

WOMEN'S ACTION TOWARDS CLIMATE RESILIENCE OF URBAN POOR IN SOUTH ASIA: PROJECT EVALUATION REPORT

May 31, 2018 Vol 2 : Process Case Analysis Report



Abstract

In seven cities of South Asia, women from slum communities have undertaken climate vulnerability assessments as well as developed and implemented resilience action plans as part of the Global Resilience Partnership (GRP) project. This case documents the journey of the women and the project facilitators, highlighting the processes, achievements and key learnings for enabling similar resilience actions elsewhere.



GLOBAL RESILIENCE



FOUNDATION

IN PARTNERSHIP WITH





This report was prepared by the staff of Mahila Housing Trust and its partners as follows:

Principal Research Investigator: Michael Elliott, Associate Professor School of City and Regional Planning, Georgia Institute of Technology

GRP Project Director: Dharmistha Chauhan, Global Resiliency Project Mahila Housing SEWA Trust (MHT)

Project Research Associate: Vanishree Herlekar, Consultant Mahila Housing SEWA Trust

> Project Coordinator: Srishti Singh Mahila Housing SEWA Trust

EXECUTIVE SUMMARY

The South Asia region has witnessed numerous climate related events in the recent past: the 2003 heat wave in Andhra Pradesh (India) killed 3000 people (MOEF, GoI, 2012), the 2014 floods in India, Pakistan, Nepal and Bangladesh left more than 700 people dead and displaced millions (news reports) and the increased incidence of Dengue with 75,808 cases reported across India in 2013 against 12,561 in 2008 (NVBDCP, 2014). The region is already water stressed with per capita water availability of less than 2500m³ (ESCAP, 2013).

The dense urban populations in South Asia are particularly susceptible to these negative climatic changes, especially heat extremes, flooding, and the spread of disease (World Bank 2013). The most vulnerable are those living in informal settlements (IPCC, 2013). For South Asia, this translates to around **190.7** *million people living in slums and informal settlements* (www.un.org), constituting 35% of the urban population of South Asia. It is vital that urban climate resilience programs are targeted to these vulnerable populations.

With a view to creating a model for building resilience of these communities, the Mahila Housing SEWA Trust (MHT) and its partners applied for and won the Global Resilience Partnership (GRP) challenge. The GRP which is a joint initiative of Rockefeller Foundation, US AID and SIDA, provided an award of one million USD to the team to implement the project.

The project aimed to create and implement resilience plans to address four major climate risks -- heat stress, flash floods, acute water shortages and vector borne diseases -- in 100 slum communities in 7 cities of South Asia. These include Ahmedabad, Jaipur, Bhopal, Ranchi, Bhubaneshwar (India), Kathmandu (Nepal) and Dhaka (Bangladesh). The key strategy was to tackle the institutional, information and knowledge barriers in building capacities of slum communities and city governments for assessing vulnerabilities and risks of Climate Change on poor populations. The project addressed this by building the social capital of slum communities by organising them into Community-Based Organisations (CBOs); promoting critical partnerships between technical experts, local governments and low-income communities; developing tools and process for transfer of scientific knowledge and participatory risk assessments; and working with communities and partners jointly towards designing and implementing resilience technical solutions. The project has directly impacted the lives of more than 25,000 poor families living in urban slums in the 7 cities by creating their capacities to deal with climate risks and vulnerability.

Our Theory of Change has been that "If the urban poor are provided with the requisite knowledge to undertake vulnerability and risk assessments and equipped with available resilient-technologies, they will be able to devise and implement locally relevant and pro-poor climate resilient solutions. If the poor are empowered to implement their own resilience plans, they will be able to better influence climate resilient city planning and ensure that effective urban adaptation practices are in place."

The evaluation of this intervention consists of a quantitative impact analysis (reported in a separate report) and this embedded case analysis, which capture the underlying stakeholder dynamics and key learnings for replication of this model in the future. The embedded case not details the processes realities and outcomes at the level of city and at settlement interventions. This report employs project records and reports as well as key informant interviews including those from community leaders and grassroot implementation staff. The report focuses on the process and implementation in two project cities (including six slum communities); three partner cities (including five NGO partners) and one grassroot organisation (the project lead MHT).

The key learnings emerging from the project have also thus been summarized based on the above.

KEY LEARNINGS ABOUT COMMUNITY ENGAGEMENT FOR RESILIENCE

- Entry into new communities requires perceptions of legitimacy, trust, and incentives on the part of community women to partner, which can only be built over time with multiple engagements.
- Continued participation by highly disenfranchised women in marginalized communities requires strategies to promote individual and community empowerment, solve tangible problems, and build recognition/ identity within community

- Leadership works best when it is developed and interacts at and promotes coordinated action at the slum, community & city level
- Empowering women to advocate in a non-confrontational/ collaborative manner increases municipal support to address these needs
- Resilience in informal settlements requires coordinated action amongst many local actors over time, with leadership that is not too concentrated amongst a few members of the slum community and which is maintained over time.
- Systematic, repeated, and innovative communication tools are necessary to enable scientific and futuristic thinking in communities whose members are used to thinking short-term
- Community's continued interest in resilience planning requires delivery of more immediate tangible actions or benefits
- Community-led data collection leads to an increased understanding within the communities on their own vulnerabilities and issues affecting them, thereby leading to more resilient actions
- Successful pro-poor technologies should be cost-effective: commercially available, culturally appealing, with proper services provided along with the purchase
- Facilitating interactions between communities and technical experts enhances the capacity of both to communicate clearly and develop mutually agreeable solutions to resilience problems

KEY LEARNINGS ABOUT SUCCESSFUL REPLICATION

- Processes can be replicated by organizations which have a grassroots orientation even though they might not have a climate change or resilience expertise
- Transferability can occur among the staff and in community action simultaneously although the community aspect needs more time
- There is a demand for such tools and processes although they need to be customized to suit local social and climate context as well as be translated in local language
- > The transferability requires time, handholding support and financial resource commitment

KEY LEARNINGS ABOUT ORGANIZATIONAL DEVELOPMENT

- Focus on communication (between internal staff and technical partners, with the community, and with external stakeholders) is essential
- Theory of change about the community also applies to staff and internal operations: 'Knowledge has to be cocreated'
- Complex projects require more effective process of partnering with other stakeholders and co-creation of knowledge products and tools
- Integrating learning and processes from GRPs in MHT's mainstream work and build and expand on those processes
- > Efficiencies of operations become more important for large projects
- > Knowledge creation and practice work best when they interact, inform each other

We hope that this report would serve as an important learning document for organisations which share similar concerns and principles and are working for building resilience of poor communities and women.

TABLE OF CONTENTS

١.	INTE	RODUCTION	1
	1.1.	Project Overview	1
	1.2	Research Overview	1
2.	RESI	EARCH METHODOLOGY	2
	2.1	Case Analysis Approach	2
	2.2	RESEARCH QUESTIONS	3
	2.3	Case Samples	5
	2.2	DATA COLLECTION & CASE WRITING	6
3.	PRO	JECT CONTEXT	6
	3.1.	Climate Change in South Asia	6
	3.2	URBANIZATION IN SOUTH ASIA	7
	3.3	URBAN LOCAL GOVERNANCE AND CLIMATE CHANGE	8
	3.4	Slums in India	10
	3.4	Slum Communities and Climate Change	12
4.	KEY	ACTORS AND STAKEHOLDERS INVOLVED IN PROJECT	15
	4.1	MAHILA HOUSING SEWA TRUST	16
	4.2.	SLUM COMMUNITIES	20
	4.3.	TECHNICAL EXPERTS	24
	4.4.	GOVERNMENT ACTORS	27
5.	THE	URBAN RESILIENCE (GRP) PROJECT	30
	5.1	BARRIERS TO RESILIENCE BUILDING OF SLUM DWELLERS	30
	5.2	PROJECT RESILIENCE BUILDING MODEL	31
	5.3	THEORY OF CHANGE AND LOGIC MODEL	32
	5.4Proj	ECT DEVELOPMENT PHASE	34
	5.5	PROJECT STRATEGIES, ACTIVITIES AND OUTPUTS	36
	5.6	KEY LEARNINGS ABOUT COMMUNITY ENGAGEMENT FOR RESILIENCE	40
6.	IMPI	EMENTATION IN ESTABLISHED CITIES: AHMEDABAD	41
	6.1	City Profile	41
	6.2	Evolution of GRP programme in Ahmedabad	44
	6.3	Case Slums of Ahmedabad	51
7.	IMPI	EMENTATION IN EMERGENT CITIES: BHOPAL	57
	7.1 CITY	Profile	57
	7.2	EVOLUTION OF GRP PROGRAM IN CITY OF BHOPAL	61

	7.4	CASE SLUMS OF BHOPAL	70	
8.	IMPLEME	ENTATION IN PARTNER CITIES: BHUBANESWAR, KATHMANDU, DHAKA	76	
	8.1 Cont	EXT FOR GRP	76	
	8.2 Cont	EXT FOR THE PARTNER CITIES	77	
	8.3 Parti	NER ORGANIZATIONS OVERVIEW	79	
	8.2	EVOLUTION OF GRP PROGRAM IN PARTNER CITIES	81	
9.	REFLE	ECTIONS AND KEY LEARNINGS	86	
	9.1	LESSONS FROM THE COMMUNITY RESILIENCE PROGRAM	86	
	9.2 ASIA	KEY LEARNINGS ABOUT SUCCESSFUL REPLICATION OF THE MODEL ACROSS CITIES/GEOGRAPHIES IN SOUTH 98		
	9.3	KEY LEARNINGS ABOUT ORGANIZATIONAL DEVELOPMENT 1	.03	
1	10. CONCLUSIONS			

LIST OF TABLES AND FIGURES

Table 1: Specifics of climate-related impacts and increased vulnerability of slum communities especially w	omen 20
Table 2: Project Input, Output and Outcome Matrix	
Table 3: Replication of Activities and Outputs by Partners	
Table 3: Replication of Activities and Outputs by Partners	

Figure 1: Building Knowledge Partnerships	2
Figure 2: Location of Project Cities	5
Figure 3: Project Stakeholder Analysis	
Figure 4: Evolution of MHT's Programs	
Figure 5: Barriers to building resilience of slum communities	
Figure 6: Project Theory of Change	
Figure 7: Population growth in Ahmedabad, Source: Census 2011	
Figure 8: Population growth in Bhopal city, Source: Census 2011	
Figure 9: City population versus slum population in Bhopal city	
Figure 10:Operations diagram of the local team at Bhopal and list of slums	

Women's Action towards Climate Resilience of Urban Poor in South Asia

I. INTRODUCTION

1.1. PROJECT OVERVIEW

The "Women-led Resilience Building of Urban Poor in South Asia" project was developed by Mahila Housing SEWA Trust (MHT) and its partners as a part of the Global Resilience Partnership (GRP) challenge. The project aimed to build the resilience capacities of 25000 low income families living in slums/informal settlements in seven cities of South Asia, to take the lead in action against four climate risks. These four climate stressors (a) heat waves; (b) flooding and inundation; (c) water scarcity; and (d) increased climate change-related incidence of water and vector borne diseases; are slower-onset and less apparent, often impacting the poor most but attract less attention compared to disasters and extreme events.

Resilience Capacities is defined as ability of communities to survive, adapt and progress in the face of stress, without distress or loss of assets. We aim to build capacities which will be evolutionary in nature with an increase in risk retention capacities; improved access to basic services (like water, sanitation, adequate shelter and health) and a continued effort to transform to a higher level of livelihood security.

The project worked to create an integrated model wherein women

take a lead through collective action and technology incubation, to devise locally relevant pro-poor and gender sensitive climate resilient solutions and promote a culture of sustainable development and resilience among the urban poor in South Asia.

Success for this project meant a demonstration of how women-led initiatives build the necessary social capital, policy influence, technical expertise, for poor urban communities to respond effectively to climate change, thereby sustaining their health and livelihood options. The project worked to do achieve this by significantly changing;

- 1. The knowledge and behaviour of slum communities, particularly women, to better understand the inherent climate risks so that they plan and make investments with strong consideration for the future, to improve their standards of living and resilience.
- 2. The sphere of influence of women leaders and slum communities within the city governance systems to enable policies and programs which include the concerns of the poor.

1.2 RESEARCH OVERVIEW

A critical process outcome of the project was to increase evidence-based advocacy and decision-making on resilience issues at the city level. To achieve this outcome, the project incorporated a strong monitoring and evaluation component. This was designed primarily to answer the following three questions in mind:

- (1) Does the model of change and corresponding interventions improve resiliency in slums with existing internal and citywide social networks?
- (2) Can the model be used to simultaneously build such networks and to improve resilience within the slum communities that currently lack internal and citywide social networks?
- (3) Can the model be transferred to other NGOs for implementation in cities where MHT does not work?

These questions required us to move beyond quantitative evaluation processes, to gather evidence which captures the "process" and "learning" aspects of the project. The qualitative Case Analysis approach was thus adopted to enable documentation of the key processes undertaken at multiple levels; capture the desirable as well as unexpected results of the action; and establish the link between the processes and the results to test our theory of change. This was considered especially useful while capturing actions and results at the community and city level as against household level wherein the results were better captured through the quantitative baseline and endline surveys.

This case report looks at three embedded cases to look separately at each of the above questions. There are in all three embedded cases which feed into the overall case. The cases have been mainly developed at the level of the city, with one each for established and emergent cities, Ahmedabad and Bhopal from India, respectively and the third for partner cities including Bhubhneshwar (India), Kathmandu (Nepal) and Dhaka (Bangladesh).

The report gathers evidence towards demonstrating the effectiveness of a community-based, women-led model for building resilience to climate change. It captures the underlying qualitative information and tests the theory of change of the project. However, the key purpose is not only to establish the effectiveness of the model, but to bring out the key learnings emerging from the process which can be useful for other resilience building initiatives. In addition, the case also looks at MHT as a learning organization and the processes and key learnings emerging at that level.

2. RESEARCH METHODOLOGY

2.1 CASE ANALYSIS APPROACH

Case studies are an important part of the M&E research because the model of change being tested in this project is fundamentally a process-based model. The case analysis thus focuses on process tracing to

examine interaction amongst the three major spheres of action – the slum dwellers, the technical support systems, and citywide networks – and intervention strategies that best explain the intervening process dynamics and outcomes, as well as eventual impacts at household, slum and city levels of intervention.

The model envisions climate change resilience as not a problem of "knowledge" but as one of barriers for translation of the knowledge into "action", the most critical being the lack of platforms and communication channels which can enable knowledge generators and



Figure 1: Building Knowledge Partnerships

communities to learn from each other and "co-create solutions". (Figure 1). The evaluation case examines whether this critical partnership gap can be closed by creating systems for mutual learning, while ensuring that the interests of the primary audience "the communities whose resilience is at stake" is paramount.

The most influencing factors towards this would be:

- a) The creation of strong institutional partnerships for joint action between all knowledge stakeholders: community members, government officials, service providers, technical experts, and other local institutions.
- b) Targeted and localized communication strategies and educational workshops that provide the most relevant information and create incentives for communities to seek technical knowledge and adopt futuristic thinking.
- c) Piloting and community validation of technical solutions to meet the needs of the poor, especially women.
- d) Designing and incubating financial products to support the poor to make investments in resilience solutions.

Qualitative case studies have been constructed to delineate the above in the context of cities and communities. The case examines these dynamics within the context of the households, slums and city actors and their interactions, in response to the interventions associated with the project.

2.2 RESEARCH QUESTIONS

The monitoring and evaluation component of this project is designed to answer three questions as mentioned above. Respectively, these three conditions are conceptualized as established, emergent and partner communities, as follows:

ESTABLISHED (NETWORKED) COMMUNITIES: IN SLUMS WITH EXISTING INTERNAL AND CITYWIDE SOCIAL NETWORKS, DOES THE MODEL OF CHANGE AND CORRESPONDING INTERVENTIONS IMPROVE RESILIENCY?

Success for this project means a demonstration of how women-led initiatives build the necessary social capital, policy influence, technical expertise, for poor urban communities to respond effectively to climate change, thereby sustaining their health and livelihood options. The project aims to achieve this by significantly changing the knowledge and behavior of slum communities, particularly women, to better understand the inherent climate risks so that they plan and make investments with strong consideration for the future, to improve their standards of living and resilience, and to expand the sphere of influence of women leaders and slum communities within the city governance systems to enabling policies and programs which include the concerns of the poor.

This condition, in which social networks **exist** both within slums and between slums across the city, is present in <u>Ahmedabad</u>, where MHT has worked for the past 20 years to build such networks around issues of housing and social services. A key team member - IIPH - also works with Ahmedabad Municipal Corporation on Heat Action Plans and the project findings would be well incorporated in these. Ahmedabad Municipal Corporation has already submitted a joint proposal with MHT and IIPH for Climate Resilience Planning as part of the Rockefeller 100 Resilient Cities Challenge. Since social networks and the corresponding institutions needed to support them are already established, this city provides the most immediate test for the model of change. We expected that during the 18 month duration of the

project, the most significant improvements in climate resilience will occur in slums in Ahmedabad because residents of these slums have the capacity needed to address these issues.

EMERGENT (NON-NETWORKED) COMMUNITIES: IN SLUMS THAT CURRENTLY LACK INTERNAL AND CITYWIDE SOCIAL NETWORKS, CAN THE MODEL BE USED TO SIMULTANEOUSLY BUILD SUCH NETWORKS AND TO IMPROVE RESILIENCE WITHIN THE COMMUNITIES?

Demonstrating the capacity of Ahmedabad to effectively enhance the capacity of slum dwellers to enhance climate change resiliency will test the model of change but raises questions of replicability. Is Ahmedabad unique in some important factors that increases its capacity to both build social networks and to promote resiliency?

This project posits that the model of intervention will work not only in Ahmedabad where social networks have already been built, but also in other large cities wherein slum communities are widespread but as of yet not organized into internal (within-slum) and citywide social networks. This proposition can be tested through three cities where MHT has more recently started working and where social networks are only beginning to **emerge**. These conditions are found in three project cities (*Jaipur, Bhopal* and *Ranchi*). In each of these cities, during the 18 month duration of the project, we expect to find moderate improvements in both social capacity (both internal and citywide) and in climate change resilience, as the slum residents located in these cities will be building capacity from the ground up.

PARTNER (NON-MHT) COMMUNITIES: CAN THE MODEL BE TRANSFERRED TO OTHER NGOS FOR IMPLEMENTA-TION IN CITIES WHERE MHT DOES NOT WORK?

If, as proposed, the project demonstrates both that the model can work in cities with existing social networks and that the model can be replicated in cities without such networks, we are left with the question of whether the model can be transferred to organizations working in cities where MHT does not work. Is the model adaptable enough to be used by other NGOs and in cities in other south Asian countries?

This project posits that the model can be transferred, and that this can be demonstrated through partnerships with other NGOs. As such, NGOs in other communities can be **enabled** to use the models of change developed by MHT to both build social networks as the basis for change and to focus these networks on issues of climate change resiliency. This proposition was tested in <u>Dhaka</u> (Bangladesh), <u>Kathmandu</u> (Nepal) and <u>Bhubhaneshwar</u> (India), cities where MHT does not work but where partner organizations are interested in adapting MHT's models of social change to conditions found in these cities.

The project thus intervened into seven cities (Figure 2) in the following conditions:

- Established: Ahmedabad (India)
- Emergent: Jaipur, Bhopal and Ranchi (India)
- **Partner**: Dhaka (Bangladesh), Kathmandu (Nepal) and Bhubaneswar (India)

Also see Annex 1 for a brief overview of each of these cities.



Figure 2: Location of Project Cities

2.3 CASE SAMPLES

The case looks into the context of three different types of sample communities and cities where interventions were made in order to capture the qualitative aspects of the project and test the theory of change.

The three case cities include:

- a) **Established City Case is of Ahmedabad (India),** wherein MHT has been working for more than two decades and has an established network of slum communities at multiple level.
- b) **Emerging City Case is of Bhopal (India),** which did not have established community networks before the project intervention was undertaken by MHT.
- c) **Partner City Case is for three cities- Bhubhaneshwar (India), Kathmandu (Nepal) and Dhaka (Bangladesh),** wherein MHT did not work but partnered with local organisations to implement the model within their given structure and expertise.

In Ahmedabad and Bhopal, there have also been slum level case studies developed to get an indepth understanding of the processes and results at the community level. Four slums cases were looked into in Ahmedabad city, which again included two types of slums- those with existing community based organisations (or networks) and those without existing slum level organization. Both these types of slums, however, had the benefit of the existing city level network of slums- the Vikasini (see

4.2.3 Vikasini federation for details). In Bhopal, two slums without any existing community organisations were selected.

The six slum level cases include:

- a) Established Slums in Ahmedabad: Silver Park and Balapir no Tekro
- b) Emergent Slums in Ahmedabad: Rajiv Nagar and Babalavlavvinagar
- c) Emergent Slums in Bhopal: Bag Sewania and Rahulnagar

The third case has looked more at the level of partner organisations and not at community level. This case is particularly important in our assessment of the transferability of the model to enabling communities where MHT does not work and local NGOs will conduct the interventions, under guidance from MHT, since these cities are not included in the baseline and end line surveys.

2.2 DATA COLLECTION & CASE WRITING

The case analysis approach enabled us to use a combination of primary and secondary data for the study. Primary data collection processes mainly included interviews with project implementation staff, community leaders and other stakeholders (government officials, elected representatives, technical experts). Focus group discussions (FGDs) were also conducted with women in each of the case slums. Project related documents especially field reports of staff, periodic staff interview reports, workshop reports, donor reports, baseline and endline survey data, etc. have also been referred to for the case analysis.

In addition to the collection of primary data and review of secondary data, the research team also deliberated multiple times for analysing the findings and identification of the key learning prepositions from the case. The initial prepositions were identified in January 2017, which were later refined multiple times before finalisation.

3. PROJECT CONTEXT

3.1. CLIMATE CHANGE IN SOUTH ASIA

The South Asia region has witnessed numerous climate related events in the recent past- resulting in both shocks and stresses. However, while the climate related shocks like heat waves and floods often get most of the attention, it is the stresses of high heat index, inundation and water logging, water scarcity and deteriorating water quality that have major impacts on human health and livelihoods.

Extreme heat events aggravated by urbanization and the concomitant urban heat island effect (Stone 2012, 2015), is resulting in cities being 5°-7° C warmer than the surrounding rural areas on summer nights (Vidal and Pathak, 2013- Ongoing study in Mumbai and Delhi). In 2010, Ahmedabad's temperature reached a high of 46.8°C causing 1344 excess deaths likely caused by the heat wave. (Azhar et al. 2014).

The region is also seeing increased frequency of extreme precipitation (IMD). The 2014 floods in South Asia left more than 700 people dead and displaced millions (news reports). Frequent inundation caused by heavy rainfall days, result in cities coming to a standstill and most urban poor facing loss of livelihood and assets due to inland flooding (Chatterjee 2010). Without proper sanitation systems, the situation gets worse with mixing of sewage water with the flood water, which not only is a breeding ground for diseases in the short term, but also has long term health impacts if it infiltrates the water supply systems or upper shallow aquifers (if existent) (Groenwall et al., 2010).

Another impact of Climate Change in South Asia is that of water scarcity (IPCC, 2015, World Bank, 2013). The region is already water stressed with per capita water availability of less than 2500m³ (ESCAP, 2013).

In Central India belt (wherein most project cities lie) even the present water threat is very high (0.8–1) (Vorosmarty et al. 2010) and the occurrence of droughts would further exacerbate the water stress.

The immediate manifestation of water scarcity and inland flooding related water contamination is an increased incidence of water borne diseases like diarrhea and typhoid. These will be exacerbated due to climate change. Diarrhea, the major cause for child mortality, is projected to increase by 6 percent by 2030 (Pandey 2010). Typhoid, already endemic in India, with an annual incidence of 214.2 per 100,000 persons (Ochiai et al) is also expected to rise.

Rise in temperature and humidity coupled with open surface water bodies and unhygienic water storage practices will increase mosquito breeding and vector borne diseases like malaria, dengue and chikangunya. India already reports 2 million cases of malaria every year (Pandey 2010) and it has been projected that the relative risk of malaria in South Asia would increase by 5 percent in 2030 (174,000 additional incidents). There is also an increase in the number of dengue cases being registered annually over the last five years from 12,561 cases in 2008 to 75,808 cases in 2013 (NVBDCP, 2014).

3.2 URBANIZATION IN SOUTH ASIA

The definition of the term urban varies from country to country. In India, the census 2011, defines urban settlement as:

- I. All the places which have municipality, corporation, cantonment board or notified town area committee;
- II. All the other places which satisfy following criteria: a) A minimum population of 5000 persons ; b) At least 75 % of male main working population engaged in non-agricultural pursuits ; and c) A density of population of at least 400 persons per square kilometre.

The first category of urban units are known as Statutory towns. The second category of towns is known as Census Town. These were identified on the basis of census 2001 data. Cities are urban areas with more than 100,000 population.

Going by this definition, the country (as well as Nepal and Bangladesh) is still predominantly rural. However, the whole of South Asia and particularly India is rapidly urbanizing. The last census of 2011 in India, reported a higher decadal growth rate of urban population than rural population resulting in 31.6 % urban population. The two main drivers for this growth is the increasing number of new towns (2774) due to growing population and the rural-to-urban migration which has increased from 42% in 1991-2001 to 56% in 2001-2011. (R.B. Bhagat, EPW, 2011)

Until the last decade most National and State policies and programmes focused on development of rural areas with the understanding the rural economic growth will curtail migration, thereby reducing the pressure on cities. However, this did not happen, rural-urban migration continues to happen particularly to the metros and capital cities like Ahmedabad, Bhopal, Jaipur, Ranchi and Bhubhaneshwar. The situation is similar in Kathmandu and Dhaka. Climate Change is expected to further exuberate the situation with increasing migration to these cities especially from coastal zones and drought prone rural areas. India is projected to add 300 million new urban residents by 2050 and it will need to build climate-friendly cities to address the challenge of accommodating the needs of the growing population. (World Cities Report, UN Habitat, 2016)

Unfortunately, much of this growth is unplanned. Cities are rapidly expanding spatially without any proper infrastructure and service support systems. The increasing population especially in the core economic zones of the cities, is putting more pressure on the already available housing and infrastructure services. Added to this urban land tenure systems and town planning laws further have resulted in a highly complex real estate market. Inadequate affordable housing leads to development of slums.

It also needs to be mentioned here that the term "City" has been used to connote the total area which is covered as part of the city municipal corporation as well as peri-urban areas which are typically as part of Indian administrative systems are covered under a parastatal body called the (city) urban development authority. For example, Ahmedabad city would include area covered under Ahmedabad Municipal Corporation (AMC) as well as the periphery areas around AMC which are being developed and managed by Ahmedabad Urban Development Authority (AUDA).

3.3 URBAN LOCAL GOVERNANCE AND CLIMATE CHANGE

The Indian Constitution has mandated a federal structure with multiple levels of governance. At the time of Independence, this mandate was limited to two-tiers at the sub-national (Referred to as States) and the National levels. In 1993-94, the Constitution was further amended to provide recognition and autonomy to the third-tier of governments in the form of Panchayati Raj Institutions (for rural areas) and Urban Local Bodies (ULBs). This amendment (the 74th Constitutional Amendment Act of 1994) was an important milestone towards local self-governance in the country. The 74th amendment has provided for an elected council for each ULB (with reservation for women); constitution of Ward Committees; creation of a District/ Metropolitan Planning Committee and establishment of funds at the ULB level to handle receipts and disbursements.

The Municipal Corporation, Municipality or Municipal Council is the basic unit of an ULB constituted through universal adult franchise in each notified urban area of the country depending on the population.1 Members of the Municipal Corporation are elected on the basis of universal adult suffrage for a period of five years and they are called Councillors. The CAA mandated regular elections every five years thereby ensuring that each constituency has a local municipal councillor who is more easily accessible to the citizens.

These Councillors, collectively called the Municipal Council, exercise deliberative functions. The Mayor and Deputy Mayor are political executives elected for a period of one year by the members of the Corporation. The Mayor is the head of the corporation and presides over the meetings of the corporation. Each Municipal Corporation also has a Standing Committee with select elected representatives, which has executive power to act on behalf of the general body.

The Municipal Corporations are in charge of Wards (subdivision or district of a town/city) demarcated according to its population and representatives are elected from each Ward. Sometimes the Municipal Corporations of larger cities are divided into zones, each consisting of 3-5 wards each. Individual wards or collections of wards within a corporation sometimes have their own administrative body known as Ward Committees. The executive functions are performed by the Municipal Commissioner, generally an

¹ The classification of any settlement into these three categories is based on criteria which are decided at the state level. Generally, a Municipal corporation is for a population above 3 lakhs and Municipality/Municipal Council for populations above 1 lakh.

officer of the Indian Administrative Service. S/he is assisted by Assistant Municipal Commissioners (who are also often Zonal Heads), and further supported by officers such as Department Heads, Ward Engineers, Sanitary Inspector, Health officer and Education Officer, etc. who come from the State Public Service and are appointed by the State Government.

The 74th CAA also transferred eighteen functions to the ULBs including essential services like public health, sanitation, solid waste management and conservancy. However, the States were given the discretion over the devolution of powers to the ULBs as they deem fit. Depending of the level of devolution in the state, the municipal corporations enjoy different degrees of autonomy.

Another aspect which also influences this is the age of the municipal corporation and its own source revenues. Older and richer municipal corporations like Ahmedabad which were functional much before the 74th CAA, enjoy a greater degree of autonomy and control. Ahmedabad Municipal Corporation (AMC) does it's own planning (in close consultation with Ahmedabad Urban Development Authority) as well as is responsible for delivery of all basic services (including Piped water supply, sewage, storm water management, waste management etc.). With an annual budget of more than Rs. 6000 Crores (Rs 10,000 per capita) and about 55% of this coming from AMC's own sources; AMC independently designs and manages slum improvement and housing programs. It also has its own health department that provides preventive and curative health services.

The local governments in Bhopal (Annual budget of \sim Rs. 2000 Crore, Rs. 11,110 per capita for 2014-15)2 and Ranchi (Annual budget of \sim Rs. 300 Crore, Rs. 3,000 per capita for 2016-17)3 do not enjoy the same level of financial authority and autonomy as AMC; with more than 60-70% of their revenue coming through State grants. However, there is still a fair degree decentralization of responsibilities. In both cities, the local governments are actively engaged in the provision of basis services. Water supply and sanitation are key responsibilities of the local government.

Further in many States, there are also multiple agencies which end up with the same responsibilities, and with lack of coordination between the two service providers, there is no integrated planning, sometime duplication of actions, and more often than not lack of accountability. In Jaipur for example, the ULB-Jaipur Nagar Nigam, has very limited powers. The piped water supply system is managed by the Public Health and Engineering Department (PHED), which is a Rajasthan State Department. Similarly, city planning as well as investments in infrastructure and housing are carried out by the Jaipur Development Authority, a para-state agency promoted by the State Government. Similarly, in Bhubhaneshwar, the construction of water supply systems is the responsibility of the Water Supply and Sewerage Board (a para-state body), while its operation and maintenance is the responsibility of the PHED (a State government body). The Bhubaneshwar Municipal Corporation has the responsibility of water supply mainly in fringe areas.

One of the most direct influences of the functionality of the ULB is over the poor and their resilience building as these affects the provision of water, sanitation, drainage, solid waste collection, public health and housing construction and improvement services. Already increasing demands of growing populations continually stretch the limits of urban infrastructure and systems, and thereby the

²http://www.bmconline.gov.in/irj/go/km/docs/documents/BMC%20Static%20Content/Municipal%20Corporation/budge t14-15.pdf

³ http://janaagraha.org/asics/city-budgets/Ranchi-2016-17.pdf

provisioning of these basic services has decreased causing detrimental impacts on the well-being of local communities, and most immediately on the urban poor.

Added to this, climate change is expected to exuberate the problems in cities. For example, flooding often causes damage to existing water and sewage infrastructure thereby often resulting in diversion of limited resources to repair and maintenance rather than extension of services. ULBs thus need to take a more pro-active approach to understanding the impacts of Climate Change in their cities. However, Climate Change policies are still majorly governed by National and State Governments, more so the national government. Furthermore, they are more under the purview of the Environment and Forest Ministries/ Departments⁴ leading to a more rural and renewable energy-based focus. Neither the National, nor the State Action Plans on Climate Change thus have a strong urban component leave along a component to target the urban poor. The ULBs themselves have also not geared up to have their own local action plans, except in some cases like Ahmedabad has its own Heat Action Plan, Bhubhaneshwar has a Disaster Action Plan, etc. As of now Surat Municipal Corporation is the only one to have been directly involved in integrated planning and action on Climate Change in collaboration with the ACCCRN project. Only recently, other ULBs from Jaipur, Pune, Bangalore, Chennai, Mysore, Shimla and Gawahati have geared up to this as part of the 100 resilience cities challenge and/or through support from the DFID Urban Resilience project.

3.4 SLUMS IN INDIA

The term "Slum" has multiple definitions in international and national parlance. UN Habitat defines slums as an urban area typically being deprived of one or more shelter related conditions; while Census of India defines slums are residential areas unfit for human habitations. Local development plans and policies like the Urban Health Plans go further to define slums as neighbourhoods characterised by lower incomes, lacking quality housing and basic services and unhygienic living conditions. (Box 1) MHT's definition of slum is the broader connotation than only recognised slums and includes areas beyond recognised slums like chawls and low-income housing societies.

Box 1: Definition of Slums

UN-HABITAT defines a slum household as a group of individuals living under the same roof in an urban area who lack one or more of the following: 1. Durable housing of a permanent nature that protects against extreme climate conditions. 2. Sufficient living space which means not more than three people sharing the same room. 3. Easy access to safe water in sufficient amounts at an affordable price. 4. Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people. 5. Security of tenure that prevents forced evictions. Not all slums are homogeneous and not all slum dwellers suffer from the same degree of deprivation. The degree of deprivation depends on how many of the five conditions that define slums are prevalent within a slum household. (UN Habitat, 2006-07)

A Slum, for the purpose of Census of India, has been defined as residential areas where dwellings are unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements and design of such buildings, narrowness or faulty arrangement of street, lack of ventilation, light, or sanitation facilities or any combination of these factors which are detrimental to the safety and health. (Census, 2011).

⁴ The National Ministry is in fact the Ministry of Environment, Forest and Climate Change. Except Gujarat none of the other States have a separate Climate Change Department.

The Census of India further categories slums as:

A) **Notified Slums:** All notified areas in a town or city notified as 'Slum' by State, UT Administration or Local Government under any Act including a 'Slum Act'.

B) **Recognised Slums:** All areas recognised as 'Slum' by State, UT Administration or Local Government, Housing and Slum Boards, which may have not been formally notified as slum under any act.

C) **Identified Slums:** A compact area of at least 300 population or about 60-70 households of poorly built congested tenements, in unhygienic environment usually with inadequate infrastructure and lacking in proper sanitary and drinking water facilities

Ahmedabad Health Action Plan defines slums as areas beyond recognized slums to include chawls, gamtals, newly merged villages, walled city areas, and other neighborhood characterized by lower incomes, lack of quality housing and basic services, and unhygienic living conditions.

A typical image of a slum in India would often constitute of a group of people living in unhygienic conditions and constantly struggling and fighting for access to basic services especially water. (An image so common it is also reflected in government advertisements for housing schemes). The residents are mostly low-income communities working in the informal sector as daily wage labourers, construction workers, iron smiths, tailors, embroiders, domestic help, bamboo basket makers, necklace makers, sweepers and rag pickers, vegetable and food vendors, or sellers in clothes markets and home-based workers (papad, agarbatti makers). Some also work in factories, or as auto-drivers, plumbers, masons, electricians, etc. Most of them lack access to secure incomes and there is absolutely no form of social security access. The overall literacy level within these families is generally low and there is more often than not lack of social capital.

Most of these areas lack access to secure land tenure systems with a constant threat of eviction, although actual eviction is very less. The tenure systems in slums are complicated, ranging from completely illegal residences to incremental tenure security systems (such as properties recognized in municipal property tax systems or with land lease or no-eviction certificates from the government). Most of the residences are poorly constructed and lack basic amenities like water supply and sanitation. Even when available, provision of water and sanitation are often inadequate and of poor quality. For example, even with individual water connections available, a typical household would not receive water supply for more than 2 to 3 hours every day and would typically face significant reductions in water supply during summers. The quality of water available in the areas is also an issue, as most areas either lack sewage systems or have frequent breakage leading to mixing of sewage water with water supply lines. Storm water drainage systems are also often non-existent or clogged (due to lack of solid waste management) leading to water

logging in monsoons. Inefficient living spaces (with 5 to 6 people sharing a home) and lack of ventilation due to the high population density in the neighbourhoods are also common phenomena.

Even when access is available, there are issues of adequacy and quality- for example even with individuals water connections available, a typical household would not receive water supply for more than 2-3 hours every day and would typically face high water cuts in summers. The quality of water available in the areas is also an issue, as most areas either lack sewage systems or have frequent breakage leading to mixing of sewage water with water supply lines. Strom water drainage systems are also often non-existent or clogged (due to lack of solid waste management) leading to water logging in monsoons. Inefficient living spaces (with 5 to 6 people sharing a Most communities are located in low-lying, downstream areas, near drainage lines. There is little to no regular collection of garbage, and no door-to-door collection available. Therefore, the drains are consistently clogged. Even one or two hours of rainfall can result in inundation of homes. High rainfall results in water logging for more than a few days (communities having experience of even two weeks of inundation) resulting in huge loss of property. Further the water logging often affects their limited access to water and sanitation services. Regular home repair and maintenance expenses post monsoons is common.

(Focused Group Discussions with communities in Dhaka)

home) and lack of ventilation due to the high population density in the neighbourhoods is a common phenomenon.

Slums in Indian cities are often a result of poorly managed urbanization. For a long time, planning policy in India has been fixated on "controlling the size of cities" fearing that population growth will make the cities more congested and crumble the already deficient infrastructure. Instead of upgrading infrastructure to meet increasing demands and allowing concentrations of populations to live in dense urban areas, the policy focus was on restricting supply of built space by controlling permissible built densities. The land supply and building approval mechanism is also bureaucratic and tedious and it takes up to several years to concert land to serviced built space. These regulatory constraints create supply bottlenecks in the housing market and prevent formal markets from offering housing products that are affordable to low-income groups. As a result, the share of people living in slums and 'informal housing has consistently increased. In all the project cities, a considerable size of the population lives in slums.

