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YOUTH-DRIVEN CLIMATE RESILIENCE AND DISASTER PREPAREDNESS: GRASSROOTS LESSONS FROM MAHARASHTRA

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India has experienced an increase in the intensity and frequency of extreme weather events in recent years. Maharashtra is not only the economic hub of India, but it also hosts megacities such as Mumbai with the highest population density in India. Maharashtra's vulnerability to climate-induced disasters compels a detailed analysis for a nuanced understanding of its varied geography, socio-economic landscape, and the escalating effects of climate change. Effective disaster management hinges on the active participation of the communities, with the youth emerging as pivotal players.

We present two case studies from the coastal cities of Mumbai and Thane, where targeted efforts of technological innovation and community engagement have been successfully implemented for disaster risk reduction. The case studies of the Thane Heat Action Plan and YUVA's intervention in Community Climate Action Planning highlights effective disaster management through a combination of technology and community engagement. Active participation of youth in disaster risk reduction reveals enormous potential that needs to be harnessed for strengthening resilience. Efforts are required to mainstream the active engagement of youth in bringing together communities to strengthen climate resilience at the local scale. This helps build in the communities a sense of ownership, empowerment, and resilience in developing disaster management operations.

1. Introduction: Disaster and Climate Intersection

1.1 Overview of Climate and Disaster Nexus

The Intergovernmental Panel on Climate Change (IPCC) characterises "climate change" as a *"significant alteration in climate conditions, identifiable through shifts in average climate properties or their variability, and that endures over an extended duration, generally spanning several decades or more."* (UNDRR 2012). Disasters such as cyclones, floods, droughts, landslides, hailstorms, lightning, forest fires, heat waves, cold waves, glacial lake outburst floods (GLOFs), local lake outburst

floods (LLOFs), as well as land erosion and submergence, often result in substantial economic losses, loss of life, displacement of populations, and casualties.

Climate change is altering India's disaster landscape by increasing the frequency, intensity, and unpredictability of extreme weather events. More than 80 percent of India's population lives in districts highly vulnerable to extreme hydro-met disasters (CEEW 2021). Moreover, 55 per cent of tehsils in India witnessed an increase and 11 per cent witnessed a decrease in southwest monsoon rainfall in the past decade (2012-2022), by more than 10 per cent each compared to the climatic baseline (1982–2011). A statistically significant rainfall increase was observed in the traditionally drier tehsils of Rajasthan, Gujarat, central Maharashtra, and parts of Tamil Nadu (CEEW 2024). Shifts in rainfall patterns are leading to more severe floods in previously dry areas and exacerbating droughts in regions with reduced precipitation.

With the global sea rise predicted by one meter by 2100, coastal cities face peculiar and urgent challenges of climate change (Glavovic et. al. 2022). So far, governments have been treating flooding as a natural disaster, absolving them of any responsibility to reduce the chances of flooding (Cook, 2022). Heat waves, which are one of the most direct impacts of a warming climate, in particular, have also emerged as one of the most severe meteorological hazards during the last decade, leading to high mortality and morbidity rates worldwide (NIDM 2021).

1.2. Climate Justice

In recent years, several climate advocates have declared that while the effect of climate change is universal, the responsibility lies exhaustively with those who are most vulnerable to climate change impacts (Schlosberg & Collins, 2014). The concept of climate justice holds at its core the understanding that developed countries contribute disproportionately to global warming, while it is the least developed and developing countries that suffer the brunt of extreme weather events. Hence, the onus of reducing fossil fuel emissions, and paying for losses and damages that poorer countries are already facing due to climate change, lies on wealthier governments.

It is widely acknowledged that the climate crisis is the result of a rapid increase in global fossil fuel emissions. However, policy-makers and practitioners are now recognizing that it is as much a by-product of unequal distribution of resources and unjust systems of production.

