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## Models of climate resilience in urban slums- a case study of the Mahila Housing Trust initiatives in India



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**\_VOIS Planet** portal primarily focuses on environmental sustainability covering various aspects: **Low carbon, Renewable energy usage** and **E-waste management**.

It is aimed at aggregating and helping co-create knowledge and information on environmentally responsive behaviours and concurrently pursuing result-oriented social media campaigns to encourage people and specifically the youth, to take proactive actions in promoting sustainable lifestyle and creating a positive impact on the environmental ecosystem in their surroundings

By: **\_VOIS Planet**

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## 1. Background of the case study

Climate change is a global challenge that affects all people, but it disproportionately impacts marginalized communities, including women. This case study aims to examine the "Women in Climate Change" initiative and its impact on women's participation in climate action. The study will also explore how The Mahila Housing Trust (MHT) SEWA addresses the specific challenges women face in the climate change sector and the progress made to date.

Climate change is a complex and multifaceted issue that requires the participation and leadership of all sectors of society to effectively address. Women, in particular, have a unique and important role to play in addressing climate change due to their disproportionate impact on and vulnerability to the impacts of climate change (United Nations Framework Convention on Climate Change [UNFCCC], 2015).

### 1.1 Impact of Climate Change on Vulnerable Communities

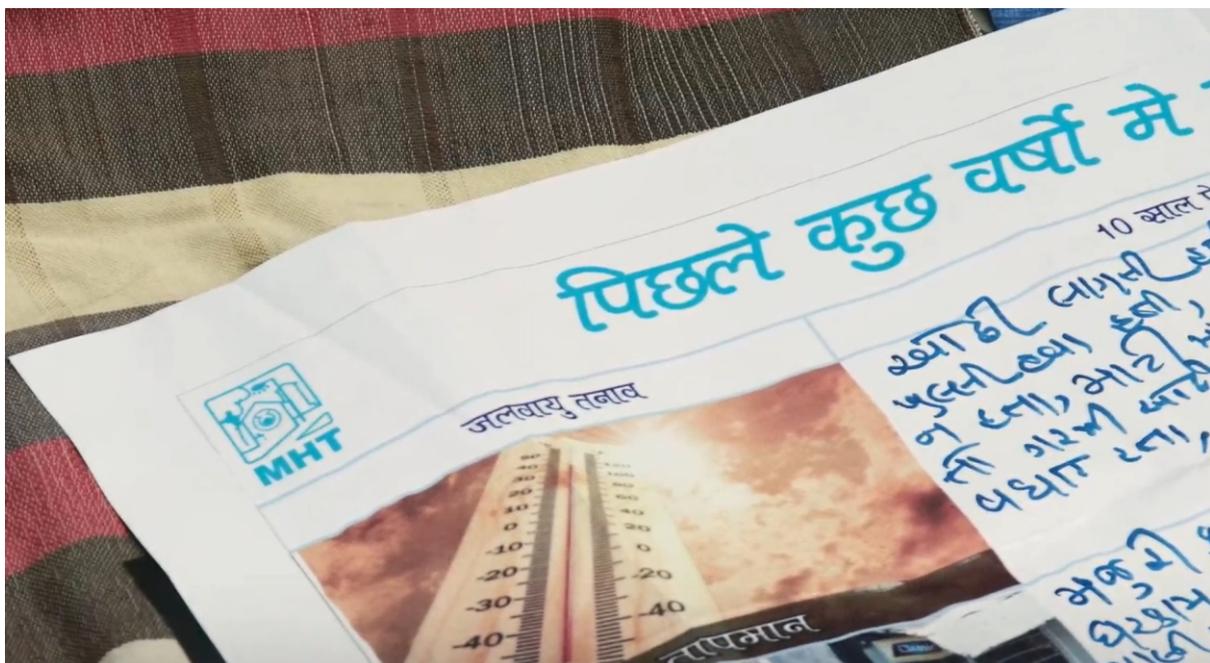
Climate change is a unique threat, not only because it is omnipresent and unpredictable, but also due to the obscure ways it impacts populations and ecosystems over time. This obscurity stems from the complex links between the state of the climate and the causes of poverty embedded within various socio-cultural contexts. Thus, current action plans to combat climate change may not be capable of fully addressing its non-linear effects on those with the fewest resources, or those with unequal access to decision-making and credible information.

In both developed and developing countries, patriarchal structures and rigidly defined gender norms often leave women and girls disadvantaged. When extreme weather events or disasters occur, the question is not only how severely everyone is affected, but who is affected more, given existing power relations and structural barriers. The fourth session of the United Nations Environment Assembly in Nairobi in March 2019 not only acknowledged the compounded burden of climate change on women and girls, but also emphasized the "power of their knowledge and collective action."