Further, government policies linking access to services to legal land titles prevent access to basic infrastructure in slums. As a result, large percentage of slum population resides in unsanitary and hazardous conditions, lacking access to water and sanitation facilities and services. Their status as 'informal residents' excludes them from benefitting from any public infrastructure investments, inclusions, and entitlements. Trapped in underemployment, they are part of the informal economy with meager incomes, no job security, no social security, and limited access to credit. Without a strong policy focus on pro-poor development in cities, slums are likely to proliferate. Improving living conditions of the poor on a large scale and building their resilience is a critical concern.

3.4 SLUM COMMUNITIES AND CLIMATE CHANGE

The dense urban population in South Asia is particularly susceptible to negative climatic changes, especially heat extremes, flooding, and diseases (World Bank 2013) and the most vulnerable are those living in informal settlements (IPCC, 2013) due to a number of factors:

A) Geographical Exposure: being located mostly in environmentally vulnerable areas- low lying lands more prone to floods/inundation or high elevations with low ground water levels. Land tenure insecurity further hampers capital investment in these habitations.

B) Occupational Exposure: dependent on occupations which require heavy physical labour; outdoor working like construction, street vending and/or informal livelihoods like seasonal vending, home-based work, that may be directly impacted by disasters.

C) Infrastructure Deprivation: living in settlements that typically lack adequate drainage, energy and communications systems where the impact of an event such as flooding or drought will be felt more sharply than elsewhere. Low quality of their housing, with limited ventilation, inadequate cooling facilities make them more vulnerable to climate vagaries like heat stress.

D) *Financial Susceptibility*: having paucity of income resources and access to credit and insurance; are often forced to exhaust limited savings or assets in order to respond.

E) Social Marginalization: having least fall-back options, limited resources and access to information, inhibited recognition as a city resident. Slums and informal settlements are often excluded, for instance, from early warning systems or flood prevention infrastructure.

F) Gender Discrimination: given the gender roles in these societies, especially domestic responsibilities like water fetching, food security and care giving, women are even more vulnerable and bear the dual burden of these climate-related events. (UN Women Watch, 2009).

Climate Change will only further exacerbate the conditions of these communities. Extreme heat events for example, impact the urban poor, living in heated concrete boxes, with no windows, ventilation, and no or little access to shade, fans, and other cooling technologies, the most. Adding to this, is the exposure to heat due to occupational compulsions especially those requiring to work outdoors in construction, street vending, etc. Productivity of women home based workers, who mostly work in afternoons could also go down sometimes up to 50% in summers resulting in reduced household incomes and increased financial burden. *(Focused Group Discussions with communities)*

Spatial analysis techniques have also revealed that the urban poor who tend to live in low lying informal settlements are highly vulnerable to such disasters (Pillai et al 2010; Hoffman 2009; Lall and Deichmann, 2009). There is also documented evidence that women die exponential more than men during disasters due to socio-economic disadvantages (Neumayer & Pluemper, 2007)⁵ and that they are likely to suffer more in the aftermath of disasters, e.g. adolescent girls facing sexual harassment (Bartlett, 2008).

Apart from floods, there is also the frequent inundation caused by heavy rainfall days, resulting in most slum dwellers facing loss of livelihood and assets due to inland flooding (Chatterjee 2010). Self-employed slum dwellers typically do not have warehousing facilities or insurance against their assets. Floods and inundation can easily destroy the physical assets (machines, raw materials, etc) of these businesses as well as homes, leaving residents destitute. Women dominated sectors are more likely to be impacted by these and are often worst hit by climate related disasters (IUCN/WEDO, n.d).

⁵ Of the 140,000 who died from the 1991 cyclone disasters in Bangladesh, 90% were women. Reasons for the disparity include women not having been taught to swim, clothing restricting mobility and cultural norms regarding the preservation of female honour causing many women to leave their homes too late because they waited for a male escort. The mortality factor even holds true for heat waves. During the 2003 European heat wave, the excess mortality for women was 75% higher than that for men of all ages.

The situation gets worse with mixing of sewage water with the flood water, which not only is a breeding ground for diseases in the short term, but also has long term health impacts if it infiltrates the water supply systems or upper shallow aquifers (if existent) (Groenwall et al., 2010). This occurs because the sanitation situation is often bad in slums due to insufficient sewage canals, missing toilets and lack of storm water drainage systems.

Further, slums and informal settlements, are often not connected to public services like water supply systems and even if they are, this is often insufficient in terms of frequency, duration and stability (Sekhar There is acute water shortage in the slums. During summers it is difficult to manage drinking water even from distant sources. Few of the slums have wells but none is working and contains contaminated water. Ground water has almost exhausted and quality is also very poor. As women have the prime responsibility for water at household level, the declining water security adds to their drudgery of fetching and storing water.

(Focused Group Discussions with communities in Jaipur)

et al. 2005; Karn and Harada, 2002) making them the most deprived from access to safe water. With increased water scarcity, they are bound to be even more deprived from water services.

There is already well documented evidence that urban poor are more prone to diseases such as diarrhea, dengue, malaria, etc (Montgomery 2009, Harpham 2009, Mercaso et al 2007, Cattaneo et al 2007) and that they will be at greater risk of adverse health impacts of climate change (IPCC, 2007). As the health risks spreads, women's workload in caring for the sick will also increase. This will further limit the time they have available for income generation which, when coupled with the rising medical costs associated with family illness, increase the household financial burden and heighten the levels of poverty. The specific climate related impacts and increased vulnerability of slum communities and women has been summarised in Table 1 next.

Climate stress	Vulnerability drivers	Impact on slum communities	Additional burden on women
Extreme heat	Micro climatic conditions Poorly-ventilated dwellings No access to cooling spaces/trees Expensive Cooling technologies Outdoor work spaces	Increased mortality- elderly and children Increased Stress, Fatigue and Illness Reduced Productivity	Reduced Productivity Increased care giving role
Extreme precipitation (flooding and inundation)	Settlement in Low lying areas Flood prone construction (below road level) No storm water drainage No sewage lines or blocked/ broken drainage Insecure Land Tenure	Loss of life and assets during floods Temporary relocation can lead to eviction Loss of assets- home, businesses and documents Loss of Livelihood Increased health risk due to water contamination	Higher risk to life Sexual harassment and lack of privacy at shelters Increased drudgery of accessing safe water Increased child protection role
Water scarcity and Contamination	Less access to reliable water supply Dependence on groundwater (often shallow aquifer) No knowledge of quality parameters	Compromised water usage Use of unsafe water Incidence of water related diseases Financial burden	Increased drudgery of accessing safe water Sometimes girls may drop from school

Table 1: Specifics of climate-related impacts and increased vulnerability of slum communities especially women

Vector	Open water bodies/ nallas	Increased morbidity and mortality	Increased care giving role
Breeding	Unhygienic water storage practices	Loss of wages	Loss of Productive hours
	Low access to health care services	Health expenditure	
Source: Inputs ; details	from Technical Experts; Focus Group Disc	ussions with Communities and Consultatic	on Workshop. See Annex 1 and 2 for

Loss of Productive hours

With a low livelihood base and limited fall- back options, their capacity to withstand climate stress and shocks is limited, leaving them to be caught in the "**poverty trap**"- they will become poorer due to climate change but not be able to make the required resilience investments because they are poor and long-term solutions seem economically non-feasible (Sach, 2005). Even though they are often seen coping in their own ways, these strategies are not feasible in the long run and often put them in a negative situation. There is an urgent need to create solutions for positive and transformative action and develop a culture of resilience among these communities, particularly women.

4. KEY ACTORS AND STAKEHOLDERS INVOLVED IN PROJECT

The most critical success parameter for any project is the engagement of multiple stakeholders. This was also the more important for this project as it recognised the lack of platforms and communication channels between multiple stakeholders as the key barrier to building resilience of slum communities. The project was in fact conceptualised by both GRP and MHT as a partnership project between knowledge generators and communities to learn from each other and joint devise resilience solutions. The first step towards building such a project naturally was a detailed stakeholder analysis. The project conception team in the initial phase itself undertook this exercise (Figure 3) and then looked for relevant partners for coming together as part of the GRP

project.

The GRP project thus was developed as a collaboration of 17 partners with Mahila Housing SEWA Trust (MHT) as the lead organisation. This included along with the slum communities, local women leaders (Vikasinis), local government officials and elected representatives included a multi-disciplinary team of urban planners, geo-hydrologists, environmentalist, architects. civil engineers, mechanical engineers, geoinformatics, insurance, public health, disaster management and community mobilizers. (List of project partners and their core competencies is given in Annex 2).





Additionally, during the project development phase private start-ups and service providers were identified to support specific project initiatives. This process of engaging with relevant stakeholders continued during the two-year project phase. In order to specifically enable this process, between 2015 to 2017, around 15 multi-stakeholder events were conducted in various project cities bringing together more than 200 sector experts and government officials. The background and context of the key stakeholders and project actors is being described in this section.

4.1 MAHILA HOUSING SEWA TRUST

MHT was founded in 1994 by the Self Employed Women's Association (SEWA), a union of poor, selfemployed women workers, in order to facilitate better housing and infrastructure for its members in the state of Gujarat. Today, MHT is working in seventeen cities across eight states in India and collaborating with partners in Bangladesh and Nepal. It is a leading advocacy organization with expertise in policy development, grassroots organizing, community development and technical know-how in land tenure, construction, management and oversight of infrastructure projects. Most importantly, MHT creates opportunities for poor women to learn about housing issues and public processes, which they cannot get anywhere else.

MHT's mission is to organize and empower women in poor communities to improve their habitat. A quality habitat is a home with all basic services such as clean water, toilets, electricity, and adequate light and ventilation. It is a key financial asset that supports livelihoods, and makes the poor more resilient to heat stress, disease, and other hazards of climate change. MHT believes women are the leaders to drive progress in their under-served communities. Through its grassroots programs in habitat development, climate change resilience, and participatory governance, MHT empowers women to exercise their rights and uplift living conditions for their families and neighbours.

4.1.1 APPROACH AND PROGRAMS

MHT believes that the most effective way of ensuring access to services, and legal rights in slums, and poor areas is through mobilizing communities, especially women, and empowering them to procure better services for themselves. Hence MHT's approach to habitat development is to support disenfranchised communities to build social capital and empower them with technical knowledge to affect change.

Towards this, MHT helps women in poor communities organize themselves into local groups, or Community Based Organizations (CBOs), each with around 200 to 250 families. A group of 10 -12 women representing these families are trained as leaders and form a Community Action Group (CAG) to actively interface with government bodies and take charge of improvement processes. MHT also facilitates the CBOs and CAGs to form their own city level federation called "Vikasini"- which is led, managed and owned by the women leaders themselves.

Through this strong grassroot women-led approach, MHT works towards improving the delivery of core public services for the urban poor. This involves vital needs assessments of slum dwellers, conducted by members of the community- helping them elucidate and voice their stake in the projects; working out suitable negotiating platforms; facilitating policy changes to meet the needs of the communities, and most importantly promoting transparency and accountability in the service delivery system. Over the years,

MHT's work has evolved from the core focus on water and sanitation services, to energy services, affordable housing infrastructure and finance, land rights and enabling participatory urban governance. (Figure 4).

Water, Sanitation and Waste Management

•Began in 1995 as "Parivartan" Slum Networksing Project (SNP): a unique partnership between slum communities, AMC, MHT, SEWA Bank & private sector to extend a package of 7 services (individual toilets, sewerage connections, water connections, paved streets, streetlights, storm water drainage, and waste management) into slum areas.

Efficient and Renewable Energy

•Began in 2001 as "Ujjala" to provide legal electric connection in Ahmedabad slumsin partnership with Torrent Power (then Ahmedabad Electricity Company). MHT has since then expanded its energy program to other states. Along with enabling grid connections, MHT also promotes the use of energy efficient & renewable sources.

Affordable Housing and Land Rights

•Began in 2001 as a housing finance programme to support the SNP programme. The programme has expanded into a full-fledged programme since 2005 with MHT working in close collaboration with the local governments and real estate developers to enable affordable housing for all.

Participatory Urban Governance

•Began in 2008 with the formation of the first Vikasini in Ahmedabad and was later expanded with focus on advocacy for influencing urban plans and policies.

Figure 4: Evolution of MHT's Programs

Through its community-based, women-led approach, MHT has enabled access to basic services and housing for more than 329,000 families. In addition, the advocacy of these community groups has led to many other benefits such as:

- Over INR 1065 million of public money has been channellized for provision of basic civic amenities to the slum families.
- > The community itself has paid an upfront contribution of over INR 444 million towards infrastructure development for these services.

4.1.2 KEY PARTNERSHIPS

MHT recognises that to be effective in influencing 'higher level' policy decision-making, grassroot organisations need to link with other groups sharing similar concerns. It is only by forming partnerships, can we strengthen the social networks of the CBOs and Vikasinis, better compete for limited resources and increase participation and voice in macro level deliberations.

MHT has this been focusing on developing key partnerships with the local governments and academic institutions. MHT works very closely with the Ahmedabad Municipal Corporation as part of its various slum development activities: Parivartan- Slum Networking programme; Slum Electrification Programme; DPR preparation for Rajiv Awas Yojana (RAY), Resettlement facilitation under JNNURM, and Affordable housing programme. The work has also been recognised by the AMC, when it officially inducted MHT as part of the city Slum Notification Board, the committee for City Sanitation Plan, and the committee for

Zero Waste Management. In Delhi, too, MHT is on the steering committee to support the Municipal Act for the poor. IN Ranchi too, MHT is a part of the Pradhan Mantri Awas Yojana (PMAY) committee.

The success of MHT's work has been based on the fact that, MHT does not focus only on identification of gaps in implementation of people centric programmes but works in tandem with local governments to develop pro-poor solutions. This requires constant liasioning with civic officials- sensitizing them to people's needs while understanding procedural dynamics; maneuvering red-tape while remaining within the regulatory frameworks; demonstrating workable approaches on the ground and training ULBs on these approaches.

MHT has also been lobbying at the State and National levels for enabling Pro-Poor Water, Sanitation, Energy and Housing Policies and Programmes. The main focus is on streamlining the procedures and ensuring better transparency and accountability for entitlement of subsidy to the poor under the existing schemes.

Some important achievements in this regard have been;

- Being appointed as a consulting expert by the Gujarat Urban Development Authority for Urban Poor Programs
- Member on the expert committee for the Rajiv Awas Yojana of the Government of Gujarat
- On the guiding committee of Ministry of Housing and Urban Poverty Alleviation for implementing JNNURM
- Task Force Member, Prime Minister's Office (PMO) task force for Affordable Housing
- Steering Committee Member, Affordable Housing and Poverty Alleviation for the National level 12th five-year plan, Planning Commission
- MHT works very closely with HUDCO and the National Housing Bank in formulating their propoor programs.
- > MHT was on the committee formed by Ministry of Housing and Urban Poverty Alleviations.

MHT has also focused on enabling community partnerships with other organisations in Ahmedabad. The purpose of partnerships is to allow community organisations to grow beyond their own local concerns and to take a stronger position on broader issues through networking and advocacy. While the most important partnership has been developed with the local municipal bodies and elected representatives, Vikasini, Ahmedabad, has also been able to form partnerships with academic organisations like Environmental Planning Collaborative; Urban Management Centre, Ahmedabad; private sector bodies like SELCO and SEWA sister organisations like the Lok Swasthya SEWA Trust, SEWA Academy and the SEWA Bank.

4.1.3 EXPANDING INTO CLIMATE RESILIENCE

The evolution of the programs of MHT has been organic, mainly based on the needs and demands of the partner communities. MHT has always also been a learning organisation, trying to explore new knowledge and technologies which can benefit the communities. As a part of this process, when a new staff member, with experience of working on gender and Climate Change, joined MHT in 2013 she was encouraged to make a presentation on the issue in a Vikasini meeting. The presentation trigged a new thought process within the organisation. Firstly, there was a realisation that much of the work that MHT was doing was building resilience of the communities for Climate Change. However, the perspective to understand the long term impacts and build in the same into the current programmes was lacking. Secondly, the Vikasini leaders discussed how they are already experiencing the impacts of extreme temperature and precipitation and expressed the need to learn more on the issue. As that staff member

(now operations head and convenor of the GRP project) had written for the MHT blog in 2015, "A talk which I thought would be quite easy turned out to be a daunting task when I realized I was talking to women who had no idea of Global Warming, Scenario Projections, not even Greenhouse Effect. And yet they were the ones I knew are to be the most affected by the impact of the changing climate. So I did what I knew best, asked the women what they were experiencing about the changing weather conditions. And voilà, the women not only knew what was happening, but were in their own ways developing mechanisms to cope with it. It was very individual specific, often based on traditional knowledge, but it was working for them. This got me thinking, if just experience could help a group of women to fix so many problems, what could they not do if they had the requisite scientific knowledge, capacities and technologies. Can this be a way to develop actionable adaptation plans? To get solutions which are demonstrated on the ground, and which the world of poor will be ready to adopt because it would seem so real, so near to them."

That how MHT started exploring more on the issue of Climate Resilience, engaging specifically with technical experts from Indian Institute of Public Health (IIPH), Gandhinagar and Centre for Environment Education (CEE), Ahmedabad. Initially the discussions were limited to understanding the issue and how it impacts women from slum communities. Subsequently, MHT also organised a specific training on Climate Change for Vikasini, Ahmedabad, with the help of CEE. Gradually there was a shared understanding that there needs to be a deeper level of engagement on the issue and we needed to go about it scientifically.

But the key challenge was how do we actually transfer this scientific knowledge to the our grassroot staff and Vikasini leaders. Climate science, is a very technical subject (or maybe we have made it so) and it felt very difficult to transfer the science to the lesser literate or often illiterate women. Again, there is the complexity of inter-linkages and inter-connectedness between various issues, which needs to be understood before one takes decisions. A simple solution like a pond- which may seem very environment friendly and helpful in ground water recharge can be actually not so useful if the region is going to have high heat waves and thereby high evaporation rates and worst could be disastrous if the water pathways are highly contaminated especially with sewage and other solid waste as we could end up contaminating the ground water aquifer. This needs multi-disciplinary approach. But we also needed this multidisciplinary team to work together with each other and with the women to help them devise the most useful solutions.

And here came another challenge. Sectoral experts are often very possessive about their own subjects and not so open when comes to deviating from their said hypothesis. So it was important to develop a common framework which they could work on. This is easier said than done as we did not know how to develop this "COMMON" framework. That's where MHT though the women could take the lead and they did. We thus decided to work together we a common theme "Where Women take Lead in Climate Action".

4.2. SLUM COMMUNITIES

4.2.1. SOCIO-ECONOMIC BACKGROUND

The slum communities involved in the project in Ahmedabad, Bhopal and Jaipur mainly belong to Backward Castes while those in Ranchi mainly belong to the Scheduled Tribes⁶. The caste composition was reasonably similar to that of the country with 45% Other Backward Castes and 20% Scheduled castes. The communities have a high level of illiteracy with around one 29 percent not even being able to read or write and around 19 percent only being able to sign their names. Only 8.5 percent of the women interviewed had gone to high school and above. (Project baseline survey, 2016)

The residents are mostly low-income communities working in the informal sector as daily wage labourers, construction workers, iron smiths, tailors, embroiderers, domestic help, bamboo basket makers, necklace makers, sweepers and rag pickers, vegetable and food vendors, or sellers in clothes markets and home-based workers (papad, agarbatti makers). Some also work in factories, or as autodrivers, plumbers, masons, electricians, etc. Most of them lack access to secure incomes. Around 70% of the families reported an annual income between 1000 to 3500 USD in 2016. Comparatively annual incomes are higher in Ahmedabad as compared to other project cities. (Project baseline survey, 2016)

Although mostly migrants from rural areas from the same or nearby states, most of these people have been residing in the city for more than two decades. The project baseline survey (2016) showed that 80 percent of the treatment families interviewed had resided in the city for at least 15 years. Nearly 90 percent of the households reported that they owned their homes but only half of them held proper legal titles to their homes and around 30 percent were illegal. (Project baseline survey, 2016). Most of these homes have been purchased without proper legal documentation long back. Mostly illiterate, the communities have not been able to get the required registrations. Also, these are the only homes which come at affordable rates to the poor. It generally begins with taking land, either from the land owner or local land mafia, and building a hut and gradually moving towards semi-permanent and permanent houses). This does give these communities a higher level of security and social capital compared to transient communities (settlements that lack permanent/ semi-permanent houses). MHT does not generally engage transient communities. However, the overall level of social capital among the communities is generally very low. The baseline survey assessment also reflected a low level of social capital among the slum communities, especially those where MHT had not worked before the project intervention. The project referred these slum communities as emergent communities. All slum communities in Jaipur, Bhopal and Ranchi fall into this category; while one third of the slums in Ahmedabad fall under this category.

MHT has also over the years worked with many slum communities especially in Ahmedabad to access these services. As per the organisation's approach, typically there is the formation of a Community Based Organisation with around 200 to 250 families are members (mainly the women of the household). Of these 10 to 15 women would have been identified as leaders and provided with trainings and handholding support to engage with local municipal corporation, officials and elected representatives, to

⁶ Scheduled Castes and Scheduled Tribes are people belonging to those communities which have been recognised by the Indian Constitutions as socio-economically backward. The Constitution also empowers the government to make special provisions for these communities without infringement of the fundamental right to equality.

demand and access basic services. These slums have a higher level of social capital have been referred to as established slums. Around two-thirds of the slums in Ahmedabad fall under this category.

Lack of proper tenure and city policies which link provision of basic services like water, sanitation, sewage and electricity to land tenure means that most slums are deprived on the necessary infrastructure and alack access to these services. However, not all the 100 slum communities intervened are of similar nature. Government policies in India have changed over the years and with many city governments focusing on providing services atleast to regular or notified slums, there are slums which have varying degrees of access to basic services.

Based on the project baseline survey data, one can say that around half of the slum households would have access to piped water supply from the municipality. However, most households only receive one or two hours of water per day which is quite inadequate. There is huge dependence on ground water and the declining availability has heightened the water stress in summer months. The quality of water drastically deteriorates during the monsoon- forcing people to fetch drinking water from hand pumps or bore wells that are between half to two kms away.

Sanitation issues have been addressed of late with around 90 percent households having access to toilets. Open defecation, however, remains a problem in some of the settlements even where toilets are provided. The lack of proper drainage system creates an issue in otherwise improved areas. There are individual sewer connections in 80% of the homes, although overflowing sewers is a major issue. The drainage system is often clogged, causing water logging as well as mixing of sewage water with drinking water supply systems.

Garbage disposal is also serious issue as most settlements do not have proper garbage disposal system, and so garbage is often collected near homes or is thrown into nearby canals. Almost all families have access to electricity, although many may have illegal connections. The electricity supply is good, and residents experience few outages. The electricity usage and cost has significantly increased over the last decade.

Given the lack of financial security and social capital accompanied by limited access to basic services, these families are also highly vulnerable to climate change. Further even within these communities, there is a difference with some families being at high risk while others having a moderate or low risk. According to the project baseline survey (2016); around 26 percent of the families fall in the high vulnerable category, 34 percent in the moderate vulnerability category and 41 percent in the low vulnerability category.

4.2.2 GOVERNANCE IN SLUMS

Slum residents are subject to constant uncertainties- theft, disease, loss of livelihoods, environmental hazards, and the constant threat of eviction and demolition. Everyday survival is also a struggle. They face the difficult challenge of securing access to basic services such as drinking water, toilets, and health and education. Informal social networks and systems of governance often evolve in these slums to mitigate these risks and improve the interface between the government and citizens.

These systems of governance vary based on factors such as the slum's ethnic constituency, how long it has been established, and how it has been established. Some particularly heterogeneous communities do not have any single slum-wide governance system. Each of the caste/ community based clusters have their own social networks that provide support in face of adversities. Over the years, informal leadership

emerges in slum communities. These informal leaders called *aagevans* or *pramukhs* are often backed by political patronage, which allows them to bring short-term, often need-based improvements in slum areas. While in some communities, these *aagevans* enjoy local public support, in others they rule through fear and intimidation. They have a vested interest in keeping the slums poor and underdeveloped so that they can keep control. They sometimes also operate illegal businesses (ranging from supplying utilities like water, through a make-shift piped supply network, often at very high prices to manufacturing and selling gooch/ local alcohol and drugs). These activities thrive on the slum remaining under-developed and an insulated territory with minimal interference from government.

Box 2: MHT's approach to organising slum communities

When MHT enters a community, it tries to establish a new system of governance, which is womenled, based on trust and legitimacy, and one that amplifies their collective voice to negotiate for better services with the government. In some rare instances, MHT also co-opts into existing systems of governance. MHT almost often faces resistance from the local leaders and thugs (largely men with political backing). These local thugs stall change, often mocking, spreading false rumors about the organization as well as community women participating in the process. In a few instances the past, women from the community as well as MHT field workers have also been physically assaulted and threatened. In the face of such active resistance, the mobilization and community organization process often takes up o a few months. The MHT instituted governance system comprises CBOs that are membership-based groups of families residing in slums. Each CBO consists of between 200 to 250 families. The presence of CBOs makes it possible for slum families to directly get involved in slum improvement processes/ other actions which require monetary and non-monetary support/ contribution from the whole community. A group of 10 -12 women representing these families are trained as leaders to actively interface with government bodies and take charge of improvement processes. This group of leaders is termed as the community action group (CAG). The CAG members take a lead in securing access to basic services and legal rights, as well as in other social welfare actions in health, education, and women's rights. With investments in CBOs and capacity development of women leaders, there are rising aspirations among community leaders to move beyond ensuring basic civic services in their slums and strengthening their influence on city level policies and programs.

4.2.3 VIKASINI FEDERATION

As a part of its efforts to improve access to basic services to slum communities between 1998 and 2008, MHT had enabled the formation of around 150 Community-based organisations (CBOs) in Ahmedabad. These CBOs through their women leaders, not only led to physical habitat improvements, but also social, economic and organizational improvements in the lives of local residents.

Vikasini is a local feminine connotation meaning: "Carriers of development." This name was created by the women-leaders themselves.

The women leaders then set their sights beyond basic service acquisition and toward such priorities as better housing facilities as well as governance issues. Towards this they started working to tackle systems-level issues like electricity, property tax and housing, land tenure, and identification documentations for ration and election cards. At this level, however, individual CBOs are limited in the amount of leverage they can bear on citywide programs, and so MHT began introducing an idea of collaboration between women leaders from different communities.

This collaborative concept emerged most prominently in November 2008 when a Sammellan of 140 CBOs was organised in Ahmedabad to discuss an exit strategy that would reduce the direct involvement of MHT within each CBOs. It was realised that each CBO had progressed along a continuum, from limited organization to collective action on community-wide, social and political concerns. The" **Vikasini**" federation was then born out of this experience and determination within each locality to foster higher-level, city-wide interventions. An informal body, the Vikasini represents a vital link between the government and the urban slum dwellers, serving to give the urban poor a voice and command attention to policy design and implementation that directly affect these citizens' daily lives.

There is no hierarchical structure and each Vikasini member represents two to three CBOs. The representative maintains constant contact with the CBO to bring forth their issues and concerns to the city level board. These members meet every fortnight to update each other about developments in their community and plan their course of action. They also serve as a community change agent since these leaders are almost always the first port of call wherever there is a problem in the community, especially related to basic civic services, and land and housing disputes. The Vikasini leaders also bridge the important information gap by passing on relevant government notifications on new policies, surveys or schemes within their community. Basically the Vikasini works at three levels:

- 1. *Citizen-level:* work on behalf of individuals in each community on applications for identity proofs and other personal documentation (election card, ration card, UID, etc.) as well as assist the procurement of welfare benefits related to pensions, scholarships, and other livelihood support.
- 2. *Area-level:* work as the liaison for two to three CBOs to local ULBs for operations, repair and maintenance of civic service, the provision of additional facilities such plantation and railway crossings, and for area planning and enumerations.
- 3. *City-level:* represent the voices of poor and women in multi-stakeholder dialogues and workshops, and provide inputs in city plans and policies.

Currently the Vikasini in Ahmedabad is made up of 154 CBOs and led by 21 voluntary women-leaders. (Box 3) The representatives are directly and successfully involved in pushing forward a pro-poor agenda within the city governance structure. Encouraged by the success in Ahmedabad, MHT also promoted Vikasinis in Surat, Delhi and Jaipur now. We view this model of advocacy and implementation as vital to successful resilience action in every city where MHT works.

Box 3: Progress and Achievements of Vikasini Ahmedabad beyond MHT's core mandate

Since 2008, when Vikasini Ahmedabad was formed, the women leaders have constantly worked in close coordination with MHT to enable housing, energy, water and sanitation services for all. However, they have also moved beyond these to play a vital role in linking the poor community members with other local and State Government initiatives. In many cases, Vikasini representatives collect applications from government offices, distribute them amongst the eligible families/persons, provide support in filling out the applications, and, if required, escort the community members to the relevant government offices for follow-ups on the submitted forms. Thus far, Vikasini members have supported more than 7000 women, to avail relevant documents and certificates, get benefits of government welfare schemes and programmes of other civil society organisations. Vikasini, Ahmedabad has especially focused on

building partnerships with other organisations, expanding their reach and their influence. While their most important partnerships are with the local municipal bodies and elected representatives, Vikasini has also collaborated with academic organisations like the Environmental Planning Collaborative, the Urban Management Centre, private sector bodies like SELCO, and social institutions such as the Lok Swasthya SEWA Trust, SEWA Academy and the SEWA Bank.

Beginning with their involvement in planning and research of pro-poor programmes, the Vikasini is now officially invited by the Ahmedabad Municipal Corporation (AMC) and other organisations to participate on a number of issues. Over the years, Vikasini, Ahmedabad has been involved in:

- The Ahmedabad City Development Plan 2020, City Sanitation Plan and Zero Waste Management Plan
- Updating the voter list for ward number 13 on request of the local AMC Municipal Councillor.
- Biometric survey and data collection under Rajiv Awas Yojana (RAY) and Jawaharlal Nehru National Urban Renewal Mission (JNNURM) for AMC.
- Public toilets and public convenience assessments for the Urban Management Centre.
- Water and sanitation services assessment in Mehsana using mobile technology.
- Research on bicycling and transportation choices of the poor.
- Mapping of service availability and household status in 1,262 slums and chawls of Ahmedabad for Environmental Planning Collaborative (World Bank funded research project).
- Mobile enabled mapping survey of 50,000 plus households in newly incorporated fringe areas of Ahmedabad Municipal Corporation with the aim to mark out the homes of the poor who would be eligible for benefits of government schemes.
- Survey and planning for pilot at slums level for enabling 24x7 water supply services in Ahmedabad.
- Taking sessions in a winter course for students of Centre for Environment Planning and Technology (CEPT) institute in Ahmedabad.

4.3. TECHNICAL EXPERTS

The challenges of growth and resilience building faced by the urban poor requires sound research and innovations. However, taking the innovation to scale often faces barriers related to the multi-dimensional and multi-stakeholder nature of social challenges. (see 5.1 Barriers to ResilienCe Building of Slum Dwellers). Dealing with this required a new approach where social and technological progress co-evolves through direct dialogue between the natural and social sciences and collective action between communities and technical experts. One of the key aspects of the project was thus to facilitate processes and platforms which enable communities, and technical experts (social and natural scientists) to interact and co-create pro-poor resilient solutions.

4.3.1 TYPES OF TECHNICAL ACTORS

Given the multi-dimensional nature of the project, four types of technical experts were part of the project:

a) **Innovative entrepreneurs and businesses:** Mainly interested in arranging a demonstration of their product/service in the slums, the entrepreneurs and business sought the help of MHT to get an entry into the communities and a space to show case their product. MHT's interest was mainly to explore multiple solutions to the various problems to be able to support the communities to select the most efficient and cost-effective solution. The idea was to create a basket of choices for the community to choose from based on their needs, aspirations and financial status. During the project a range of such partners dealing with improved roofing solutions, water purification products, composting technologies, building technologies, etc was explored.

- b) Academic Institutions-Universities and Public Research Institutes : Academic institutions played many roles including enabling systems thinking approach, providing subject specific inputs and technical trainings and creation of knowledge products (technical manuals, audio/video bytes, etc). The key institutes participating for technical support especially related with water and heat stress were Free University of Berlin (FUB) and Indian Institute of Public Health Gandhinagar (IIPHG). These institutes particularly engaged undertaking applied research projects in Jaipur and Ahmedabad. In addition, University of Georgia Tech, Atlanta along with IIPHG lead the formative and summative project evaluation to be able to capture and disseminate the learnings.
- c) <u>Civil Society Organizations (CSOs) and Social Innovators</u>: Local CSOs with different organizational focus and expertise were also involved in the process. The key among them was Centre for Environment Education (CEE) which led the communication and behavior change aspects of the project. In addition, the project also involved multiple communication technology partners- Mobile Vaani (for mobile based communication); Radio Nazaria (a community radio station at Ahmedabad); Ayan Media (a visual communication agency). The highlight of the project was that these agencies did not work in isolation but came together to support the project develop an integrated and effective communication strategy.
- d) Individual Subject Matter Experts: The fourth set of technical experts involved a lot of individuals with subject matter expertise, who demonstrated an interest in working directly with the communities/ grassroot to train them or design products and services for them. The project benefitted from the expert services of more than 20 people from the field of health, vector management, disaster management, water management, behavior change analysis and risk management and information technology. These experts came from different backgrounds- some had worked with the government while some with CSOs, bringing in varied perspectives to the same issue.

The focus was on partnering with highly specialized, local, national, international experts. One aspect which ran common across all the partners was their intention to enable policy change for scale- most of the partners had worked with the local, state or national government.

There were more than 21 organisations/individuals which were involved in the project as partners, although not all partners had an equal stake. While the innovators and entrepreneurs were limited to dealing with their products, many individual subject matter experts limited to providing trainings to community and staff and participation in project related workshops. Mainly there were four partners-IIPHG, FUB, Georgia Tech and CEE which were involved in depth into the project designing and implementation and monitoring.

4.3.2 TECHNOLOGY FOR SLUMS

The initial attraction for most partners to collaborate was MHT's ability to mobilise slum communities especially women and the approach of the project designing which enabled the partners to interact directly with the women leaders. This process being facilitated in the project design stage itself, was a key motivation for the partners to continue to be a part of the project.

This is interesting because one the key barriers to innovation and transfer of knowledge identified by the project was the skills and abilities of technical experts to work with communities. Currently, this happens in two ways:

- a) **For research purposes** when the University of the PRI would send its students or surveyors to the communities to get data from them which would inform the research project. Here the community is basically a supplier of information, with no or little control over the analysis and conclusions drawn. In fact in most cases, the results may not even be shared with the communities.
- b) **For marketing purposes** Innovators as well as businesses with established products, everyone has started to look at slum communities as a target population, especially those who are a level higher on the poverty pyramid. However, both these groups face multiple challenges.

Firstly, the products or services offered are often designed in a generic manner and are not suitable for slum communities. They need designs that are planned for density, have mixed or multiple use, build on their existing investments, are cost-effective and at the same time aspirational. Hence, even though a range of climate resilient solutions for heat resistance and water management are already available, they are often inaccessible and unsuitably prototyped to meet the specific needs of these communities. Often, the technology offered is not in sync with the existing infrastructure or the existing space constraints. This happens mainly because the innovator has no space to test the prototype of the product directly with the slum communities and also no facilitation for validation of the prototype. One of the essential services that MHT brought into this partnership was facilitation to test and provide feedback on the prototype and to validate the solution.

The second challenge is for businesses to have a proper supply chain model which enables them to reach out products to communities at a scale. The current distributor-based model of most businesses which require high upfront investments are not successful in slum communities where the capacity to pay is low and initial turnover is less making the business less viable. While MHT is still struggling to enable big changes in this, the CAG leaders and Vikasinis have been able to make a mark by becoming sales agents and marketeers for many of the products. This helps disseminate the product in the community while also becoming a source of livelihood for the women leaders.

The third challenge is the cost. Most innovations at the initial stage are not cost effective especially as the manufacturer has not achieved the economies of scale. This makes the products costlier and often there are not many takers at the slum levels. As slum dwellers have little access to formal finance, they are not even able to take these on instalments. MHT has been working towards enabling this by linking slum dwellers to formal banks and credit cooperatives as well as by having a revolving fund specifically created for financing such products. This is also an attraction for innovators as well as businesses to partner with MHT.

4.4. GOVERNMENT ACTORS

4.4.1 MUNICIPAL CORPORATORS (LOCAL COUNCILORS)

Municipal corporators or Councilors are members of the local government council. They are elected from different wards⁷, which are both electoral/political sub-divisions and administrative sub units in Indian cities.

A councillor's primary role is to monitor the activities of urban local body in the provision of all municipal services and ensure their effectiveness in their respective wards. They oversee the responsibility to ensure coverage and functioning of public works like water, sewer, sanitation, lighting, solid waste management, roads, government schools, hospitals, public parks etc., and hence are the closest to the communities.

In most cities, the councilors are allocated a set budget for carrying out development activities in their wards. In Ahmedabad for example, each ward councilor is allocated an annual budget of Rs. 22 Lakhs (2017-2018). Each ward is represented by 4 Councillors, hence the total councillor budget for the ward is Rs. 88 lakhs. In Bhopal, the annual allocated budget for each ward councillor is about Rs. 25 lakhs (2016-17).

Apart from councillors ward development funds, in some Corporation example Ahmedabad, Bhubhaneshwar, Ranchi also sets aside a capital budget for the ward.⁸ To utilize these capital funds, the

councilors are required to submit the intent and estimated budget for a proposed capital improvement and get it sanctioned from the local body.

Over the last 20 years, MHT has mobilized and trained women leaders from poor communities to engage with the councilors and leverage their budgets to bring in improvements to their area. With the active engagement and financial support of local councilors, the women leaders have been able to bring about tangible improvements in their areas. As shared by Hiraben Patel, the ward councillor from Nikol ward in Ahmedabad, "It is only with the support of the Vikasini leader in my area that I have been able to work with so much of vigour. The support of the Vikasini is very important in reaching out to the community and convincing people that they need to raise a voice for their rights."