The injustice of the climate crisis is that marginalised people contribute minimally to the emissions, yet are forced to bear the brunt of climate vulnerabilities (Islam & Winkel 2017). Further, there is almost no support for the impacts on their mental health, as their broader physical environment degrades (Parmar et al. 2022).

Heat waves, in particular, have emerged as one of the most severe meteorological hazards during the period from 2015 to 2019, leading to high mortality and morbidity rates worldwide, specifically impacting the most vulnerable groups (NIDM 2021). Further, on studying the impacts of climate change, it is clear that flooding will only worsen, more so in coastal cities, due to increased cyclone frequency, tidal action leading to prolonged inundation, along with industrial pollution; exacerbating risks for vulnerable populations living in climate sensitive locations (Glavovic et. al. 2022).

1.3. Legal Frameworks and Routes

There are interlinkages in plans and policies in India

towards climate change and disaster management. Post the adoption of the Hyogo Framework for Action at the World Conference on Disaster Reduction in 2005, the Government of India took a defining step by enacting the Disaster Management Act of 2005 to address disaster management and climate adaptation in India by creating a structured approach to disaster preparedness and response. It emphasises proactive measures, capacity building, and community involvement in managing disaster risks (NPDM 2009).

Moreover, The National Action Plan on Climate Change or NAPCC, introduced in 2008, sets forth a national approach designed to help India adapt to climate change while promoting ecological sustainability in its development trajectory. It underscores the importance of sustaining a high growth rate as a means to improve the living standards for the majority of India's population and to mitigate their vulnerability to climate change effects (NAPCC 2018).

Building on national strategies, many states have developed their own State Action Plans on Climate Change and Disaster Management. In addition, numerous cities and districts have introduced localised plans addressing climate change, disaster management, and interconnected issues such as extreme heat through Heat Action Plans. Notable examples include cities like Mumbai, Thane, Ahmedabad, and New Delhi.

In March 2021, Mumbai joined a few Indian cities that released their climate action plan (MCAP). However, we identified potential areas of intervention in the MCAP and scope for improvement in enhancing participatory planning in the implementation of the plan (Wagh & Indorewala, 2021). Maharashtra has established a State Climate Action Cell (SCAC) in October, 2023, which will guide the implementation of the district level and city level climate action plans. The Government of Maharashtra has formally approved the development and implementation of climate action plans by passing a Government Resolution (Hindustan Times 2024). We propose two case studies in this paper, which can provide pathways of enhancing the youth engagement for accelerating climate action.

1.4. Risk

The United Nations International Strategy for Disaster Reduction (UNISDR) terminology for Disaster Risk Reduction (DRR) defines risk as "the combination of the probability of an event and its negative consequences" (UNISDR 2009). Risk is typically understood in terms of probability or uncertainty regarding potential outcomes. As such, risk is inherently multidisciplinary and can be approached from various perspectives. However, the notion of risk with the current scenario of rapid urbanisation and climate change comes across. Under U. Beck's concept of "radicalized modernisation" (Beck 1992), risk highlights the critical need for enhanced governance.

In the realm of disaster studies, risk is examined through a range of definitions, reflecting the diverse ways it can be understood and analysed. United Nations Development Programme (UNDP) puts down disaster risk as "the probability of harmful consequences, or expected loss of lives, people injured, property, livelihoods, economic activity disrupted and environment damaged resulting from interactions between natural or human-induced hazards and vulnerable conditions"(GoI-UNDP 2007). Additionally, in the fifth assessment report of IPCC (Intergovernmental Panel on Climate Change 2014), the focus shifted towards a more risk-centric approach from a vulnerability approach. This new approach introduced new terminology

and concepts that aligned more closely with risk assessment, diverging from the previous vulnerability-centric understanding presented in the fourth assessment report. This shift implied a redefinition and separation of exposure and a reconceptualisation of vulnerability as a function of sensitivity and capacity to cope and adapt, whereas risk was defined as a product of hazard, exposure and vulnerability.