### 1.2 The urgent need for Climate Resilience

Recent discourse has increasingly highlighted the disproportionate effects of climate change on women due to their greater domestic responsibilities, lack of asset ownership, and limited access to the skills and knowledge needed to adapt to stressful events. This brief examines the deeper implications of shifting ecological conditions from a standpoint of gender and proposes constructive ways to bring about equity in the policies that are being created under India's climate change response plan. Despite the significant contributions that women make to addressing climate change, they are often underrepresented in decision-making processes and face barriers to fully participating in and contributing to climate action (UNFCCC, 2015).

MHT recognized this issue and launched the "Women in Climate Change" initiative to address these challenges and empower women to take action on climate change. The Mahila Housing SEWA Trust is a non-profit organization that aims to provide women with the necessary financial, legal, and technical support to upgrade their living environments in urban, rural, and peri-urban settings. It was founded in 1994 by the Self-Employed Women's Association (SEWA), an association of poor rural women working in India's informal economy and who come together to support each other in the face of shared vulnerabilities. It uses a hybrid approach that provides both technical and social tools for women living in informal settlements to upgrade and improve their habitats, in urban, rural, and peri-urban settings.



Currently, it has three broad portfolios of work: 1) habitat development, which includes housing, housing finance, water and sanitation, access to energy, land rights, and related issues; 2) climate resilience and adaptation; and 3) participatory governance. A cross-cutting theme of all three portfolios is women's empowerment. The trust has established itself as a leading advocacy group with expertise in policy development, grassroots organizing, community development, and technical knowledge in the areas of land tenure, construction, and management.

The Mahila Housing Trust (MHT) SEWA is an organization that recognizes the significant role that women play in addressing climate change and has launched the "Women in Climate Change" initiative to empower and support women in taking action on climate change.

## 2. Introduction

Mahila Housing Trust (MHT) works in several countries in South Asia to build climate resilience among women through a range of initiatives. Some examples of the specific initiatives that MHT has implemented in the region include:

- In Nepal, MHT has supported the construction of climate-resilient homes for women who have been affected by natural disasters, such as earthquakes and floods. MHT has also provided training to women on how to design and build these homes and how to manage natural resources in a sustainable way.
- In India, MHT has worked with local governments and other partners to develop and implement climate resilience plans that consider women's unique needs and perspectives. MHT has also supported the formation of women's groups that are focused on climate resilience and environmental protection and has provided training and capacity-building support to these groups.
- In Bangladesh, MHT has supported the construction of climate-resilient homes and infrastructure, such as storm shelters and flood-proof roads, in communities that are vulnerable to natural disasters. MHT has also provided training to women on disaster risk reduction and emergency preparedness and has supported the development of community-based organizations that are led by women.

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## 3. Objectives of MHT

MHT has implemented a number of strategies to achieve the objectives of the Climate initiative. These include:

- **Providing training and capacity-building opportunities:** MHT has organized a series of training programs and workshops for women on climate change-related topics. These programs aim to provide women with the knowledge and skills necessary to effectively address climate change in their communities. For example, MHT has conducted training in climate-resilient agriculture techniques, such as the use of drought-resistant crops and water conservation methods.

MHT has also provided training on renewable energy technologies, such as solar panel installation, to enable women to access clean and affordable energy sources.

- **Facilitating the participation of women in decision-making processes:** MHT has established a number of platforms for women to participate in decision-making processes related to climate change. These include community meetings, focus group discussions, and policy consultations. MHT has also supported the formation of women's groups and networks to enable women to advocate for their needs and interests in relation to climate change.
- **Promoting the inclusion of a gender perspective in climate change-related policies and programs:** MHT has worked with local and national governments to ensure that the needs and perspectives of women are considered in the development and implementation of climate change-related policies and programs. MHT has also advocated for the inclusion of gender-specific targets and indicators in climate change-related agreements and frameworks, such as the United Nations Framework Convention on Climate Change's (UNFCCC) Sustainable Development Goals (SDGs).
- **Advocacy:** MHT has advocated for the recognition of the important role that women play in addressing climate change and has worked to raise awareness of the challenges faced by women in the climate change sector.

Overall, these strategies are aimed at empowering and supporting women to take action on climate change, as well as addressing the specific challenges faced by women in the sector and promoting the inclusion of a gender perspective in climate change-related policies and programs.

## 4. The Larger Problem

The MHT is a membership organization based in Ahmedabad, Gujarat that works to bring about social and technical changes through advocacy and innovation. It joined the Parivartan Slum Networking Programme (SNP) in 1995, an initiative that aims to improve living conditions in informal settlements and integrate them into mainstream society. The MHT partners with various stakeholders, including informal settlement residents, NGOs, and the Ahmedabad Municipal Corporation (AMC), to achieve these goals. The SNP has received recognition for its efforts to bring about positive change in the city.