4.4.2 TECHNICAL STAFF OF LOCAL GOVERNMENT

While the councillors form the deliberative wing of the local government, all Municipal Corporations also have an executive wing headed by the Municipal Commissioner. These are subsequently divided into zone/ward level offices and different functional departments like public health and engineering, water and sanitation, school education, etc. The functional departments are differently organised in different cities. These are but the core municipal staff who plan, sanction and implement the various programmes and services of the municipal corporation. These departments have a number of technical staff mainly

⁷ As discussed earlier in section ----, the population of a city determines the number of wards in a municipal area. For example, in Ahmedabad, typically one ward comprises a population of about one hundred thousand (One lakh).

⁸ In Bhopal, there is no additional ward-wise fund allocation, but the Bhopal Municipal Corporation prepares a detail programme budget.

engineers and medical professionals. While these staff are competent to design and plan projects technically, they often lack the social engineering skills required during implementation especially when it comes to working in slums. Because there are limited channels for effective dialog between government and slum dwellers, local governments are often unaware of barriers that exist in extending services in slums.

One of the unique selling points of MHT has been its programme managers who are mainly trained as engineers but bring strong social mobilization skills with them. These programme managers work closely with the technical staff to overcome these barriers by recommending process improvements, changes in policies and operational guidelines, and surrogate mechanisms to help reach their policies and programs to the poor. As Bharati Bhonsale, programme manager, Ahmedabad shares, "*I am responsible for liasioning with the government. Hence, I am aware of the circumstances at both ends – the women who face problems as well as the local government which finds it difficult to work in the community. Thus, I am required to do the balancing act."* In the past 20 years, MHT has successfully worked with local governments and has been instrumental in bringing key policy and program changes that have enabled the poor to access improved services. Local governments also recognize the value MHT brings in resolving the implementation hurdles on ground.

Over the years, in Ahmedabad, the relationships have developed beyond only programme managers to our spearhead team members (grassroot staff) and Vikasinis directly interacting with the technical staff. While this has not been an easy process and required many training sessions and handholding support to the Vikasini leaders, one can now see the change in perception and attitude of both the local government staff and Vikasini leaders.

As, Meena ben, a Vikasini leader, from Vishwasnagar, Ahmedabad shares, "Initially when we thought of working with the local government, we always had the impression that it would be difficult. But over the years, I received training from Anandbhai regarding the structure and functioning of local governance systems. We have been able to change and challenge people's perceptions about the government. The belief that government machinery never works is a stereotype and we need to dismantle it." A similar sentiment is echoed in the statement of Mr. Anand Patel, the (now Retd) Deputy Commissioner of Ahmedabad, "I have been working with MHT and Vikasini leaders since the past 19 years. In order to implement government policies and schemes in urban slums, Vikasini's support has been instrumental. The government falls short when it comes to convincing people and securing their support for developmental needs. This is where organizations like MHT and Vikasini leaders have played a vital role of a mediator between the community and the government. In this way, we were able to serve around 50 slums in the city. During the initial phase of my work, I did face some challenges. But when I saw that I had MHT's full support, I started enjoying working with these women leaders and it has given me immense satisfaction to serve the community."

Another key role that MHT plays is enabling coordination between the multiple departments of the ULBs. One of the key challenges to enable basic services to slum dwellers is also the multiplicity of windows and channels which they have to approach to secure a service. For example as part of one 500 NOC scheme in Ahmedabad, which enables slum communities (especially those living in very small dwellings and are poor) to access legal water and sanitation connections and also provides subsidy for the same. While an innovative mechanism to enable service delivery to the poor, the critical challenge of the schemes has been that the application passes through 38 tables in 6 different local government departments. Most slum dwellers are not aware of these processes and end up with follow ups only at the zone office level, thereby returning dejected.

MHT demystifies the complicated processes and builds capacities of the women leaders particularly Vikasinis to understand the same. This is very essential for the women leaders to be able to pursue their case through the whole government channel and bring it to a logical conclusion. Further handholding support is provided to the women leaders to follow up at multiple levels and also work with the technical staff in various departments to understand the limitations and solve them.

4.4.3 NATIONAL AND STATE GOVERNMENTS

Although a federal structure both National and State Governments play a key role in urban development especially for health, education, infrastructure and housing development. Climate Change as a subject is also being dealt more at National and State level than at municipal level. In addition, the Ministry of Finance also coordinates the Central Finance Commissions every five years, which stipulate the share of the ULBs in the net revenues. The 14th Finance Commission, for example, enabled a basic and performance grant of INR 69,715 crores and 17,429 crores, respectively to all ULBs in the country for the period from 2015- 2020. This is an untied grant particularly to be used for provision of basic services and provides the much needed fiscal autonomy to ULBs.

The role of the National Government lies mainly in policy making and supplementing the same with finances. In many cases there are National programmes like JNNURM, PMAY, AMRUT, SMART Cities, etc and centrally sponsored schemes like the National Urban Health Mission and Education related Schemes, which impact cities. Under many of these the city governments need to send proposals to the National Government to seek funding either directly or through the respective state governments. Most of these projects are implemented directly by the ULB.

MHT plays a key role in supporting the ULBs in implementing these programmes on the ground especially the PMAY. Besides, it has also been involved with AMC in supporting rehabilitation of slum dwellers arising as a result of the implementation of many JNNURM programme sin Ahmedabad. Another key role that MHT plays is documenting the challenges and solutions that emerge in the process of implementation of these projects and participating in policy debates at National level to enable policy change. (also see 4.1.2 Key Partnerships).

The State governments in India through their Urban development Departments and other service related line departments especially Public Health and Engineering Department, Roads and Building, have a more pro-active role in urban management. Not only do the State governments directly provide Grant-in Aid to urban local bodies, but also implement projects directly through the line departments or parastatal agencies. In some states the urban service delivery is the responsibility of parastatals (state government's statutory agencies) that are not answerable to ULBs and only to state governments. MHT's interaction with the parastatals dealing with basic service delivery like Jal (Water) Boards, Electricity Boards, Housing Boards, etc is similar to its interaction with the ULB. The interactions at State level are limited to influencing changes in policies and legislations related to town planning, water, sanitation and housing.

5. THE URBAN RESILIENCE (GRP) PROJECT

The Global Resilience Partnership (GRP) project was developed as a consortium of 18 partners- technical, government and communities in 2015. It aimed to build resilience to Climate risks and shocks for more than 1,25,000 people, particularly women, living in 100 slum settlements in 7 cities of South Asia. The project team believed that achieving this required the target communities to be aware of the climatic risks and projections, conduct their own risk and vulnerability assessments, integrate the climate risk perspective, especially those linked with disaster preparedness, land/resource use and household level financial planning.

5.1 BARRIERS TO RESILIENCE BUILDING OF SLUM DWELLERS

Slum communities, particularly women, however, face many information, technical, behavioral, institutional and financial challenges to building climate resilience. (Figure 5)

Information

Barriers- Slum communities are faced with two kinds of knowledge barriers —





the first is poor understanding of the potential risk of climate change due to lack of micro level data and access to climate related information and the other is limited skillsets for scientific assessment of risks and vulnerabilities (IIED and IIED, et al 2014; Rockefeller and Arup International, 2014). Additionally the skill gaps among local governments and climate scientists to work in participation with communities further hinder the participatory processes. Preston et al. (2011) has, through a review of 45 vulnerability mapping exercises, found that only 40% included stakeholder participation highlighting the technical, expertise, resource, and institutional challenges to implementing participatory processes.

Institutional Barriers- City planning is often not inclusive and slum dwellers in particular are not even considered as residents of the city and governments are less likely to invest in them (UNISDR, 2011). A very critical requirement to resilience is the developing of social capital or people's institutions across slums and cities, especially those which are inclusive of women and who have the capacity to generate pressure for changes within the government (Boonyabancha and Mitlin, 2012). At the same time, there is the need for city governments and local service providers to respond to the needs of urban poor, particularly slum communities. Many city governments, however, lack the capacities and interdepartmental coordination, to develop and implement pro-poor participatory climate resilience action plans (UMC and NIUA, 2008). IPCC (2014) also highlighted the critical partnership gaps between technical experts, local governments and slum communities to undertake participatory risk assessments and design joint technical solutions.
Technology Adoption Barriers- While technology innovation is critical, a range of climate resilient solutions for heat resistance (ventilation designs, alternative materials, green landscaping,) and water management (rain water harvesting, small recharge measures, eco-system water planning, water testing kits, etc) are already available. However, they are not adopted by the communities due to a lack of awareness. Also they are often inaccessible and unsuitably prototyped to meet the specific needs of these communities (Nagrath, 2013). Often, the technology offered is not in sync with the existing infrastructure or the existing space constraints. Additionally, one also needs to understand that the poor prefer technology solutions which builds on their existing investments. Addressing this requires the involvement of communities with social scientists and technical experts to design effective and customised solutions.

Further, given their socio-economic context, the poor often have a short-term vision and depict very typical behavior anomalies when dealing with risk. The unpredictability of climate-related risks is more likely to bring out behavior anomalies such as loss aversion, status-quo bias and/or narrow framing. Thus mere information will not induce behavior change or adoption. There is a need to provide distinct incentives (not necessarily financial) for this (IFRC, 2010). This requires a study of the cultural as well as social dynamics, along with the behavior patterns of the poor- a very context specific approach. Also there is need for innovations in communication tools which can help translate a futuristic concept into today's priorities for inducing action.

Financial Barriers- Resilient technologies are often expensive and require capital investments and incur high maintenance costs, making them inaccessible to the underprivileged communities. It is important to design financial products keeping in mind the needs of the urban poor and their informal status, including those for risk transfer.

5.2 PROJECT RESILIENCE BUILDING MODEL

The project was thus conceived as a socio-technical partnership between communities and technical experts to address all the above barriers. The proposed community-based resilience model was to be women-led, integrated; evidence based, and focused on innovative communication strategies to promote a culture of resilience action.

Women-led: Currently, the most vulnerable in the community and one with the least access to information and resources, women, were empowered to become agents of change. Systems were created for women to take lead in resilience action by building their capacities and providing them platforms to voice their concerns and priorities. This was done mainly by organising them into community-based organisations (CBOs), community action groups (CAGs) and building their capacities as Vikasinis.

Integrated and Partnership based: The project also brought together multi-disciplinary expertise to look at holistic vulnerability assessments and solutions to climate stress with the livelihood of the poor

at the core. The focus was to get multiple stakeholders to engage with each other and create frameworks and tools to facilitate cross-transfer of knowledge.

Evidence based Technology and Communication for Change: The project deployed innovative communication strategies to induce action including audio, video and mobile messaging, participatory games, folk shows, participatory learning and vulnerability assessment tools, microdata gathering through community based surveillance and the development of a climate vulnerability calculator for the poor. Also recognizing that action occurs only when awareness is accompanied by a reliable and effective intervention, the



project also focused on undertaking field demonstrations of successful technologies.

5.3 THEORY OF CHANGE AND LOGIC MODEL

The project builds upon the conviction that if the urban poor are provided with the requisite knowledge to undertake vulnerability and risk assessments and are equipped with available resilient-technologies, they will be able to devise and implement locally relevant and pro-poor climate resilient solutions. Moreover, if the poor are empowered to implement their own resilience plans, and the institutional mechanisms representing their voices are in place, they will be able to better influence city planning and governance on pro-poor adaptation and resilience action.

Climate action for poor will happen only if the poor are self-organized for action. However, they can take action only if they are made aware of the risks and are provided simplified data through customized trainings and exposure through structured interactions with research/technical experts. There are suitable technology solutions available, which need to be jointly developed and validated, standardized, demonstrated and marketed with suitable financial support. Incentivizing is the key to convincing them to adopt the technology. The underprivileged communities will be able to effectively pressurize the government if they are organized into collectives, are equipped with technical knowledge and qualified support.

This will be sustainable and scalable only if the whole process is institutionalized. MHT believes that the most efficient model of resilience would be one which enables 'iterative adaptation' — a learning process through creation of highly-evolved, self-organized institutions. This requires pursuing an adaptive process that incorporates the ability to continue adapting. It builds in capacity to "learn" and progress towards greater efficiency and optimization. The challenge, however, is how one "engineers" such a process, the critical answer to which would be by "empowering local agents" to build an institution that ensures stability for the community at risk.



The logic model that emerges from our theory of change is given in Figure 6.

The model in turn implies the following relationships between inputs, outputs, proximate outcomes and long-term impacts as shared in Table 2.

Table 2: Project Input, Output and Outcome Matrix

LEVEL	INPUTS	OUTPUTS	OUTCOMES	IMPACTS (CULTURE OF RESILIENCE)
HOUSEHOLD	Mobilizing Women through One to One contact, Area meetings and Video Shows; Targeted Communication; Trainings and Exposure Visits; Support for Technology Demonstrations	Household level Vulnerability Database; Increased Climate Risk and solutions awareness among women; Catalogue (Print and Video) of Successful Household level technologies	Households Adopt Resilient Solutions; Information Seeking behavior for Climate Risks and Technology Solution demonstrated	Households show reduced vulnerability and show futuristic investment tendencies
SLUM/ LOCALITY	Formation of Community Action Groups; Training of Women and Youth leaders; Tools for Vulnerability Assessment (Data collection and Sharing) and Resilience	Community Action Groups (CAG) in place; Local cadre of trained women and youth leaders developed; Community Surveillance System in place; Slum level	CAG implementing Resilience Action Plan; Revisiting the Plan through regular feedback and systematic data collection; Sharing of real-	Slums/localities have a system for risk surveillance and resilience planning in place; CAG able to attract public investment/

Figure 6: Project Theory of Change

	Planning; Support for Technology Demonstration	Resilience Plans Developed	time data at city level	private financing options
СІТҮ	Formation of City-level Federations (Vikasinis*); Meetings and Trainings of Vikasinis; Development of city- level Technical Resource Group; Tools for Vulnerability Analysis; Tools for scoping of technologies and community based validation	City Level forum with Vikasini and Technical Resource Groups Functional; Slum vulnerability Spatial Database available online; Citywide Recommended Solutions Catalogue with supply chain mechanisms (Private and Public Sector based) available	Vikasini undertaking advocacy with local governments/servi ce providers for investment in pro- poor resilience; Systems for regular interaction between community, technical experts (resource group) and local government in place)	City Government resilience plans have a pro-poor and pro-women agenda with voices and concerns of slum dwellers incorporated; Vikasini providing regular feedback in City level plans and processes

5.4PROJECT DEVELOPMENT PHASE

The GRP challenge was unique in the sense that it was a two phased process. After the initial concept note was selected, there was financial and technical support for the selected grantees to develop undertake an in-depth problem assessment and then design their solutions (project). MHT and its partners used this opportunity to test the viability of the theory of change in the project development phase itself. Thus, the project was developed in a participatory manner by providing initial orientation to select community leaders especially Vikasini Ahmedabad to understand Climate risks and vulnerability and provided them with the necessary tools (Histogram and Moser framework) to undertake a quick assessment of the same at the slum level. The Vikasini leaders in Ahmedabad and project staff in the emerging cities used these tools to undertake focus group discussions (FGDs) with the slum communities.

In end March 2015, they were then brought them together with the technical experts in workshop mode to undertake joint problem analysis. The problem tree development workshop which brought the technical partners of the project, implementation team and women leaders from Ahmedabad, Bhopal, Ranchi and Jaipur on one platform, was a key highlight of the project development stage. This was the first type of interaction where the experts and communities were brought across the table and discussed about the specific stresses from their different perceptions to develop problem trees. Each of these problem trees on heat stress, water scarcity, inland flooding, water and vector-borne diseases, loss of property and institutional capacities as well as mechanisms developed as part of this workshop were taken as a base to develop log-frames which helped the team to design solutions in a participatory mode. At the end of this two-day comprehensive workshop, securing health and livelihoods, emerged as the core of the solutions framework. This workshop also broke the ice between the technical experts and community leaders and was followed by many technical experts also visiting the slums to understand the issues better.

The process of conducting FGDs was further expanded into partner cities Bhubhaneshwar and Dhaka (Kathmandu was not covered as it faced a major earthquake in that period). In all 52 FGDs were organised in 6 cities during this phase on the issues related to climate change. The key stress being covered by the project-heat, water, water quality, flooding and inundation and vector management; also emerged as the major issues during these FGDs. Communities shared that due to extensively hot afternoons, 4 hours of the day went in vain as they could not take up any activity due to the extreme heat. This led to decrease in the working hours as well as reduced efficiency. The FGDs also brought out that most of the households received 2-3 hours of water per day through individual municipal connections or through common bore wells in the community. However, there were still areas where water was a major issue especially in the summer months. Most of the communities also reported on inland flooding which caused backlogged sewers. Some also mentioned that heavy rainfall for as little as 1-2 hours caused knee-level water logging and on an average, workers miss out 4-5 working days a month as instead of working, residents got involved in removing water or fell sick and were unable to work as flooding caused unhygienic conditions, increase in dengue and cases of other vector borne diseases. Based on these interactions detailed city level community profiles and slum profiles were developed for the target settlements.

Vikasini, Ahmedabad was so charged during this phase, that they demanded more technical knowledge on health-related topics on which MHT has not worked directly before. Two technical trainings were thus organized for the Vikasini-Ahmedabad during this stage, one on the issue of Heat stress, Water and Vector-borne diseases facilitated by the project partners Dr. Vijay Kohli and Dr. Vikas Desai. Both the trainings helped the Vikasinis having an increased understanding of the new concepts and breaking of myths around these issues.

Later in May 2015, there was also an Indicator development exercise undertaken with the Vikasini Ahmedabad and grassroot mobilization team which was to feed into the process of assessing communitylevel vulnerability. Vikasini's view of smart slum and smart city was taken to understand their perception of vulnerability, risk and resilience building. Various sources of information for the women leaders were also mapped to identify the existing barriers and prospects for behavior change communication interventions as part of the project implementation. This was also supported by an interesting role play and story-telling exercise with the grassroots team and different types of communication strategies/practices used on the ground to mobilize the communities. The entire exercise was helpful in charting out a behavior change communication strategy for the project. The last day of this three-day workshop also saw various communication. Two of the three main communication partners of the project-Mobile Vani and Radio Nazaria were bought into the project mainly during this workshop.

Inorder to further the stakeholder engagement process, multi-stakeholder workshops were organised in Ahmedabad, Bhubhaneshwar and Dhaka. The last two especially enabled MHT to understand the dynamics of the partner cities as also assess the possibilities of collaboration in these cities. It was through these workshops that in addition to Homenet South Asia, two new project partners ICCCAD (Dhaka) and CORE (Bhubhaneshwar) were identified.

During this phase, the technical experts especially Georgia Tech, FUB, IIPHG, Development Alternatives, SELCO, Himadri Consultants and other individual experts also did their own scoping of solutions/technologies and also developed sectoral briefs of their subjects of expertise. These sectoral briefs went on to become the basis for establishing the evidence to validate the theory of change and proposed project strategies.

Finally, in July 2015, a solutions development workshop was organised which again brought together the technical experts and Vikasini Ahmedabad leaders to reflect on the proposed project model, implementation strategies and activities.

5.5 PROJECT STRATEGIES, ACTIVITIES AND OUTPUTS

5.5.1 COMMUNITY ORGANIZATION AND LEADERSHIP TRAININGS

Women face structural barriers and capacity gaps in participating in local governance activities, as they are less likely than men to have the education, contacts and resources needed to become effective leaders and change makers. Organising women from slums communities and providing them leadership trainings has thus been one of the key focus of MHT's work over the years.

MHT organizes and mobilizes women from poor slum communities to form their own Community Based Organizations (CBOs), each with around 200 to 250 families. A group of 15 to 25 women representing these families are trained on community action, leadership and urban governance. Generally, a group of 10 to 12 women would emerge as leaders during the training process. This group of leaders is called the Community Action Group (CAG). The CAG group then becomes a strong support system within the slum for women to actively interface with government bodies and municipal corporations and take charge of the slum improvement processes.

MHT applied the same approach to the GRP project. During the project period, MHT mobilised 27,055 families in 107 slum communities across seven project cities into CBOs. This was followed by conducting of 180 trainings for women leaders to induce collective action within the communities. Considering the time constraints of the project, MHT shortened its CAG training programme from a 10 module (20 days) programme to a 4 module (8 days) programme. The key topic covered under the GRP project for CAG leaders included:

- 1) Orientation to MHT and GRP;
- 2) Importance of collective action and process of CBO/CAG formation;
- 3) Structure and functioning of urban local bodies (ULB) and service agencies (including a visit to the local ULB office)
- 4) Urban development programmes and people's entitlements

As the training process continued over a period of 6 months to one year depending on the slum, CAGs were promoted in all the slum settlements. However, there was a difference. The CAGs promoted as part of the GRP not only included 10 women leaders from the CBO but were also encouraged to include 2 adolescent/young girls. This was done with the dual motive to firstly have a more contemporary and futuristic perspective within the group as well as for the CAG to benefit with the technology skills which these young girls would bring with them. These trainings and mobilization activities enabled formation of 114 Women led CAGs with 1604 leaders including 249 adolescent girls/youth leaders.

5.5.2 PROMOTING A CITY LEVEL FORUM FOR POOR WOMEN

The Ahmedabad experience clearly had demonstrated what influence a city-level federation like "Vikasini" can have on scale as well as for enabling pro-poor urban development policies. Learning from this experience, while the Vikasini in Ahmedabad was strengthened on the issue of Climate Change and resilience building, MHT also facilitated the formation of Vikasini in other emerging cities- Jaipur, Bhopal

and Ranchi. This mainly involved identification of CAG leaders, who are willing and have the capacity to move beyond their residential locations to other places. Generally, one leader for 2-3 nearby slums is identified. A larger group of women was initially identified and encouraged to meet at the city level as part of Vikasini meetings. These women are then given specific tasks to perform in other locations- like mobilizing CBOs in other slums, undertaking surveys, facilitating drives, facilitating government liasioning, etc. This process was undertaken for a period of 6 to 8 months in the three cities after which, an initial group of 15 to 20 city-level women leaders have emerged as Vikasinis in these cities.

In Bhubhaneshwar, the process was initiated by providing them the task of facilitating the CBVAT exercise. This hastened the process and even Bhubhaneshwar saw the emergence of city-level Vikasini leaders. Processes for enabling 2 more Vikasinis is to be initiated in Dhaka and Kathmandu.

5.5.3 MULTI-STAKEHOLDER ENGAGEMENT

Another key learning applied from MHT's earlier experience in Ahmedabad was the facilitation of multistakeholder engagement. Thus, in all cities, CAG and Vikasini leaders were encouraged to develop one-to

one relationships with the local ward councillors and municipal officials. To further strengthen these interactions city level multi-stakeholder events (workshops and round tables) were organised in all cities. The highlight of these events were the panel discussions organised to provide various stakeholders an opportunity to provide their perspective and also interact with the other stakeholders. Each multistakeholder event has a panel of community leaders, which was much appreciated. All the events saw elected representatives and officials of the municipal corporation and service agencies participate.

Another highlight was the participation of local academic institutions and innovators in these events. This not only helped MHT and the communities get a better overview of the local issues (especially from a scientific angle) but also helped create linkages for

Participatory Research on Integrated Water Management with FUB in Jaipur

An integrated water management plan was developed in two slum communities in Jaipur as part of a highly technical yet participatory research project with FUB. The research has been completed and the findings have been developed as a technical handbook on conducting participatory ground water research and guidelines to perform hydrogeological investigations. The results of the study along-with possible solutions have also been shared with the team as well as the local stakeholders.

future technical interactions. 21 Technical experts from various fields including water, geo-hydrology, heat stress, vector management, disaster management, health, social development specialists, architects, civil engineers, communication, etc. were identified at the project level and at city level. MHT further facilitated interaction between technical experts and slum communities through additional field visits, technical trainings and conducting of joint research activities. The events and partnerships helped bridge the communication and knowledge gaps between different stakeholders, help them understand each other, and move towards coordinated resilience action.

5.5.4 CLIMATE CHANGE TRAININGS AND COMMUNICATION ACTIVITIES

The project also recognised that to transfer scientific knowledge, we will have to repeatedly and progressively convey information regarding climate change and resilience actions without losing

residents' interest. Toward this goal, it was necessary to devise innovative communication tools that are systematic, repeated, and slowly progressing in depth and difficulty.

The key trainings and communication activities that MHT adopted in this regard included:

- a) The Basic Climate Change (BCC) Orientation Training
- b) Advanced technical trainings led by sector experts
- c) Mass communication campaigns using creative mediums like games, video shows, and folk media.

The basic training module aimed to introduce the concept of climate change and generate awareness of its impact on the urban poor, especially women. It's a step-by-step process composed of six sessions. The first two sessions are intended to stimulate interest. Session 3 and session 4 introduce concepts such as climate change and global warming and explaining their impacts on the entire humanity as well as everyday life. The last two sessions are more activity- oriented, with Session 5 introducing the game of snakes and ladders, where climate stressors are snakes to drag women down and resilience actions are ladders that help them up. Session 6 encourages personal reflection and introduces the concept of resilience actions and futuristic thinking. MHT conducts this two-day training with the CAG, who then act as Climate Saathis to facilitate individual modules in the community. 58 trainings on orientation of climate risks and resilience measures have been organized in the project period to create a local cadre of 1508 Climate Saathis.

The technical trainings conducted by sector experts offered more in-depth and comprehensive information on a given topic such as water management, vector-borne disease, heat stress, managing one's own health etc. Instead of giving all CAG members undifferentiated Technical Training, the intention is to encourage each CAG member to become specialized in at least one climate change-related stressor among the four. 16 advanced trainings have been conducted for 445 Climate Saathis to further upgrade their knowledge base on climate risks and resilience solutions. These advanced trainings were technical trainings on multiple climate risks and solutions- heat stress, water management, vector-borne diseases & flooding, waste management and disaster management.

MHT also employed innovative communication strategies tools like snake and ladder game, animated videos, posters, and wall paintings and folk media to reach out to communities through multiple channels. The print media material included dissemination of 500 copies each of a set of 4 posters on different stresses, which was widely used in all CBO meetings reaching out to a wide audience. Folk media shows were organised in 38 slums reaching out to more than 7500 people within a span of one month. Around 229 rounds of the snakes and ladders game were organized in which more than 3500 people participated. Short audio-visual materials on community vulnerabilities, interventions and community feedback have also been produced by Awaas Sewa for community awareness building. Among these, the animation film on "Ramaben's story" became quite popular with the communities.

An integrated Voice Response (IVR) service provided personalized access to climate-change related information and a venue for their personal feedback on household-level interventions. 87114 IVR based messages were sent during the project period. 6289 inbound call were received at the two-communication platform Mobile Vaani created for the project.

Communication channels like community radio that report local situation, expert opinion, government responses and citizens' voices (primarily in Ahmedabad) help widen outreach beyond our targeted communities. 45 radio episodes have been broadcasted on the broad theme of "Enabling Inclusive and



Basic Climate Change Training1. Snake and Ladder game2. Realisation of climate variance

Resilient Cities" via Radio Nazariya (a community radio station in Ahmedabad). Four adolescent girls who were CAG leaders have also begun working as city level radio reporters for Radio Nazariya.

5.5.5 COMMUNITY BASED VULNERABILITY ASSESSMENT AND RESILIENCE ACTION PLANNING

One the core project beliefs was that communities need to undertake their own vulnerability assessment. This was a major challenge, since neither local slum-level data is available handily in the region, not did the women leaders have the capacities and orientation to learn complex models. To deal with this, the GRP partners developed the Community Based Vulnerability Assessment Toolkit (CBVAT). This is a participatory learning tool using a set of 6 exercises designed to build a community's understanding about climate risks and adaptation strategies. The assessment spans over six to eight weeks. A series of charts and tables are provided to CAG members, guiding them to identify the stressor against which the community is most vulnerable, the occupation groups/gender that are most vulnerable as also to assess the root cause of the vulnerability and their adaptive capacity. These include:

- a) Histogram: To map the climate and urbanization challenges faced in the last ten years
- b) Moser: To understand the gender implication of climate stress and shocks
- c) Matrix Ranking: To apply a somewhat objective analysis to identify the most impacting stressor and the most vulnerable occupational groups
- d) Risk Quadrant: To understand the stressors and shocks in relation to the level of impact and frequency of occurence
- e) Root Influence Diagram: To dissect the key risks emerging in the last session and identify causes which are mainly responsible for the risk as well as for aggravating the situation
- f) Adaptive Capacity Scoring: To assess the availability of infrastructure, knowledge and social capital within the community which would contribute to building their resilience

The CBVAT provided a framework for dialogue within communities regarding identification of practical strategies to facilitate community-based adaptation to climate change. Once the CBVAT assessment is completed, the results are converted into a power point presentation and shared with the CAG members in a workshop mode. This is when the CAGs come together to develop their Community Based Resilience Action Plan (CBRAP). The CAG members revisit the assessment results once again, improving or accepting the same and develop an annual action plan for addressing the identified key stressors, listing the time required for action, the daily/weekly/monthly goals, the funding they need, and organizations who can support the communities in implementing these action plans. During the project period almost 70% of the CAGs had completed their CBVAT assessments and more than one-third has developed their resilience action plans.

5.5.6 COMMUNITY-BASED SURVEILLANCE

While the annual action plan development process is a periodic affair, the project was also conscious of the fact that resilience building is an iterative process and that the communities especially the CAG leaders have to be groomed into monitoring the climate related changes and stresses to be able to take timely action. Towards this, the project developed a two-pronged surveillance system:

a) **Seasonal surveillance system:** This was initiated through drives involving young boys and girls (known as Child Doctors) from the community for collecting real-time data on larvae presence and water quality testing. In the first year of the project, with the help of the child doctors and CAG leaders vector surveillance was conducted in 46 slums and water quality surveillance was conducted for 71 slums. The process has been continued in the year 2 in 24 slums for vector drive

and 4 slums for water quality drive, wherein the CAG leaders have taken their own initiative to undertake this.

b) **Daily/weekly surveillance systems:** The project also piloted systems to collect real time weather information and climate data in 23 slums. This included systems to measure temperature, humidity and precipitation as also to look also water quantity and quality, vectors, flooding and inundation.

5.5.7 TECHNOLOGY VALIDATION AND DISSEMINATION

MHT also researches and invests in technologies in order to provide options to poor communities, so they can then make their own decisions based on what is affordable and appealing to them. The new technologies were scoped through exposure visits and inviting innovators and technology providers to workshops along with inputs from the project technical experts. This is coupled with field demonstration of relevant technical interventions. Seeing and experiencing various products first hand helps build the confidence among communities to themselves invest in resilient technologies. 175 field level demonstrations of 21 different climate-resilient technologies and solutions have been undertaken. Nine community level solutions have also been demonstrated in Ahmedabad, Ranchi, Bhopal and Jaipur. These were mainly those solutions which emerged from the resilience planning exercise and include urban landscaping, vermi-compost systems, water meters, compost tumblers and community-managed water supply systems.

5.5.8 INFLUENCING CITY GOVERNMENT POLICIES

Building on its grassroots experience, MHT and other GRP partners advocated with the government to institute and implement Pro- Poor Policies and Programs. This was done through participating in various workshops especially those related with plan-making/ policy formulation process and sharing of the learnings of the project.

5.6 KEY LEARNINGS ABOUT COMMUNITY ENGAGEMENT FOR RESILIENCE

More specifically, the model of change posits ten key expectations that serve both to shape the intervention and to focus the evaluation.

- 1. Entry into new communities requires perceptions of legitimacy, trust, and incentives on the part of community women to partner, which can only be built over time with multiple engagements.
- 2. Continued participation by highly disenfranchised women in marginalized communities requires strategies to promote individual and community empowerment, solve tangible problems, and build recognition/ identity within community
- 3. Leadership works best when it is developed and interacts at and promotes coordinated action at the slum, community and city level.
- 4. Empowering women to advocate in a non-confrontational/collaborative manner increases municipal support to address these needs
- 5. Resilience in informal settlements requires coordinated action amongst many local actors over time, with leadership that is not too concentrated amongst a few members of the slum community and which is maintained over time.
- 6. Systematic, repeated, and innovative communication tools are necessary to enable scientific and futuristic thinking in communities whose members are used to thinking short-term



Community based Vulnerability Assessment (CBVAT) & Resilience Action Planning (CBRAP)

- 7. Community's continued interest in resilience planning requires delivery of more immediate tangible actions or benefits
- 8. Community-led data collection leads to an increased understanding within the communities on their own vulnerabilities and issues affecting them, thereby leading to more resilient actions
- 9. Successful pro-poor technologies should be cost-effective: commercially available, culturally appealing, with proper services provided along with the purchase
- 10. Facilitating interactions between communities and technical experts enhances the capacity of both to communicate clearly and develop mutually agreeable solutions to resilience problems.

6. IMPLEMENTATION IN ESTABLISHED CITIES: AHMEDABAD

6.1 CITY PROFILE

6.1.1 OVERVIEW

With a population of 60 lakh (6 million), Ahmedabad is the largest city in Gujarat and the fifth largest metropolis in India (Census 2011). The city has been at the forefront of several important political, economic, and social developments including India's independence and civil rights movement led by Mahatma Gandhi. During early to mid-20th century, Ahmedabad was also the epicenter of the developing textile industry in India. The growth in the industrial sector was accompanied by the emergence of an influential civil society, which was influential in establishing several notable institutions such as Ahmedabad Textile Industry's Research Association (ATIRA), Indian Space Research Organization (ISRO), Indian Institute of Management (IIM), Physical Research Laboratory (PRL), etc. in the city.

The city's economy went into a decline in the 1980s after the closure of the textile mills. The Ahmedabad Municipal Corporation (AMC) also was severely impoverished and unable to invest in city wide physical and social infrastructure. During the 1990s, the city embarked upon several key reforms to improve municipal income. By 1995, it had a budget surplus and began several new project works including augmenting its water supply and sanitation systems, improved road networks, investments in transportation, riverfront development, and slum-up gradation at scale. During this time, AMC also took proactive steps to encourage participation of communities and civil society organizations in city level urban projects.

In the last 20 years, the city has made significant progress in managing urban growth and expanding the access to basic environmental services, and improving the quality of life of its citizens, including those living in slums and informal settlements. Civil society organizations have played a key role in supporting this development, while safeguarding the interests of the poor, and encouraging their involvement in community and city level governance and planning programs. Today, Ahmedabad is recognized as a thriving metropolis in the forefront of real estate and infrastructure development and is one of the better managed cities in India.

6.1.2 DEMOGRAPHICS AND POPULATION GROWTH

Until the early twentieth century, the growth of the city of Ahmedabad was restricted to the eastern side of the city. The opening of the Ellis Bridge in the early twentieth century connected the western bank, which allowed the ongoing development of the city in this direction. Ahmedabad saw a significant growth in population during 1970's owing to the growth in industry. Expansion of the city into peripheral areas

began in the 1980s and has continued since then. The population of the city has increased from 35 lakh (3.5 million) in the year 2001 to 55.68 lakh (5.56 million) in 2011. The population growth during this decade can largely be attributed to expansion of municipal limits in 2006 when 17 Nagar Palikas and 30 Gram Panchayats were annexed into the city limits. Today the city comprises an area of 464 sq km.



Figure 7: Population growth in Ahmedabad, Source: Census 2011

6.1.2 SETTLEMENT PATTERN

Spatially, the city is clearly divided into eastern and western parts. Sabarmati River flows right through the center of the city, bisecting the city into its two halves. There are nine bridges across the river connecting east and west Ahmedabad. The historic walled city (recently recognized by UNICEF as a world heritage city) is located on the eastern bank of the river. The western part of the city has lately seen more investment in infrastructure. In the past decade, the city has expanded largely towards the west. Areas between the 132 feet road and Sarkhej-Gandhinagar Highway such as Ghatlodiya, Chandlodiya, Thaltej and Sarkhej have seen rapid real estate growth. SG Highway has emerged as an important commercial area in the city. The emergence of new industrial centers such as Sanand has also influenced spatial growth in Ahmedabad and has driven development further towards the fringes between SG Highway and SP ring road.

6.1.3 SLUMS IN THE CITY

According to the Ahmedabad Urban Development Plan published in 2013, there are 262,511 slum households in the city comprising a population of more than 13 Lakh (23% of the city's population)⁹. Groups and NGOs working with slum communities in the city estimate the slum population to be between 30 to 40%.

Slums in Ahmedabad are located on either public lands (of the State, Central government like airports/ railway lands etc.), in environmentally vulnerable areas like river or lake beds, or on private lands whose use is restricted through land/planning regulations. The owners do not see any economic benefits in

⁹ The official Census of India figures are much smaller. According to Census 2011, only 4.5% of the city's total population resides in slums.

holding these lands, as legally they cannot be used for any sort of development. In such cases, the legal landowners often illegally subdivide the land and sell the plots in the grey-market, facilitating the formation of 'informal communities' or slums. Several slums are also located on land belonging to religious trusts. The trusts had settled landless/ poor people on these lands (either at no cost, or sometimes after paying a fee/ rent). While these households enjoy a de-facto tenure, they do not have legal titles to the land. Ahmedabad has adopted a more liberal and progressive planning approach in the last two decades. Several regulatory constraints that restricted development on certain lands have been replaced with more fair and participatory processes for land development. The cost of formal development processes however is still high. Hence peripheral areas in Ahmedabad are still seeing formation of new 'informal subdivisions'.

6.1.4 URBAN REJUVENATION & SLUM IMPROVEMENT PROGRAMS

Over the last 20 years, the AMC has undertaken several programs to improve access to basic services and shelter for the poor.