Grassroots studies show that the urban poor also lack access to climate risk-reduction information and are less prepared for adaptation (Dodman and Satterthwaite, 2008; Driver and Shankar, 2024; Krass et al. 2016). Additionally, the urban poor living in informal settlements are also often informal workers. Their livelihoods depend on insecure jobs and uninsured goods and assets that can be highly impacted by climate hazards. Moreover, the work conditions of many informal workers such as construction workers and street vendors get worse due to severe climatic conditions, leaving them more at risk. Infrastructure projects and climate mitigation projects often impact the urban poor adversely more than other groups through forced evictions, loss of livelihood and so on (HLRN 2021 & YUVA 2021).

2. Case Study on advancing heat resilience in Thane City, Maharashtra (CEEW's story)

2.1 Impact of heat waves on vulnerable populations in urban areas

Heat wave creates differential vulnerabilities depending upon various social, economic, and physical factors. Vulnerability to extreme heat events varies based on exposure levels, sensitivity, and the ability to adapt to extreme heat. Groups at higher risk include the elderly, young children, and individuals with pre-existing conditions such as heart, kidney, lung, or liver diseases. Furthermore, individuals residing in substandard housing or experiencing economic difficulties are also at increased risk of health issues related to extreme heat (NIDM 2016).

Apart from this, there is also differential vulnerability in terms of socio-regional vulnerability. According to the ILO report, "the countries most affected by heat stress are Africa and South Asia." According to the report, these areas are expected to see around 5 per cent of their working hours lost by 2030. This is equivalent to approximately forty-three million jobs in Southern Asia and nine million jobs in Western Africa (ILO 2019).

Heat stress also impacts the livelihood of the people as it significantly decreases the efficiency of workers, particularly those engaged in industries such as construction, manufacturing, and agriculture, which require manual labour outdoors (Mohanasundaram Mourougan et al 2024).

The impact of heat is also felt differently by men and women. With existing climate conditions and accessible data, it is approximated that an average of 27,000 women succumbs to heat-related excess mortality annually. Projections indicate that this figure could surpass 73,500 in India alone by 2050 (Adrienne Arsht-Rockefeller Foundation Resilience Centre 2023).

2.2 Case study of Thane Heat Action Plan 2024

The Thane Municipal Corporation, in collaboration with the Council on Energy, Environment, and Water (CEEW), developed the Thane Heat Action Plan 2024, aiming for zero mortality from extreme heat, minimising heat-related illnesses and stress, and reducing economic impacts. A multidisciplinary approach was employed, integrating technical tools, scientific analysis, policy evaluation, and stakeholder engagement to formulate

Thane City's HAP (TMC and CEEW 2024).

2.2.1 Background

Building on the foundation provided by the NDMA guidelines of 2019 for HAPs and the National Disaster Management Plan 2019, a comprehensive framework for effective heat action was established. This framework comprises of the following three critical components: I) when to take action, ii) where to take action, and iii) who will and how to take action.

2.2.2 Framework

To enhance the information for decision-making, a ward-level heat risk index was specifically developed for Thane City which adhered to the standardised methodology outlined in the IPCC Fifth Assessment Report (AR5) of 2014 (Intergovernmental Panel on Climate Change 2014). The risk assessment framework comprises of three components that define the risk to the systems (in this analysis, the Prabhag Samitees). The sub-indices are hazards, exposure, and vulnerability (consisting of adaptive capacity and sensitivity) as defined in Figure 1