MHT recognized that women are often disproportionately impacted by climate change, as they may have limited access to resources and decision-making power, and may be more vulnerable to the negative effects of extreme weather events and other climate-related disasters. Therefore, MHT works to build climate resilience among women through a variety of initiatives.

Overall, MHT's efforts aim to increase the resilience of individual women and their communities and empower them to take an active role in addressing and adapting to the impacts of climate change.

Research has shown that poverty in informal settlements disproportionately affects women due to cultural, religious, and traditional factors that often place additional responsibilities on them for caregiving and managing the household and assets. While men are traditionally seen as the primary breadwinners in households, more and more women are taking on this role as heads of the family or by participating in informal economic activities. Inadequate housing and the lack of access to land titles can limit women's agency and power to improve their living conditions, and secure land ownership and tenure have been identified as key factors in addressing gender inequality and power imbalances. On the other hand, a lack of land ownership can greatly disadvantage women.

Many SEWA members identified housing and living conditions as their "first and most important demand," prompting the formation of MHT in 1994 (MHT, 2016); the organization is now independent of SEWA. Many people who live in informal settlements and work in the informal sector work from home, so their homes are frequently both a living space and a productive asset, providing living space, storage space, and working space. Women's livelihoods and well-being are thus dependent on the quality of their homes as well as the availability of basic services such as clean water and sanitation, as well as adequate light and ventilation. The quality of their homes also influences their resilience to heat stress, flooding, and other climate-related effects (United Nations).

Over 190.7 million individuals are estimated to be living in South Asian informal settlements. These towns are frequently densely inhabited and extremely vulnerable to even minor changes in our environment. MHT's initiative is strengthening the resilience of over 25,000 families living in slums and informal settlements in seven cities spanning three South Asian countries: Ahmedabad, Bhopal, Ranchi, Jaipur, and Bhubaneswar (India); Dhaka (Bangladesh); and Kathmandu (Nepal).

Their activities enable women to lead local mitigation efforts to reduce important climate hazards like heatwaves, flooding, and inundation, as well as climate change-related outbreaks of water-borne diseases. Slow-onset crises tend to garner less worldwide attention while disproportionately affecting low-income households.

## 5. Solution

MHT has trained over 1,500 women to be 'Climate Saathis' ('Climate Partners'). They are in charge of socializing the issue of climate change in each community's language (United Nations Climate Change, 2019). This has had an impact on women's attitudes and behaviours regarding the climate crisis. For example, in Climate Saathi-led training programs, the proportion of participants who believed climate change was an act of God decreased from 26% to 9% (UNFCCC, 2019).



The organization has earned a reputation for creating "last-mile" service connections, linking residents of remote places, and facilitating or providing facilities like toilets, drain pipes, water tanks, and even homes. These efforts frequently have effects on the lives of women and girls that go beyond just enhancing sanitation or cleanliness; for instance, women are frequently ridiculed or subjected to sexual harassment when forced to defecate or wash outside the home due to a lack of facilities. MHT's work also focuses on improving community organization, participation, and women's empowerment through the formation of resident welfare associations and community-based organizations (CBOs).

MHT collaborates with a variety of social and technical partners to provide women and their families with access to sustainable technology solutions and to strengthen their resistance to climate change. MHT's goal is not to create answers, but to be an enabler or incubator of new procedures that allow solutions to be tested, validated, and adapted by disadvantaged women' (MHT, not dated). Households are given the option to purchase the solutions after a one-month trial period. MHT also makes microfinance loans available to persons living in informal settlements (MHT, 2017).

Air Lite ventilators, Mod-Roof toppers, and Cool Auto rickshaws are three of its most popular climate adaption solutions.

## 5.1 Air-lite ventilators or dome-shaped ventilators



An air-lite ventilator or dome-shaped roof ventilator is a type of ventilation device that is installed on the roof of a building to improve air circulation and ventilation within the space. These ventilators are typically made of fibre sheets and are designed to allow hot air to escape from the building, reducing temperatures and improving the overall indoor air quality. Dome-

shaped roof ventilators may also provide natural lighting and can help to reduce the need for artificial lighting, potentially saving energy. These ventilators may be suitable for a variety of buildings, including residential, commercial, and industrial structures. The specific composition of a dome-shaped roof ventilator may vary depending on the manufacturer and model, but most ventilators consist of a dome-shaped cover and a base that is installed on the roof. Some models may also include additional features such as a control panel or a motor to operate the ventilator.

Can help to improve indoor air quality by increasing the amount of fresh air circulation in the space

Can help to reduce temperatures in the space by allowing hot air to escape through the ventilator.

Can provide natural lighting, which can help to reduce the need for artificial lighting and potentially save energy



### Advantages

### Disadvantages



May require installation by a professional, which can be costly.