Programs aimed at Urban Poor:

- 1995-2009: Parivartan Slum Networking Program
- 2001: Slum Electrification Scheme
- Introduction of 500 NOC program delinking service delivery from tenure
- Slum Redevelopment under Rajiv Awaas Yojana and PMAY
- Instituting RWAs in public housing complexes

Programs for city level infrastructure improvement

- 1995- ongoing: Sabarmati Riverfront Development (The AMC began discussions about this project in 1995 to improve the health of the Sabarmati River and reclaim land for parks, promenades and other public uses. The project also required the resettling of about 10,000 slum households from the river banks to public housing complexes)
- JNNURM: BRT, augmenting water-sanitation networks
- AMRUT
- Smart City Plan
- 2017: Metro Rail

Plans and policies:

- 2005: Reforms in Development Plan (implementation through TP schemes)
- 2005: City Development Plan under JNNURM
- 2012: City Sanitation Plan
- 2013: City's first heat action plan
- 2015: Development Plan (implementation through TP schemes) (new byelaws for affordable housing)

6.1.5 ROLE OF CIVIL SOCIETY IN CITY DEVELOPMENT

An active civil society, in which people are engaged and well informed, can facilitate dialogue between the state and society, it can demand accountability and monitor the performance of public officials. Also,

very importantly, civil society organizations play a key role in mobilizing communities, particularly the vulnerable and marginalized sections of masses, to participate more fully in politics and public affairs.

Ahmedabad has had a long established and prominent civil society even before Independence It also has a long history of volunteerism and philanthropy whose roots can be traced to Mahatma Gandhi establishing an ashram in the city and the interest of early industrial elites in philanthropy and public leadership.

In the last 20 years, a number of civil- society organizations and NGOs have played an increasingly important role in urban development. Organizations like Environmental Planning Collaborative (EPC), Urban Management Centre (UMC), Centre for Environment Education (CEE), IIPH provided technical planning/ communication assistance, played an advisory role.

Others like MHT, SEWA, and SAATH have played a key role in building social capital in poor communities, developing community voice, financial inclusion. Organizations like CHETNA have been working in poor communities to mobilize women and girls around health issues. These organizations have been crucial in facilitating dialogue between poor communities and the government, seeking to establish trust and engagement in the implementation of development programs in the city.

6.1.6 MHT'S WORK BEFORE GRP

MHT started its work in the water and sanitation sector in Ahmedabad in 1995 with the Parivartan Slum Networking Program, which enabled access to legal services and improved living conditions for close to 40,000 households across 47 slums in Ahmedabad. Further down, MHT has also collaborated with AMC, on the 500 NOC and Nirmal Gujarat Abhiyan Schemes, thereby enabling 1,31,105 slum residents to avail the basic facilities of household level water connections, toilets and drainage facilities in the last 20 years. Recognizing that access to electricity was also a major demand of poor women, MHT later partnered with the Ahmedabad Electricity Company to initiate the Ujjala program to provide legal electric connections in Ahmedabad slums in 2001. Since the launch of JNNURM in 2005, MHT has played a significant role in connecting poor communities to public housing programs. MHT has also been advocating for more transparent and inclusive land management & planning procedures and making housing more affordable and accessible to the poor.

Over the years, MHT has worked in more than 200 settlements in Ahmedabad in some or other capacity, Before GRP, MHT had enabled more than 2 lakh families avail access to various basic services and housing in Ahmedabad. MHT is especially recognised among slum dwellers in Ahmedabad as an organisation which secures access to basic services and housing for the poor.

After 2008, with the formation of Vikasini, Ahmedabad, MHT has further scaled its work in Ahmedabad through a strong grassroot network of 52 women leaders working across the city. MHT enjoys a very good rapport with the AMC- officials as well as with elected representatives as an organisation which strives to solve implementation issues and enable "last mile connectivity".

6.2 EVOLUTION OF GRP PROGRAMME IN AHMEDABAD

6.2.1 GRP PROGRAM DEVELOPMENT STAGE

Ahmedabad, being the established city, was the center of GRP's initial program development stage. Most of the initial program related processes, trainings, partner meetings, and workshops during the proposal

development were conducted at Ahmedabad which then gradually moved on to the emerging as well as enabling cities.

Focus Group Discussions with eleven slum communities were organized during the first phase on the issues related to climate change across Ahmedabad where heat stress and water logging came out to be major slum-level risks and communities' livelihood getting affected especially during the heat months and monsoons was also observed during the discussions. Communities shared that due to extensively hot afternoons, 4 hours of the day went in vain as they could not take up any activity due to the extreme heat. This led to decrease in the working hours as well as reduced efficiency. Most of the communities also reported on inland flooding which caused backlogged sewers. They also mentioned that heavy rainfall for as little as 1-2 hours caused knee-level water logging and on an average, workers miss out 4-5 working days a month as instead of working, residents got involved in removing water or fell sick and were unable to work as flooding caused unhygienic conditions, increase in dengue and cases of other vector borne diseases.

The highlight of the proposal development phase in Ahmedabad, however, was the capacity building of the Vikasini leaders on the issue. While in other cities, the FGDs were undertaken by the staff, in Ahmedabad, Vikasini leaders took the lead in this. The first official GRP event in fact was a Vikasini training held on 13th March 2015, wherein the women leaders were provided basic inputs on the issue as well as equipped with participatory tools to undertake FGDs in the slums. Having undertaken the FGDs, the Vikasini leaders developed a further grasp of the issue and were thus very active during the problem development workshop held in Ahmedabad later that month. This workshop was later followed by indicator development and behaviour change analysis workshop with the Vikasinis which became a forum for the Vikasinis to provide inputs into the solutions for their problems.

Having identified health stressors (heat and vector) as a major knowledge gap area (Vikasinis had already been trained on issues related to WASH and energy), two technical trainings were organized for the Vikasini-Ahmedabad during this stage, one on the issue of Water and Vector-borne diseases and other on Health facilitated by the project partners Dr. Vijay Kohli and Dr. Vikas Desai respectively. Both the trainings helped the Vikasinis having an increased understanding of the new concepts and breaking of myths around these issues.

A water and waste water management based survey was undertaken by Himadri Consultants, one of the technical partners the project for Rajivnagar-3 and Saraspur Mill, to scope water related solutions for these two slums. Individual rooftop rain water harvesting and recharge of existing well as technoeconomical option for Rajivnagar and community-level rain water harvesting for Saraspur were proposed. The proposal could not be inculcated in the final project implementation due to low feasibility and very high cost implications. This was a good learning experience since the technical partner had not involved the community in the finalisation of the solution and it reiterated on the need for joint solution development in the main phase.

6.2.2 GRP PROGRAM IMPLEMENTATION STAGE

MHT identified 38 poor communities in Ahmedabad where it would work towards building resilience capacities of poor women. Of these 38¹⁰ communities, MHT had already worked in 25 on habitat

¹⁰ Of the 38 communities, the program was implemented (with varying degrees of success) in 37 communities. It never took off in one community (Chhipa Nagar).

improvements and thus already established credibility in these communities. Over the years MHT had also invested in mobilizing the residents into collectives and building capacities of women leaders. These communities were hence more organized with an active women leadership. 13 were 'emerging' communities, where MHT started working in the beginning of 2016 under the GRP program. In its 20 years of work in Ahmedabad, MHT has partnered with local government and developers and led redevelopment/ relocation of slum communities into formal housing societies. Some of these public housing societies were hence also identified for intervention. Another category included in the intervention communities in historic core in the program was to engage with Government players towards scaling up and mainstreaming the resilience building approach in publically funded housing and community development projects.

The program implementation started in Ahmedabad in December 2015. Bharti Bhosale led the implementation of the program in Ahmedabad. Bharti has been working with MHT for more than 17 years managing water, sanitation, and housing programs in Ahmedabad as well as other cities. She has experience and expertise in liaising with government agencies to design and implement infrastructure and housing programs in slums, and also and on-ground execution and monitoring of these programs. A team of six field officers was put together to roll out the program in intervention communities. MHT also engaged members of the Vikasini Federation to spearhead community organization. A team of one field officer and a Vikasini/ spearhead team member were assigned between 5 to 8 communities.

Entry into communities

From December 2015 - April 2016 the focus was on mobilizing families in emergent communities to partner with MHT under the GRP program. This process was long-drawn and involved repeated and multiple visits by MHT staff and spearhead teams. The mobilization process involves understanding the community and its needs and vulnerabilities, introducing MHT and its work, and more importantly building trust among residents. MHT has worked in close to 200 communities in Ahmedabad in various area of the city. Among communities, MHT is viewed as an implementation focused organization that works with community residents to liase with government to bring water and sanitation improvements¹¹. Some new communities like Silver Park, thus were already aware of MHT's work and showed immediate interest and willingness to partner. In other communities like Balapir no Tekro, the process of trust building took as long as six months. By the end of the mobilization phase, MHT had prepared a database of all slum households and got their consent to come together to form a CBO. The two types of communities that proved the most challenging to mobilize were formal public housing communities and very poor/ illiterate communities bound by rigid socio-cultural norms, superstition and where the women were most disempowered¹².

Organizing women into collectives, developing leadership in communities

In April 2016, MHT started the CAG trainings (for women) aimed at building awareness on collective action and urban governance. The training process also provides enough opportunities for women from community to get together and identify and select a group of 10-12 women 'leaders' who would form the CAG. The training program (comprising 4 modules, 2 days each), is generally spread over 4 to 5 months

¹¹ Interview with Meenaben, Vikasini member, Spearhead team

¹² Interview with Bhartiben

and is conducted in MHT offices. This is important as it offers women an avenue to venture out of their neighborhoods, a key behavioral change for women from this socio-economic stratum.

The trainings were organized keeping in mind women's schedules, their loss of livelihood, religious/ cultural festivals and other engagements. Yet in some communities getting women out was very challenging. There was skepticism among women and men alike about the whereabouts/ nature of these trainings. MHT thus also organized visit for community women and their husbands to MHT offices to convince them to let the women attend these trainings. Sometimes MHT staff also had to personally escort women to and from their communities to attend the trainings.

Typically, In Ahmedabad communities, 35-40 women attended these trainings. About 3-5 women from each community attended all trainings. By the end of August 2016, 7 of the 13 emerging slums had completed the training program and had an established leadership in the form of CAG. In the remaining

6 slums, it took much longer (till December 2016) to complete the trainings.

Mobilizing Communities around Climate Change

To generate awareness and interest around the issue of climate change among poor women required new strategies and communication tools. Area meetings were not garnering a lot of attention and interest. By April 2016, the knowledge team had developed a Climate Change orientation multimedia training toolkit comprising creative communication tools like games, videos, and group activities. Between May and December 2016, the field staff ran awareness campaigns around climate change in the intervention communities using video shows, area meetings, and games and activities. In Ahmedabad the snakes and ladder game were very successful in garnering widespread participation from the communities. CAG leaders were able to recall these activities as the most interesting and having the most impact on them in terms of both understanding the concept and impact of climate change as well as encouraging them to think about making resilience investments. The climate change training for CAG members from slums was conducted in June 2016, for established communities and in December-January 2017 for emerging communities.

Climate change was a new topic even for MHT field staff. The Ahmedabad staff and Vikasini members participated in a series of climate change orientation trainings between March and April 2017. In these 'training of trainers' workshops the staff was trained to facilitate climate change training and communication activities on ground. In June 2016, the staff was also trained in facilitating community based vulnerability assessment toolkit (CBVAT) and use of digital communication platforms like mobile-vani to help communities create and disseminate original content on climate change and its impacts on their daily lives. In March 2017, another training of trainers for CBRAP was held in which again both Vikasini leaders and grassroot staff participated.

Instituting community led surveillance and action

With the use of creative communication tools like video shows and the snakes and ladders game was beginning to garner enough interest among community on climate change and its impacts. Women were starting to come for trainings. However, Bhartiben felt that the program was getting too training focused. She believed that to sustain the interest of communities in the program as well as their trust in MHT, there was need to "demonstrate action and tangible change on ground". In the critical reflection meeting for the program held in September 2016, Bhartiben highlighted her concern.

At that time the knowledge team was into developing the community-based surveillance system. It was felt that the system can be modified to provide it a more communication angle if it is conducted as a drive.

So moving beyond only real-time data collection for a few households, the vector surveillance system was expanded to include at least half of the households in the slums. To make it more attractive it was decided to involve adolescent boys and girls in the programme. These young boys and girls from communities were trained as 'child doctors' to identify and monitor larvae breeding spots, and also provide information to families on vector management.

Given the limited resources, initially it was planned to undertake vector drives only in 7 slums of Ahmedabad. However, the drives received very good response from the community and Vikasini leaders and thus was expanded to cover an additional 13 slums in the city.

Encouraged by the experience, it was felt that the water quality testing should also be undertaken seasonally (in addition to the daily and weekly monitoring systems being planned). It was felt that conducted in a drive mode, this will not only train the women leaders on the testing methods but would also be a strong communication tool to provide information to the communities on their water quality. Between December 2016 to February 2017, water drives were conducted in 22 slums of Ahmedabad.

Both these drives received a very positive response from communities both in term of driving behavior change and encouraging families to make resilience investments. Muskaan, one of the child doctors from BabaLavlavi Nagar says "Earlier the families did not take us seriously. They would ask us to come later and never really gave us time. But we persisted. When we started detecting larvae, cleaning those areas, they understood its importance. They started following what we told them. They kept the drinking water areas clean, started cleaning the water tanks. Soon it became a matter of pride for the community. Now families invite me to test their water on their own!" Following the water drives, several families in Rajiv Nagar also invested in buying water purifiers. Other communities became more engaged in keeping their community clean, getting the drains cleared etc. The drives also proved to be an opportunity for the community to engage with ward councilors and other government stakeholders. The councilors recognized and applauded these community led initiatives and also supported them by providing saplings for plantation, and linking communities to AMC's health and sanitation departments.

In February 2017 MHT also established environmental surveillance stations (temperature, humidity and water quality) in the homes of Vikasini workers in 4 slum communities. The purpose was to encourage communities to collect and monitor real time climate data and use it to make informed choices about their daily lives and activities.

Involving Women leaders for Communication Strategy Development

The drives further reiterated the crucial role of Vikasini members as 'foot soldiers' in program development. They were in the forefront of driving grassroots change, communicating ideas and information to communities, supporting them in resolving everyday issues, and also bringing their needs and concerns to MHT. In December 2016, MHT thus organized a workshop with the communication partners (led by CEE and Arman Oza) in collaboration with Vikasini to develop new communication material and a timetable for carrying out outreach activities and drives in slums in the following year. During the workshop, Vikasini's offered important inputs in developing key messages and visuals to be disseminated through different media platforms.

Community led risk assessment and resilience planning

By the end of the first year, it was time to focus on training communities to understand their vulnerabilities through the CBVAT and CBRAP process. The CBVAT and CBRAP tools are designed as a series of participatory exercises to be administered with CAG members over a period of 6-8 weeks.

Several members of Ahmedabad field team and Vikasini leader Krishnaben were trained to conduct the CBVAT process on ground. However, since the process was technical and slightly complex and involved a longer learning curve, it was decided that a team comprising one field officer (Radha) and two Vikssani leaders (Krishnaben and Bhanuben) would administer it in all slums. According to Radha "*It was difficult for me to remember all the terms and the different tools. I used to get them confused and mixed-up. It took us a long time to facilitate the CBVAT in the first 5 to 6 slums. We thought it was a lot of paperwork which we were not used to. The communities also showed little interest. They thought it was a tedious process. The risk quadrant exercise was particularly difficult for them to understand. As we got hang of the process, it got easier and I also started enjoying the process.*"

The CBVAT process elicited different response from different communities. In some established communities like Rajiv Nagar and Ramesh Dutt Colony, CBVAT was very successful. At least 5-7 women consistently participated in all the exercises that were spread across a few weeks. They were able to understand and articulate their vulnerabilities. In the public housing complexes the process got derailed almost every-time because of quarrels and concerns over maintenance and other issues of apartments. In emerging communities, it proved a little more challenging to sustain interest in the process. Between January to December 2017, MHT facilitated CBVAT in 28 and CBRAP in 22 out of the 37 communities. One of the key challenges of the process was the need to involve the same people in the training and implementation process. One of the critical gaps that Ahmedabad experienced in this was that given the large size of the team, and the need to train every one with limited resources, different people attended different trainings, except Radha and Krishnaben who attended all trainings. Later on, it emerged that only these two could best facilitate the processes on the ground since they has a more sound understanding of the issue and processes. This is a key learning for MHT and highlights the need for staff capacity building. The fact was also recognised by MHT during the project and in October 2016 and in January 2017 refresher training was also organised for all project staff from various cities one on resilience building and another on development. institutional The regular staff capacity building process has now been institutionalised within MHT.

Promoting adoption of technology/ resilient solutions

Building on the interest that the drives and the outreach

processes had generated, MHT encouraged and supported communities to initiate community level actions. Communities made applications to AMC to clean drains, organized waste collection drive, planted trees, got paved streets and streetlights installed etc.

MHT also conduct technology demonstrations to nudge families towards making resilient investments. Around March- April 2017 (before the onset of summer), MHT demonstrated several cool roofing solutions (white paints, thermacol roofs, mod roofs) for slums. Other technology demonstrations include sprinkler taps, water filters, rain water harvesting systems and another home-grown solutions like use of indigenous plants as mosquito repellants, use of mosquito nets etc. Parallel to the technology demonstrations, MHT organized advanced trainings for Vikasini workers and adolescent girls in May 2017 on heat stress (identified as a key concern in Ahmedabad affecting health and livelihoods).

During this phase, it was also felt that a special communication drive be conducted which focuses mainly on solutions. Folk media had emerged as a good strategy to promote communication in the December behaviour change communication workshop. It was thus decided to undertake a folk media campaign focusing on resilience practices and technology solutions. Undertaken between March to May 2017, folk media got a very positive response from the communities. Next to drives, snake and ladders game, folk media were the most recollected CAG activity by the communities in Ahmedabad.

Community-based resilience planning and action

By May 2017, the CBRAP process had also been initiated in a few slums in Ahmedabad. By then communities had prepared resilience action plans, which identified and prioritized actions to be taken at the community level. Between June and December 2017 MHT supported the implementation of a few key community level solutions including revival of wells in Ahmedabad's historic core, use of community water meters, plantations and landscaping using indigenous plants in public housing complexes, vermicomposting etc. The Ahmedabad implementation team partnered with sector/ technical experts to implement these solutions.

Engaging with government to bring change

Throughout the implementation stage, MHT, Vikasini workers as well as CAG leaders from slums engaged with the government at different levels to improve living conditions/ bring tangible change in the communities. CAG leaders engaged with the elected councilors and leveraged their funds for local infrastructure and improvements in their communities. 15 councilors representing 15 wards in the city were supported implementation of the program. Vikasini with the support of MHT was also instrumental in working with AMC to extend water and sanitation infrastructure in 33 communities.

MHT has been known in AMC for implementing water-sanitation and housing programs in slum communities. With the GRP program, MHT's work in the area of heat stress, especially cool roof initiatives in poor communities also started generating enough interest among AMC Health Department staff. In March 2017, when MHT organized the CBRA in Ahmedabad, we used this opportunity to further strengthen the engagement with government actors (at all levels) and technology experts in the City. Mr. Mukesh Shah, Joint Secretary, Department of Climate Change, Govt. of Gujarat was invited to speak at the valedictory session of the CBRA. He shared the State Governments initiatives in combating climate change and its impacts, and welcomed the opportunity to partner with MHT in future.

In early 2017, AMC (with the technical support of IIPH) was in the process of developing the city's heat action plan for the year along with IIPHG (with Dr. Abhiyant Tiwari as the point person). Dr. Abhiyant Tiwari (IIPH) was also invited as a panelists to speak on scaling technology solutions. He acknowledged that MHT's work has been crucial in establishing 'heat related stresses' as an important issue amongst government actors. Later on, Dr. Abhiyant Tiwari along with Dr. Tejas Shah, Health Officer, AMC visited MHT office to learn about the GRP initiatives in heat stress and potential convergence with city's heat action planning process. In April, a team from NRDC (a technical consultant to AMC for heat action planning initiative) through interactions with IIPHG, learnt about the project and visited MHT to understand its work in supporting poor families to invest in cool roofs. On 7th April the city's heat action plan was launched. Two Vikasini members (Ms. Praveenaben from Rameshdutt colony and Ms. Minaben

Kori from Rameshdutt colony) were invited to share their experiences with cool roofs at the plan's launch workshop. This was AMC's third heat action plan, and for the first time, the plan emphasized cool roofing. MHT's work in slum communities (in surveillance and technology outreach) was recognized and featured as part of the plan. The plan identified "Collaboration

By the next year in May 2018, the AMC had officially adopted white painting of roofs as a strategy and has been promoting the same.

with non-governmental organizations"13 as a key strategy to expand outreach and communication with the city's most at-risk communities. MHT has also now recognized as a key stakeholder in supporting the city's efforts towards climate action.

In May 2017, MHT and Vikasini members were invited at the State Governments launch of Ahmedabad's first real time air quality monitoring system supported by System of Air Quality and Weather Forecasting and Research (SAFAR).

6.2.3 KEY CITY LEVEL OUTCOMES

MHT had been working in Ahmedabad for 20+ years in habitat development. It is recognized amongst local government as a partner in reaching services and infrastructure in poor communities. Under the GRP program continued to work with AMC to bring water and sanitation infrastructure into communities. The program offered MHT an opportunity to widen its engagement with AMC beyond slum improvement/ engineering departments to also engage with the health department on preventive health initiatives. MHT also established a working relationship with the State Climate Change and Women and Child Development Departments. The emphasis on multi-stakeholder processes also resulted in lasting partnerships with technical institutions and other NGOs in the city such as IIPH and CEE that continued beyond the project period. These partnerships benefitted MHT's other programs and also resulted in new funding. The biggest success in Ahmedabad however was the recognition of MHT's work in the area of heat stress by government actors and leading technical stakeholders in the city.

6.3 CASE SLUMS OF AHMEDABAD

6.3.1 SILVER PARK (EMERGING SLUM)

Located in the western periphery of Ahmedabad in the Sarkhej area, Silver Park is a 90-year-old Muslim settlement of close to 100 families. Silver Park is one amongst the many settlements in the Muslim dominated Sarkhej and Juhapura areas. With access to housing becoming increasingly difficult for Muslims in other parts of the city, these areas are densifying rapidly. The average family incomes in Silver Park are between Rs.10,000-Rs. 15,000 per month. Men are engaged as drivers, are part of the construction industry. Women are engaged in household chores or do home based work like sewing, embroidering etc. They spend only a limited time outside their homes/ community.

Silver Park is located off of the Sarkhej Makarba road. The land most likely belongs to a Muslim religious trust. Families in Silver Park do not have legal titles to their land, but do enjoy some kind of de-facto tenure. The access road leading to the community is about 5 - 6 meters wide, which further narrows down to 3 - 4 meters closer to the community. The access roads as well internal roads are all unpaved. The community experiences severe flooding during monsoons, and the roads get waterlogged and remain covered in muck/ mud for months together.

AMC provided individual water connections in the community a few years back. However water supplied is not sufficient, and till very recently was supplied at odd hours in the day. The community residents routinely call tankers to augment the limited supply. Most households have individual toilets in their

¹³ https://www.nrdc.org/sites/default/files/ahmedabad-heat-action-plan-2017.pdf

homes, which are connected to khal kunva (deep single pits). There is no underground drainage line in the community. The houses themselves are in good condition with *pucca* structures (sometimes multistoried), and have been incrementally developed over the years.

MHT has been working with other communities in the Sarkhej area since 2006. It started working in Silver Park in January 2016 on the insistence of local community women and NafisaBen, the elected councilor from the area. NafisaBen was earlier a vikasini member from NehruNagar slum where MHT had facilitated access to improved water and sanitation infrastructure. Silver Park had a somewhat active women leadership and they sought MHT's support in getting access to improved water supply and drainage in their community. For the first few months, Meenaben, Vikasini member who was charged with mobilizing and organizing the slum conducted meetings on the process of getting legal water and drainage connections from AMC. In April 2016, Meenaben introduced the GRP program and the concept of climate change through video shows and interactive games. "The women were very sharp", Meenaben says, "They understood everything very quickly. Soon MHT started the CAG formation trainings in the community. In June 2016, Meenaben facilitated a visit for a few women to another slum community where a mod-roof was installed.

In June and July 2017, Meenaben supported slum households in filling applications and collating related paperwork to apply for drainage connections with AMC. The process between filing of the application and acquiring the service connection is lengthy and tedious. The application is passed through multiple tables for approval and sometimes ends up being rejected because of incomplete information/ technical glitches. MHT has developed a web-based interface linked to a backend data system to make it easier for slum residents to track their application. This web-based interface was piloted in Silver Park in September 2017. In November 2017, women from the community participated in a training on using the interface to track their application. MHT continued its climate change outreach activities in the slum all along. The vector surveillance and water testing drives conducted in the community were hugely successful. Women and children started taking an active leadership role in ensuring that the surroundings remain clean and free from mosquitos. In November AMC approved extending drainage line into the area (till the main road). In December 2016, MHT organized a two-day training on climate change for the CAG leaders.

By February 2017, most households in the community had received a copy of the 'No Objection Certificate' issued by AMC (a prerequisite for informal communities to access legal water and drainage infrastructure). In March MHT organized a small event in the community inviting Nafisaben (ward councilor, Sarkhej) to update her on community led surveillance started under GRP. She recognized the efforts of the community, especially children in maintaining cleanliness and curbing spread of vector borne diseases.

From March to May 2017, MHT focused its outreach on heat stress and its impacts on health and productivity. Another exposure visit (to a slum in Odhav) for CAG leaders was organized. The women were exposed to various cooling roof solutions such as the ModRoof, White paint, thermo coal based insulation etc. In April MHT also organized folk media gatherings on the subject. In May, MHT installed a temperature monitoring station in one of the CAG member's house. With the support of CAG leaders and the local councilor, MHT also organized a tree plantation drive in the area.

Now that the AMC had approved laying of the drainage line, MHT mobilized the community to find resources to bring the drainage line into the community, and get the streets paved. NafisaBen agreed to spend her councilors funds towards laying this infrastructure. MHT also applied for getting streetlights installed in the community. In August 2017, MHT facilitated the CBVAT exercises with CAG leaders.

Currently, MHT is facilitating the laying of the underground drainage line in the community leveraging Councilor's funds. The underground drainage line is expected to be functional by early 2018. MHT has also been influential in changing the water supply timings in the community to a time that is more convenient for resident families. Rehmatben and Karimaben are two of the most active CAG members who are working with the support of Meenaben Soni, a Vikasini worker to bring these improvements to the community. They believe that once the work for drainage line is over, and the roads get paved, the living conditions will drastically improve.

6.3.2 BALAPIR NO TEKRO (EMERGING SLUM)

Balapeer No Tekro is a relatively small slum community of about 100 families located in the eastern part of Ahmedabad in the Dudheshwar ward. The settlement is 80 years old and is situated on land belonging to a religious trust.

The slum comprises very poor populations with an average family income between Rs. 5000-Rs. 10,000 per month. Education levels are also low. Most people are engaged in vegetable vending, casual labour, and other petty jobs such as exchanging utensils for used clothes. It is a homogeneous community with most families belonging to the Patani Caste (Hindu religion). The slum is located on a sloped terrain and rises upward from the main access road. The condition of houses as well as sanitation infrastructure in the slum is very poor.

The houses are tiny (less than 30 sqm) with tin roofs, and are tightly packed along very narrow, undulant alleys often littered with garbage and covered with open sewage. Several families have made additions to their houses over the years and have encroached upon the streets, making the right of way narrower. This has also made it difficult to install/ upgrade underground water and sanitation infrastructure. Most families go to the nearby community toilet for defecation. The slum community has access to piped water supply and electricity. Several households rely on burning solid fuel for their cooking needs.

MHT started working in both Balapir No Tekro and Silver Park in December 2015. Balapir No Tekro was a completely new settlement. MHT had no prior history of working in or around the community. Krishnaben, an experienced vikasini leader was charged with starting the community organization and mobilization process in the community. She narrates her experience: *"I didn't even know that this community existed. When I reached there, I started asking around. Usually, I always start with the Anganwadi. People were not very receptive at the start. No-one really wanted to talk about community issues. We are fine here they would say. We don't need any thing from you. I kept making repeated visits".*

Slowly the community started engaging with Krishnaben and MHT field staff. 3 months after the first visit, MHT conducted the first survey in the community in February 2016. It was a household level rapid assessment of the level of infrastructure, as well as level of citizenship and entitlements.

Krishnaben had been engaged with the community for more than 6 months. MHT started organizing area level meetings. Since most women were engaged in vending activities and left for work early in the morning, the attendance in these was often low. During these interactions and trainings, it became evident that lack of sanitation is a major concern for the community. It was already May and the temperatures had started to soar beyond 40-degree celcius. MHT started introducing the concept of climate change at this time. In Krishnaben's words "Women had started complaining about increasing heat. I used this as an opportunity to start talking about the evident change in climate patterns and what is causing that. I had attended the training on climate change at MHT office just a month before, so I could really engage them in an informed discussion."

In most meetings women were vocal about the lack of individual toilets and inadequate drainage facilities in the slum. In June 2016, MHT took this agenda to AMC and facilitated a field visit for AMC officers to the slum. Simultaneously, MHT's field staff mobilized women on the importance of forming a community-based organization and collectively working together to improve sanitation in the community. MHT also started the CAG formation trainings.

They informed and educated the community about accessing individual toilets (fully subsidized) under Government's Swaccha Bharat Mission (SBM).

AMC agreed to construct toilets in the slum. MHT helped the households make applications under the program. AMC engaged a contractor to construct toilets in the community. Within a period of three months, the contractors constructed individual toilets in 7 houses. Once the super-structures were ready, the contractor started work on connecting them to the existing drainage line. The drainage line is very old. Also several families had extended their houses into the street right of way (over the underground drainage line), which made its cleaning and servicing difficult. The drainage line often got clogged up causing unhygienic conditions in the community. Fearing that connecting the new toilets to this drainage line will worsen the situation, most households vehemently opposed the decision. They stopped the contractor from doing any further work.

For the next couple of months (September to December 2017), MHT tried to mediate between the community members and AMC. The community demanded a new drainage line (in addition to the existing drainage line). AMC was not too keen to put in a new drainage line. They felt that the lanes were too narrow and the construction would involve demolition of several houses.

MHT also continued its climate change communication and outreach activities in the slum. MHT also mobilized young children from the slum and organized a water testing drive in January 2017. All families in the slum have a piped water connection provided by AMC. They were satisfied with the water quality. The test results reaffirmed that. While these activities saw participation from women, they kept bringing up the sanitation issues.

In February 2017 MHT mobilized a few community members (Sonalben and Nandaben who were beginning to emerge as leaders in their communities) and approached the elected ward councilor (PhalguniBen) for a solution. The councilor suggested that the community should make an application to the AMC for regularly cleaning the drainage line. MHT along with Vikasini member KrishnaBen made these applications to AMC and followed up on the process. AMC sent sanitary staff for cleaning the drainage line. While they were able to clean most of the drainage line, it proved to be a challenging task, as at several places, families had extended their houses over the drainage line and paved over the manholes.

However even after the cleaning, no one was willing to connect the newly constructed toilets to the drainage line. MHT sought the support of CAG members to convince the community. However the CAG members were also unsuccessful in changing people's positions. MHT then started advocating with the AMC for a new drainage line. However the bigger challenge was to convince the community to make space for putting the new line. Individual households had extended their houses and encroached upon the lanes in the community, leaving a very narrow right of way at several places.

It was impossible to put a new line without demolishing some of these encroachments. No single household was ready to this. Small temples and one large tree also obstructed the already narrow streets. The community was not willing to negotiate around any of these factors. Even after six months, the

community was not able to come to a resolution. Over time, AMC stopped paying attention to the community. The contractor left without completing the connections.

In May 2017, MHT facilitated the community based vulnerability assessment (CBVAT) exercise in the slum. During the exercise, issues such as clogging of drainage lines, inundation (during monsoon months), and unhygienic conditions in the community were repeatedly highlighted. The community identified bad quality water, increase in vectors, rodents, and widespread diseases, and heat stress (on account of very small houses and very narrow lanes with limited light/ air circulation), use of polluting fuels for cooking amongst the areas of critical concern. The CBVAT exercise also probed the women participants on the level of organization in the community. During one of the exercise, majority of the women agreed that during times of crisis the community comes together to resolve an issue. However, a CAG member did not hold the same view. She pointed out that over the last months when the community needed to work together to solve the sanitation issue, no one cooperated.

In June 2017, several households demolished the toilets constructed under SBM. They garnered financial support from the local councilor to repave the lanes in the community. During this time, MHT tried to demonstrate cooling roof solutions but was unsuccessful. Since most households had tin sheet roofs, some falling apart, any intervention proved difficult. In August 2017, the community participated in the participatory resilience planning exercise. Krishnaben continue to support and mentor CAG leaders to take resilience actions. As of December 2017, with the cleaning of the drainage line, the sanitation situation in the community has improved. Most households however still prefer to use the community toilet. At the household level, Sonalben has supported more than 10 households to get access to liquefied petroleum gas (LPG) cylinders for cooking and halped them move away from polluting solid fuels.

6.3.3 RAJIV NAGAR-3 (ESTABLISHED SLUM)

Rajiv Nagar is a large informal settlement in a relatively affluent, and centrally located area of the city. The land is in private ownership. The 1976 statutory Development Plan prepared by AUDA in 1976 demarcated the plot as part of the city's green belt. However the authorities never acquired the land. Since the private owners could not make any legal transactions on the land, they illegally subdivided the land and sold individual parcels through grey market transactions. The community came into being around 1980, and has since then been amidst a legal battle between the owners and the AMC. A recent High Court Resolution has declared that the original owners will get back 70% of their land. AMC would retain the remaining 30%, which will be used to house the current occupants/ slum residents, and to develop other public amenities. Rajiv Nagar 3 is part of the 30% retained by AMC.

The community has between 300-400 households and comprises a largely Hindu population. Owing to its ambiguous tenure, the community has been devoid of municipal services. There is no piped water supply in Rajiv Nagar-3. The community is entirely dependent on water from bore wells operated by private individuals. Families pay between Rs. 250-300 per month, for water from these bore wells. Some families have come together to dig their own borewells. Water quality of the bore water has been consistently deteriorating. Some families claim it is undrinkable now. Most families have constructed their own toilets. The toilets are connected to deep single pits (constructed 30 years back) to dispose off wastewater. The community has been consistently making efforts for the last 15 years to get access to municipal water and drainage lines. Finally in 2016, AMC approved the laying of underground drainage in the community, which is currently underway.

MHT has been working in the community since 2005. BhanuBen emerged as a leader in the community. She mobilized another 8-10 women and started following up on the progress of the water-sanitation infrastructure with MHT's support. In 2006, the process of laying the underground drainage started but was left halfway. To extend the water/ sewage lines into the slum, AMC needed easement rights from the adjoining property.

Under the GRP program, MHT continued to work in Rajiv Nagar to mobilize communities around climate action and encourage the community to take resilient actions.

In 2016, the drainage work in the community was also finally resumed. The CAG members remained engaged in the process. They mobilized families to pay the connection charges and get legal connections, and monitored the construction work. Over the last 2 years, the CAG members have a played an active role in generating awareness and interest amongst the community on climate change and related stresses. Community surveillance processes (water testing and vector drives) have been very successful in Rajiv Nagar. The community has become much aware about health issues related to deteriorating water quality and infestation of mosquitos. 6-7 families have invested in water purifiers; many others have started boiling water before using. According to CAG members, incidences of Malaria, Dengue have also drastically reduced. The community also got a drainage line in September 2017. All toilets in the community are currently being connected to underground drainage. The CAG members are now working to get access to piped water supply in the community

6.3.4 BABA LABLABI NAGAR (ESTABLISHED SLUM)

Baba Lablabi Nagar is a 60-year-old settlement located in the Eastern part of Ahmedabad adjacent to the Sabarmati River. It is a large homogenous community comprising about 500 Muslim families. The settlement gets its name from the Baba Lablabi Masjid, a mosque dedicated to a local saint around which the community grew. The mosque is a protected heritage building. In most families, male members are Men are engaged as drivers, work in construction, or are food/ vegetable vendors. Most women are homemakers, few are engaged in home based work like sewing, embroidering etc. The average monthly incomes are between Rs. 10,000 to Rs. 15,000.

The community has grown over the years with addition of new families. Some of the houses that were constructed later are as small as 10-15 sqm. Almost all houses are Katccha (temporary) with tin roofs. Most houses have individual toilets, which are connected to the AMC drainage line. However, since the settlement slopes down towards the river, incidences of sewage backflow (especially in low lying areas) are common. Flooding and inundation is also a major concern during the rainy season. The community has access to piped water supply provided by AMC. All houses have a legal electricity connection.

MHT started working in the community in 1999 as part of the Slum Networking Program. Before 1999, the slum was in a very poor shape with no infrastructure. People defecated in the open; there were no paved roads, water, or electricity in the community. Sewage used to flow into the streets creating very unsanitary living conditions. MHT facilitated the formation of CBO, which was formally registered in September 1999. Gulshan Bano was one of the CBO leaders (CAG member) who played an active role in mobilizing the community and raising community contribution as part of the slum-networking program. At the end of 2001, the community was completely transformed with individual toilets, water & drainage infrastructure, and well-paved roads. MHT continued to remain engaged with the community. After the 2002 riots, several houses in the community were burned down. MHT supported the reconstruction of

those houses. During the last 15 years the CAG has remained actively engaged in improving the physical and socio-economic conditions in the community.

Gulshan Bano is now a Vikasini member. She has facilitated construction of individual toilets (for new households), started a savings group for women, constructed a community hall where she runs free classes for children, and has also helped several families to get government benefits under various social welfare schemes. Her daughter Muskaan is now also involved with MHT as part of the adolescent girls group.

Under the GRP program, the community has especially focused on waste management and improving overall cleanliness and sanitation levels in the community. The CAG actively engaged with the AMC to get open drains closed, and get leaking sewage pipes fixed, both of which were causing very unsanitary conditions in the community. The drains were also opening directly into the river. They also worked with the Health Department to take preventive measures (such as fumigation, spraying of DDT powder etc.) to control spread of disease.

7. IMPLEMENTATION IN EMERGENT CITIES: BHOPAL

7.1 CITY PROFILE

7.1.1 OVERVIEW OF THE CITY

Bhopal, the capital of Madhya Pradesh, is a city of historical, economical and as well as political importance. Situated on the site of an 11th century city, Bhojapal, founded by Raja Bhoja, Bhopal today presents a multi-faceted profile- the old city with its ethnicity, fine old palaces and mosques and the modern new city with its well laid out parks and gardens, broad avenues and streamlined modern facilities.