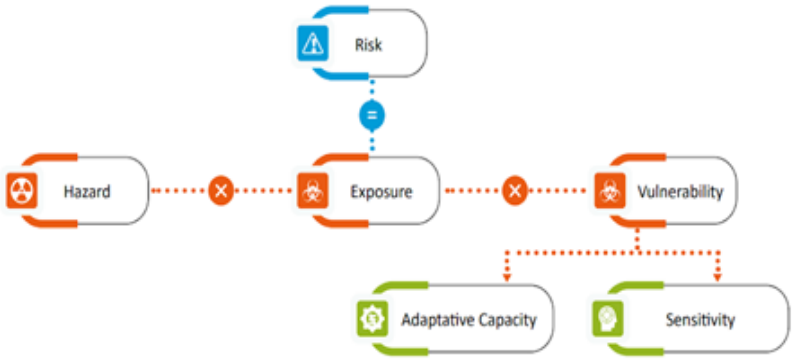


Figure 1: Risk assessment equation
Source: TMC and CEEW 2024

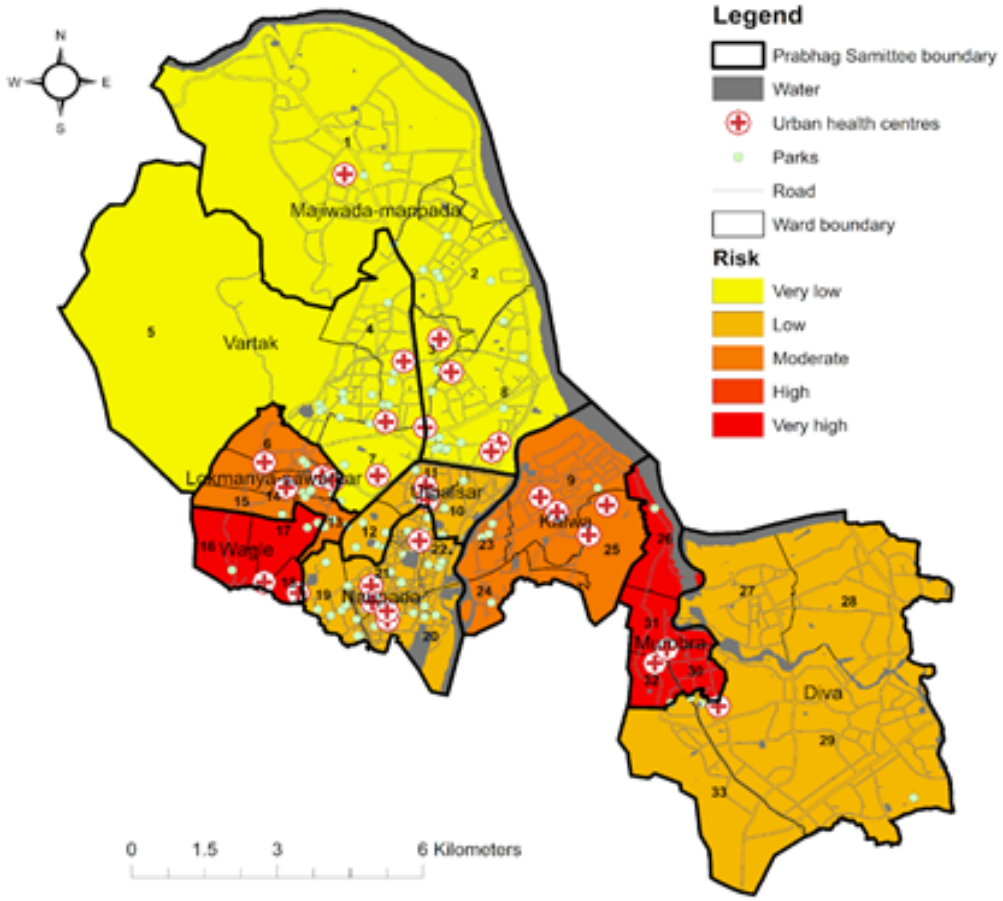
Fig 3: CEEW team in discussion with relevant line departments validating the heat risk assessments
Source: TMC and CEEW 2024

2.2.3 Methodology

The approach to developing the Thane HAP involved rigorous data collection and validation through extensive stakeholder consultations (Figures 2 and 3). Various stakeholders, including line departments, scientific experts, and policymakers crucial to the plan's implementation, actively participated. The consultations centered around presenting climatological analysis, the heat risk index with its indicators, and the locally developed heat thresholds, which was done using openly accessible climate and geospatial datasets.

