers: Often underlying existing systems, rooted in history, values, attitudes and behaviours

Although the categorisation of enablers is 'emergent', the categories can be viewed in relation with other fundamental research in policy studies. For example, Leichter's categorisation of "factors of context", widely considered in development of policies and strategies [27] is as follows:
1. Situational factors, i.e. the specific conditions of a moment in history that impact policy changes
2. Structural factors, i.e. the relatively unchanging circumstances of the society and polity, such as the structure of the economy and the political system
3. Cultural factors, i.e. the values and commitments of society as a whole and groups within it
4. Exogenous factors, i.e. the events and values outside any one country or system that influence it

The two emergent categories of enablers, i.e. situational and cultural, are similar to Leichter's classification of factors of context. What Leichter considered as 'structural' and 'exogenous' factors find a place in the 'operational' category.

It should be noted that this distinct categorisation is meant for conceptual understanding. In practice, enablers work together in influencing outcomes.

The enablers in Surat city context are enlisted with their specific characteristics the figure below.
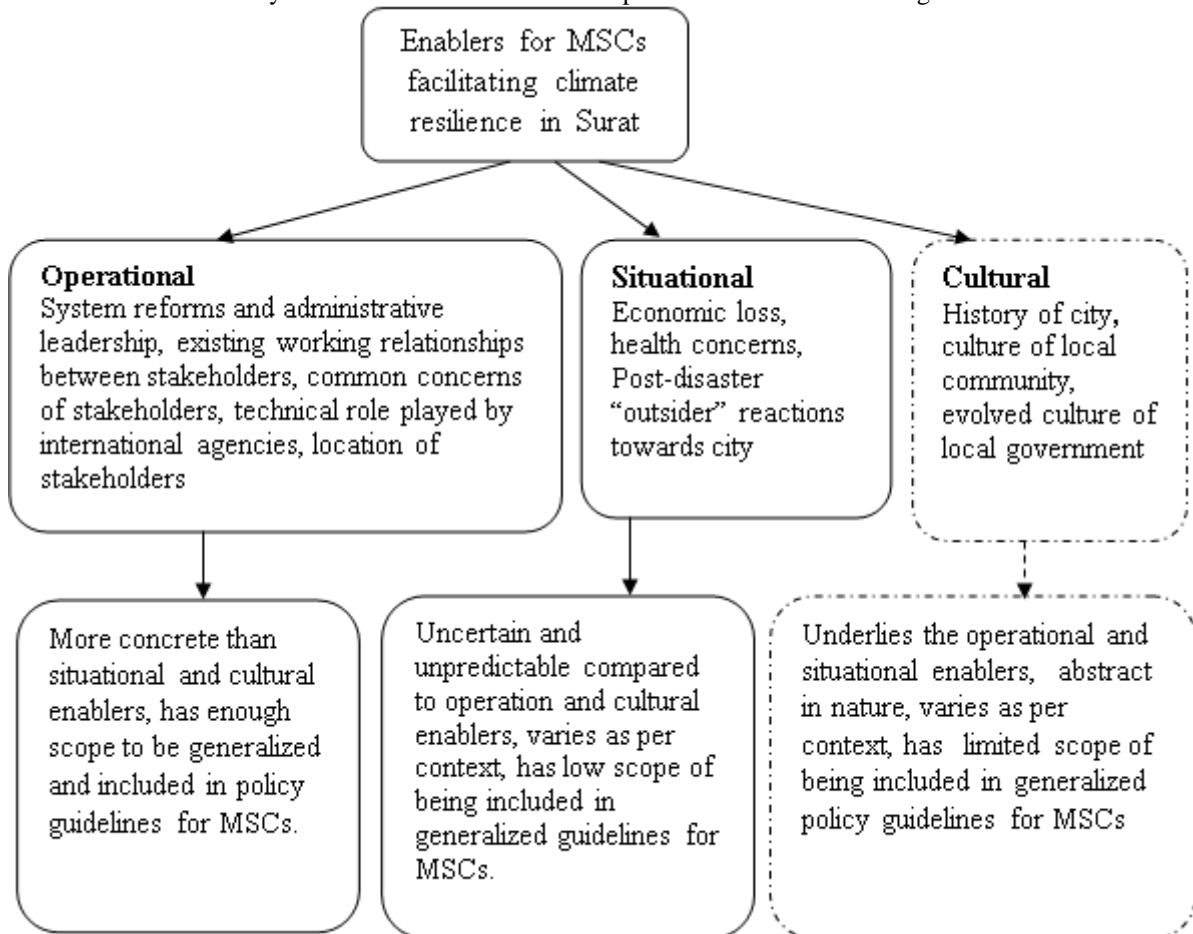
Figure 2: Enablers for MSCs in Surat city: List and characteristics

5.2 Situational enablers for MSCs in Surat

Situational enablers are those which few people call as *'ability of the city to convert adversity into an opportunity'*. Key informants unanimously speak about two disasters in Surat's case, namely, the plague epidemic in 1994 and the devastating flood in 2006.