In 1956 Bhopal was declared the capital of newly reorganised State of Madhya Pradesh. In the same decade, the Industrial Township of Bharat Heavy Electricals Limited (BHEL) was also established 3 km east of the then city boundary. As a result of these two interventions, Bhopal has witnessed a substantial population growth. Capital Project Township T. T. Nagar was built south of the lakes to support the capital. The military cantonment moved to Bairagarh area to the west of the old city. In the decade 1971-1981, the city boundary was increased to bring BHEL Township and Bairagarh within the Bhopal Municipal Corporation limits. Bhopal has thus not grown as a single city but as discreet townships, with sparse outgrowth in between. Divided into 85 wards, the city has a population of around 18 lakhs (1.8 million) spread over an area of 285 square kms (census 2011).

Bhopal has a humid subtropical climate, with mild, dry winters, a hot summer and a humid monsoon season. The minimum and maximum temperature reported is 9°C and 44°C respectively. Average rainfall of the city is 1260 mm, majorly concentrating from June to September. Bhopal is also categorized as a moderate damage risk zone and is located within a Seismic zone III. Also known as "the City of Lakes", Bhopal has 14 various natural and artificial lakes around the city including the two large lakes (the Upper and the Lower) towards the eastern region. Not surprising thus Bhopal's water supply is drawn majorly from surface water sources, especially the Upper Lake and Kolar Dam.

The economy of Bhopal is essentially divided into modern and traditional industries. The prominent industries in the old city are those of cotton, electrical goods, jewelry and chemical. Some other industries are involved in cloth weaving, making sports equipment, sealing wax and making matches. The Old City also has many garages that specialize in automobile conversion and are popular for producing modified and tuned motorbikes, SUVs and cars. A significant 39 % of the working population is also engaged in informal work associated with these industries.

On the other hand, being the state capital, Bhopal is essentially an administrative city with large number of population engaged in various state and central government organizations. It is also a hub of various educational and research institutions of national importance, namely Indian Space Research Organizations' Master Control Facility, Indian Institute of Science and Educational Research (IISER), School of Planning and Architecture (SPA), All Indian Institute of Medical Sciences (AIIMS), Maulana Azad National Institute of Technology (MANIT) etc.

The city became an infamous location and attained global attention after the Union Carbide disaster, commonly known as the Bhopal Gas Tragedy, which occurred in the year 1984 due to leaked mixtures of deadly gases and left 5,295 residents dead and over 5 lakh injured (as per Government figures). One of the world's worst industrial disasters, it still continues to affect the city's health and environment, with the present generation still born with disabilities.

7.1.2 DEMOGRAPHICS AND POPULATION GROWTH

After it was declared as state capital in the year 1956, Bhopal has been attracting a large number of migrants since then due to growing employment opportunities as well as owing to the establishment of the Industrial Township of Bharat Heavy Electricals Limited (BHEL) during the same decade. The influx of migrants, including many poor from rural and tribal areas of the state as well as other adjoining states, has been one of the major factors responsible for the growth of the population in the 1960s due to flourishing trade and commerce that the city initially attracted people from wider areas. Again in the year 1971-81, a further impetus in the population was seen due to establishment of a major industrial area-Mandideep, along-with heavy commercialization and expansion of Government services during the same period, which recorded a phenomenal 74.35% decadal growth. Thereafter, in the last few decades it has

been eventually stabilized to a gradual increase with decadal growth rate of 23.3% during 2001-11. However, at the same time, the poor in Bhopal are facing housing shortage and can only resort to informal housing and squatter settlements. The population of Bhopal had increased from 1.43 million (2001) to 1.79 million (2011). (Figure 8)



Figure 8: Population growth in Bhopal city, Source: Census 2011

7.1.3 SETTLEMENT PATTERN

The city is largely divided into two major areas: the old and the new city. The old city comprises majorly of Muslim populations due to small scale industries located in the region which are involved in production of cotton, cloth weaving, making sports equipment, sealing wax, making matches etc. Governmental organizations and planned growth largely constitute the new part of the city. The maximum growth has been experienced in the Southeast region of Bhopal along the Hoshangabad Road. The leveled topography and ease of transportation facilities near the Habibganj Railway Station has led to this South-ward growth of the city irrespective of the investments made in the Upper Lake that were unable to encourage in growing of the city towards the west.

7.1.4 SLUMS IN THE CITY

Due to the increasing influx of migrants and city policies not enabling availability of affordable housing, Bhopal has seen a significant growth in slum population over the years. (Figure 9).



Figure 9: City population versus slum population in Bhopal city

According to Census 2011, Bhopal has 380 slum settlements (209 notified and 171 un-notified) with total population of 650,970 (26.68% of the city population). Other studies (CEPT, 2013) point out that the census has under-reported the slum population. The current officially accepted figures as quoted in the Bhopal Master Plan 2021 is 9.36 lakh slum dwellers which is 36.2% of Bhopal's populations.

The slums range from lower density at

the city periphery to higher densities of 150-200 persons per hectare near the industrial areas. A majority, 59% of the slums in Bhopal are located in public land belonging to the Government of Madhya Pradesh, whereas 12% on private limited and the rest are mostly on Public (BHEL) and GoI land.

A large number of slums in Bhopal are on, or close to, nallah or riverbanks. Many slums have steep slopes, rock outcrops and high water table. This would imply high infrastructure development cost on the account of cut and fill, difficult access, rock excavations and dewatering. The positive side is that the slopes are favorable for good drainage, storm and sewerage. Some of the slums on flatter terrain have black cotton soils, which again imply extra development cost. Most of the slums don't have access to the sufficient water supply especially those on hills or remote areas where municipal lines are not been extended. 80% of the slums in Bhopal practice open defecation and have poor waste management systems.

The majority of slum residents work in the informal sector as daily wage construction industry workers. Further, men have involved in fishing, maintenance and repairing. On the other hand, some women are involved in traditional works such as embroidery and stitching.

7.1.5 URBAN GOVERNANCE ARCHITECTURE

The Urban Local Body governing the city of Bhopal is Bhopal Municipal Corporation. The Corporation is headed by City Mayor who presides over Councilors. The Municipal Commissioner, an I.A. S. officer forms the administrative head. The city is divided in 85 wards. The Municipal Corporation renders important services to its citizens like: birth, death and marriage registration, assessment and collection of property tax, building permission and household water connection. Bhopal Development Authority, established by Government of Madhya Pradesh as an apex body for planning and co-ordination of development activities in the Madhya Pradesh comprising of Bhopal and its influence area. In particular, it conceives, promotes and monitors the key projects for developing new growth centres and brings about improvement in sectors like transport, housing, water supply and environment in the region. The Town and Country Planning of Madhya Pradesh, with one of its district office in Bhopal is responsible for making Master Plan of Bhopal City. In Bhopal water comes from Upper Lake and Kolar Dam. Water supply in Bhopal city is looked after by Public Health Engineering Department (PHED) of Madhya Pradesh as well as Bhopal Municipal Corporation. Madhya Pradesh Housing and Infrastructure Development Board (MPHIDB), an autonomous body caters to the housing needs of the population in Bhopal city. It is also engaged in construction of schools, commercial building and colonies in the city. Public Works Department Madhya Pradesh is engaged in planning, designing, construction and maintenance of Government assets in the field of built environment and infrastructure development. Madhya Pradesh Pollution Control Board is responsible to maintain air, water and soil quality in healthy and usuable form. Presently it operates in 12 regional offices, where Bhopal is one of them

7.1.6 URBAN REJENUVATION & SLUM IMPROVEMENT PROGRAMS

The State government and Bhopal Municipal Corporation (BMC) have been implementing a number of projects under the JNNURM and AMRUT Mission. Besides the BMC is also implementing the ADB funded Project Uday with focus on infrastructure development to benefit the entire urban community in general, with some components focusing on upgrading the conditions of the poorest and most needy groups in the slum areas in particular. Bhopal has also been selected as one of the first twenty cities to be developed as Smart City under the Smart City Mission.

A lot of Government interventions have been implemented towards betterment of the slum community including;

- Madhya Pradesh Urban Services for the poor (MPUSP) Project Utthan (2006-2011)
- Basic Services for Urban Poor(BSUP)/, Jawaharlal Nehru National Urban Rural Mission (2006)
- Slum Environment and Sanitation Initiative (SESI) programme (2011)
- Pradhan Mantri Awas Yojana (PMAY¹⁴) (2011)

The MPUSP was implemented in Bhopal in select 21 slums that are on municipal land. MPUSP works with ULBs and slum communities for extending infrastructure through in-situ up-gradation in identified slums for improving water supply, drainage, roads, street lights, waste management and sanitation and community social assets. The BSUP is a 280 crore project under which the government is mainly focusing on providing dwelling units (housing) and creation of water, sanitation and transport infrastructure.

¹⁴ earlier known as Rajiv Awas Yojana- RAY

The most important initiative of the government however has been the Patta Act of 1984, which enabled the state government to provide slum land on lease to the dwellers. Out the 366 slums for which data is available, 177 (48%) slums have already received their lease documents or Patta till date.

7.1.7 ROLE OF CIVIL SOCIETY IN CITY DEVELOPMENT

Participation from civil society has been encouraged but the presence of civil society in city development has not been strong. Renowned NGOs such as Aarambh, Sewa Bharati, Action Aid, Muskaan have been working to ensure community participation, education and human rights.

7.1.7 MHT'S WORK BEFORE GRP

MHT stated in Bhopal since 2011, through the Project Uday, where it was involved in revival of defunct Community-based Organizations (CBOs) formed in the slums. Through its work with the BMC, MHT organized CBOs as part of the slum up-gradation programme, while supporting slum communities to get water connection, sanitation facilities, as well as pattas (land lease titles). This was followed by the Misereor Foundation funded project on energy which focused on providing legal electrification, formation of energy auditors, promoting technology and awareness generation. MHT over the years have worked closely with the BMC, Urja Vikas Nigam, Madhya Pradesh Vij Company, EPCO, and local technology providers etc wherein its larger role has been bridging the gap between the service providers and the slum communities for increased access to services for the urban poor. MHT is also the lead NGO for implementing of Rajiv Awaas Yojana scheme for 4 pilot slums (Jheel nagar, Arjun Nagar, Shantinagar (Nizamuddin) and Ambedkar Nagar).

Since the work in Bhopal just started seven years ago, the internal network of individual slum communities is not as strong as in Ahmedabad. In the 13 slums where MHT had formed CBOs, the trainings were not completed and the CAG leaders had not emerged fully as desired, although there were identified potential women leaders in all these slums. In many slums covered under the energy project, although there was a certain rapport with the communities, it was mainly through energy auditors trained and facilitated as part of the project. The city-wide network among communities was also not yet established. Also prior to 2015 although MHT has worked closely with BMC, it does not enjoy a similar rapport with the BMC officials and elected representatives as is the case with Ahmedabad.

This is why Bhopal was categorized as one of the "emergent" cities, where MHT's mobilizing and capacity building efforts just began to emerge. Bhopal thus became an ideal site for MHT's GRP Project both because of its vulnerability to climate change stressors (heat stress and water scarcity) and the opportunity for MHT to replicate its model in Ahmedabad.

7.2 EVOLUTION OF GRP PROGRAM IN CITY OF BHOPAL

7.2.1 GRP PROGRAM DEVELOPMENT STAGE

Initially twenty slums were selected and slum profiles for the same developed for identifying the current situations and key vulnerabilities in the settlements. A meeting with the energy auditor and leaders of some of the CBOs formed under Project Uday and PMAY/RAY project was held to discuss the issue and its relevance for the city. Focus group discussions were also conducted in the five communities of Bhopal, namely Shantinagar Bhadbhada Basti, Arjun Nanger, Arjun Nager 1250, Purani Bag sewaniya and Satnami nagar, to understand implications of climate change in the lives of the slum communities. The

energy auditors were also involved in the process although the lead was mainly by MHT's grassroot staff. The auditors along with other women leaders also participated in the problem analysis workshop held in Ahmedabad in late March 2015. The workshop also proved to be a major experience sharing and learning event for the Bhopal team as they got an opportunity to interact first-hand with the Vikasini leaders in Ahmedabad and were charged back to have a similar result in their city.

Heat stress and water scarcity came out as major climate change issues in the FGDs. The communities reflected that due to continued reduction of trees and greenery along with increase in congestion/urbanization there was an increase in heat stress. This was also leading to higher energy bills as they were resorting to inefficient cooling systems. The communities also reported to have been facing drastic water shortages during summers and low-quality, contaminated water during monsoons which led to residents being forced to fetch drinking water from bore wells, government provided or private tankers and hand pumps. Further water tables were on a decline. A few communities also faced inland flooding during monsoons and resultant health issues especially malaria and typhoid. Women also perceived the health expenses to have somewhat increased by 5-10 times in the last decade. Garbage disposal and proper drainage systems were major problems as far as infrastructure in the sample slums were concerned. This caused water logging and unhygienic conditions in the slums.

Similar to Ahmedabad experience, the water management situation and existing mechanisms for two slums- Budhakheda and Bagsewaniya were done by Himadri Consultants, a technical partner to the project. The situational analysis revealed that water source and adequate pressure of water needs to be dealt with in Budhakheda. Recharge of the existing well and household level rain water harvesting system could be a solution to the water problems in Bagsewaniya due to unavailability of land. However, due to very high proposed costs for these projects, the budget could not be inculcated for the implementation stage.

7.2.2 GRP PROGRAM IMPLEMENTATION STAGE

The programs in Bhopal is headed by M. Bhavna Maheriya Program Manager from the MHT head office at Ahmedabad. Bhavna has been associated with the organization since past 17 years and has developed the energy efficiency / renewable energy programme at MHT. An electrical engineer by profession she has also designed flexible financing options for energy along with the development of poor women as energy auditors. She has been overseeing the Bhopal operations since the year 2012 especially the energy and climate related interventions. She plays both monitoring as well as a guidance role to the local team of six members based in Bhopal and makes a visit to the city once in two months.



Figure 10: Operations diagram of the local team at Bhopal and list of slums

Locally, the program is led by Ms. Ekta Sahu, Coordinator for MHT Bhopal who is majorly responsible for the planning, implementation and documentation of all the activities in Bhopal. Liasioning with the local

government is also one of her important tasks. She is supported by a team of three community organisers cum trainers and four spear-head¹⁵ team members.

Community Mobilization and leadership building

MHT had identified 20 slum communities for climate resilience interventions in Bhopal. Out of these, 13 slums were already collectivized as communitybased organizations as part of MHT's earlier interventions whereas 7 new slums were identified to implement the GRP program. Once the process of finalization of intervention slums was completed, the mobilization process for the newly identified slum communities commenced from January 2016 as per MHT's set model through area meetings. The team also wanted to conduct video shows, but the high cost of renting a player and lack of proper space in the slums prevented the same.

The actual process of the CBO formation thus happened only during the household listing exercise. This door to door household contact exercise basically undertaken to get community consent for joining the CBO and being part of the project proved to be very effective in Bhopal. The community and staff not only got to know each other but it also created a better understanding in terms of collectivizing the families together even within a given slum. Thus, the larger slums were organised into multiple CBOs, and overall 5518 households were identified as members of 25 CBOs.

The potential leaders from these CBOs, women and young/adolescent girls were identified as CAG leaders and provided CAG trainings. However, the training process was slow and in the first year (2016), only 22 CAG trainings were organised for these identified leaders- basically on project orientation The process took pace only in the second year, wherein all the CAGs underwent the other three modules. The reason was that even though the

STAFF CAPACITY BUILDING FOCUS

One of the key focus in Bhopal was the training cum orientation program for the staff to initiate climate-change focused initiatives. The first was 3-day detailed program held in Ahmedabad in March 2016 which had a "learning by doing approach" where the staff members along-with obtaining conceptual clarity on the issue of climate risks; were also refining the designed tools to easing the same process with the community leaders. The participatory tools gave them an easy way to communicate about the program on the ground and also help them mobilize the communities around this specific issue. This knowledge was further built upon by the first climate change orientation training conducted in April for the three CAGs in Bhopal by the support of the knowledge member Ahmedabad. team from Thereafter, the processes and tools were taken over by the local team. Similarly in June 2016 the CBVAT training of trainers workshop was organised after which the knowledge team members facilitated local level trainings for three months until the staff could take over the process. The same was repeated for the CBRAP process in March 2017. Bhopal team was unique in the sense that all the staff of Bhopal participated in all the three workshops and hence had a similar and high level of understanding of the climate change related aspects of the project.

¹⁵ Spearhead team members are grassroot women, mainly from the communities MHT works with. Women/young girls who have basic level of education and are highly committed to local development. They are paid based on their involvement in MHT's activities and number of days given to any project.

potential leaders were identified, there were not very forthcoming to participate in the trainings. The women thought of it as a waste of their time. In fact many women also dropped as CAG leaders in the process as they were expected to give time for the trainings. It was only after at least 8 to 10 meetings being organised in all slums with the CAG leaders and other women from the area, that the CAG formation process got pace and the women started participating in the trainings. Even then most trainings in Bhopal have been undertaken at the slum level only and not at office level as in Ahmedabad or other cities.

However, the response in the year two was very positive. The leadership development trainings especially about collective action and knowledge of Urban Local Body came out to be really helpful in

Taraben's experience as a trainings facilitator:

-Which training exercise was the most effective in garnering a positive response?

The activity with 4 glasses (one mixed with soil, others with pebbles, sugar, salt) which has been developed to make the women understand about how an ideal CAG leader should be (like the one who gets totally mixed with the community (like the sugar does) and at the same time should be nice in behavior (sweet) towards the members.

-Which training exercise is more difficult and why?

The most difficult is the blindfold exercise, involving two women, in which one of them is blindfolded and the other takes her through the hurdles posed by the facilitator. This exercise is to tell them as to how members should trust their leader on different issues/problems of the community.

-Do you think the trainings are effective in helping the women understand the concepts which was covered during the training?

Yes, there has been an increase in the confidence level of the women. They have realized that speaking (or asking) and getting clarity about a certain issue makes a lot of difference. For instance, a woman was unable to avail ration from the vendor twice due to some issue. It was resolved only when she went upto him taking help from the other CAG leader and asked about the issue. She finally got to know that it was just a matter of a signature.

garnering the interest of the women in heading certain slum-level initiatives. 241 women leaders and 55 adolescent girls were developed as well as their leadership skills were enhanced during the GRP implementation stage.

Climate Change Trainings and Communication

Not having got the initial response for CAG trainings, the local staff felt that it would be good to begin with the Climate Change module since that was much more participatory in nature and the women could relate too quicker. Thus between April to December 2016, 16 CAGs were given basic climate change orientation trainings. Following these trainings the team along with the CAG leaders facilitated the snake and ladder game at the community level. This received a very positive responsive from the community members. The snake and ladder game was acclaimed widely across the communities for not only helpful in knowing the impacts of climate change on informal settlements, but also helping them know the importance of saving money, making careful decisions and getting a futuristic perspective. Lakshmi, a CAG leader from Garibnagar says *"the game has allowed me to think twice before availing loans, which I earlier used to take without giving a second thought. It has helped me in making thoughtful decisions."*
Encouraged by the community interest and having established some local measures for video shows, the team then facilitated video and slide shows¹⁶ on Climate Change and Resilience action. The video on Ramaben especially received a lot of positive response from the communities and women still recollect her story when there is a discussion on climate change impacts. Bhavnaben the programme lead reflected in November 2016, " *I conducted 9 area meetings with the CAG leaders were conducted during the visit to discuss their experience as well as the receive feedback of the processes undertaken by MHT as part of the GRP program. They were specifically queried about the understanding of the snake and ladders game along-with their implication on their life and were also asked about their top 3 priorities. It was found that the CAGs had a very well understanding of the climate change issue and how it affects them."*

The whole process also helped the local team identify the active CAG leaders and groom them. The technical trainings on various climate stresses further helped streamline this process.

The first technical training was organised August 2016 on vector management facilitated by Dr. Kohli (project partner). This not only helped in mobilizing active women's leadership but also enriched their technical competencies on the issue. The training was followed by field visits by Dr Kohli, which further motivated the community to take small actions. This was a selfrealization process as one participants from the vector training had shared, *"We individuals ourselves must be*

In Rahulnagar, 10 women (including CAG and CBO members) voluntarily cleaned their area realizing the importance of keeping surroundings clean after Dr. Kohli's technical training and field visit.

responsible for mosquito prevention and should not depend on the Government for this. When snakes come out of the houses, people do not expect the Government to come and protect. Similarly, the breeding of mosquitoes needs to be prevented by us."

During this phase of the program, the staff members experienced a hassle when the community was unable to see an end product to the program which they usually visualize for other MHT programs such as water, sanitation energy etc. This issue was already being dealt with at the organization level through planning of drives.

The vector surveillance drive conducted during the first week October in seven slums of Bhopal, triggered the knowledge base provided by the program till date to a significant action. The formation of Child Doctors gained vast enthusiasm amongst the children and further increased community participation in Bhopal. The drives in Bhopal in fact resulted in a decrease in larvae levels in the community and the community also starting implementing the vector management solutions. Initially although there was some resistance from the community to allow the children to enter the homes as the people feared that they might be fined. But the Child Doctors took help of local CAG leaders who explained to the people that this was for their own good as well as for the community.

Gradually the process undertaken over four weeks got the attention even of the local media. The Malaria Department officials then contacted Ektaben and asked her to support the department in undertaking similar drives also in other middle-income housing societies nearby. This was an important achievement

¹⁶ The Bhopal team developed their own power point slide shows on vector and heat management, which along with communities was also shared in local schools.

since earlier efforts to establish any relations with the department were being met with a cold shoulder. The recognition has been such that when in the absence of any monetary support from the department a similar drive could not be undertaken in 2017, the department official was seen complaining that the number of malaria and dengue cases were rising in these areas. The department also sought the help of MHT and Vikasini leaders (as the Vikasini, Bhopal was formed by then) in November 2017 to organised disease surveillance health camps in multiple slums in Bhopal.

Following the success of the technical training on vector management and drives, a similar approach was

In early October 2016, the Bhopal team was liasioning with the Malaria Department of Bhopal Municipal Corporation to organize a session with them to know their strategies to combat vector borne diseases in different wards. This became a big challenge lately when the official, whom they were in conversation with, was allocated other responsibilities during the last minute and they had to again go through the process with a different official.

By end of the month, increased collaboration with the City Malaria Department was seen post MHT's vector drive was featured in the leading daily newspaper. The relationship with the Department was further strengthened when the officials came forward to partner with MHT to organize other community level health campaigns. MHT team of 4 people (3 CAG leaders and 1 staff) is now working with the department to spread awareness on the vector borne diseases across slum communities. An authorized letter has only been issued in the name of MHT for formalizing the partnership. MHT Bhopal is also receiving invitation for the city-level meetings.

The other highlight was further collaboration with the Health Department. The Department conducted 10 awareness workshops across colleges in Bhopal between December 1 to 10 and MHT Bhopal team was called to present their experience with the communities as well as the Department with the students. Also, the Department has invited MHT to conduct a large-scale campaign in Saket Nagar (the area which has the highest Dengue incidences). 2 CAG leaders from Bag Sevaniya facilitated the campaign through mobilizing the communities.

employed for water management. Thus, before undertaking the water testing drives in February 2017, a water management training was conducted with the help of Theresa from FUB (project partner). The water testing drive, conducted in all the GRP slums of Bhopal, post the technical training on water management also made the community realize about the water quality and its implication on their health and economic status. As the CAG leaders from Nehru Colony shared, "We have two sources of water- one from borewell and one from municipal tap. Through water surveillance we realised that the tap water was good but the borewell water was not good. Now we practice purification measures like using alum and chlorine drops and even boiling water when needed." As Taraben shares, "In Budha kheda the strings tied to the women to make them understand the hydrological cycle during water management training is still there in the wrist of the women. While conducting the turbidity test during the drive, the women did by themselves as they did it during the training also and knew the test. The same happened in Borband basti also."

In addition, technical trainings on health by Dr. Vikas Desai (project partner) and on water logging management by Mr. Jitendra from RAWS India.

The communities in Bhopal have a very high recollection of all the technical trainings. In fact in the CAG experience sharing workshop organised in Bhopal in July 2017, most CAG leaders recollected in detail what was shared in each of the trainings right from basic information like "*Dengue mosquitoes are day time mosquitos*" to "*Need for sewage lines to be 15 ft away from water lines*".

Vikasini Formation

It was also during these activities that the recognition of CAG leaders that could be looked upon as prospective Vikasinis took place. The identification of Vikasinis was done by the community mobilizers who worked closely at the grassroots and see the progress of the women as leaders and also in taking collective action. Initially, a Vikasini meet of 13 members was organized in the month of November 2016 as the first step of formation and from then the staff has been enhancing their leadership skills in the Vikasini meetings organized very second Saturday.

As the Vikasini formation was also not very clear even at the staff level, the capacity of the Bhopal staff was built from time to time in a common capacity building workshop organized at the Head office to enable the local teams in replicating the Ahmedabad model. Though the initial identification process started, but this capacity building process strengthened the Vikasini development as well as working with the government on slum issues under the various schemes/plans. Emphasis on staff trainings which not only focused on the program but also on the MHT model, especially for the emerging cities like Bhopal, was provided given which altogether proved very helpful in providing guidance to the staff on MHT's approach. To this Ekta says, *"A key learning emerged from the refresher training in October at Ahmedabad, that we were earlier oriented towards largely planning strategies for solutions like provision of toilets etc and not finding the actual problem of each of the community. My perspective has now totally changed. We need to know the problems of the community first and then provide the relevant solution, not approach the community with a pre-assumed solution."*

Vulnerability Assessment and Resilience Planning

It was this understanding that drove the CBVAT process in Bhopal. Initiated in two slums in November 2016, the first response was not very positive as the communities in Bhopal perceived it to be a timetaking process and women were not finding much interest. However, moving further with the same, they looked upon the same as realization of certain individual as well as community level issues and the correlation between the same. Apart from realization, prioritization of the concerns and taking relevant actions based on the same was also learnt. As Taraben a community organiser from Bhopal shared, "Earlier we were not very confident that the CBVAT exercise will be able to result as we expected. But now as we could observe the results of the exercise amongst the communities, there has been a significant increase in our confidence level in conducting the same....Initially not many women were coming but gradually more and more women started participating. They got interested and this further strengthened the CAG formation process." Ratneshben, another community organiser shares, "As women started getting deeper into the discussions, they started relating it to their personal experiences. Then the interest generated. In fact at times, we had to stop the discussions from going into individual experiences in the interest of time and the women would want to discuss more." Sapnaben from Bag Sewania shares, "We realised from these processes especially the web game (root influence analysis) how most of the problems are the result of our own actions and what can be done for the same. Now I can also teach my children about this." Till date in Bhopal, 20 CAGs have successfully undertaken their vulnerability assessments and 18 have also developed their action plans based on the identified vulnerabilities.







Community led surveillance systems: 1.Water testing Drive 2.Mosquito larvae detection by Child Doctors 3.Technical Training on Vector management Besides the communities in Bhopal also adapted to the daily surveillance mechanisms very positively. Adolescent girls in the CAGs mainly took the lead in this. Their curiosity further improved the utility of the activity. For example, in Bag Sewania, they also tested the water quality from the water purifier as part of the weekly surveillance on their own, as one of the water samples. Also though their water generally appeared clean, the test revealed that there was microbial contamination in the same through the weekly tests.

Multi-stakeholder engagement

As discussed earlier one of the key outcomes of the project has been the engagement with the health department in Bhopal. In addition, during the project period, relationships were also further strengthened between the CAG leaders and the ward councillors. As Sapnaben from Bag Sewania shares, "Earlier I would never even meet the ward councillor or talk to him, but now I am in constant contact with him and can get my work done over phone only".

The engagement processes further strengthened when a multi-stakeholder workshop was organized in January 2017. However, it was not due to the workshop but the process of the workshop organisation that led to the realisation of the importance of the processes by the staff and women leaders. As Ektaben shares, "*The workshop helped in profiling MHT as a community based organisation at city-level and provided us with an entry point to talk to various stakeholders. Although everyone did turn up as planned, that was the beginning.*"

The team then established a working partnership with RAWS India on the issue of water-logging. RAWS organized technical visits to investigate the situations of waterlogging and water conservation, gave twoday training to our staff, and organized sanitation campaigns in all the slums. The partnership with the organization was further elaborated with Mr. Jitendra Parmar, technical expert from the organization, who provided technical guidance, training and inputs as well as facilitated community level water supply and waste management systems in three slums. Learning from this experience Bhopal team also involved the local ward councillor in the vermi-compost unit establishment in Bag Sewania-2. Beginning with support for only painting of the unit, the relationship was further strengthened to being involved in the Swachh Bharat Abhiyan.

MHT Bhopal also strengthened its relationship by being actively involved with the BMC's Swachh Bharat Abhiyan- Cleaning drives in all the slums. This was further expanded by MHT's involvement with Sanket (a local NGO) to undertake a survey on Gender Responsiveness of Public Toilets in Bhopal. Mainly emerging through personal contacts- one leading to the other, the processes, however, gained momentum only due to the focus on multi-stakeholder engagement as part of the GRP project.

Technology Demonstration and Validation

Bhopal was also observed very active in demonstrating and validating most types of the technology solutions both household and community level. It was majorly through the staff interests towards innovations, especially Ms. Bhavna, Ektaben and the team's understanding. Technologies such as Cool Auto, green roof, mosquito traps/repellant plants and eco-cooler were first demonstrated in Bhopal. Mosquito traps, water purifiers and repellant plants were taken up really well with 125 women adopting atleast one of these. Aqua plus water purification liquid and sprinkler taps were also adopted by over 500 women. However, Cool Auto, Eco-cooler and Green roof did not work well in Bhopal communities. The major learnings from the process are that:

- a) There is a need to have a buy-in of the community even in the initial phase of the product testing. What happened in case of cool-auto was that in the excitement of the innovation, the product was tried with the auto-driver for free. While the auto-drivers were really interested in the product since it was for free they did not really invest in the maintenance. As Ratneshben shares, "In Cool auto earlier there was no contribution taken and so earlier beneficiaries passed wrong messages and so people did not agree saying Rexine will be spoilt especially when asked for contribution; none agreed. However we learnt from this and for solar roof paint we insisted on contribution. Women are so empowered that they kept checking the quantity of roof paint used and the contribution they made, staff made them understand how it actually works and then she was fine with it."
- b) In case of Eco-cooler, it was realised that while the product seemed a very good best out of waste product, the problem was doing it on scale was not possible. It requires similar plastic water bottles of a large numbers which is not possible to get. Also, the technology was more suited for homes with tin walls which can be easily cut than those with brick walls which cannot be altered easily.
- a) Green roofs is a more locally relevant and acceptable technology and only needed to be promoted. However, the problem was of getting the local experts (mainly community people) to train others on the solution. The community had many questions and in the absence of any technical expert to provide answers to the same, it was not scaled up.
- b) Aqua plus water purification liquid and sprinkler taps are both company manufactured products and just needed a distribution system. They were thus widely adopted (although were not free and paid) and have a potential to be further scaled.

Technology interventions- Eco cooler, water purifier, mosquito trap (demonstrated in all 18 slums)

- Pure It: liked by the communities, 2 HHs in Bag sewaniya and 1 in Jatkhedi adopted the solution. Nehru Colony residents are interested but cannot give money in one go. We are working out for a solution to this as the water quality is very bad and the residents are also exposed to it as part of water testing drive.
- Eco-Cooler: temperature noted showed same as earlier (there may be a data collection issue). The thermometers have been installed again. The home where Eco cooler was installed had already an electricity cooler and thermometers have been installed in both the rooms to see the temperature difference. We are still looking for a HH where there is no cooler but due to immense heat, most of the HHs have electricity coolers. The price is coming out to be 1785 INR for a 3*3 window size. *Finding bottles was a big challenge*
- Mosquito trap: Neem oil one is getting very good feedback. Camphor fragrance is an issue at some places and hence they prefer All Out. So those communities are not using. The yeast one was not getting very good feedback due to unavailability of yeast powder.
- Sameenaben (Neither CAG/ CBO member) interacted with Madhuben while she sold energy products. She used edible soda in place of yeast and made a trap out of it. It gave very good results, many mosquitoes trapped and they had to change within 3 days. Good Night Fast card costed 5 Rs per day. Communities said that it the fumes are suffocating and the mosquitoes also don't die they only faint. The trap is costing 10-15 Rs for 15 days. Health wise also good, easily made at home. Relatives also started using it and liking it too. Changing the techniques and customization helped. Tulsi plants and camphor usage are very helpful

7.2.3 KEY CITY LEVEL OUTCOMES

Among all the project cities, Bhopal saw the maximum action at the community level. There were a number of instances of community-initiated action. In Bag Sewania, the CAG leaders took charge and liasioned with the ward councillor to get a new water supply system for dealing with their water quality problems as well as road paving. In Boraband Basti the community took initiative for getting the drainage lines in their areas. Budhakheda CAG leaders took lead in getting individual water connections. In Rahul nagar, the community not only initiated a self-cleaning drive but also a kitchen garden for their local anganwadi.

Based on the actions emerging in the resilience plans and with project support, in Dashmeshnagar and Bag Sewania the CAGs have also installed vermi-compost units. In Bhadbadha Basti they established a water supply system. The communities not only contributed in cash for establishing of these units but have also taken responsibility for maintenance.

Further the relationship with the local government especially BMC, Swachh Bharat Mission (GoMP), and Malaria Department has also been strengthened. Another city level outcome has been the increased rapport with the local media which is now proactively wanting to cover issues related to slums and their resilience building.

7.4 CASE SLUMS OF BHOPAL

7.4.1 RAHUL NAGAR (EMERGING SLUM)

Rahulnagar is a large slum located in the Southern part of the city of Bhopal in the ward 28-29 of Zone 2. Located near the famous Maulana Azad National Institute of technology (MANIT), the slum is home to about 2,028 families as per the Bhopal Municipal Corporation figures included in the CEPT study on BSUP scheme. It is a notified slum developed on a Government land and has also been listed in the Town Directory as part of the District Census Handbook for Bhopal, 2011.

As per the Bhopal City profile 2012 developed by the Bhopal Municipal Corporation, Rahul nagar was also one of the two slums which were declared as open defecation free in the state. Through Slums Environment Sanitation Initiative (SESI) in 2005, an initiative of WaterAid India and BMC, Aarambh implemented a sanitation program being the local NGO partner. The program benefited 142 families in Rahul Nagar through upgrading the water hygiene and sanitation infrastructure with maximum community participation. Community Water and Sanitation Committees and self-help groups for women were set up. Rahulnagar was also identified as a redevelopment site under the BSUP scheme for in-situ rehabilitation of slum households by housing reconstruction as part of the Madrasi Colony.

The slum is aligned with the main road which is well connected with the city and has paved roads within. The topography of the slum has been the major concern over the years with the slum located on a hilly terrain and households spread both towards the uphill as well as the downhill. There is a huge nalah (drain) passing through the slum which gets flooded during the monsoons and leads to water entering into the households especially those located towards the lower side. The slum also lacks proper drainage and hence the situation becomes very critical during monsoons. There have been many incidences of dengue, malaria and Chikungunya over the years.

The area lacks individual water connections and the community mainly receives water from common stand posts located at various locations in the slum. A dug well is also present inside the slum whose water is generally used for domestic purposes. 80% of the household have individual toilets and there is also one community toilet. Basic infrastructure like Private Health Centre, municipal school and Aaganwadi are there within the slum. Asha Workers are also active within the slum. Men mostly work as laborers whereas women generally go for domestic help. The community is mainly of daily labourers having migrated to Bhopal almost more than 15 years back. The general social cohesion in the slum is high.

MHT started working in Rahulnagar during the year 2014 through its energy interventions under Project Ujala wherein communities were trained on various methods of energy consumption and usage of products that are efficient in energy to reduce their monthly electricity bills. There were also energy auditors working in these slums for measuring energy consumption through watt meters visiting door to door as well as also advising the relevant energy product based on the consumption pattern of the house. In addition, demonstrations on efficient energy products- ventilation sheet, were also undertaken in Rahulnagar.

From the year 2015, MHT also engaged with the communities on the issue of climate change and resilience building. It began with an orientation on the GRP project in an area meeting. This was followed by the house listing exercise and mobilizing the women to form a CBO. As part of the CBO listing process in April 2016, 781 members were listed in Rahulnagar. Being a large slum, three CBOs, Rahulnagar A, B and C were formed to ease the mobilizing process as well as implement initiatives.

In the initial stages, the slum did not have an active leadership and although 15 women were identified by the community as CAG leaders, many did not participate in any meeting or trainings. The women were interested to come for the meetings as they thought it was a waste of time. Also the women did not understand the issue of climate change as they cannot see its impacts as well as associate linkages with their lives. The staff as well as the active members continued to call them for meetings and also went door to door for ensuring their participation. Once they were convinced after multiple interactions, they gradually started attending meetings/trainings. Pushplataben, Preetiben, Aarti, Vimla Sharma and Sunita Vishwakarma have been the emerging CAG leaders of the area.

The major change came through the participation in the basic climate change orientation training in April 2016. The use of innovative tools like animated video-shows, story-telling and posters gathered a lot of interest in the women. The CAG leaders were very responsive to the training sessions. The recall vale of snake and ladder game and Ramaben's story was particularly high in Rahulnagar.

There was a major realization about the importance of plantations after the climate change training and how it could help combat heat stress. This idea was further reinforced during the plantation drive conducted in June. Thereafter, self-initiated plantation drive in Rahulnagar both at the household as well as the community level. The CAG members of Rahulnagar-B also approached MHT to figure out options for for planting on the road-side as they learnt that as part of the training. MHT staff thereafter facilitated seedlings/saplings from the government offices. In Rahulanagar-A group CAGs took this plantation initiative in the open space near a temple situated in the area. They planted fruit and vegetable trees and have converted it into a kind of community kitchen garden.

In September, Dr. Kohli trained the CAGs on vector borne diseases where the leaders shared that they became aware about the fact that we individuals ourselves must be responsible for mosquito prevention and should not depend on the Government. Followed by the training, a visit to Rahulnagar was made by

Dr. Kohli and his inputs on the unhygienic conditions of the area, made the women realize and take action in terms of getting the area cleaned by making application at the ward office.