2.2.4 Results

As per Thane City's heat risk index seen in Figure 3, Wagle and Mumbra Prabhag Samitees have the highest risk, followed by Kalwa and Lokmanya Savarkar Nagar Prabhag Samitees which fall in the moderate risk category. Furthermore, Diva, Naupada, and Uthalsar show low risk whereas, Vartak Nagar and Majiwada-manpada show very low risk.



A key component of the Hazard Action Plan (HAP) is the responsibilities matrix. This matrix details the strategies for mitigation, preparedness, and response, clearly defining the roles of various departments, the supportive functions of the District Disaster Management Authority (DDMA), State Disaster Management Authority (SDMA), and other stakeholders, to ensure effective coordination during the execution of the plan.

2.2.5 Impact

Post the development of a heat action plan to ensure inter-departmental and inter-agency coordination for successfully implementing the strategies outlined in the plan. A heat wave task force committee has been established in the Thane Municipal Corporation under the control of the Thane Municipal Commissioner.

A joint initiative of household survey was conducted in collaboration with the health department and CEEW. Starting in the Wagle and Mumbra wards, AASHA Workers conducted household surveys across both slum and non-slum areas by utilising a questionnaire designed by CEEW's team based on the CDRI 5*5*5 matrix. (Jonas and Shaw 2011).

2.2.6 Way forward: youth involvement in future HAPs

India's population is one of the youngest worldwide, with

an average age of 29 years (Ministry of Statistics and Programme Implementation 2019). While the youth are at risk of extreme heat, they themselves can act as the change agents. Youth play a critical role in making changes in the community and are the pioneering force that implements new policies. Youth involvement in recent years has been spread over vast horizons and has been a prominent part of the field of disaster management.

Thane Heat Action Plan's comprehensive ward-level assessment model has set a precedent for other cities and state governments, prompting them to adopt similar frameworks adapted to their specific districts and cities. These models aim to improve early warning systems, community outreach, and the integration of heat mitigation strategies into urban planning. Given that India has over 4,800 cities, developing localised heat action plans is essential for strengthening resilience against the increasing risks of extreme heat and humidity, which can be achieved by engaging youth in various ways.

While the youth can play a significant part in data collection, awareness generation, and acting as support to the first respondents during extreme heat, involving youth in data collection and decision-making processes promotes a sense of responsibility and accountability. This approach not only deepens their understanding of heat-related issues but also improves the identification of gaps. For instance, college students and young adults could take over the ground-level surveys previously conducted by AASHA workers. Additionally, youth are central to spreading awareness about the do's and don'ts outlined in the heat action plan, therefore, they can play a key role in implementing the policy at the grassroots level, thus, enhancing its outreach and impact.

3. Case Study on Community Climate Action planning in an urban poor community in Mumbai (YUVA's story)

3.1 Flooding and YUVA's climate hazard mapping

The Maharashtra State Adaptation Action Plan on Climate Change predicts that as compared to other districts in Maharashtra, Mumbai residents will experience maximum discomfort in the 2030s because of high felt temperature and will experience maximum warm nights. Also, the city is highly prone to flash floods, high-intensity rainfall, coastal salinity, and severe soil erosion (TERI, 2014).

Due to inadequate affordable housing in the Mumbai Metropolitan Region (MMR), a large population of the working class is compelled to reside in informal settlements. These individuals, who build and run the city, are denied their right to adequate housing and are forced to construct their homes on the fringes of the city, often in vulnerable areas such as low-lying marshy lands or hill slopes. These locations prove to be hazardous, particularly during periods of heavy rainfall and cyclonic events. Moreover, the lack of recognition of these settlements results in them being inadequately provided with basic services, infrastructure, and security of tenure, thereby increasing their vulnerability to the impacts of climate change and related disasters (Satterthwaite and Mitlin, 2014).