5.2.1 Economic loss

Surat is an economically prosperous industrial centre which has experienced one of the most rapid economic growth rates among cities in India in recent years.[22] It is home to textile and diamond industries. Given that the city thrives on trade and business, it is not a surprise that 'economic loss during disasters' was spelt out as an essential enabler.

The plague in 1994 threatened the city's economic success. When news of the plague spread, one fourth of Surat's population (0.7 million) fled the city.[28] Migrant labourers ran away from the perceived 'unsafe' city atmosphere. The lack of trust regarding the health conditions in the city prevented residents from returning to the city. The business community was heavily affected. It took several months to restore trust in the security of Surat after this episode.

The flood in 2006 disrupted the economy again. Industries took nearly one month to bounce back from direct flooding-related losses and indirect losses like absence of workers. The total industrial loss was INR 160 billion, out of which three-fifth were direct losses and rest from loss of production. Around 77 per cent of the working population lost between 15 and 30 days' work.[22] The increase in the incidence of floods led to the decrease of

investments in city. Industries are by now familiar with annual losses of 2-3 working days as a result of creek floods.

Economic losses have acted as an enabler for responses and resource sharing by the business community. The Southern Gujarat Chamber of Commerce and Industries (SGCCI) has been actively involved with SMC, academia and international funding agencies in all climate change resilience efforts and also in the formation of the Surat Climate Change Trust.
Research needs were emphasized and collaborations built in the aftermath of the floods. For example, "Hydrodynamic Modelling Studies for River Flood Prediction" project was carried out by academia. SMC provided hydrologic and topographic data for this project.

The lead academician, working as Head of the Civil Engineering Department of a lead academic institute explains,

> "The 2006 episode created much panic in the city and was characterised by enormous losses in crores. The need of the hour was scientific work and solutions. This precipitated the need for dedicated research work in water resource and flood management. In 2013, we presented our findings to the commissioner and the city engineer. We had four rounds of intense discussions. We believe that researchers and policy makers should work together."

Economic loss, therefore, turned out to be a crucial situational enabler in this traditionally industrial city.

5.2.2   Health concerns
Surat's climate adaptation initiative is heavily focused on public health (controlling vector-borne diseases, in particular).[8] The geo-physical and socio-demographic environment of Surat is conducive to vector breeding and vector borne infections. In the 1950s, filariasis, and in the 1990s, malaria, including falciparum malaria, was a major public health challenge for the city. For example, half a million slum dwellers across the city face high flood risks and are exposed to vector-borne disease risks.[8, 22, 29] In the last two decades, the city experienced two post-flood resurgent infections – the plague in 1994, and leptospirosis in 2006 and 2013. These health concerns worked as enablers for different collaborations, such as the PPP between SMC and private medical practitioners. Health system reforms took place in the aftermath of the1994 plague. The city felt a strong need for convergence between sanitation, water supply and health interventions.

In the interview with the Deputy Commissioner (health and hospitals) of SMC, the precarious health situation was referred to as an enabler:

> "PPP in public health field began in 1995-96 in the city. As the data of various diseases is very important and government disease statistics alone cannot give the health scenario of the whole city, the disease data from private institutions is also essential. In 1996, we identified five private doctors whose practice was very good and were ready to share the data of their clinics with us. Our health worker used to go to their clinics and collect the data, and we could gather the data and work with them."

The leptospirosis emergency in 2006 was a similar enabler of PPPs in health.[24]

A representative of medical association explains the importance of such collaborative efforts.

> "Citizens mostly prefer their family doctors for treatment. As a result, we know what communities prefer, what are their concerns, how they behave… In our joint pre-monsoon meetings with north zone health department of SMC, we contribute through knowledge from our routine practice…"

Health concerns, therefore, represent a strong enabler for collaborations in health hazard-prone Surat.