Rahulnagar B & C had been facing a huge problem in terms of solid-waste management and chocked drains. A clogged drain in the community was overflowing resulting in mosquito breeding and foul odour all over the place. The CAG members were continuously asking for support from the staff to get rid of this problem and therefore a meeting was conducted with the members to facilitate submission of application to the Ward Councilor in order to clean and thereafter close the drain. Initially the women were afraid to go alone and so they were encouraged to go as a group. 6/7 CAG members from Rahulnagar then went to submit the application. The same was cleaned but it got chocked time and again due to garbage disposal and sewerage line opening in the drain. So the CAG members took an initiative to clean the drainage line themselves and fixed their turns for cleaning. During the same time that in Rahulanagar C, the ward councilor visited the area and got the area cleaned but some of the lanes were neglected. Hence the resident of those lanes did not participate in the meeting called by the Ward Councilor afterwards. Seeing this kind of reaction, the Ward Councilor got those lanes cleaned the next day. The CAG in Rahulnagar C has also applied for and got individual water connections.

The vector surveillance drive conducted during the first week of October in the 7 slums included Rahulnagar. Four child doctors each with support from the CAG women of the area led the process in a total of 120 households in their respective areas. Many of the households were resistant to entry of the children in their premises. They then seek support from the CAG leaders of their area and completed their activity. "*The name "Child Doctors" itself was very encouraging for the children from the community to give their best in the task and come up with results"*, mentions Ekta. As a result of the four-week surveillance, the number of households with presence of mosquito larvae decreased from 13 to zero in Rahulnagar.

The community-based vulnerability assessment and surveillance process commenced in Rahulnagar during January as part of the pilot for the toolkit developed. Earlier the women seem not very interested in the sessions, then after relating the continuous discussions with their own lives their participation increased. For instance, in Rahulnagar they were able to easily relate that the increase in the amount of rainfall leads to entry of water inside their houses which as a result spoils the cereals stored for the year which never used to happen before. Also, earlier they were not seeing cleanliness and water quality as an important factor in impacting their health. However, as part of the CBVAT they easily articulated this and made applications at the ward office for cleaning the community and also demanding for good quality water.

During the same month water management training and water drive were also organized in Rahulnagar water drive for all the three groups together. CAGs earlier used to say that the water quality is good only and we need not test the same. When the water drive process was briefed to them, they found it interesting. For the entire process from sampling to testing, CAGs were present and trying to acquire maximum information. Water quality was actually good as per the tests. The interest of all the CAGs was retained till the end and very enthusiastic to know the quality of water and related implications. The drive also created a huge demand of water purifiers, sprinkler taps and purification liquid in the slum.

The community-based resilience action plan development process brought forth heat stress vulnerability as a major issue in Rahulanagar A; water contamination, waste and mosquitoes in Rahulnagar B; mosquito and water contamination in Rahulnagar C. Following this, solar reflective white paint was demonstrated in households of Rahulnagar A which received a positive response from the beneficiary in terms of reducing temperature. However, convincing them for the same was difficult especially for attaining 10% contribution. They were convinced only after continuous information about its benefits and how it can help bring the electricity bills down. In Rahulnagar B and C, they had already initiated action on waste management and water contamination as well as vector surveillance. The CAGs members wanted to have additional demonstrations for mosquito repellants. They tried out to make an home-made mosquito repellent from neem oil and Kapoor. Further, they have also committed to continue with their turns to keep the area clean. They also share that earlier when they sue to go for the vector drive with the child doctors the community was not cooperating, but now the communities members have also realised the importance of keeping the area mosquito free. They change the water stored every week and also use kerosene to keep the larvae away. Now they are educating the families on water purification practices.

According to Taraben, the local community organiser, "Today almost 60 to 70 percent of the CAG leaders are very active participating in meetings, trainings and ready to take any action within their communities. Initially they were reluctant but after two months of intense persuasion they started coming for meetings. The Basic Climate Change training was the game changer. The CBVAT also brought in more women. Although initially it needed a lot of facilitation, they got more active through the process. The drives and surveillance also increased their understanding especially on water quality. The community saw an increase in Aquasure usage. There was also an impact of Dr' Kohli's training which led to community becoming more aware on keeping the area clean as well as vector management. The child doctor approach worked very well. Saap sidi game also helped get community interest and understanding on the issue."

7.4.2 BAGSEWANIYA (EMERGING SLUM)

Bagsewaniya is located in Ward no. 52 of zone 11 and is situated towards the South East part of the city near the famous Ram Mandir. The ownership of the land lies with the Government and is a notified slum. The density of population is medium with around 1000 families residing. Women mostly work as domestic workers, vegetable and fruits vendors whereas 70% men work as labourers.

Though there are hand pumps and a well, but the community is mainly dependent on water tankers, as the water received from hand pump is red colored and the water level is very low. The borewell water previously was causing kidney stones but now the water supply and water quality is good in the community. Residents also travel to distant places to satisfy domestic water from hand pump available in other colony. Even though Narmada water is being supplied to the area, it is not regular and also the quality is sometimes poor. RCC roads are present within the slum. Well connected with the main road, water logging is a major emerging problem due to open drains and poor waste management.

The Madhya Pradesh Vij Company supplies electricity to the entire area with 8-9 hours load shedding especially during summers. Many households have loose electric wires over their houses which is a severe threat to the lives of the people. There are two government schools within the settlement and a private school at 2 km distance. The community has a government hospital, market place, temple, mosque, private school, aaganwadi, community hall, open ground. There is also a private clinic and an active USHA health worker. Settlement has an open drainage line and improper waste management system with individual toilets in most of the households. There are many plants in the community and women have taken self-initiative of green roofs where they have grown vegetables and also get relief from heat.



Technologists and Community Interaction for better water Management 1.Dr.Veena, IIPH 2.Theresa Frommen, Freie Universität Berlin In Bag Sewania too, the community women were not initially interested in coming for meeting and trainings. However, Sapnaben, the CAG leader was convinced of wanting to work with MHT. She supported Ratneshben (the local community organiser) to meet all the women individually during the household listing exercise and convinced the women to be part of the CBO. But the women asked one question, what will we get by being involved with MHT. They could not understand the need and importance of working together and bringing about change. It required a lot of perseverance on behalf of Ratneshben to convince them to participate in the meetings and trainings.

Finally when in April 2016, the basic climate change training was conducted, the women got a little interested. As Darshita- an adolescent CAG leader shares, "*The ribbon game, which showed how even among ourselves we have different types of vulnerabilities impressed me a lot.*". Rekhaben, another CAG leader shares, "*I learnt something which I could teach my children. They were surprised that I knew something which is taught in their textbooks.*" After the training, the women started to sow fruit seeds in their vicinity as well as also in plastic bottles.

As the other CAG trainings were being conducted, there were certain issues which were organized and resolved through community-level visits and meetings. For instance, there was only one hand pump in Bagsewaniya-B which generally provided yellow water and remained dry during summers. The tanker facility was available but the tanker only came at 4:30 in the morning and the women had to wake up at 3:30am in order to collect water. So regular area meetings were conducted to solve this issue but not enough women were participating. It was in one of the meetings that CAG leaders themselves called the CBO members and collected around 35 women. Out of which, 20 women went to the ward office and made an application for water connection. The officials ensured that they will provide the connection within 30 days. They followed up for the same and got it resolved.

Similarly, in Bagsewaniya-A, Sapnaben-CAG leader was continuously attending MHT trainings/ meetings and was sharing the water quality problems. MHT staff was suggesting her to make an application to the ward office with other members of the community and she did the same. She made an application for the issue of water-quality along-with signatures of 50 individuals from the community. However, every time she visited the ward office, she could not meet the ward councilor. Therefore, lastly she conveyed the message at the office that if this does not get resolved, she will come with media and other community members. So finally the Ward Councilor visited her area and saw the support she was getting from the community and also realized that the problem was genuine. Henceforth, the issue was resolved and the community is now receiving good quality water.

The vector drive in Bag Sewania was also a major success, bringing down the presence of mosquito larvae decreased from 44 to 13. Five CAG members from Bagsewaniya also got involved with the Malaria Department and conducted vector survey with the Department in the identified settlements in 2016. In 2017, they also facilitated a disease surveillance camp (for sample collection and testing) in their own locality in collaboration with the Malaria department.

Another big highlight during the project period was of construction of toilets in Bagsewaniya during November after continuous follow up with the Government by the CAG members of the area. The construction material for 250 toilets reached the area but only 60 were constructed during that time, as the target of the contractor for current fiscal year was fulfilled. However, the further toilets got constructed only when the budget for the year 2017-18 was sanctioned with new targets.

Dakshita also took lead in performing the tests as part of the surveillance. In Bagsewaniya though the water quality was improved and the water appeared clean, there was microbial contamination which was

known through weekly water tests conducted as part of the surveillance. She even tested the water from the water purifier as part of the weekly testing process as part of the at home sample.

During the CBVAT process in Bagsewaniya, they were mostly sharing the issues related to heat stress and difference in earlier and present temperatures. The response from the CAG leaders was good as there has been lot of realization and they were aware of the real facts now. For instance, they were aware that climate change is cause by human interventions (earlier they felt it was natural) and also it was felt that they cannot do anything about it but now they know that they can atleast adapt to the conditions. Realizing the same, the women have also started making mats from waste polythene bags.

The team at Bhopal organized focused area meeting on heat stress with its linkages to water scarcity and vector borne diseases during the starting of summers where safety from mosquitoes emerged in Bagsewaniya. To solve the same, home-made mosquito traps were tried. CAGs reflected that the traps were very effective in getting rid of mosquitoes in the area. They also confirmed about saving money as it was much cheaper than the incense sticks, coils, All Out and other mosquito repellants which they used earlier. Also, there were no health impacts as well.

Thereafter, health training facilitated by Dr. Vikas induced hand washing behavior and brought focus on the major health issues emerging due to day activities. The women of both the slums reflected a major learning in terms of hand washing practices. Sensitization campaign and training on water conservation was also conducted during May but did not receive very high recall value amongst these communities. The community-based resilience action plan development process brought forth issues of water scarcity, waste management and mosquitoes as the major issues in Bagsewaniya.

During the month of February, an interesting event took place when registration of working women was ongoing in Bagsewaniya and the officials were charging money for this free service. Sapnaben, Vikasini member took a step against the wrong and threatened the officer to record video of taking bribe in form of depositing fees. The same was informed by the officials to the Ward Councilor. Thereafter, the cards were posted to their individual homes for free. This was one such instance when Sapnaben led such a scenario and stood up for her community.

The relationship with the Ward Councilor and Bagsewaniya CAGs has enormously increased in the last one year where the issues such as water quality and road have been resolved. The community leader-Sapnaben along-with other CAGs has also proposed to build a garden and shade near the temple alongwith a water tanker facility for residents to rest and for children. According to her, this would also improve the aesthetics near the temple. The Councilor has promised to take this into consideration in the coming months.

Sapnaben, Darshikaben and Rekhaben have been the emerging CAG leaders of the area and have been taking lead in various community-level processes such as water quality and surveillance. As Sapnaben shares, "I had never met the ward councillor one to one nor spoken to him. I was very afraid initially, but Ratneshben motivated me to speak to him. Now I am in touch with him over the phone and can get work done easily. Just recently, when they were asking bribe to give us registration, I confronted them with going public with the information and all our people have got the cards without giving any money."

In Bag Sewania 2, initially the women were not at all interested. However, when the community women were encouraged to take some action to get the nearby blocked canal cleaned, they got interested. It was an interesting process, as Ratneshben shares, *"First we have to get the information, then we have to share it with the community and also motivate them to take action."* So when the BMC and the local irrigation departments were tossing the ball in each other court she decided to explore other options and learnt

about the CM helpline. The Cag women were encourage to lodge a complaint to the CM helpline since it was being monitored at the highest levels. The matter was attended too temporarily by removing the garbage but not taking it away. The women checked with Ratneshben before signing the service complete register and did not sign the same on her advice. The garbage was removed the next day and the confidence of the women CAG members was restored on the process. Since then they have been participating in all meetings and trainings. *"Even when there is an emergency water tanker coming, we ask our husbands to fetch the water."* share the CAG member of Bag Sewania 2, Dhanvanti Yadav.

To bring a permanent solution to the garbage management, community-level resilient solution investments have been made through the GRP project. They have installed a vermi-compost system to be managed by the CAG themselves in Bagsewaniya 2. This took place with assistance from Mr. Jitendra Parmar who also trained the CAGs of the area about how the system operates and other related processes. The women also showed interest in getting some livelihood from the manufactured compost. Women also came forward to organize training on livelihood through their own contribution if MHT could facilitate an expert since they have struggling to attain livelihood opportunities. The group is further collaborating with the local ward councillor for training support and painting of the unit.

8. Implementation in Partner Cities: Bhubaneswar, Kathmandu, Dhaka

8.1 CONTEXT FOR GRP

On the key parameter for assessment of any resilience project is its ability to be scaled and transferred beyond the project boundaries and target beneficiaries. While for technologies and physical solutions, it is relatively easy to assess the potential to scale, the same is very difficult for process- oriented solutions and innovations. Added to this the very notion of community-based or community-led indicates a certain level of local or context specific nature of the solution. In such case it becomes even more difficult to assess the potential to scale, as what succeed in one community might not succeed in another community.

The project had envisaged this challenge at the design stage itself and the notion of scale was defined at not replicability of solutions implemented within a community but the replicability of the concept of "Community-Based" and the "Processes for Resilience Building". The project sought to derive certain principles and processes for promoting community-based resilience building and defined scale as the "*possibility of implementing those similar principles and processes across multiple geographies and by agencies other than the core implementing actor MHT*". Thus, the project implementation plan spread across three types of cities:

- Type A: Ahmedabad (India), which is an established city and where most project pilots were carried out by MHT
- **Type B:** Bhopal, Jaipur and Ranchi (all in India), which were emerging cities and where the replication of the project processes was tested and the validated by MHT
- Type C: Bhubhaneshwar (India), Dhaka (Bangladesh) and Kathmandu (Nepal), which are completely new cities and where replication was sought by transferring the project learnings, principles and processes to another actor (implementing agency)

This section next deals with the experience of the project in transferring the model in Type C cities (referred hereto as partner cities) through partner organizations. The parameters considered for review in the first year of scale were: a) The type of cities and organizations which would suit best for potential

scaling of such a project; b) The facilitation processes required for transferability of the model; and c) The adoption and implementation of the project principles and processes by the partner organizations.

8.2 CONTEXT FOR THE PARTNER CITIES

One of the key parameters for the selection of cities was that the cities should have a relatively high and increasing slum population and should be facing at least two of the four climate risks (stresses) identified in the project. The second criteria was to test it beyond the Indian context to other South Asian cities. The third was a logistical criteria of there being an existing relationship between the project team and organizations working in the city. Keeping these in mind, the project identified Bhubhaneshwar in India; Dhaka in Bangladesh; and Kathmandu in Nepal as partner cities. On hindsight, there also emerges the need to have a fourth criteria for future selection- the governance structure in the cities- the model will be more successful where the government is more pro towards the needs of the urban poor and is positive towards the needs of slum dwellers.

Before moving ahead, it is important to understand where each of the partner cities stand on the above criteria and a brief overview of the cities.

8.2.1 BHUBHANESHWAR

Bhubhaneshwar, is the capital and largest city of the State of Odisha. Although an old city of religious and economic significance, the modern city of Bhubhaneshwar was formally established only in 1948. Situated on the eastern coast along the eastern ghats and with the Mahanadi river on one side, the Daya and Kuakhai river on the other, the city also affords a rich bio diversity on its boundary. Home to many temples, together with Konark, Puri and twin city Cuttack, Bhubhaneshwar is one of eastern India's most visited cities.

The modern city falls under the Bhubhaneshwar Municipal Corporation, covering 135 sq kms and a population of 8 lakhs (837 thousand). Divided into 67 wards, the Bhubhaneshwar Municipal Corporation, oversees and manages the civic infrastructure of the city including drainage, sewerage, sanitation, solid waste management and street lighting. Water supply and sewerage are handled by the Public Health and Engineering Department (State Body) and Electricity supply governed bu the Central Electricity Supply Utility of Odisha. Bhubhaneshwar Development Authority is responsible for statutory planning, development and building regulations.

An administrative, education, tourism and information technology hub of the region, Bhubhneshwar has emerged as the fastest growing commercial hub of Eastern India and has the highest rate of employment growth among tier two cities in India. The key employment driving sectors in the city are real estate, infrastructure, retail and hospitality, and retail. However traditional handicrafts, silver filigree work, applique work, stone and wood carvings and patta painting also contribute to the economy. In addition, there are four industrial estates also around the city. There are around 22,000 vendors in the city operating the regulated and unregulated markets.

The city has a high number of slums (377) mostly unauthorised and rising fast due to increasing migration from rural areas and neighbouring states. However, the state government and municipal corporations have also taken some very pro-active steps for improving infrastructure in the slums, providing basic services and housing and recently is also embarking on an ambitious project to provide legal land rights to slum dwellers.

The city is highly susceptible to "very high damage risks" from winds and cyclones according to UNDP. Floods and water lying in the low lying areas are a common site during monsoons. The city also faces heat stress with souring temperatures coupled with high humidity. In addition, slum communities also face problems due to lack of water, sanitation and drainage facilities.

8.2.2 DHAKA

Dhaka is the capital and largest city of Bangladesh and with a population of 18.89 million, it is also one of the largest and the 4th most densely populated city in the world. Dhaka is the chief economic, political and cultural centre of Bangladesh. As a growing business centre the city attracts a lot of labourers especially in the textile manufacturing sector along with leather goods, vegetable oil, electronics and consumer goods manufacturing. The population of the city is growing at an estimated 4.2% per year, mainly due to increased migration from rural and coastal areas and expansion of city boundaries.

Every year four lakh to five lakh people migrate to Dhaka city of which most are poor and often settle in slums. An estimated 3.5 million people, 40 percent of the city's population, lives in slums. These slums typically lack adequate housing facilities, water supply, heath facilities, sanitation facilities, education facilities, water drainage facilities, energy supply.

Dhaka City Corporation runs the affairs of the city. In 2011, it was spilt into two- Dhaka North City Corporation and Dhaka South City Corporation for ensuring better civic facilities. In total the city has 130 wards and 725 mohallas. RAJUK is responsible for coordinating urban development in Greater Dhaka area. There are more than two dozen government organisations under different ministries providing various services like power, water supply, transport, etc. Lack of coordination among them and the centralisation of the powers by the Government is a major challenge to city governance.

As a part of the Bengal plains, the city is bounded by the Buriganga river, Turag river, Dhaleshwari River and Shitalakshya river. Recent changes in the climate, along with the pattern of infrastructural development in Dhaka make the city more vulnerable to climatic disasters especially flooding caused by torrential rainfall, water logging and heat waves. Urban poor particularly the slum dwellers are the most vulnerable to these with often ten to twenty minutes of rainfall also leading to water logging and homes with tin roof and walls and no ventilation becoming heat chambers in summers.

8.2.3 KATHMANDU

Kathmandu is the capital city of the Federal Democratic Republic of Nepal. It is the largest metropolis in Nepal with a population of 1.5 million in the city proper and 3 million in its urban agglomeration across the Kathmandu Valley including Lalitpur, Kirtipur, Madhyapur, Thimi, Bhaktapur. The city stands at an elevation of approximately 4600 feet above sea level in central Nepal. An old city with rich heritage and the gateway to Nepalese Himalayas, tourism is the important part of the city's economy. Besides the city is also the export hub for handicrafts, art works, carpets, pashmina, paper, garments, carpets, etc.

There is no official agglomeration of Kathmandu and the urban areas are split between different district government units. The Kathmandu Valley consists of three districts, Kathmandu, Lalitpur and Bhaktapur. These districts comprise five municipalities and 99 Village Development Committees. Municipalities are the same administrative level as Village Development Committees, but are considered urban, whereas VDCs are rural. In addition, in 2011 the Government of Nepal formed the Kathmandu Valley Development Authority (KVDA) with the objectives of re-constructing, expanding and developing the cities in a planned

way to provide necessary services and facilities to the people. Most of the urban population is concentrated in the capital Kathmandu and its rapid growth has led to increasing pressure in Kathmandu. At present, there are 63 slum and squatter settlements in Kathmandu, and their population is estimated to be growing by 25 percent per year. According to a Government report, it is estimated that around 10 per cent of the urban population lives in informal settlements. Most of the slums settlements are located in the centre of the city along the river banks of Bagamati, Bishnumati, and Manohara Rivers. Urban slums are typically characterised by the lack of access to improved water, improved sanitation facilities, sufficient living area, structural quality and durability of dwellings and security of tenure. The government approach to slum development is constructing multi-storied housing as a part of the resettlement programme for people living in informal settlements.

In 2009, a modeling exercise was conducted by team of Nepali, American, British, Pakistani and Bangladeshi experts (NCVST,2009) using the emissions scenarios in the IPCC's special report (2007). The report indicates that Nepal will see an increase in temperatures especially and increase in extreme hot days by 55% by 2060; extremely hot nights are expected to increase by 77% and precipitation changes, especially during the monsoon: from a decrease of 14% to an increase of 40% by the 2030s are expected.

8.3 PARTNER ORGANIZATIONS OVERVIEW

Considering the scope of the project it was initially considered to identify partner organizations which had a similar orientation and scope of work as that of MHT (the lead implementing partner in Type A and Type B cities). However, it was found that very few organizations are working on the theme of urban climate resilience in the context of slum dwellers with a community-based perspective in the South Asian region.

During the project design stage the GRP team had organised two workshops one in Bhubhaneshwar (May 2015) and another in Dhaka (June 2015) to interact with multiple stakeholders and identify partners for the project.¹⁷ In these workshops, it was clear that there was no one organisation which covered all aspects and a combination of 2-3 organisations had to be worked out. Thus in Bhubhaneshwar a combination of two local organisations- one with a rights based approach (ROAD) and another a technology solution based approach (CORE) were identified as partners. In Dhaka, a combination of two organisations- one with a strong Climate Change research approach (ICCCAD) and one with a strong grassroot based approach and presence in slums (Nari Maitree) were identified as partners. In Nepal, a grassroot based organisation (Saathi) was identified as partner. Box 4 next gives a brief overview of the partner organisations and their existing development models.

Box 4: Partners Existing Models

ROAD:

ROAD is a women-led grassroots organisation working in Bhubhaneshwar and Sambhalpur districts of Odisha state (India). The core constituency of ROAD's work are home based workers- those involved in stitching, embroidery, handloom, agarbatti and papad making. Mainly a rights-based organisation ROAD focus has been on organising home-based workers as a collective to demand

¹⁷ A similar workshop was also planned to be held in Kathmandu. Unfortunately, due to the devastating earthquake in the region in April 2015, the same could not be conducted.

better wages and social security for their members. Since 2014, they had begun to take up concerns of basic services availability for home-based workers through their contact with MHT buying into the notion of "My Home My Workplace" and the need for better access to services for home based workers to ensure better productivity. ROAD has been an active network member of the GRP team member Homenet South Asia. ROAD's work in Bhubhaneshwar has been mainly around the Kargil Basti, Jharnasahi, Saliasahi and Sitanathanagar. Most of these slums are unauthorised, although the threat of eviction is low. Typical occupations in these communities include: construction workers, home-based workers (papad, agarbatti makers), daily wage laborers, drivers, plumbers, masons, and vendors. Most dwellings are semi-pucca, very densely situated, poor ventilation. There is limited access to basic services, although common water supply systems (bore wells) and common toilets are there.

CO-OPERATION FOR RURAL EXCELLENCE (CORE):

CORE is a grassroot based organisation working in Bhubhaneshwar and Cuttack districts of Odisha state (India). The focus on their work has been to create women's Self Help Groups (SHGs) mainly around savings and credit activities and provide them skill training and technology support for livelihood generation. The organisation does not have a direct climate change adaptation focus but has been working on promotion of sustainable technologies especially those related to bio-mass conservation. In Bhubhaneshwar, CORE's work has been mainly in Raghunath Nagar, Shastri Nagar, Satya Nagar, Barabari & Suka Vihar sub-settlements of a large BSUP (Basic Services for Urban Poor) project cluster situated towards the southern edge of the city. All the settlements are approximately 35 years old. The residents of these settlements enjoy a larger degree of legitimacy as they have been given leaseholds with restricted sale rights for varied periods ranging from 10 to 90 years and has very less illegal construction. Residents were given a 600 square feet plot (20 feet x 30 feet), along with financial assistance of up to ₹ 1.7 lakh as loan. All houses have individual water connections and individual toilets.

International Centre for Climate Change and Development (ICCCAD):

ICCCAD is a global Centre of Excellence on Climate Change and Development research based in Independent University of Bangladesh. ICCCAD aims to build and lead a network of Southern based partner institutes, together educating the world about Climate Change and Development and increasing capacity in the South. The organization focuses on research and capacity building of different stakeholders and had been facilitating the Community Based Adaption (CBA) forum for the last decade and is also the nodal agency for ACCCRN project in Bangladesh. Their focus of working directly with slum community has been limited "for acquiring information for research purpose and dissemination of new knowledge among relevant stakeholders and policy makers"¹⁸.

¹⁸ Oct to Nov 2017 quarterly report submitted by ICCCAD to Awas Sewa

NARI MAITREE:

Nari Maitree, is a grassroot based women-led organisation working in Dhaka (Bangladesh). It has long experience empowering women in slums who are considered underprivileged group in the society by enhancing their socio-economic condition. The focus of the work has been mainly on "**savings and credit activities and not directly for climate change adaptation**".¹⁹ Nari Maitree's climate resilience work has been focused on two slums-Kalyanpur Pora Bosti having 2500 households and Mirpur Jheelpar Bosti having 800 households. Both of these were established around three decades back and are on government land. Mainly consisting of garment workers, rickshaw pullers, domestic servants and daily wage labourers, the communities are living in houses made with bamboo pools, bamboo finch, tin and corrugated iron sheets. The slums are very densely populated with hardly any space between two homes and also lack in all basic services. Additionally they face a high problem of water logging and increasing temperatures. Both the slums have a high risk of eviction (one has actually got a court stay order to prevent eviction). There were community-based organisations prior to the project but they were mostly male dominated.

SAATHI:

Saathi is also an active network member of Homenet South Asia. They have been working on promoting the rights of home-based workers in Nepal. Their core focus has been on organising home-based workers collectives to demand better wages and social security. In addition, they also help women register as home-based workers with the government authority as well as focus on gender issues of health and domestic violence. In work focuses on Bagmati zone of Lalitpur. As part of the resilience project they have focused on Bhakhapur (620 hhs) and Godavari slums (215 hhs), both of which are situated in private lands on the river bank and although notified as slums face a high threat of eviction. There are some amount of basic services available in the form of toilets, but water supply, garbage management, drainage and electricity, are still a matter of concern. Both the slums face problems of water scarcity as well as flooding. Saathi has already initiated CBO formation in the area (mainly through home-based workers) prior to the commencement of the Climate Change activity. However, the CBOs were not actively functioning.

The GRP team member, Center for Environment Education (CEE) facilitated the processes in Bhubhaneshwar, while another member Awas Sewa facilitated the process in Dhaka and Kathmandu. Additionally, Homenet South Asia another team member also facilitated the processes in Bhubhaneshwar and Kathmandu.

8.2 EVOLUTION OF GRP PROGRAM IN PARTNER CITIES

8.2.1 BHUBHANESHWAR

CEE, a GRP team member, had a small office in Bhubhaneshwar in 2015. The initial planning phase of the project was thus lead by them in May 2015, through the organisation of the multi-stakeholder workshop.

¹⁹ Oct to Nov 2017 quarterly report submitted by ICCCAD to Awas Sewa

The workshop brought various local NGOs, academics, government officials as well as technical experts who provided their inputs on the climate risks and ongoing initiatives in Bhubhaneshwar and the possible scope of the project. Based on the workshop, it was suggested that since there is no one organisation working on climate change resilience in slums of Bhubhaneshwar, it would be good to explore working with multiple organisations. Both ROAD and CORE had participated in the workshop and showed their interest to partner with MHT for testing the project tools and processes in their areas. It was thought best to work with both organisations, since they provided an option to also understand what type of organisations and communities the model can be better replicated. ROAD had an expertise in higher level of community mobilization work and worked more in unauthorised slums; whereas CORE had a relatively more focus on technology and skill promotion and was working in slums with a higher tenure security and legality. As the dialogue began with both the organisations, ROAD actually also took lead and undertook focused group discussions with 11 slum communities in the city to understand the issue better in GRP solutions development phase itself.

The actual implementation of the project, with both partners, started in July 2016. A three- day orientation training on the project was organised by MHT at Ahmedabad in June 2016, in which both ROAD and CORE teams participated. The training included sharing of MHT's core social capital building model- the CBO/CAG development processes and the CBO/CAG training modules and basic orientation on Climate Change and the GRP project. As exposure visit was also organised to established slums in Ahmedabad to better understand the process on the ground. Based on this, an initial 6 month action plan was developed which included the following activities: a) Identification of slum pockets and initial need assessment in the identified slums: including slum profiling, and household listing for the Community Based Organisation (CBO); b) Formation of the CBO and facilitating area (CBO) Meetings and Video Shows; and c) Training of local women and youth leaders of the CAGs on Collective action and Promotion of Community Action Groups (CAGs).

Following this, both the organisations identified 5 slum pockets each covering approximately 3000 households. The initial process included conducting areas meetings, undertaking household listing and initial orientation training of the community leaders on the project concept and CBO model. By the end of December in each slum, around 6 area (CBO) meetings, 2 to 3 video shows on the need for CAG, formation of 10 CAGs and trainings on the first two CAG modules (including topics related to project concept, need for collective action and CBO/CAG structure) was completed in all slums. ROAD had also completed the third module on urban governance by then. This phase was particularly ridden with delays due to language barrier and festive seasons. Most material had to be translated to Oriya language since they were to be used directly with the community or be facilitated by very grassroot staff. However, most activities went as per the initial plan. The role of CEE (Mr. Bhibhu) was very crucial in this phase to provide handholding support to both the teams. CEE also recruited an additional staff (Ms. Bhibhahari) to support the project.

In January 2017, MHT-GRP coordinator Srishti visited Bhubhaneshwar, and conducted a training of trainers programme on the Basic Climate Change module to 16 staff and key leaders from both organisations. This training led to a spurt in the energy of both organisations, as one could see the rest of the CBO/CAG training modules as well as the basic CC training module being undertaken for all areas by the end of March 2017. Both the type of trainings, those for CBO/CAG development and the basic climate change module, where mainly facilitated for the CAG leaders by the staff of CORE and ROAD. It was also in this phase that the exposure visit to Bhubhaneshwar Municipal Corporation for the CAG leaders was organised as part of the 3rd CBO/CAG module on urban governance. During this period, regular CAG

meeting continued, and video shows related to Climate Change were organised at the community level by the ROAD and CORE staff members.

In March 2017, ROAD and CORE teams also participated in the Community-Based Resilience Academy (CBRA) organised by MHT at Ahmedabad. Following this CEE facilitators (Kinjal and Bhibhu) felt the need for a round of refresher training for both CORE and ROAD especially on the social capital aspects and the need to look at this not as a project but a movement. A 2 day workshop was thus facilitated by the CEE team for both the organisations in April 2017. This was followed by another Training of Trainers (ToT) programme for CBVAT by MHT team in the same month. A different approach was followed in Bhubhaneshwar than that of the Type A and B cities, wherein along with the staff, two leaders from each CAG were also trained on the process. This was undertaken for two reasons- 1) To identify potential Vikasini leaders from within the community which could facilitate the process in all the slums; and 2) To create more awareness among the CAG members towards the process (it was learnt from the project experience that often CAGs think of it initially as a waste of time and only in the later stage do they gain interest and are more articulate). The strategy change was well received in Bhubhaneshwar with a quicker identification of the Vikasini leaders, as also the CBVAT process was completed well in time all slums by June 2017. It was also in this phase that the organisations focused on using the snake and ladder game; and the mobile vani tool for better communication. The weather and water surveillance kit was also installed in 2 slums during this phase.

During this phase a few technologies were also tested in Bhubhaneshwar. MHT made a presentation of all possible technologies to both the organisations, from which the two teams selected technologies they thought more suited the community needs. Demonstrations where then done accordingly. This was interesting, as in CORE areas the focus was more on getting community contribution and undertaking individual household demonstrations; while in ROAD areas the focus was on demonstrations in common areas. Also CORE picked up one more solution "Cool Auto" (which has not been so successful in other cities) as they have a larger constituency of auto rickshaw drivers in their areas.

In end of June, another visit was made by MHT to demonstrate the Community Based Resilience Action Plan (CBRAP) process. The exercise was facilitated by MHT and CEE separately for the two organisations (2 CAGs each) as it had to be done in the local area. With some support from CEE team, both ROAD and CORE were able to facilitate the action plan development in the other areas in the coming two months. Post that, the organisations have been continuing the create awareness and facilitate community action on the issue. ROAD also proposed and facilitated a technical training on disaster management (organised by them on their own with just financial support from MHT) for their communities.

8.2.2 DHAKA

As a part of our initial exploration process, MHT had undertaken 4 Focus Group Discussions in 2 slums of Dhaka (Two with men and two with women's groups). A stakeholder consultation was also facilitated in Dhaka in June 2015, to get an initial feedback on the model and it replicability in the region. Based on the feedback received, Dhaka was included in the project proposal. It was also in this consultation that the need to undertake a feasibility study was identified. It was also discussed that we need to focus on a very specific region of the city so as to be able to demonstrate the results better. Following this MHT developed an informal partnership with International Center for Climate Change and Development (ICCCAD), Bangladesh (which had played a key role in the stakeholder consultation and facilitating the focus group discussions). ICCCAD team member (Mr Sarder) participated in the GRP launch workshop organised in New Delhi in February 2016. MHT GRP team members (Ms. Dharmistha and Ms. Bhavana) participated in the CBA-10 programme organised by ICCCAD in Dhaka.

After a lot of time gap (mainly due to operational reasons with the GRP funding team), in January 2017, our partner Awas SEWA formally collaborated with ICCCAD to take forward the model in Dhaka. It was also left to ICCCAD to identify the implementing partner Non-Governmental Organisation (NGO)- one which works with women's micro-finance groups or one which works on Water Management and/or Housing issues in slums of Dhaka. In the initial months, ICCCAD prepared a draft report on the existing research and knowledge from urban resilience and urban government perspective in Dhaka. ICCCAD also identified Nari Maitree as their field partner.

In March 2017, two persons from ICCCAD and one person from Nari Maitree attended the CBRA-2017 which was held at Ahmedabad. In their words, "That training workshop showcased the practices, success and challenge stories of the project implemented in different parts of India. The team from Dhaka, Bangladesh could learn about various tools and techniques for the project activity......The learning from the workshop mainly highlighted that how women build their community led climate resilience action plan, implement such plan with the help of the government and other stakeholders in India. There is a need of long term engagement of an organization to form women action groups, build individual members' capacity to identify their own real problems, causes of problems, identify low cost solutions, develop micro level action plan and get necessary cooperation from relevant experts and government institutions".

Based on discussion on a list of slums and initial field visit ICCCAD with staff of Nari Maitree, jointly selected two slums. One site is Haji Road, Jhilpar Basti, Ptol no. 6, 7 & 8, in Ward no. 7, Mirpur-2 in DNCC. Another site is Kalyanpur Porabosti, Ward No. 11, Mirpur. Criteria of selection of the slums included; interest expressed by slum dwellers to involve with the project and beset with problems of water logging, shortage of drinking water & electricity, prevalence of disease and availability & willingness to do some unpaid works. Sarder Shafiqul Alam and Tasfia Tasnim from ICCCAD and Ms. Bina from Nari Maitree visited both the slums and conducted two small Group Discussions and did several interviews with local people for gathering information. Slum information was then collected to develop slum profiles for two slums, based on the MHT format, as also more information was collected as part of initial field assessment by ICCCAD. Initially it was envisaged to cover three slums of the capital city Dhaka. But given the high population density, congestion and plan target households the number of slums was reduced to two.

Between April to June 2017, 6 CBO meetings were conducted with women members to give them can overview of the concept (there was a special focus on basic services and housing aspects along with climate risks). Following this the household listing process was initiated. A total of 300 women have become CBO members, 200 from Kalyanpur Pora Bosti and 100 from Mirpur Jheelpar Bosti. In the meetings the slum dwellers expressed their grievances of slum dwelling. Their top demand was for decent housing with water supply, sanitation, electricity and other facilities. Eventually, discussion centered the issue of climate change impacts on the slum dwellers and working out ways and means to adapt to the impacts.

After 3 meetings, the CBO members chose their leaders for the CAG. Finally, 3 CAGs were formed by end of June 2017.- each having 16 women and 4 children (boys and girls) from primary and secondary schools as members. One CAG formed in the Jhilpar Bosti named themselves as "Ekota" in the meeting. The other two CAGs formed in Kalyanpur Porabosti named themselves as "Golap" and "Shapla". During the meeting, CAG members have selected their President and Vice President within the group. There were a few number of alteration in the name of the CAG members because "Selecting a few names from some groups

is one crucial decision. The slums here doesn't have knowledge on this type of activities. Due to some political reasons in the slums, the name of the actual duty bearers were altered in some cases."

In July 2017, a two-day training on Climate Change for each CAG was organized by Nari Maitree and facilitated by Sarder Shafiqul Alam and Tasfia Tasnim of ICCCAD. This training was given based on the MHT developed basic climate change and CBVAT module which was customised by ICCCAD to meet the local situation. ICCCAD also followed it up with another one day training in October 2017 which included aspects of CBRAP and community action. Following this the team, also used the translated Snake and Ladder Game and video shows in the communities to build mass awareness on the issue of climate change and its impact on the lines of slum dwellers.

A customised version of the CBVAT and CBRAP exercises was also used in both slums to facilitate the community-based vulnerability assessment and resilience planning exercise, engaging the CAG members. This was done, "using MHT developed "root cause analysis" tools and PRA techniques..... The vulnerability assessment followed by solution identification and development of resilience plans. The solution identification exercise has been conducted through engaging CAG members and used tools of MHT. The adaptive capacity indicators have been shared with the CAG members to identify possible solutions to reduce their vulnerability."

Some of the activities were delayed some due to the incessant monsoons in Dhaka, as also the need to translate all material in Bengali. The CBO/CAG modules have thus not been completed there. Some other challenges faced also included influence of local leaders in CAG- demotivating women to participate as well as the time commitment of the daily wage earner women for the training programmes.