To map these complexities, in 2021, Youth for Unity and Voluntary Action (YUVA) began Climate Hazard Mapping (CHM) in the Mumbai Metropolitan Region, a crucial tool for identifying climate and social vulnerabilities (YUVA, 2023). YUVA is a non-profit working with the marginalized to empower them and help them access their rights. YUVA

partners with marginalized urban populations in climate-sensitive regions, focusing on understanding climate change impacts from their perspectives. YUVA's approach emphasises that addressing climate action through a justice lens means tackling the root causes of vulnerability, not merely the economic impacts. It calls for considering social inequalities, such as the disproportionate exposure of marginalised communities to climate risks and their limited access to recovery resources. This ensures that climate resilience efforts are inclusive and tailored to the needs of those most affected.

The initial phase of the CHM involved mapping the most vulnerable groups, particularly informal settlements known as bastis. This was followed by pinpointing climate hotspots through a detailed analysis of hazards such as flooding, landslides, sea-level rise, and air pollution.

Findings from CHM revealed that areas like Bhayander and Malvani-Ambujwadi, located along Mumbai's western coast, are especially prone to tidal flooding due to their proximity to the sea and the high density of informal settlements. Similar vulnerabilities are observed in Worli, where neighbourhoods near Haji Ali face regular inundation, particularly during monsoons and high tides. In Trombay and Govandi, the situation is worsened by nearby industrial zones, which exacerbate drainage problems due to inadequate Solid Waste Management. Eastern suburbs like Diva and Kalwa experience recurrent flooding from river overflows during heavy rains, with low-lying areas, often reclaimed land or riverbank developments, at risk from both natural and human-induced changes such as blocked waterways and reduced green spaces.

In addition to this, a participatory approach to city-level flood mapping was initiated by YUVA in partnership with the Interdisciplinary Program in Climate Studies at the Indian Institute of Technology Bombay, addressing gaps in traditional flood maps that often exclude slums (Tripathy et al. 2024). Approximately 40 YUVA staff and volunteers were trained to collect real-time flood depth and hotspot data using WhatsApp and Google Forms. This real-time data validated other sources and provided a comprehensive representation of flood impacts in Mumbai's bastis. The study also incorporated data from Automatic Weather Stations set up by the Municipal Corporation of Greater Mumbai (MCGM) and included a survey of key flood hotspots, enhancing the accuracy and inclusivity of flood dynamics and disaster management strategies.

While acknowledging the geographical and physical implications of flooding is critical, it is equally important to recognise the heightened impact of climate-induced flooding on mental health. As highlighted by YUVA in The Mariwala Health Initiative Journal and the REFrame article on environmental health, flooding, exacerbated by climate change, causes significant psychological distress, including anxiety, depression, and post-traumatic stress disorder (PTSD) (Parmar et. al. 2022). This is particularly severe in marginalised communities, especially amongst youth, in Mumbai and other flood-prone areas of India. In Ambojwadi, for example, the ongoing stress fuelled by constant eviction threats and rebuilding from climate impact each season exacerbates mental health issues (YUVA, 2018). The article underscores the need for nuanced approaches that integrate mental health support into disaster response and recovery plans, ensuring that services address the specific needs of affected regions effectively.

3.2 Community based vulnerability assessment: understanding localised climate risks

In 2022, following the CHM process; Ambojwadi, an urban settlement along the west coast of Mumbai, stood out due to the basti's social and climate vulnerabilities and intensity. YUVA responded by initiating a community-based Vulnerability Assessment (VA), involving five young residents, aged 18 to 23, from various parts of Ambojwadi. With YUVA's support, these individuals—dedicated to addressing local challenges through a climate justice perspective—engaged in a series of comprehensive knowledge sessions. These sessions deepened their understanding of climate change's root causes and helped them formulate their definitions of climate justice, linking social and climate justice.