5.2.3   Post-disaster reaction of 'outsiders' towards the city
The 'city' is not an isolated unit but it is linked with a number of external forces at scales of the local, national and international. These resonate with 'exogenous' factors elaborated by Leichter.[27] Post-disaster reactions of these 'outside' forces, either appreciating or tarnishing the city image, worked as one of the situational enablers for MSCs.

- Post-plague criticism (1994): The image of Surat being a 'filthy city', different stakeholders come together and review the situation [29, 30]
- Following the 1994 plague epidemic, Surat city metamorphosed into a well-governed city and a clean city with several award-winning urban development and health initiatives to its credit. Such recognition encouraged MSCs.

5.3   Operational enablers

Operational enablers are concerned with systems and their functioning.

5.3.1 System reforms and administrative leadership

The 1994 plague epidemic led to a series of reforms in the city's health services sector and India's first large-scale urban sanitation and public health program was conducted. The Municipal Commissioner, Mr Rao, initiated certain measures to make the administration effective. The steps were related to motivating the staff, making structural changes in the administration and the decision-making process.[29] In order to bridge the gap between the executive and elected wing of SMC, committees were created. This strengthened SMC's role in working in a collaborative mode.

System reforms, in addition to strengthening existing MSCs, gave birth to new MSCs, for example, citizens-SMC informal partnerships. In the words of a local academician from social science, "SMC came into day-to-day consciousness of citizens after system reforms post 1994."

The following statement by another key informant shows how this operational enabler has worked at different points of time in the last two decades:

> "In 1994, Surat suffered from floods and subsequent plague. In 1998, experiences from 1994 helped and the city was cleaned rapidly… In 2006, a complete waste management plan was visible. NGOs, citizens and administration worked in synchronisation. Former commissioner was called for monitoring the activities and chief minister used his experience of 1994… Surat city was saved from diseases… Enthusiasm of the citizens to keep the city clean was evident in 2006. They knew the history, and they didn't want history to be repeated."

Even in case of SCCT, the municipal commissioner has taken interest and is one of the trustees.[22] This leadership has been recognised as exceptional in all ACCCRN funded cities.[31]

5.3.2 Financially robust local government

SMC is financially stronger than other municipal corporations. This has had an impact on stakeholder engagement and SMC's involvement in SCCT formation. For example, SMC has allotted 10 million rupees in the budget for climate change related activities. The city is highly regarded for its urban management, which includes a strong revenue base. It has an average annual gross income of around INR three billion (around US$ 70 million).

5.3.3 Existing working relationships between stakeholders

Surat was compared by few informants with a metropolis like Bombay or Delhi. This increases the frequency of interactions among stakeholders. Stakeholders often meet and work each other in different forums. For example, regular 'event mailing list' of CSS covers certain SMC officials.

Existing networks were leveraged to build trust and foster collaborative action. In case of SMC-academia collaboration, for example,

- The strong identity of academic institutions at the city-level in their core subject area is an enabling factor. For example, Centre for Social Studies in social sciences and Sarvajanik College of Engineering and Technology in architecture.
- Association of SMC officials with academic institutions have been crucial. Many officials are alumni of academic institutions in the city. Heads of institutions are appointed on technical committees of SMC. For example, hydraulic engineers of SMC are alumni of SVNIT and health officers are alumni of Government Medical College, Surat. CSS faculty members are part of the Monitoring and Evaluation Committee of SMC. The director of SVNIT played the role of Chairman, Technical Committee, and SMC. These factors worked as enablers in the creation of SCCT as well.

5.3.4 Common concern of stakeholders

Most of the informants reported that climate change adaptation initiatives are the need of the hour. Climate change is evident from perceived weather pattern changes, increased frequency of floods, changing trends of vector borne diseases, and increased air pollution.

A network of influential people in the city who were working on environment-related issues was formed. What brought them together was the commitment of this network to shared concerns rather than their expertise in their domains. This concern ultimately led to the formation of SCCT.

5.3.5 Location of stakeholders and geographic location of the city

The location of critical stakeholders within the city limits and the location of city in the State have had an impact. Most of the industries in Surat are located within the city limit and are a source of revenue for the SMC. Therefore, it is in their best interest to come together and tackle issues that affects the city's stability. As the city

is away from political power centre of the state, the city government must own responsibility in difficult situations and cannot afford to look to other sources of support for immediate direction.

5.3.6 Role played by international agencies

The climate change adaptation process of Surat has benefited from international support compared to other South Asian cities.[8, 21]

The former president of SGCCI highlights the role of international agencies as an operational enabler:

> "Before the Asian Cities Climate Change Resilience Network (ACCCRN) initiative, there were individuals who were working in silos who did not understand that their efforts were collectively contributing to combating climate change."