ICCCAD team also outlined the draft policy brief based on the literature, resources and the initial learning while working in the slum and it was shared among different urban climate change experts, academicians and relevant stakeholders for getting their inputs and feedback on it. The major findings from the draft policy brief has also been presented in the ICCCAD organized flagship event called "Second Annual National Conference on Urban Resilience to Climate Change". There were 30 representatives from the slums and two participants from Awaas Sewa along with many other participants including government officials, mayors, NGOs, academicians and journalists. Participants of the session appreciated the project and its policy findings and provided necessary comments and suggestions which have been inputs have been incorporated in the final policy brief.

8.2.3 KATHMANDU

In 2015, when the GRP project was in its solutions development phase, MHT had already developed an informal partnership with Saathi through Homenet South Asia. In April 2015 itself a training was organized for Saathi team on MHT core models of social capital building for enabling basic services for the urban poor. MHT had planned to build on this partnership as part of the GRP project to incorporate a resilience perspective in the water, sanitation and housing portfolio of Saathi that MHT was supporting to build. Unfortunately, things got out of line due the devastating earthquake in Kathmandu in end of April 2015.

Post that, since focus of all work in Nepal was rehabilitation, the dialogue on resilience was only resumed in early 2017, when Awaas Sewa entered into a formal agreement with Saathi for testing and validating the MHT- GRP model in their region. Following this, three people from Saathi (two staff and one women leader) participated in the CBRA in Ahmedabad in March 2017. The CBRA was in a way an introduction

to the team on the concept on climate change and resilience building in addition to exposing them to the tools and processes being used by MHT.

Since April 2017, Saathi then begun application of these in their work in Kathmandu and Lalitpur. Being already strong on the community mobilizing aspects, Saathi did not adopt all the CBO/CAG training modules of MHT. However, Saathi did undertake slum profiling and household listing activity. Area (CBO) meetings were also conducted and in May 2017, two CAGs were formed. There was just one training on collective action for 25 CAG members organized which Saathi conducted using their own module.

The key process they adopted was the basic climate change training module developed by MHT. Since Saathi had no prior experience of working on the issue, they used more or less the same module with some customization to suit the local context for conducting the training of 56 of the 60 CAG leaders. This was followed by 10 video shows on climate change- although language of the video was an issue as they were not available in Nepali.

In July 2017, Saathi along with MHT also organized a multi-stakeholder event in Kathmandu, in which more than 25 participants from civil society, government and research groups participated. The GRP model was shared in this workshop and many organizations expressed interest in learning about the same. Saathi also adopted the MHT model of getting women leaders from slum on the panel to share their concerns related to climate change.

Two GRP team members (Ms. Ekta Sahu and Ms. Radha Soni) then visited Kathmandu and conducted a Training of Trainers (ToT) on the CBVAT and CBRAP process on similar lines as that of Bhubhaneshwar (staff with women leaders). After the training, the process was facilitated by Saathi staff in both the CAG, which undertook their vulnerability assessment as also prepared the action plans. However, apart from language, there was another challenge faced here as the CBRAP module particularly had a high focus on heat stress, which did not emerge as much of a problem in these slums.

9. REFLECTIONS AND KEY LEARNINGS

9.1 LESSONS FROM THE COMMUNITY RESILIENCE PROGRAM

9.1.1 ENTRY INTO NEW COMMUNITIES REQUIRES PERCEPTIONS OF LEGITIMACY, TRUST, AND INCENTIVES ON THE PART OF COMMUNITY WOMEN TO PARTNER, WHICH CAN ONLY BE BUILT OVER TIME WITH MULTIPLE ENGAGEMENTS

In an established city like Ahmedabad, where MHT has been working on slum improvement for the last 20 years, the organization enjoys credibility and trust amongst poor communities, sometimes even amongst 'emerging communities' where it has not worked directly. The Vikasini network and elected councillors play a crucial role in upholding this reputation of the organization by connecting communities in need to MHT. For example, in Silver Park, an emerging slum identified for intervention under the GRP program, Nafisaben, the elected councillor of the ward (and ex Vikasini member) played a key role in initiating the partnership between MHT and the community. In such instances, MHT has to build on the existing relationships; some level of trust already exists.

In communities where MHT's work is 'unknown', trust building is a long drawn process. MHT's field coordinators and spearhead teams conduct multiple visits in the area to meet with individuals and groups to start talking to them about MHT, and how it can support them in bringing improvements into their area. Initially MHT's field team is often met with scepticism. To gain the community's trust, MHT's spearhead teams often emphasize their own poor backgrounds. They can empathize with the

communities and are able to relate with the communities' experiences. Krishnaben, an experienced spearhead team member charged with mobilizing community in Balapeer No Tekro says:

"I didn't even know that this community existed. When I reached there, I started asking around. The Anganwadi (government supported day care in poor communities) is a good place to start generally. People were not very receptive at the start. No-one really wanted to talk about community issues. We are fine here they would say. We don't need anything from you. I kept making repeated visits. I emphasized my background; that i also come from a similar community, from a poor upbringing. Slowly people opened up and asked me to go and meet Nandaben, one of the local women leaders. Nandaben was determined that everything was ok! She just pointed to the need for individual toilets. However the entire place was filthy! It was as if they didn't make the connection between sanitation and health! There was work cut out for us!.

Evidence from Bhopal points to similar experiences of field teams meeting with contempt and sometimes-even abuse. Ektaben, City Coordinator shares:

"Our field teams were initially being looked upon as a money-making agencies and the community women often shouted at them for wasting their time. They often faced abuse from the community"

As Taraben the local community organiser shares,

"A great challenge is building trust among the communities especially for water and sanitation services. We have been conducting surveys regarding status of watsan in the GRP areas and trying to make them understand that how MHT will facilitate applications for the same but most of the communities feel that we are like other organizations who just make promises and would not be able to deliver anything. Another challenge of working in slums is that most of the women are working in the area so the activities have to be conducted either very early in the morning or during late evenings."

MHT's program managers and senior field officers share that this mistrust amongst communities is not new. Poor communities are often promised improvements that they never get; local contractors and middlemen often cheat them; so they often view such engagements as a 'waste of time'. MHT's field staff is trained to deal with such hostility and build trust over time. Sheetal, a field worker from Bhopal shares how MHT slowly started gaining community's support:

"Initially, the women were not at all interested in our initiative. We had to keep inviting them for meetings by going door to door, but they simply avoided and ignored us. Gradually, they started attending meetings, just because we were so persistent. Once in the meetings, they realized that we were talking sense and something substantial was going on. Then they started attending on a regular basis. We conducted interactive activities that created a good bonding with the women. Once they understood our approach, they started opening up about their issues".

Another strategy that MHT often employs to build trust and credibility is facilitating field visits and peer exchanges. This is particularly effective in cities like Ahmedabad, where MHT has implemented projects at all scales. MHT facilitates visits for women from emerging communities to these sites, where they are also able to talk to women leaders. Such peer exchanges give grassroots women an opportunity to see for themselves the actions that MHT has delivered. They are able to visualize how their community could also change.

9.1.2 CONTINUED PARTICIPATION BY HIGHLY DISENFRANCHISED WOMEN IN MARGINALIZED COMMUNITIES REQUIRES STRATEGIES TO PROMOTE INDIVIDUAL AND COMMUNITY EMPOWERMENT, SOLVE TANGIBLE PROBLEMS, AND BUILD RECOGNITION/ IDENTITY WITHIN COMMUNITY

Most grassroots programs and initiatives in India by NGOs as well as the government emphasize involvement of communities in planning, implementing and monitoring specific development programs. However, the 'participation' of communities in decision-making is often limited to the duration of the 'externally funded' program. Once the program ends, the framework for participation also ends. Continued participation of communities in decisions concerning their lives and well-being requires development of empowered change agents within the community. MHT's experience in Ahmedabad offers strong evidence to support this claim. Some of the earliest intervention communities where MHT worked more than 15 years back continue to show leadership. CBO leaders in several of these early intervention communities have remained actively engaged in development activities in their slum (without active support from MHT). MHT's role for these communities has changed from a facilitator/ service provider to that of an advisor. The Vikasini platform offers a space for slum level leaders to connect with leaders from other communities and also remain abreast with latest planning/ policy developments at city level. GulshanBano, CAG member from Babalablabi Nagar shares how she has remained active in community development and is now nurturing new leadership:

"Our CBO was registered in September 1999. Improvements under slum networking program were over by 2001. However I remain engaged with mht and regularly came for the monthly vikasini meetings. There is so much to learn! They inform us about different government schemes/ programs that we can benefit from. In the last 10 years, our CBO has led several initiatives. We got toilets constructed in new households that joined the community; we worked with AMC to initiate door-to-door waste collection. I have taken a lead in educating women and children in the community. Currently I am grooming my teenage daughter to get involved in community affairs".

To ensure continued participation in emerging slums, MHT engages women in 'action oriented activities'. MHT breaks down the development process into a series of short-term actions (like organizing area meetings, learning how to fill forms, using public transport to visit government offices, establishing a connect with the elected representatives etc.). These actions create opportunities for women to go out of home, meet other people, expand their knowledge. The feeling of self-worth, of being productive, of contributing towards change is a big personal incentive for women to remain engaged in the process. Sonalben, CAG member from Balapeer No Tekro, an emerging community in Ahmedabad shares:

"I was caught up in domestic work. Everyday when everyone left for work/ school, I ended up feeling lonely and bored. Even after finishing my daily chores i was left with a couple of hours on hand. I used to while away that time doing nothing much. Now that I have started participating in area meetings in my area I feel I am using my time well. One day Krishnaben took me to AMC offices, showed me how to fill forms. I have facilitated gas connections in my community. I have realized that even I can contribute to bring improvements in my community".

To ensure participation of younger girls and boys, MHT had to adopt different strategies focusing on their interests and aspirations. For example adolescent girls in Ahmedabad were trained as sanitation reporters. They used mobile phones to tag locations with garbage dumps, water logging, sewage overflow and reported these incidents on the governments complaints registration platform. The "Child Doctors" strategy for instituting community surveillance was another effective way to capture the interest of young children. The title of 'Doctor' itself gave them a sense of pride and recognition amongst the

community. The recognition of their work by elected councillors further increased their confidence to remain active in their work.

Gradually communities start realizing the importance of collective action and an effective leadership. The case of Bag Sewaniya-B in Bhopal offers insights into this community collectivization and empowerment process. The slum had a canal flowing next to the community, which was extremely polluted, and potentially a health hazard. During earlier meetings the women raised the issue several times with a sense of helplessness. MHT advised them to call the Chief Minister's Helpline Number to lodge a complaint. After a few days, the city's Sanitary Inspector visited the slum. He put some medicine/ chemical treatment in the canal, which was hardly of any use. But he insisted that the community signed the official papers agreeing that the problem has been addressed. The community leaders returned to MHT seeking advice on how to move further. They were informed that they should not sign unless the problem is genuinely resolved. There was a lot of back and forth between the community and the local government for the next couple of months. But the canal was finally cleaned. This first victory provided a big boost for the community. The women who had taken an active role in this matter were nominated into the CAG, which became more engaged and active with each action.

9.1.3 LEADERSHIP WORKS BEST WHEN IT IS DEVELOPED AND INTERACTS AT AND PROMOTES COORDINATED ACTION AT THE SLUM, COMMUNITY AND CITY LEVEL.

The leadership development model of MHT is based on a three-step process. First MHT organizes all families in a community into a membership group called the Community Based Organizations (CBO).

MHT organizes sensitization campaigns, hosts area meetings with CBO members to identify needs and aspirations of the community. CBO members are then encouraged to identify women leaders among themselves as members of the Community Action Group (CAG). The CAG, comprising 10-12 women leaders acts as the executive committee of the CBO members and leads action on their behalf. This is the second step. MHT builds and nurtures this leadership in slums by involving them in implementation of programs. Over years the CAG members become highly knowledgeable about their communities, as well as their rights as citizens. They are able to independently work with government and service providers to bring improvements in their communities. MHT's leadership development model further offers these community leaders opportunity to move beyond driving change in their own communities to strengthening their influence on urban development plans and policies as part of the Vikasini forum. This is the final step in the process. Vikasini members represent the collective voices of poor and women in multi-stakeholder dialogues and workshops. They also work with MHT as part of the spearhead team to lead the mobilization process in new communities. They train and mentor CAG members in these communities and ensure that the community level institutions created in slums remain engaged and active. In Ahmedabad, few Vikasini members have also joined mainstream politics as party leaders and elected councilors.

This ladder of leadership offers opportunities to engage with the government at different levels. At each level in the leadership process, the women see a role for themselves. Collectivising all slum families into a CBO allows MHT to engage with the community as a whole and inform the residents about their rights and how to exercise the. From time to time CBO members come together for campaigns. This is a strategy for 'show of strength' helps them rally support for their cause. The CAG members have a more defined role. They engage with area councillors to implement local improvements. The Vikasini leaders operate at the city level to engage with and influence decision-making. In Ahmedabad, where the Vikasini is well

established, Vikasini members are often invited to be part of working groups and committees constituted by the government. A few Vikasini members have also joined political parties and continue to work towards improving the lives of the poor in the capacity of elected representatives.

In Ahmedabad, effective leadership at all levels and a strong working relationship with AMC contributed to the GRP program seeing very active government engagement and coordinated action at various levels. CAG members from Silver Park share how the leadership model works on ground:

"We are able to go and talk to our local councilor on our own about issues in our community. If she (the councillor) is unable to resolve any issue locally, she asks us to engage with the AMC technical staff (zonal engineers/ deputy municipal commissioners etc.). Here Meenaben and Urvashiben support (members of MHT's field team). Sometimes, they have to ask Bhartiben (program manager, Ahmedabad) to make our case to senior officers."

Leadership development is a challenging and time-consuming effort. For example, in Bhopal, where women in poor communities even refused to come out of their homes to attend meetings, MHT had to be very patient and persistent with its efforts. Despite challenges, the GRP program has been a catalyst in the process. There is enough evidence of an emerging leadership. At the community level, CAG members are increasingly engaging with external actors such as ASHA and *Anganwadi* workers (outreach workers under State Governments Health and Women and Child Development Departments), elected councillors, and technical partners.

There also have been significant efforts towards encouraging community leaders to expand their involvement to other areas in the city. For example after the success of community level vector surveillance drives, the Bhopal District Malaria Office (Under the State's Health Department) invited MHT to help support similar efforts in other areas of the district. The local team involved community women in this campaign. CAG leaders worked hand in hand with government workers officials during the campaign. Senior Government officers recognized and applauded their work. The campaign offered them an opportunity to be part of a larger mission, that of a 'Vector-free Bhopal' and slowly build a recognition at the city level.

9.1.4 EMPOWERING WOMEN TO ADVOCATE IN A NON-CONFRONTATIONAL AND COLLABORATIVE MANNER INCREASES MUNICIPAL SUPPORT TO ADDRESS THESE NEEDS

MHT has been working with communities to improve sanitation conditions and living environments in slums for more than 20 years. This requires significant investment in public infrastructure, and hence government support for such initiatives is vital.

In Ahmedabad, AMC has a history of extending basic infrastructure in slums. Though in some areas it takes much longer (up to 8 to 10 years) to reach services for multiple reasons. Sometimes the lands are under dispute or the communities are located on difficult terrain, which poses technical challenges to lay infrastructure. Communities located in the periphery or communally sensitive areas also find it difficult to access services. Even in these areas, MHT's core strategy is not to promote insurgent activism, but to empower women from these underserved communities to collaborate with the institutional powers, so that a two-way collaboration can be facilitated. MHT trains and mentors women to patiently and persistently work with elected representatives and technical staff of AMC, to influence budgets, to collaboratively find solutions to difficult problems.

Rajiv Nagar(established) and Silver Park(emerging) are both examples of communities, which had been

devoid of services for a very long time. MHT supported them in this endeavour under the GRP program. Silver Park is a community located in Sarkhej area. It being primarily a Muslim area, there was a greater resentment among people. They did not trust the AMC to deliver. The community was tired of the false promises and short-term improvements that often happened around local election cycles. Several groups had staged rallies and protests at different times to make their voices heard. When MHT started working in the area, it mobilized women to engage with AMC as informed citizens, demand their rights and work with their elected representatives for improvements. RehmatBen, a leader from Silver Park shares:

"Our community had been devoid of services for a very long time. We were tired of making complaints! Frustrated with the response from government a few men from the community then decided to organize a violent protest. They organized a rally to the government office and broke glass windows/ vandalized public property. We knew that this is not the right way, but since we saw no other alternative, we joined in! This was about three to four years ago, before we knew of mht and its work.

Since we started working with mht and Minaben (spearhead team member) we have understood how we can work collaboratively with the government. Now we don't get swayed away by promises that the politicians make before elections. Instead we work with our elected councillor throughout the year to bring improvements in our area. We feel that this approach, of working collaboratively, peacefully, patiently, is the best as it has brought about real change."

Similarly In Bhopal, CAG leaders were able to rally municipal support by engaging with them in a professional, non-confrontational manner. Taraben shares how women from Rahul Nagar have ensured regular waste collection from their community:

"After attending MHT's leadership training and the specialized training on vector surveillance by Dr. Kohli, cag leaders from Rahulnagar were motivated to work towards cleanliness and improved hygiene conditions in their community. They now knew the link between unsanitary conditions and infectious diseases. They started by engaging with safai karamcharis (sanitary workers) assigned to clean their area. They monitored their work and demanded that they do their job well. However this didn't lead to much change on ground. Then they submitted a written application complaining about this situation to the ward office of Rahulnagar. This made an impact and the garbage dumps around their slum were promptly cleaned. To ensure that the area remains consistently garbage-free and clean they continued their engagement with the safai karmacharis. The community as a whole also decided to raise some contribution to pay these workers for their efforts."

MHT's work also points to the fact that though women are the most marginalized, mobilizing and empowering them to take charge (as against men) has benefits. Since most women in this socio-economic stratum are not employed full-time, they have time to persistently lobby for their cause. Women also are traditionally more patient and persistent. Sonalben, a CAG leader from Balapir No Tekro says:

"Earlier mostly men used to approach the government with complaints. They had to go repeatedly, leaving their work. They lost their cool sometimes. Mht mobilized women to take charge and taught us how to approach the elected councillors, seek their support in making complaints to AMC, getting action on ground".

The CAG members also gain motivation and Confidence through this process. As Ektaben shares,

"CAG members are participating enthusiastically in the malaria drive with the health department. It was encouraging to see their participation both in the drive as well as raising objection against the opendefecation free declaration are going to be the prospective Vikasinis for Bhopal." However, there is the need for a mediator, especially when it comes to bringing development to the last mile, As Ektaben shares,

"Compiling the legal documents for submission to avail ray scheme is a challenge for the other 3 slums (apart from Ambedkar Nagar) as most of the residents are reluctant (Shantinagar) or do not have adequate documents. Continuous meetings with the nodal officer-Mr. Chaturvedi is being organized to solve the issues."

9.1.5 RESILIENCE IN INFORMAL SETTLEMENTS REQUIRES COORDINATED ACTION AMONGST MANY LOCAL ACTORS OVER TIME, WITH LEADERSHIP THAT IS NOT TOO CONCENTRATED AMONGST A FEW MEMBERS OF THE SLUM COMMUNITY AND WHICH IS MAINTAINED OVER TIME.

In the last 20 years, MHT has worked in more than 800 communities and organized women into CBOs and CAGs. Typically, MHT's experience suggests that 2-3 women leaders actively take charge of the community improvement process. Other women support these leaders in their initiatives but are not themselves actively engaged in the process. Having 1 or 2 as the face of the community works as a strategy in programs that require government engagement and action.

GRP program was fundamentally different than MHT's other programs in that sense. Community led resilience planning requires women to work together and find solutions to their collective problems. Some solutions require government support, while others require coordinated action from within the community. Hence, the GRP program was designed to engage many local actors and empower them to lead different aspects of the program. Adolescent girls were made members of CAGs. They brought young energy and new ideas into the meetings. They were also receptive to, and interested in technical knowledge and processes. Since the young girls were also more familiar with using technology, they found different ways to engage with the government. In Ahmedabad, for example they recorded their observations on digital platforms, used AMC's complaints portals to register complaints, and used mediums like community radio to make their voices heard to a larger audience. Similarly young children and youth were trained to conduct surveillance drives and monitor the progress in the community. The CBVAT and CBRAP processes also mandated participation from more number of women and promoted a widespread leadership.

Though this strategy of involving a larger group of women/ girls consistently over a period of time has not been very successful in all communities, results of this coordinated action are evident in a few slums. In Rajiv Nagar, BhanuBen, CAG member and an experienced Vikasini member involved more number of community women in various initiatives.

"We ensured that at least 10-11 women are engaged in the process throughout. They attended all trainings and also participated in CBVAT and CBRAP processes. We were also able to inculcate a culture of regular climate surveillance in the community". This ensured a collective consciousness in the community on issues affecting them".

In Baba Lablalbi Nagar, encouraging the participation of young girls in community affairs has lent a new vigor to the CAG, comprised of aging women who are now beginning to face health issues and slow down their involvement in the community development process.

9.1.6 SYSTEMATIC, REPEATED, AND INNOVATIVE COMMUNICATION TOOLS ARE NECESSARY TO ENABLE SCIENTIFIC AND FUTURISTIC THINKING IN COMMUNITIES WHOSE MEMBERS ARE USED TO THINKING SHORT-TERM

MHT's work before the GRP program has largely focused on delivering tangible change in the short-term (2-3 years). This included enabling access to water and sanitation infrastructure, legal electricity connections, loans for incremental home improvements etc. Mobilizing communities around their immediate needs and requirements largely entails communicating information (either on accessing government scheme and processes, or specifics of loan products etc.) There already is an evident demand so there is often no need to create 'community interest'. Hence MHT has primarily relied on area meetings and classroom style trainings to deliver these messages. However to trigger and sustain communities' interest in macro level concepts of 'global warming' and 'climate change' MHT had to get creative.

The first sets of communication tools were developed to educate the community on climate change, its reasons and its impacts. MHT conducted video shows in local languages and engaged women in interactive games that helped women understand and register long-term impacts of climate change, and understand concepts of vulnerability and resilience. Urvashiben, Senior field officer shares:

"We showed them (the communities) different kind of videos regarding climate change and calamities and informed them about its impacts and the actions they can take. Through the game of snake and ladder, we explained them the important of savings and investing in resilience action."

Muskaan, a young girl of 16 years, resident of Baba Lablabi Nagar also shares how the interactive activities during the climate change training helped her understand her own and other women's vulnerabilities:

"I remember one particular activity that we participated in. It was a game in which we had to tie either green, orange, or red colored ribbons based on the facilities we have in our house. I had mostly green and a few orange. But there were other women with mostly red ribbons. That tells us that are not as well off as we are. We have to go and talk to them about their issues, and help resolve them as a community"

The challenge also was to sustain the interest of communities over a long period of time. MHT with its communication partner CEE and Vikasini members planned a calendar of outreach activities and actions for the entire year. The link with communities was kept active using multiple media platforms such as mobile-vani, community-level drives, display of posters, distribution of pamphlets, folk media etc.

Ektaben, City Coordinator of Bhopal shares how this strategy helped:

"Connectivity needs to be maintained between various activities to garner and sustain the interest of the community. That is what the program was able to do. The community's memory and interest on climate issues was unable to fade as each of the activity was linked to the other, and the staff continuously kept them engaged using various interactive tools."

Unlike MHT's other programs, which are largely focused on service delivery, the GRP program also had a key component of behaviour change. The surveillance drives led by the 'child doctors' proved very effective in triggering behaviour change at both the individual and the community level. Through the drives, MHT was able to develop collective consciousness amongst community members on their everyday practices and behaviours. The 'child doctor' strategy encouraged children and youth to become community champions and leaders and promote collective action in the community. Gulshan Bano, CAG member from Babalablabi Nagar talks about how the drives have made people more conscious of their eater storage and handing practices:

"The drives were very successful in driving behaviour change. People clean their tanks regularly. We have established a working relationship with the government ASHA health worker. We have asked her to distribute chlorine tablets to purify water to households on a regular basis. Similarly since the vector drive, we have been paying closer attention to disposal of garbage and maintaining cleanliness in the community. We now contact the AMC to get fogging done/ on a regular basis."

Folk media also proved to be a very effective tool, especially in Ahmedabad to encourage communities to make resilient investments.

While some staff at MHT viewed the communication activities as 'repetitive' and 'time consuming', the full benefits of repeated engagements became evident much later in the program. Ratneshben, Field Officer from Bhopal says:

"The repetition of the same concepts through various on ground activities helped the communities understand and assimilate these complex ideas. The effectiveness of these tools was clearly seen when community leaders themselves approached us for validating potential technology solutions and showed willingness to invest in them. Some communities like Bagsewaniya planed vegetable/fruit trees in their communities, and started efforts to minimize and reuse plastic wastes."

9.1.7 COMMUNITY'S CONTINUED INTEREST IN RESILIENCE PLANNING REQUIRES DELIVERY OF MORE IMMEDIATE TANGIBLE ACTIONS OR BENEFITS

MHT recognizes that to increase resilience, it is important to have a long-term approach that incorporates strategies for knowledge generation, triggering behaviour change, and promoting community led action. MHT's experience suggests that to mobilize communities around climate change and sustain their interest in long term resilient planning, it is often essential to serve their immediate interest.

In Ahmedabad, MHT has ensured sustained progress over the last two decades by adopting an incremental and phased approach in its work. It directs public (and sometimes private) funds into a community to improve their current living conditions, and then building on its credibility and ability to deliver results, expands across the 'share of people's day to day' pain through multiple initiatives. Bhartiben, Program Manager, Ahmedabad believes that in an established city where MHT has a long history of delivering slum improvement programs, there is expectation amongst communities to deliver tangible outcomes.

"We have observed that in communities, where access to basic infrastructure is still lacking, addressing that is critical. There is frustration/ anger in the communities regarding the state of affairs. Our work helps them lessen their day-to-day pain".

Community leaders in Ahmedabad share the same sentiment. BhanuBen, CAG member, Rajiv Nagar has been working for the past 10 years to get her community connected to the city's drainage and water supply network. She shares

"Initially when i started conducing area meetings around climate change, in all meetings women would enquire about when the drainage line would be completed? One year into the program the work for drainage line started. Once the change was visible, they took more interest in participatory planning processes like CBRAP. These processes offered them a space to come together and decide collective action that the community wants to take next."

KrishnaBen, Spearhead Team Member, shares her experience of working in Balapir No Tekro:

"The most successful interventions in the community were those that offered the community solutions to their immediate problems. The community had severe sewage backflow issues leading to very unsanitary conditions and inundation during monsoon months. The drains, which were clogged for years, have now been cleaned. Several families moved to LPG cylinders for cooking from polluting cookstoves. I think that is progress in the right direction."

While the Ahmedabad staff took an approach of delivering on the immediate needs of the community while simultaneously building their interest in long-term resilience planning, in Bhopal, the delivery of tangible outcomes was integrated into the resilience program. The tangible outcomes came in the form of community-led-improvements that were identified during the CBRAP process. For example, the BagSewaniya community came together to address waste management issues in their area and installed a composting structure in their community with MHT's support. The CAG has started segregating the waste and composting the wet waste. Similarly, in Bhadbadha Basti, where the community expressed the need for improved water supply, MHT supported the installation of a water supply system. The community also contributed towards investing in the system, which is now fully functional.

9.1.8 COMMUNITY-LED DATA COLLECTION LEADS TO AN INCREASED UNDERSTANDING WITHIN THE COMMUNITIES ON THEIR OWN VULNERABILITIES AND ISSUES AFFECTING THEM, THEREBY LEADING TO MORE RESILIENT ACTIONS

Instituting community based surveillance, especially in communities that have a high level of organization and leadership has proved to be a very effective strategy in Ahmedabad. There is evidence that real time collection and monitoring of climate data has triggered a behavior change in communities towards making more informed decisions, and empowered them with knowledge to demand improved government services. Bhanuben, A Viksaini member had a weather monitoring station installed in her house in Rajiv Nagar. She used to note the temperature and humidity every day and share with community. The community also got into a habit of checking weather forecasts in newspapers or their mobile phones. She shares how this practice helped the community persuade AMC to take timely action on infrastructure improvement in their community:

"It was Ganpati time this year (around August/ September), and AMC had dug up all roads of our community as the drainage line work was in process. The work was already delayed. We were monitoring the work and asking the construction workers to speed up. An AMC officer was also present at the site. As usual they kept saying that it would get done in a week, and we had nothing to worry. Just then 4-5 people came forward and said: no, no! Why wouldn't we worry? We saw the weather forecast in the news. It is expected to rain in the next few days. If you don't finish your work, our roads will get waterlogged again and all your efforts will be lost! The AMC officer was seemingly surprised with our knowledge on weather forecasts. He nodded his head in agreement, and had to concede to what we were saying!

In the same community, the adoption of water filters greatly increased after the community participated in conducting water-testing drives.

"We had done several trainings earlier on use of water filters, but no one was willing to adopt it. When we conducted water testing, community women realized the quality of water they are drinking was quite bad. We explained how drinking such water results in health problems like kidney stones, stomach illnesses etc. After these drives, people came forward on their own to buy water filters."

In Silver Park, the CAG leaders shared the water testing results to advocate with AMC for improved water quality.

"Water quality really improved. Madinaben used to take the results of the water quality to AMC, to Nafisaben, the councillor. Currently we get \water from AMC supplied tankers. We are raising community contribution to get a water line laid in the community."

Evidence from Bhopal also points to the importance of community-led data collection in triggering behaviour change. In communities like BagSewaniya, Rahul Nagar, and Jatkhedi, regular water quality and vector surveillance drives have led to visible changes. Women leaders from Rahul Nagar rallied municipal support to get the area cleaned. Jatkhedi had faced regular quality issues and had complained about the same from time to time. The water testing drive in the community yielded results showing very poor water quality. Now the community had scientific evidence to back their claim. They showed the test results in their Ward Office and submitted an application to resolve the issue. The Ward Councillor soon visited the community (for the first time ever) address community level issues. The CAG members got him to fix the defunct hand-pump. The CAG is continuing to work together with the ward councillor on water quality and other community improvement initiatives in Jaatkhedi.

9.1.9 DEMONSTRATION OF TECHNOLOGY SOLUTIONS, COUPLED WITH FACILITATED ENGAGEMENTS BETWEEN COMMUNITIES AND TECHNICAL EXPERTS ENHANCES THE DEVELOPMENT OF MUTUALLY AGREEABLE SOLUTIONS TO RESILIENCE PROBLEMS.

Facilitating co-creation of technology was central to the GRP program. Field demonstrations of relevant technologies and solutions help build the confidence of the communities regarding the solutions and induce behavior changes thereby increasing adoption rates. ground-level technical support will further increase the possibility of adoption. During the course of the program, MHT demonstrated 21 types of climate resilient solutions at the household-level reaching out to 2,453 families across the cities. Further, 5 community-level resilient solutions were implemented reaching out to 4,425 individuals. MHT had also planned to conduct technology fairs in select cities, but the shortened timeframe of the program did not allow that. MHT realised that in addition to demonstration projects, it is important to facilitate interactions between technical experts and communities. For example, MHT facilitated the field visit of Dr. Kohli, an epidemiologist to Bhopal, to speak to community leaders about larvae breeding and the science behind vector-borne diseases. MHT facilitated his visit to slum communities for him to view the living environment in slums and develop appropriate content for the trainings. MHT team also worked with him to develop simplified messages that the community is able to understand. At the end of the training, most women reported gaining new knowledge (that Dengue is also caused by mosquitos, that mosquitos can only breed in water etc.) and an increased interest in dealing with vector borne diseases in their slum. As Ektaben from Bhopal shared, "It makes such a huge difference when women have an understanding of the technicalities of an issue and a technical expert visits areas and interacts with them directly."

MHT had a similar experience during the water management training that was facilitated by Theresa Formmen from FUB, where MHT also worked with Theresa to translate the training material in Hindi.

Theresa also worked independently with the communities in Jaipur on an action research project to develop water management solutions. In a project reflection meeting Theresa shared how sometimes it was challenging to work with the communities because they often had different expectations from her. As a technical researcher, she adopted a more scientific approach to her work, where her first task was to get enough evidence to articulate the problem. This meant a lot of time spent on data collection from the field. But the communities didn't fully understand this approach. They would often get impatient and demand immediate solutions to their problems. This points to MHT's crucial role in such programs that

bring together a diverse range of stakeholders; that of clearly communicating the processes, managing expectations and helping them understand each other's perspective.

9.1.10 SUCCESSFUL PRO-POOR TECHNOLOGIES SHOULD BE COST-EFFECTIVE, COMMERCIALLY AVAILABLE, CULTURALLY APPEALING, WITH PROPER SERVICES PROVIDED ALONG WITH THE PURCHASE

In the last couple of years, MHT has piloted and tested a range of technologies and innovations, especially in the energy sector. These include building innovations and products that reduce heat stress, bring in natural light and ventilation, and help reduce energy consumption, thereby making dwellings more energy efficient. Under the GRP program, MHT widened this portfolio to include products and systems that promote more judicious use of water, reduce flooding and inundation, and safeguard food security and health. The types of technologies demonstrated could be categorized in three categories: innovations (by MHT or product innovators), market-based, and community-emerged/ home grown solutions.

Both in Ahmedabad and Bhopal, market-based, commercially available, low cost solutions such as tap water filters, purification liquids, and sprinkler taps saw a higher rate of adoption. In Bhopal, the community showed a lot of interest in water purification liquids, especially after the water drives. More than 300 households purchased these purification liquids. Similarly, 235+ families in Bhopal, and 396 families in Ahmedabad invested in the sprinkler taps. However, while investing in products with a cost higher than a couple of thousand rupees, 'perceived value' became a critical factor. For example, one of the solutions that MHT demonstrated was a Carbon based water filter. However most families perceived it as inferior to the RO systems that require electricity (popular amongst middle-higher income households). MHT found it difficult to sell it at Market prices. The solution was more acceptable at a subsidized rate.

Other than making market-based technologies available, MHT also worked with product innovators to validate new technologies and make these available to the poor. However, MHT has met with limited success in terms of reaching scale. MHT has met with moderate success with the mod-roof system developed by Re-Materials in Ahmedabad. Currently, since the company is in its incubation phase, it is offering the roof system at a subsidized rate. MHT also offers loans to help poor households make this investment. Meenaben, a Vikasini member in Ahmedabad who has installed the system at her place shares "It is durable, looks nice, and considerably reduces the indoor temperature. It is just like a concrete roof!"

Bijalben, Director, MHT believes it is often not true that the poor will invest in the cheapest of alternatives. "In fact, given the limited resources they will invest only if the product is aspirational, affordable, user friendly, and easily accessible."

The acceptance of mod roof is a testament to that. During the last two years, 80 families in Ahmedabad have invested in the mod roof. Most of these families have monthly incomes above Rs. 15,000, which puts them in a higher bracket amongst those living in slums. The community-emerged/ home-grown solutions that were demonstrated included terrace gardening, landscaping with native plants, mosquito traps etc. Some families in both Ahmadabad and Bhopal adopted these solutions. Solutions like rainwater harvesting, community based water supply systems, and vermicomposting that require a higher amount of investment were also demonstrated on a pilot basis. These solutions. Whether communities continue using/ maintaining these solutions is yet to be seen. MHT believes scaling these will require first a market to be developed for these services. A policy push from Government might enable that.

Another important aspect of demonstrating pro-poor solutions was to link communities to available government subsidies for infrastructure. In several slums in Ahmedabad MHT facilitated government supported infrastructure improvements and interventions such as toilets and improved water supply and drainage connections.

9.2 KEY LEARNINGS ABOUT SUCCESSFUL REPLICATION OF THE MODEL ACROSS CITIES/GEOGRAPHIES IN SOUTH ASIA

9.1.11 PARTNER WITH ORGANIZATIONS COMMITTED TO BUILDING GRASSROOTS SOCIAL CAPITAL EVEN IF THEY LACK CLIMATE CHANGE OR RESILIENCE EXPERTISE. CLIMATE RESILIENCE-BUILDING PROCESSES CAN BE TAUGHT.

One of the key experiences of the project is that it is possible to transfer the principles and processes across geographies, by partnering with and training organizations that have a grassroots orientation.

All organizations that MHT partnered with to replicate and scale the resilience-building model have an expertise in community mobilization and advocacy. Only one organization, (ICCCAD), has an expertise in Climate Change. Within a short period of two years, all organizations have been able to incorporate the resilience perspective into their core work to a large extent. MHT was able to extend a higher-level of hand holding support to Bhubhaneshwar (an Indian city) as compared to Dhaka or Kathmandu. But both Nari Maitree (Dhaka) and Saathi(Kathmandu) have been able to develop a good understanding of the program even with the limited technical support from ICCCAD and MHT. Table 3 next highlights the status of replication of project activities and outputs by the partner organisations in the given period between June 2016 to December 2017 for Bhubhaneshwar and between January 2017 and December 2017 for Dhaka and Kathmandu

Sr.	Activities	ROAD,	CORE,	Saathi,	Nari Maitree
No.		Bhubaneswar	Bhubaneswar	Kathmandu	& ICCD,
				Nepal	Dhaka,
					Bangladesh
CBO	/CAG Formation				
1	Slums Reached/ CBO	5	5	2	2
	Formation				
2	Slum Profiles Completed	5	5	2	2
3	CBO HH Listing	1500	1500	835	1500
	Completed				
4	CAG Formation	5	5	2	3
5	CAG Trainings on	20	25	1	3
	Collective Action				
6	Number of CAG members	702	805	25	60
	trained				
7	Regular CAG Meetings	85	55	4	
Climate change Awareness					
8	Video Shows on Climate	60	10		
	Change				
9	Promotion of Climate	60	60	60	30
	Saathis				

Table 3: Replication of Activities and Outputs by Partners
11	Orientation Training on Climate Risks	3	3	2	1
12	Community level Games	11	5		1
13	Risk Assessment cum CBVAT Administration Training for local cadre	2	2		2
14	Slum Level Vulnerability Assessment Exercises	25	50		2
15	Development of Resilience Plans for CAGs	5	5		2
Field Demonstration-		10	0		
Individual Solutions					
16	Water Connections	0	0		
17	Individual Toilets	9	0		
18	Roof Painting	10	10		
19	Rain water harvesting system	0	0		
20	Mod Roof	0	0		
21	Air lite	4	0		
22	Cool Auto	0	2		
23	Paddle Auto	0	0		
24	Thermocol Roof	0			
25	Ventilation sheet	1	0		
26	Solar cooler	0	0		
27	Water purifier	7			
28	Sprinkiller Tap	20	5		
29	Green roofing	35			
30	Mosquto Net	7	0		
31	Ecofemme	20	20		
Field Demonstration- Drives		0			
32	Plantation	80			
33	Vector	10			
34	Water Testing	12			
35	Policy Brief				1

Mr. Sarder from ICCCAD observes,

"Nari Maitree had earlier never worked on climate change. ICCCAD gave them orientation on climate change issues and also jointly gave training to local people. They found the mht model very interesting as such types of models are not used generally. We had to only do some modifications to suit our communities like that of land tenure issues.... Now with minimum guidance from ICCCAD, Nari Maitree can develop such type of CCAR related new project concepts and proposals to raise fund for implementation" Mr Santosh from Nepal also had a similar view, "both our models are same, mobilizing women into groups (cags) and conducting training and awareness for empowerment. But in this model, we got to learn about aspects of climate change especially in the lives of the urban slums dwellers. The tools developed are based on community

and is very effective as it is easy for community to understand. Also most tools just had to be translated as the conditions are same in India and Nepal." ICCCAD project reports further highlights that, "the participatory climate change module is so well designed that it can be easily replicated to other cities of the country. ICCCAD partner, Nari Maitree has been using the mht developed module in their different field level activities."