These young residents played a key role in tailoring the VA to Ambojwadi's specific context. They incorporated their personal experiences with climate impacts into the assessment, refining its focus and methodology. This collaborative approach led to the creation of a comprehensive and objective map of vulnerable stakeholders, informed by their lived experiences. The VA tools were co-developed to capture the nuances of local conditions. Training sessions provided the young residents with a foundational understanding of mapping, including the translation of three-dimensional objects into two-dimensional maps, mapping history and standards, and GIS software use.

This training resulted in detailed maps created using mobile applications like Map Marker. Once data was collected, the team analysed it and shared the findings with the community. For data collection, Focused Group Discussions (FGDs), conducted between December 2022 and March 2023, were integral to the VA. Eighteen FGDs engaged various social groups—children, women, the elderly, and informal workers—across five areas, offering insights into the community's climate vulnerabilities and perceptions.

The data analysis, including geotagging of vulnerabilities, revealed ten key themes in Ambojwadi: Housing, Open Space, Water, Toilets and Sewage, Storm Water Drains (SWD), Solid Waste Management, Transport and Road Network, Livelihood, Education, and Health. These themes underscored systemic issues where inadequate infrastructure and service provision exacerbated existing vulnerabilities. Further, the qualitative, people-led VA revealed that extreme heat and flooding are the most significant climate hazards affecting Ambojwadi. For example, poor waste management and inadequate storm water drainage worsened flooding, affecting health and livelihoods. The lack of piped water led to groundwater depletion and contamination, while transportation challenges impacted education, health, and safety, particularly during climate-related emergencies. Insufficient infrastructure, such as poorly maintained storm water drains and inadequate street lighting, further compounded these issues.

3.3 Community Climate Action Plan: empowering vulnerable communities

The Climate Change Adaptation Plan (CCAP) adopts a bottom-up approach, emphasizing the inclusion of voices from those most impacted by climate change. The CCAP is crafted to integrate findings from the Vulnerability Assessment (VA), connect climate and social issues, and enable community advocacy. By centering the experiences of affected populations of Ambojwadi, the CCAP aims to create an actionable plan for climate adaptation and coping mechanisms to be

Figure 6: Young residents brainstorming together on mapping database analysis
Source: YUVA 2023

adopted in the community.

The CCAP advocates for an alternative approach to the top-down action plan, emphasising the inclusion of voices and demands from those most affected by the climate crisis. By doing so, it seeks to hold accountable the existing power structures. It aims to assess the key findings of the VA and to establish connections between climate issues and social challenges with the community. By doing so, it aims to generate demands and promote advocacy from bottom up. Overall, the plan strives to integrate climate justice into mainstream discourse and actions, in the following ways:

I. **Awareness Sessions:** It was essential to focus on building awareness about the climate crisis and justice before moving on to adaptation discussions. The youth involved in the VA data collection led these awareness efforts, identifying key areas, scripting, and facilitating the sessions. These sessions aimed to enhance community engagement with the development plan, address everyday climate impacts, and underscore state responsibilities. Tailored for specific groups, such as women and children who are less likely to participate in mixed settings, the sessions were held in their own neighbourhood. This approach ensured that the knowledge was relevant to the community, especially the most marginalised, and highlighted the urgent need for climate justice.

II. Identifying priority areas for interventions: To address the community's needs and aspirations effectively, a rigorous prioritisation process was implemented. This process aimed to address immediate

Figure 7: Climate justice awareness session conducted by the young resident in Shanti Nagar area in May 2023
Source: YUVA 2023

need for basic services while enhancing the community's adaptive capacity and holding the state accountable for past damages. Key issues were identified and were classified based on their severity and risk according to climate projections. Engaging relevant stakeholders was crucial for these discussions and implementation. The community meetings were conducted in two stages: the first focused on immediate actions, while the second developed a comprehensive adaptation plan requiring a longer design timeframe.