The following table shows the timeline of ACCCRN formation and its initiatives in the city:

2008	Surat was selected as one of the pilot cities for Rockefeller Foundation's (RF) ACCCRN project.
5th January 2009 (World Environment Day)	Discussion at SGCCI facilitated by TARU team regarding rising frequency of flood in Surat city.
2009	Formation of "City Advisory Committee" (CAC). CAC had 20 members (from SMC departments, academia and SGCCI), out of which 10-12 used to meet quarterly.
2009-2011	CAC developed a visioning exercise for Surat on parameters - water, energy and health.
2009-2011	Sectoral climate risks and vulnerability studies funded by RF in five areas: Health, Water, Energy, Environment and Flood. The studies were expert led.
April 2011	Publication of city resilience strategy by SMC with the help of ACCCRN and TARU
2009-2011	Key ACCCRN outcomes: - A national competition for developing Town Planning scheme in Hazira area - As part of Jawaharlal Nehru National Urban Renewal Mission (JnNURM), 55,000 units were built for resettlement - Design competition for architecture students to develop low cost housing along the creeks - Flood vulnerability GIS mapping and socio-demographic survey - A short message service (SMS) enabled Urban Services Monitoring System (UrSMS) to access real-time data and evaluate the performance of the city's service delivery systems
June 2012	SCCT formation The process was initiated by former municipal commissioner. The roles of the original CAC members were subsequently formalised into trustees of the SCCT.

The need to sustain momentum of climate change efforts post ACCCRN gave birth to the idea of SCCT. After the ACCCRN project, a structure was needed to procure funds and to manage the initiatives by the city. SCCT also enabled overcoming procedural difficulties for the city to get funds from international agencies.

The Department for International Development (DFID)
A malaria control and prevention project supported by DFID was implemented by SMC, Department of Community Medicine, Government medical college, Surat and London school of Hygiene and Tropical Medicine, London during 1997 to 2000.

5.4   Cultural enablers

In simple terms, culture is a way of life. Though the enablers specific to the culture of Surat city are underlying and contextual, they play a vital role. We traced cultural enablers at three different levels: a) historical context of the city, b) prevalent values-attitudes-behaviours, and c) evolved culture in functioning of SMC.

5.4.1   Surat's historical footprints
The idea of 'many stakeholders coming together' during a disaster or in routine is certainly not new for Surat. It is rooted in history. Secondary research revealed how stakeholders always have united for economic prosperity or self-protection at different points of time.

Surat had been an important trading port on the western coast of India since 1514 AD. It was the first port in India which received the East India Company. Due to its strategic location, Surat had very well developed overseas trade links. Trade with Europe, Africa, Ceylon, Arabia and Sumatra led to affluence and cultural exchanges in the city. During 17th and 18th century, Surat ranked as the chief export and import centre of India. Flags of 84 countries were seen flying on their ships indicating the vast range of trading partners that patronised Surat. Since then, the province surrounding Surat has acquired the name 'Choryasi Taluka' (84 talukas).

Also, the architecture, description of a 400 year old structure, Nagarsheth ni Haveli, elicits the kind of social resilience traced in Surat's history. The haveli has an underground basement. In the latter half of 17th century, Surat was repeatedly raided by the Marathas. During such raids, the residents would go underground and emerge safely at the river bank, where boats used to wait to take them across the river.[32]

Commerce brought varied cultures together in Surat. They could respect their differences and retain their preferences. For example, from 15th to 18th centuries, city included the Hindus, the Jains, the Muslims, the Parsis, the Armenians, the Portuguese, the English, the French and the Dutch. Hindu Wanias were considered the richest. The Muslim communities included the Saiyyeds, the Sheikhs, the Pathans and the Mughals. Apart from migrant Muslims, local Boharas, Khojas and Memons converted to Islam. In 15th century, the Parsis were in majority. Arabs settled in 16th century while Armenians built their church in 1717 AD. The influx of Boharas, prominent merchants, happened in 1785 AD. The European settlement included the English, the Dutch, the Portuguese and the French. Today's Gujarati Christians reside in European settlements of history. The community always had been a 'melting pot of varied cultures.' [32]

This historical background bears significance in migrants getting assimilated and working together in the industry and during disasters.