Also organizations were able to establish a connect between their work and the resilience perspective. As Mr Suresh from ROAD shared, "through this programme we have been able to understand the link between home-based work and climate change and this is very important." For Saathi, this was the first project on the issue of Climate Change and in the January 2017 staff meeting they briefed everyone and have now decided to include a climate change perspective in all their projects.

9.1.12 TRANSFER OF RESILIENCE-BUILDING PROCESSES IS MORE EFFECTIVE IF 'STAFF TRAINING' AND 'APPLICATION OF LEARNING IN COMMUNITIES' RUNS IN PARALLEL AND REINFORCES EACH OTHER.

Another learning from the project has also been that while one does need to train organization staff on the issue, the "learning by doing" approach works much faster with staff too. Staffs particularly of grassroots organisations are able to learn much faster if they are simultaneously involved in project implementation. As Core Executive Director Mr Anjan Jena shares,

"Today core staff has more knowledge of the issue than many highly qualified development professionals." Mr Suresh from road observed that, "the best part is that we have been able to facilitate many of the trainings ourselves with minimum support from mht over time". Mr Sarder from ICCCAD shares that, "through this project and collaborating with ICCCAD, five staffs of Nari Maitree developed their individual capacity. A lot of capacities of monitoring officer, field officer and supervisor have been developed by facilitating the trainings."

Additionally, even in this short span of one to two years, we are able to see impacts on the community in these cities. In Bhubhaneshwar, many CAGs (Barabari, Sukavihar, Satyanagar, Salia sahi, Sitanath, Mahivir Sahi, Kargil Basti) from both ROAD and CORE areas took action after the training on urban governance structure. They have started giving applications to corporators for garbage disposal, application to PHED for water supply, etc. "The exposure visit to the municipal corporation was especially was especially useful." Shares Suresh from ROAD. Particularly in Mahavir Sahi, the CAG leaders shared that they were earlier only complaining to the local councilor about the water issue, but post the training they realized that the subject is dealt with the PHED. They then submitted an application to the PHED and also followed up more proactively as a CAG group. The result was that the people actually managed to get an additional water tank cum stand post in the area. In another incident in Kargil Basti, people were generally using the handpump (ground) water for drinking but after the community-led surveillance system was set up, they realized that the quality of the municipal supply was better and their ground water was actually very contaminated. They have now started using municipal supply water and have also initiated action for getting better municipal water supply connections in their area. This is an important change given the time frame of the project, as generally such level of change is seen only after years of mobilization. The ROAD team clearly feels that this is the impact of the ULB Governance structure training, the exposure visit and the surveillance system.

Similar knowledge enhancement results have been seen even in Dhaka as Sarder shares,

"Right now the community women are very much interested to plan more and more on climate change adaptation issues and they are trying to assess their vulnerability themselves. Slum

women cag leaders can also train also other people now. Now women have become vocal without asking male partners. The urban resilience workshop sharing was new for the women, but they participated very actively in the same."

Box 5 next highlights the case of a CAG leader from Mirpur in Dhaka, which shows how such processes can be transferred transcending cultural and social barriers and across various geographies.

Box 5:A Story of Jotsna Begum, Kallyanpur Slum (Porabosti), Mirpur, Dhaka

Ms. Jotsna Begum, aged 35 years lives in Kallyanpur Porabosti, Mirpur Dhaka for last 27 years. In 2017, Ms. Jotsna became a member of CBO of GRP Project supported by Awaas Sewa Pvt. Ltd to build her capacity on new knowledge so that she can reduce her vulnerability. Form the CBO members, she was later elected as a member of Community Action Group (CAG). As a CAG member, she participated all training sessions arranged by ICCCAD and Nari Maitree and also participated to learn different modules of MHT. She mostly liked the video, snake ladder game and focus group discussion. She found the modules are very relevant to understand climate change related hazards, impacts, causes of vulnerability and what needs to be done such as adaptation options to reduce the vulnerability. Now she realized climate change is the main reason behind her family moving to Dhaka earlier. Why her family's livelihood and wellbeing are affected by the rising temperature and increased torrential rainfall, which causes water logging and different water and vector borne illness. She also realized that the waste water in the surrounding drains and low areas becomes the birthplace of mosquitoes and other insects. When she learned that this are mainly climate induced disasters and likely to increase in the future, she became aware of the situation. Now she has a sound knowledge of climate change and vulnerability which need adaptation actions to make her family resilient. If she can aware her family and her neighbors about drinking safe water, keeping their surroundings clean and help each other during water logging and heavy rainfall, negative health impacts will reduce and their livelihood well beings will be enhanced. She stated that, they need to assess climate change vulnerability, identify adaptation options to reduce their vulnerability and making their family more resilient. This type of women empowerment capacity building trainings need to continue for a longer period of time.

9.1.13 THERE IS AN EVIDENT DEMAND FOR PARTICIPATORY TOOLS AND PROCESS THAT PROMOTE COMMUNITY LED RESILIENCE ACTION, HOWEVER THESE TOOLS NEED TO BE CUSTOMIZED AND TRANSLATED TO LOCAL LANGUAGE TO SUIT LOCAL SOCIAL AND CLIMATE CONTEXT.

It was evident that there is a demand from grassroots organizations for participatory tools and processes, especially for awareness building and training on the issue of urban governance, climate change as well as for vulnerability assessment. The tools developed by MHT were much appreciated. As Anjan from CORE states,

"The subject content and method was very unique." ICCCAD in one of its reports has mentioned, "in the mht climate change module, different participatory tools and techniques were used to build the capacity of the slum people by providing them knowledge and training on the climate change adaptation and resilience. ICCCAD and Nari Maitree never used earlier such type of module to identity climate change related problems. They used different participatory techniques like focus group discussion (fgd), ranking matrix preparation, participatory vulnerability assessment and identify adaptation actions through larger group exercise. Here we found the mht developed tools and modules are simple and effective. The cag members here found the videos and different games more user friendly and engaging. Those help the slum community for better understanding the climate change related problems and adaptation solutions. These "learning by doing" activities make them more capable and empowered. This learning procedure also helped them developing their leadership capacity."

The most popular tool was the snake and ladder game but the CBVAT and CBRAP toolkits were also used. The partners in Dhaka for example used the adaptive capacity tools as a means for action planning and raising awareness of the need for communities to engage with local government.

In the multi-stakeholder event in Kathmandu as well as the Urban resilience workshop in Dhaka, other players also showed interest in the model. As Santosh shared, "Even during multi-stakeholder meeting, when the model was shared, some people were interested to replicate in other communities." Sarder emphasisis,

"Your model is very relevant and should be tested more and more in Bangladesh...little bit modification... the empowerment and capacity building of women (the most vulnerable) is the most unique aspect of the project...now their thinking has changed...they have started understanding the future condition...and they need access, resources and need to think to reduce their vulnerability by themselves and how to network...basic climate change module and CBVAT module and the snake and ladder game was most useful as was the livelihood impact by disasters matrix.. When urban conference was organized in November many new people were also now interested to learn about the mht model here. But we need more time and resources for the same."

However some of the process could not be fully replicated in all cities. For example, the training module on 'engaging with government' that introduces the concept of local government and its role and is supplemented by field visits to municipal offices was very well received in Bhubaneswar. The local NGO, ROAD saw a lot of value in MHT's approach of working with the government to solve community issues. They began to more actively engage with the local government in Bhubaneswar, and later in the program, also organized a technical training on disaster management (an issue of concern for Bhubhaneshwar which is prone to cyclones) in partnership with local government officials.

The partner organizations in both Dhaka and Kathmandu also recognized the value of this governance training. However this would require MHT to first understand the local governance processes in these two countries and then customize the training to suite that context. Unfortunately, the limited time duration did not permit MHT to develop this module and impart the training. However, ICCCAD was keen to take the idea of 'working with the government' further and shared how they plan to further engage with local government officials and duty bearers.

Similarly, the training tools would have to be modified to suite the climate context. For example, Nepal doesn't face 'heat stress'. For training purposes, MHT presented how communities in Ahmedabad are dealing with heat stress by adopting different technology solutions. Though MHT had clarified that the 'processes and tools' are to replicate, not necessarily the technology solutions, the communities in Kathmandu could not relate to some of the solutions presented. MHT emphasized that the local partners would have to adapt the training material to suite the requirements of their communities. To enable this, MHT shared original copies of the materials (wherever possible) for the partners to customize.

Another very critical challenge was that of language. As most of the tools were meant to be used directly with the community and by grassroot level staff, it was very important to translate them in local language. Even within India, MHT had to translate all material to Oriya before it could be used in Bhubaneswar.

9.1.14 THE TRANSFER PROCESS IS TIME-INTENSIVE, AND REQUIRES SERIOUS COMMITMENT FROM THE LEAD ORGANIZATION IN THE FORM OF CONTINUED HANDHOLDING AS WELL AS FINANCIAL SUPPORT.

The transfer process began with a participatory orientation workshop, the Community Based Resilience Academy (CBRA) which was organized in Ahmedabad. Here the partner organizations got a hands-on experience of various tools and processes. MHT then followed this up with sharing of tools and staff trainings.

While MHT was able to transfer individual tools and process, the success of transferability of the whole model and its application in a new context still needs to be assessed. This would require continued involvement of MHT in the transfer process (even after the completion of the program), both in terms of time and financial commitment. Anjan from CORE shares,

"You need to commit a minimum 3 years initially for any such project to take off from the ground and become sustainable. I think in Bhubhaneshwar we need to reach out to at least double the number we did currently to create a visible mass especially if we are to reach the stage of vikasini wherein the community women take charge in their own hands as we have seen in case of MHT's work in Ahmedabad."

Even ICCCAD shared similar concerns, although they are positive that,

"We will also establish link for these issues with relevant local government, but there is more work to be done on this and there needs more time. But the group of people now are interested as they have understood the importance.....we will continue the process with Nari Maitree but mht should also do some policy advocacy for fund raising.... We are also exploring possibilities to work with BRAC to further scale the model."

Other than time and financial resources the transfer also requires a higher level of handholding support. While MHT could provide the same in Bhubhaneshwar through multiple exchange visits and the support of CEE, the resources for doing the same in Dhaka and Kathmandu were limited. Sardar highlights, "there should have been some follow up trainings after six months...additional if a few cag leaders can have the exposure it will also be good..."

In Dhaka the issue was resolved to quite an extent because of the partnership with ICCCAD. Since they were already working on climate issues, they could provide the necessary technical support. It needs to be noted here that ICCCAD is a unique in that way. Even though it is an academic institution, it has very high levels of commitment to community-based adaptation processes and grassroot works. It needs to be seen how the model would replicate is the technical agency facilitating the transfer is not so community-oriented.

9.3 KEY LEARNINGS ABOUT ORGANIZATIONAL DEVELOPMENT

9.1.15 GRASSROOTS ORGANIZATIONS HAVE TO FOSTER A CULTURE OF SHARED LEARNING AND CONSTANTLY TRANSFORM THEMSELVES TO REMAIN EFFECTIVE AND EFFICIENT IN CHANGING ENVIRONMENTS.

The GRP program presents an example of how organizations can foster a culture of shared learning by forging new partnerships and adapt to new ways of working.

In 2014, Dharmistha Chauhan, a Gender & Climate Expert, and a Strategic Advisor to MHT encouraged the organization to incorporate a climate resilience perspective into its work. Later that year, the Global Resilience Challenge was announced that invited proposals from organizations across the globe to demonstrate transformative resilience solutions. MHT took this an opportunity to develop new expertise in the field of 'climate change resilience'. Bijal Bhatt, Director, MHT says

"MHT was open to looking at its work from a new climate change lens. Though we had never worked in this area before, we were confident that we will be able to adapt and deliver resilience outcomes because of our strong experience in grassroots work."

MHT won the challenge. Dharmistha designed and led the program on behalf of MHT. Michael Elliott, Principal Investigator, M&E positioned the idea of MHT as a 'Learning Organization' at the first partners meet in March 2016. He emphasized the 'system thinking' approach and concept of 'regenerative learning' that focuses on an organizations capacity to create new knowledge in addition to 'survival learning' that is often necessary for an organization. This emphasis on co-creating new knowledge was central to program design.

Most of MHT's existing staff had an expertise in grassroots work (community processes and government liasoning). To complement this core expertise, a new 'knowledge team' was created within the organization to work with partner organizations on developing (and evaluating) new tools and processes. The team also included researchers and IT specialists to integrate new technology and rigorous M&E processes into the working of the organization. In addition to instituting the knowledge team, MHT engaged consultants to lead other aspects of the program (like communication and advocacy). MHT also designed an 'interns and fellows' program to give young researchers an opportunity to learn from and contribute to the program. The new team brought a new vigour to the organization. Another area where the program pushed MHT to adopt new ways of doing business was 'partnering with external organizations at a large scale'9.1.16. Before the GRP program, MHT had worked with external actors, experts, and researchers, albeit not at such a large scale. Also, these external researchers/ service providers were often viewed as 'consultants' and not partners. Their relationship with MHT was often 'delivery based'. For programs that required a more intense collaboration, MHT largely partnered with organizations within the SEWA family. In some ways, the GRP program MHT (an organization found by SEWA based on Gandhian principles of volunteerism) to move towards professionalism.

But most of all, the GRP program required MHT to reflect and re-examine its role when working with the communities. The program positioned MHT as a facilitator for learning, and an enabler for long-term behaviour change. This was a step up from how most staff viewed their role, that of 'information bearers' and ' leading delivery of short term action'. In the beginning, the staff (especially in Ahmedabad) struggled to adapt to a new approach of doing things. "The program is too focused on meetings, trainings and communication activities. The community trusts us to deliver tangible outcomes. They will get bored soon!" was an often-cited concern. It took some time for the staff to value this new approach and understand how it benefits the organisation even when working on short-term action. Bhartiben, Program Manager, Ahmedabad who agrees to her initial reluctance to this approach says

"Long-term perspective of resilience building has really helped us look at our work differently. There is an emphasis on co-creating new knowledge, which was earlier not as prominent in our work. We have realised that it is important that communities understand 'why's' behind what we are doing. We have also created so many new training tools which will benefit all our program". The program also piqued the interest of staff based in other cities (like Delhi) which were not part of the intervention cities. Bijalben says:

"The push to transfer these processes even in those cities came from the middle level management. This is testimony to the fact that we were able to transcend the learning (beyond the project) and across the organization at least to some extent."

While the GRP program was successful in churning a creative process, changing the culture of an organization takes time. Bijalben believes that there are challenges that will need to be addressed to sustain some of the changes beyond the program period. Getting consistent funding to continue to support additional staff is a concern. Also several of the tools and processes were successfully piloted, but scaling and institutionalizing them will require a great deal of effort and time.

9.1.16 COMPLEX PROJECTS REQUIRE MORE EFFECTIVE PROCESS OF PARTNERING WITH OTHER STAKEHOLDERS FOR CO-CREATION OF KNOWLEDGE PRODUCTS AND TOOLS.

Fostering multi-stakeholder partnerships was central to the design of the program. The range of 'partners' in the GRP included sub grantees, technology providers, consultants, and advisors to the program, climate/ technical experts, government actors, and the communities spread across multiple geographies. As Dharmitha say, it was a complex program: "In the past, MHT had led many multi-sectoral projects, many multi-partner projects and many multi-city projects; however under grp we had all of these together, with mht in the lead". The program required MHT to put in place more efficient processes to 'manage' these partnerships, and MHT struggled in this area. Several partnerships earlier envisaged in the proposal did not come to fruition because of disagreements over roles, responsibilities, payments and/ or difference in work ethics. The process of negotiation to finalize contracts/ legal agreements with partners took a long time. Putting in place systems for financial transfers to partners in other countries (Nepal and Bangladesh) also proved challenging. Streamlining all these contractual requirements ate away time from more strategic tasks. Dharmistha believes there were several learnings from the experience.

"MHT has to be smarter and strategic about who to partner with, and how... External stakeholders definitely add value to the programs. But we have to distinguish between them as to who would be a valuable partner, and who we could engage as a consultant to deliver on a given task. We realized that amongst all partners identified during the proposal stage, only a few organizations were committed to working with us to develop and design the program. These organizations showed a deep interest in the program and remained engaged and active throughout. They also submitted their budgets on time and maintained a line of communication with us. These are the qualities that qualify them as partners. We could engage other organizations as consultants for limited involvement."

It also proved challenging for MHT to get timely deliverables from partners. MHT realized that while (some of) the technical partners were skilled at giving trainings to staff and communities, and sharing their learning in meetings and workshops, converting these findings to training modules/ reports (written deliverables) proved to be difficult. The program also saw consultants leaving half-way. Other MHT staff had to take time out from their tasks to often complete them. Reflecting on the matter, the senior leadership believes "every multi-partner project requires some buffer budget to be kept aside so that if we do not get desired outcomes from partners, we can allocate resources accordingly."

Other than the partners (sub grantees) and consultants with whom MHT entered into financial contracts, the program also saw participation of several other stakeholders including government actors/ advisors/product suppliers/ Vikasini members etc.

As part of the program design, MHT put in place the 'multi-stakeholder processes' to bring these varied actors on a common platform from time to time to frameworks and tools to facilitate cross-transfer of knowledge. During the course of the program MHT facilitated multi-stakeholder workshops across 4 cities. However sustaining these partnerships beyond the project period posed a challenge. In the last partners meet on June 22, 2017, the team reflected on how these multi-stakeholder groups could be instituted. The team agreed that it would require a permanent resource at MHT to keep these alliances active and engaged. It would also require additional funding to sustain these processes. CEE shared how they have institutionalized such partnership for sustainable transport. Michael Elliott cited another example, that of "Healthy Places Group" in Atlanta as potential models for MHT to consider.

9.1.17 FOCUS ON COMMUNICATION (BETWEEN INTERNAL STAFF AND GRP PARTNERS, WITH THE COMMUNITY, AND WITH EXTERNAL STAKEHOLDERS) IS ESSENTIAL.

Being a multi-stakeholder project, the GRP program required MHT staff to form and manage meaningful relationships with different levels of stakeholders. Effective communication hence was vital to the success of the program. MHT put in place processes to foster communication between internal staff, with partners, with communities, as well as other external stakeholders.

Communication between internal staff and partners

The GRP program involved widespread staff members, distributed across multiple cities, some working on field, others stationed at MHT head office (as part of headquarters as part of program management and knowledge teams). It was hence important to put in place spaces and opportunities to bring the team together for reflection and learning. Monthly review meetings were organized each month to ensure that the internal staff is up to speed with all aspects of the program at all times. These meetings were attended by the team leader, the grant manager, program managers (each in charge of implementing the program in a given city), as well as the finance team. Similarly partners' meets were organized every 6 months to share the progress/learnings and change course where required. The program also put in place systems of documenting findings at regular intervals. These included telephonic interviews with field teams and trainers and recording notes and case studies from the field, documenting minutes from all meetings and workshops etc. These systems however could not be sustained after a few months.

The regular meetings proved effective to talk about targets and activities. There was also a good bit of documentation of actions and processes. However, the team generally struggled with 'reflective communication'. Team members struggled to articulate their struggles/ challenges or their motivations, conviction behind certain actions. The project also experienced some communication lapses because of frequent changing of staff/ or staff not being consistent available for all meetings. AS a result, while the staff was aware of parts of the program, no one else, other than the project lead could articulate and make meaning of the project as a whole.

Communication with community

GRP program was very successful in demonstrating new and creative ways of communicating with the community. 9.1.6. The program also prompted MHT to reflect on all their community-training modules and how to make them more relevant and interactive.

Communication with External stakeholders

Bijalben, Director MHT says that the GRP program has allowed MHT to drastically widen its outreach to external stakeholders

"Communication has reached a new level under the GRP program earlier we were largely communicating to our donors and relied on project reports/ impact assessments for the same. Most of the communication was also outsourced."

As part of the program, the team documented various processes/ tools/ training modules, which can be a great resource for other organizations implementing similar programs. MHT started a monthly emailer to share the finding and learnings with external stakeholders (including donors, research institutes, think tanks etc.) The program was also able to generate significant media interest in all intervention cities. This has led to more people becoming aware of MHT's work.

9.1.18 EFFICIENCIES OF OPERATIONS BECOME MORE IMPORTANT FOR LARGE PROJECTS.

Typically in the past, most of MHT's programs were based in a single city. Also the programs were clearly confined to a particular sector (like water & sanitation, energy, or land rights etc.). MHT's operational structure had hence evolved to suite these requirements. MHT's program managers lead specific sectors. In addition they are in charge of managing all of MHT's work in one or more cities. For example, Bhavna Meheriya, one of the program managers handles the energy portfolio. She also manages the overall functioning of the office in Bhopal. Similarly Bindiya, who leads community organizing and training initiatives in the organization is also in charge of the office in Jaipur. This structure required limited coordination amongst them. Despite achieving scale, MHT had also been slow to adapt to new technologies that would enable the organization to effectively manage its work or allow easier engagement internally/ with communities.

Large and complex programs such as GRP, which are cross-sectoral and implemented across geographies made it essential for MHT to put in place robust systems for internal operations and program management. MHT embraced technology and hired a full time IT person on its staff to lead development of IT tools and processes for better inter-organizational coordination and informed decision making. MHT also invested in new servers (including a new cloud server), and put in place a file management system that would allow the team to organize all the work at one place while allowing everyone to access it when needed. The GRP program also gave the organization an impetus to more seriously look at 'data' and how it could support managerial decisions within an organization. Under the program, MHT initiated the process of developing management information systems (MIS) and Geographical Information Systems (GIS) to create spatial databases of MHT's work.

During the same time, MHT engaged an organizational development consultant to build the capacities of the program team and the finance team to more effectively manage their work.

On one hand the program pushed MHT to enhance/ augment its systems and improve operational capacities within the organization, and on the other it also tested the level of preparedness of MHT to efficiently manage large programs under tight deadlines. There were times when the staff struggled to meet deadlines, payments were delayed, too much time went into approval of bills and payments etc. Bijal Bhatt feels that implementing a program of this scale in less than a two year period sometimes took a toll on the staff

"In retrospect, the program design was too ambitious. It packed too many intense activities in short period of time. Hence sometimes it felt we were just rushing, a slightly slower pace could have given us more time to reflect, learn from our mistakes, which was the purpose of taking up this challenging program."

9.1.19 KNOWLEDGE CREATION AND PRACTICE WORK BEST WHEN THEY INTERACT WITH, AND INFORM EACH OTHER

The GRP program aimed to build a culture of evidence-based actions. Hence it was critical to create avenues for consistent communication between the research/ knowledge team and the program staff that was implementing the program in communities. The monthly review meetings and critical reflection workshops allowed the knowledge team and the program team to interact with each other and share their concerns and constantly improve/ improvise the program. For example, the idea to conduct drives in communities emerged from one of these reflection meetings.

The M&E research for the program also designed to reinforce this interaction between practice and research. It included both a formative and summative evaluation to ensure that real-time feedback from ground enables any necessary course corrections that are required. Before the GRP program, M&E research was largely focussed on impact assessment for donors, which was often outsourced to a third-party organization. Program staff was rarely involved in research design or new knowledge creation. Michael Elliott believes that one of the key successes of the program is that it has been able to change the perceptions about research in the organization.

MHT has been a learning-organization since its inception, primarily by valuing internal reflections on projects and cross-team sharing of those reflections. However, with its shift to more research-based evaluations, the organization has increasingly focused on both formative and summative evaluation, thereby systematizing its reflections and creating systems for capturing these reflections. Consequently, MHT's capacity to learn from its own program work has increased substantially.

Bijal adds, "It is evident now that program staff is taking initiative on its own to get involved in research/ evidence based data collection." But she believes the ultimate goal of transcending research down to the level of program managers/ middle management was not fully realized. For a large part of the program, the program team followed instructions. "Time was limited. The attitude to question why we are doing what we are doing came much later".

9.1.20 NEW KNOWLEDGE AND LEARNINGS FROM INDIVIDUAL PROGRAMS HAS TO BE INTEGRATED WITH ORGANIZATIONS' MAINSTREAM PROCESSES TO YIELD SUSTAINED RESULTS.

One key learning from the GRP program was that new processes take time to institutionalize. Most donorfunded programs have an individual time-limit (not more than 3 years), but 'mission-driven' organizations like MHT can integrate the knowledge and learnings from individual programs into it's mainstream processes. MHT had limited success in this matter. The GRP program introduced new ways of doing things all across the spectrum of MHT's work (From data collection processes, community engagement, operations and systems, communication, to research). Some process innovatons were readily accepted and scaled all across the organization. Using ICT tools for data collection has become second nature. Research is becoming integral to MHT's programs (of a certain scale). The organization plans to make basic climate change training module an integral part of the CBO training process. Community surveillance models (the seasonal vector and water drives) as well as the community resilience planning process (CBRAP) have also generated enough interest both amongst the communities as well as program staff to be included as part of MHT's core processes (if not fully, in some modified fashion). MHT is also taking the research on 'heat stress' further with new funding from SELCO Foundation and with new partners such as TERI, University of Chicago and NRDC.

Another important learning from the GRP program was the crucial role of Vikasinis as 'bridge builders' (between the community and MHT), (and between community and government). Since after the program, MHT is looking at the Vikasini platform in a more strategic fashion (how can MHT invest in their further capacity building, streamlining their roles, compensation, relationship with MHT etc.) All these instances point to MHT's commitment to imbibing new learning and integrating it across programs.

However, not all process introduced under GRP were accepted with equal enthusiasm. Adoption of MIS and GIS systems has been slow. Since these are resource intensive processes, the organization seems not fully convinced about taking them further in their current avatar.

10. CONCLUSIONS

The project aimed to create and implement resilience plans to address four major climate risks -- heat stress, flash floods, acute water shortages and vector borne diseases -- in 100 slum communities in 7 cities of South Asia. These include Ahmedabad, Jaipur, Bhopal, Ranchi, Bhubaneshwar (India), Kathmandu (Nepal) and Dhaka (Bangladesh). The key strategy was to tackle the institutional, information and knowledge barriers in building capacities of slum communities and city governments for assessing vulnerabilities and risks of Climate Change on poor populations. The project addressed this by building the social capital of slum communities by organising them into Community-Based Organisations (CBOs); promoting critical partnerships between technical experts, local governments and low-income communities; developing tools and process for transfer of scientific knowledge and participatory risk assessments; and working with communities and partners jointly towards designing and implementing resilience technical solutions. The project has directly impacted the lives of more than 25,000 poor families living in urban slums in the 7 cities by creating their capacities to deal with climate risks and vulnerability.

Our Theory of Change has been that "If the urban poor are provided with the requisite knowledge to undertake vulnerability and risk assessments and equipped with available resilient-technologies, they will be able to devise and implement locally relevant and pro-poor climate resilient solutions. If the poor are empowered to implement their own resilience plans, they will be able to better influence climate resilient city planning and ensure that effective urban adaptation practices are in place."

The evaluation of this intervention consists of a quantitative impact analysis (reported in a separate report) and this embedded case analysis, which capture the underlying stakeholder dynamics and key learnings for replication of this model in the future. The embedded case not details the processes realities and outcomes at the level of city and at settlement interventions. This report employs project records and reports as well as key informant interviews including those from community leaders and grassroot implementation staff. The report focuses on the process and implementation in two project cities (including six slum communities); three partner cities (including five NGO partners) and one grassroot organisation (the project lead MHT).

The key learnings emerging from the project have also thus been summarized based on the above.

KEY LEARNINGS ABOUT COMMUNITY ENGAGEMENT FOR RESILIENCE

- Entry into new communities requires perceptions of legitimacy, trust, and incentives on the part of community women to partner, which can only be built over time with multiple engagements.
- Continued participation by highly disenfranchised women in marginalized communities requires strategies to promote individual and community empowerment, solve tangible problems, and build recognition/ identity within community
- Leadership works best when it is developed and interacts at and promotes coordinated action at the slum, community & city level
- Empowering women to advocate in a non-confrontational/ collaborative manner increases municipal support to address these needs

- Resilience in informal settlements requires coordinated action amongst many local actors over time, with leadership that is not too concentrated amongst a few members of the slum community and which is maintained over time.
- Systematic, repeated, and innovative communication tools are necessary to enable scientific and futuristic thinking in communities whose members are used to thinking short-term
- Community's continued interest in resilience planning requires delivery of more immediate tangible actions or benefits
- Community-led data collection leads to an increased understanding within the communities on their own vulnerabilities and issues affecting them, thereby leading to more resilient actions
- Successful pro-poor technologies should be cost-effective: commercially available, culturally appealing, with proper services provided along with the purchase
- Facilitating interactions between communities and technical experts enhances the capacity of both to communicate clearly and develop mutually agreeable solutions to resilience problems

KEY LEARNINGS ABOUT SUCCESSFUL REPLICATION

- Processes can be replicated by organizations which have a grassroots orientation even though they might not have a climate change or resilience expertise
- > Transferability can occur among the staff and in community action simultaneously although the community aspect needs more time
- There is a demand for such tools and processes although they need to be customized to suit local social and climate context as well as be translated in local language
- > The transferability requires time, handholding support and financial resource commitment

KEY LEARNINGS ABOUT ORGANIZATIONAL DEVELOPMENT

- Focus on communication (between internal staff and technical partners, with the community, and with external stakeholders) is essential
- Theory of change about the community also applies to staff and internal operations: 'Knowledge has to be cocreated'
- Complex projects require more effective process of partnering with other stakeholders and co-creation of knowledge products and tools
- Integrating learning and processes from GRPs in MHT's mainstream work and build and expand on those processes
- > Efficiencies of operations become more important for large projects
- > Knowledge creation and practice work best when they interact, inform each other

We hope that this report would serve as an important learning document for organisations which share similar concerns and principles and are working for building resilience of poor communities and women.

СПУ	Characteristic Features	Location (Latitude and Longitude) Height (metres above sea level)	City Population (As per 2011 census)	Slum details (No. of slum clusters, slum households, and population)	Damage risk from winds and cyclones & susceptibility to earthquakes ⁱ Key Climate risk	Annual Average Temperature, Annual Temp. Range, Average Annual Precipitation (AP) & Increase in Maximum Temp ^{II} . (Annual Average) over a decade (↑MT)
AHMEDABAD	Largest City of Gujarat, located in central part of it. It is situated at the bank of river Sabarmati. It is an industrial base for sectors such as chemicals, textiles, drugs and pharmaceuticals and agro and food processing industries.	22° 58' N 72° 58E 53 m	6,352,254	Slum- 834 HHs - 262,551 P- 1.31 million	Moderate damage risk Seismic zone III Water Logging and Heat Stress ⁱⁱⁱ	Average- 28°C Range- 13°C- 41°C ^v AP- 1,017mm 个MT30°C
внорац	Bhopal, the capital of Madhya Pradesh, is a city of historical, economical and as well as political importance. Cotton, electrical goods, jewelry and chemical industries are prominent in old city. There are two lakes in city. The Upper Lake drains into the Kolar River	23°16' N 77°36' E 427 m	1, 795,648 ^{vi}	Slum- 380 HHs- 183989 P- 936066	Moderate damage risk Seismic zone III A large number of slums are on, or close to, nallah or riverbanks. Many slums have steep slopes, rock outcrops and high water table. 66% of households depend on public stand posts, boreholes, wells, springs etc for drinking water ^w	Average -25 °C Range- 11°C-41°C ^{vii} AP- 1146 mm 个MT27 °C
BHUBANESWA R ^{viii}	Capital city of Orissa. Largest city of the state, and has become the center of economic and religious importance in the region. Lies southwest of the Mahanadi River. The city is bounded by the Daya River to the south and the Kuakhai River to	20°27' N 85°84' E 45 m	837,737	Slum- 377 HHs- NA P- 309962 ^{ix}	Very High damage risk Seismic zone III Floods and waterlogging low-lying areas have become common due to unplanned growth ^x .	Average- 27.4°C Range- 12°C -43°c. AP-1542 mm 个MT16 °C

ANNEX 1: BRIEF OVERVIEW OF PROJECT CITIES

0

	the east. It has Kanjia Lake in the Northern outskirts.					
JAIPUR	Capital and largest city of Rajasthan.	26°55′ N 75°49′ E 1417 m	3,073,350 ^{×i} .	Slums- 211 HHs-59476 P-6,88,430 ^{vii}	High damage risk Seismic zone IV	Average- 36 °C Range- 15 °C - 38°C ^{xiii} AP- 600 mm 个MT16 °C
RANCHI	The Capital City of the newly formed Jharkhand State, which is known for its rich deposits of minerals, water falls, rivers, streams, lakes, dams and forests.	23.35°N 85.23° E 651 m	1,073,440	Slums- NA HHs – 64,406 (calculated, 5/HH) P-Roughly 322,032 ^{xiv}	Moderate damage risk Seismic zone II	Average- 23.8 Range- 10 °C- 27°C ^w AP - 1530mm 个MT22 °C
рнака	Capital city of Bangladesh and the tenth largest city in the world. Dhaka Serves as the national economic hub. This city historically has attracted and is attracting millions of peoples for jobs. The annual per capita income of Dhaka is estimated at \$500 which is higher than national average. It stands on the east bank of the Buriganga River.	23° 42' N, 90° 22' E 4 m	14,543,124 ^{xvi}	Slums-NA HHs-NA P-3.5 million ^{xvii}	Increasing air and water pollution emanating from traffic congestion and industrial waste are serious problems affecting public health and the quality of life in the city.	Average- 26 °C Range- 14°C- 34°C ^{xviii} AP - 2,123mm 个MT11 °C

 \vdash

one Average- 18°C Range- 4°C- 26°C ^{xxi}	risk AP- 1,407mm	↑МТ48 °С	
Kathmandu is a natural disaster-pro	city. Nepal itself is ranked fourth at country for climate change. ^{xx}		
Slums-137	HHs-6,985	P- 31,463 ^{xix}	
1,740,977			
27° 42′ N,	85° 20' E	1,400 m	
The capital and largest municipality of	Nepal.		
KATMANDU			

^v http://mhupa-ray.gov.in/wp-content/uploads/2012/08/bhopal-city-profile.pdf

^{vi} http://www.census2011.co.in/census/city/302-bhopal.html

vii http://www.weatherbase.com/weather/weather.php3?s=76624&cityname=Bhopal-Madhya-Pradesh-India

viii http://utbenchmark.in/UsersidePages/CityProfile.aspx?City=2

^{ix} http://www.ajms.co.in/sites/ajms/index.php/ajms/article/view/830

* http://web.archive.org/web/20060519100611/http://www.undp.org.in/dmweb/hazardprofile.pdf

xi http://www.census2011.co.in/census/city/77-jaipur.html

^{xii} https://terraurban.wordpress.com/2012/03/29/status-and-opportunities-of-development-for-urban-poorslums-dwellers-in-jaipur-city-2/

^{xiii} http://www.weatherbase.com/weather/weather.php3?s=17924&cityname=Bhubaneswar--United-Statesof-America

xiv http://jnnurm.nic.in/wp-content/uploads/2010/12/Ranchi_BSUP.pdf

^{xv} http://www.weatherbase.com/weather/weather.php3?s=590752&cityname=Ranchi-Jharkhand-India

^{xvi} http://www.citypopulation.de/php/bangladesh-dhaka.php

^{xvii} http://www.citiesalliance.org/node/420

xviii http://www.weatherbase.com/weather/weather.php3?s=32914&cityname=Dhaka-Dhaka-Bangladesh

xix http://un.org.np/oneun/undaf/slum

^{xx} http://www.myrepublica.com/portal/index.php?action=news_details&news_id=76258

^{xxi} <u>http://www.weatherbase.com/weather/weather.php3?s=45444&cityname=Kathmandu--United-States-of-</u> <u>America</u>

http://www.crdf.org.in/cue/saic/wp-content/uploads/2014/05/26CUEWP-26 City-Profile-Ahmedabad.pdf

ⁱ http://web.archive.org/web/20060519100611/http://www.undp.org.in/dmweb/hazardprofile.pdf

[&]quot; http://www.cdc.gov/climateandhealth/

ⁱⁱⁱ http://www.seachangecop.org/sites/default/files/documents/2013%2012%20IIED%20-%20Urban%20Climate%20Resilience.pdf

^{iv} http://www.weatherbase.com/weather/weather.php3?s=74624&cityname=Ahmedabad-Gujar?t-India&units=metric



Mahila Housing Sewa Trust

701-702, Sakar-4, Opp. M.J.Library, Ashram Road, Ellisbridge, Ahmedabad-380006, Gujarat, INDIA Phone : 91-79-26587725, 26587726, 65446208. © info@mahilahsg.org ©@mahilahsg @Mahila Housing Trust-MHT @www.mahilahousingtrust.org