For instance, the Sant Nirankari area of the basti, which emerged as highly vulnerable to flooding in the VA, was identified as one of the priority areas for intervention. When engaging with the community, it was found that this was an issue because of the absence of SWM. Moreover, the presence of a toilet lacking a connected sewage system exacerbated the vulnerabilities, especially during rains. Thus, in CCAP, the provision of SWM along with an outlet became a priority adaptation intervention.

At a systemic level, in CCAP addressing habitat issues through a climate lens highlights the profound impact of secure housing on climate resilience. The lack of tenure security emerged as a critical vulnerability, with the push to spearhead housing as a key climate adaptation strategy proving essential for protecting communities.

III. Coalition formation: In the CCAP, coalition formation at the community level is a central strategy for advancing advocacy focused on people's rights and promoting governance accountability. YUVA's approach emphasizes grassroots coalition-building to help vulnerable groups access their rights. These coalitions are crucial for highlighting specific concerns, such as inadequate access to services, lack of tenure security, and insufficient infrastructure. The CCAP prioritizes establishing relationships with relevant government officials from departments like maintenance, water, and SWM at the BMC. To facilitate this, YUVA engaged local leaders and Mohalla Committee members, who hold influence in their areas, and involved community members to build trust and ensure broad representation.

For instance, the VA and its findings were presented at the P North ward office in the BMC to the Additional Municipal Commissioner and officers from several departments. Possible collaboration between BMC and the community was discussed along with the corporation's future plans for the basti. Advocacy engagements like these become key to implementing the CCAP.

4. Conclusion

The impacts of climate change are evident across the world; however these impacts vary across the regions and are experienced by the different sections of the community differently. Additionally, the involvement of youth in

Figure 8: Area-level meeting on the CCAP in Ambojwadi
Source: YUVA 2024

climate action and disaster management is crucial for integrating the next generation's perspectives and needs into environmental decisions (Mishra 2023).

By engaging young people in data collection, awareness generation, and decision-making processes, the Thane HAP not only leverages their energy and enthusiasm but also fosters a sense of ownership and accountability. This approach aligns with the growing recognition of the importance of youth participation in disaster management, particularly in the context of climate change. The emphasis on youth involvement illustrates a crucial shift in disaster management, thereby recognising that effective resilience strategies are as much about empowering future leaders as they are about deploying advanced technologies. By actively including young people in every phase from data gathering to implementation, the plan not only prepares them to tackle future climate challenges but also reinforces the importance of their role in shaping adaptive, forward-thinking responses to extreme heat and other hazards.

On the other hand, YUVA's case study on the Community Climate Action Plan underscores the pivotal role of youth in spearheading grassroots community action for climate adaptation. This case is also highlighted as a best practice in the Youth ACT Framework by the National Institute of Urban Affairs and in the "Enabling Youth-Led Urban Climate Action: A Framework for Engagement and Impact" by Youth Ki Awaaz (Driver and Shankar, 2024). If macro-level urban processes align with Ambojwadi's grassroots initiatives, systemic solutions can be developed to address climate vulnerabilities comprehensively. The TAPESTRY project highlights the importance of such collaboration among communities, civil society, and governance (Mehta et. al 2021). YUVA has initiated local adaptation efforts, focusing on urban greening, place making, and nature-based solutions in Rehabilitation and Resettlement colonies and educational institutions. These efforts, part of piloting the CCAP, are also being implemented in Vasai-Virar, Navi Mumbai, and Guwahati, while also advocating for mainstreaming climate mitigation through land use planning in their respective city development plans.

In summary, youth comprise nearly 2/3rd of India's population and can play a pivotal role in enhancing climate resilience efforts in India. However, there is a need for policy guidelines and frameworks to mainstream the engagement of youth in disaster risk reduction. Future research should assess the effectiveness of current policies in engaging youth and propose necessary interventions to scale and mainstream youth involvement, aiming for accelerated climate action and achieving a Viksit Bharat by 2047.

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