5.4.2   Values, attitudes and behaviours
A set of values, attitudes and behaviours are transmitted through several generations in a particular society. This typically forms the 'non-material' culture of the society. The city of Surat is not an exception. Several cultural traits were reported which can be considered as the deep enablers of today's resilience. Such indicators have also been considered in previous worldwide research, as qualitative measures to assess vulnerability.[33]

While speaking about how community-SMC informal collaboration tackled the flood of 2006, one of the key informants proudly talked about the typical 'Surti' attitude of cooperation.
> "Surtis are helpful by nature and insist on helping others in difficult times with whatever resources they have."

Trust of community members on leadership was another underlying cultural factor revealed. Total pride and trust on former commissioner of Surat, Mr Rao was visible in narratives by citizens.
> "When Rao *Sahib* told us to shift to the second floor, we took it seriously and moved to the terrace of nearby society", a 53-year-old Surati man narrated.

When social scientists talk about 'network theory', they distinguish between strong and weak ties. Strong ties are characterised by duration, emotional intimacy, mutual confidence, and reciprocal services, which are conditions one usually finds among kin and close friends. Weak ties, on the other hand, are characterised by looser affiliations.[34] This theory resonates with reported enabler – 'the process of belongingness of migrants in Surat

city', 'social network and cohesion', etc. Surat, among all cities of India, has the highest proportion of migrant population.[35] The reported enabler explains why migrant communities stood up with SMC in 2006 flood rescue and evacuation activities, shared their resources and helped it bounce back.

5.4.3   Evolved culture of SMC as an institution
The transformed work culture of SMC after 1994 was acknowledged as a critical factor. Aspects of material culture of the institution were brought out, such as compulsory uniform and obligatory field duty in the morning from 7:30 am to 12:00 noon for each SMC official. Also, non-material aspects were emphasized, like increased sense of duty, sense of belongingness and pride in public sector work.

For example, one of the health officers of SMC reports:
"Working in SMC is actually a 'Government' duty… But we feel proud to be here…"

Respondents talked about 'invisible or hidden' compulsion for sustaining initiatives such as cleanliness of the city. The drivers can be found in tarnished image of city in 1994 and the subsequent responsibility of improvement successfully taken up by city officials, post 1994.[30]

5.5   Understanding enablers: A tool for building MSCs

The above conceptual categorisation of enablers provides a way to think while building MSCs in cities. In order to operationalise, the local planning practitioners can assess the situation in their own regional context with the help of such a conceptual understanding and thereby identify the possible scope of building MSCs. We find the basic categorisation abstract enough to apply in a wide range of contexts. The intention of this categorisation is to guide practice.

6   CONCLUDING REMARKS

Cities are expected to cater to the needs of citizens as per the 12th Schedule of the 74th Constitutional Amendment Act of India. Factors such as climate change increase the complexity of meeting such expectations. City governments not only have to perform well at what they are supposed to do, but have to be proactive in seeking partners and building MSCs in delivering these outcomes. The city of Surat has shown that it is possible to create such outcomes through working collaborations. Policy makers at national and state level should consider creating instruments that facilitate such efforts. Understanding enablers and possible barriers for such collaboration to come about and thrive become critical in such an endeavour.

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APPENDICES

Appendix 1: List of key informants interviewed

Serial no.	Informant	Designation
1	Dr Vikas Desai	Trustee SCCT, Technical Director UHCRC
2	Professor P L Patel	Professor, Civil Engineering Dept. SVNIT
3	Dr Praful Timabadiya	PhD student & teacher, SVNIT
4	Mr Vinod Patel	Corporator SMC
5	Dr Hemant Desai	Deputy Commissioner (Health & Hospital)
6	Community Leaders	Godadara-South East zone
7	Mr C Y Bhatt	Deputy Commissioner
8	Mr P C Shah	Former City Engineer
9	Dr Akash Acharya	Associate Professor- Centre for Social Studies
10	Dr Kalpesh Khatri	Deputy Medical Officer of Health
11	Mr Nilesh Patel	Deputy engineer hydraulics
12	S Aparna	Principal Secretary to Government, Finance Department
13	Dr S K Mohanty	Former Deputy Commissioner
14	Mr Kamlesh Yagnik	Former President SGCCI
15	Mrs Bhavna Vimawala	Professor- Faculty of Architecture- SCET Surat
16	Mr Mahesh Rajshekar	Representative TARU Leading edge
17	Mr Mathur Bhai Savani	President NGO - Saurashtra Jal Dhara
18	Private doctors team	Katargam Ved Medical Association