May not be suitable for all types of buildings or roofs.

May not be effective in areas with high levels of pollution or poor outdoor air quality.

## 5.2 Mod-Roofs toppers

Mod-Roof is a type of roofing system made from panels made of recycled cardboard and coconut fibers, bound together with a natural binder. It is designed to be modular, which makes it easy to transport, install, and replace. The colourful roofing system offers protection against various weather conditions, including heat in the summer and heavy rain during the monsoon season. It is significantly less expensive than the alternative: concrete slabs, which cost around USD 7 - USD 10 per square foot, which can be unaffordable for most households. While Mod-Roof costs roughly USD 3.10 per square foot. There are many advantages and disadvantages of installing a mod roof which is listed below:-



### Advantages:

- Made from recycled materials, which may have a lower environmental impact compared to traditional roofing materials
- Modular design makes it easy to transport, install, and replace
- Provides protection against various weather conditions, including extreme heat and heavy monsoon rain
- May be more affordable than some other roofing options, particularly for low-income households or communities
- It is less expensive and can be installed easily

### Disadvantages:

- Durability and performance may be unknown, as the product is relatively new and may not have a track record of long-term use in India
- May require more maintenance or repairs than other roofing materials, and can be a concern in areas with limited access to skilled labour or materials
- May not be suitable for all weathers or types of buildings, depending on the specific characteristics of the region
- May not be as visually appealing as some other roofing options, which could be a concern for homeowners or developers looking for a particular aesthetic

As with any building material, it's important to carefully consider these pros and cons, as well as any other factors that may be relevant to your specific project, when deciding whether Mod-Roof is the right choice.

### 5.3 Cool Auto Rickshaws



Cool Auto rickshaws are vehicles whose roofs have been adapted with paddy husk, which is used in India to keep homes cooler. The husk is secured with bamboo and plastic pipes, which act as a frame. It helps to reduce temperatures inside the covered rickshaws by 2–6°C. Cool auto rickshaws, also known as "cool cabs," are a type of three-wheeled vehicle commonly used for

transportation in India. They are similar to traditional auto rickshaws but have been modified with a roof made of paddy husk, bamboo, and plastic pipes. The paddy husk is a natural insulator that helps to keep the interior of the rickshaw cooler, which can be especially helpful in hot and humid climates. To manufacture a cool auto rickshaw, the roof of a traditional auto rickshaw is first removed and replaced with a frame made of bamboo and plastic pipes. The paddy husk is then secured to the frame using wire or other binding materials. The paddy husk is a natural and renewable resource, making it an environmentally friendly choice for the roofing material. There are several advantages to using cool auto rickshaws. In addition to providing a cooler environment for passengers, they can also help to reduce fuel consumption by reducing the need for cooling.

The use of paddy husk as a roofing material is also a sustainable choice, as it is a renewable resource and can be easily replenished. These can be used for as long they are good, once they wither these have to be changed or removed.

However, there are also some disadvantages to using cool auto rickshaws. The paddy husk roof may not be as durable as other materials and may need to be replaced more frequently. In addition, the use of paddy husk may not be as aesthetically pleasing as other materials, and may not appeal to all users.

## 6. MHT's Reach



MHT being a pioneer organisation in empowering the urban poor does not only work in one sector but makes sure that these areas are kept well under track and get enough knowledge base to bring changes not just in behaviour but also in practices. The organisation's wider network across South Asia helps in making the program more impactful.



**13,770**

Women Trained as Climate Resilient Specialist



**1, 81, 614**

Households Accessing Grid Electricity



**44, 230**

Households Invested in Energy Saving Products

## 7. MHT's take on Renewable Energy

The Mahila Housing Trust (MHT) has implemented a number of strategies as part of the "Women in Climate Change" initiative to empower and support women in taking action on climate change, including the provision of training and capacity-building opportunities on renewable energy of life and reduce their reliance on polluting fossil fuels.



Renewable energy refers to energy sources that are naturally replenished on a human timescale, such as solar, wind, and hydro-power (International Renewable Energy Agency [IRENA], 2021). By building the capacity of women in renewable energy, MHT is helping to ensure that these communities are able to access clean and affordable energy sources, which can help to reduce greenhouse gas emissions and mitigate the impacts of climate change.

MHT has implemented a number of approaches to building the capacity of women in renewable energy, including:

**Providing training on renewable energy technologies:** MHT has organized training programs for women on the installation and maintenance of renewable energy technologies, such as solar panels and wind turbines. These programs aim to provide women with the knowledge and skills necessary to effectively use and manage renewable energy sources in their communities.

**Facilitating the adoption of renewable energy technologies:** MHT has supported the adoption of renewable energy technologies, such as solar home systems and micro-grids, among women in rural and remote communities. By providing access to these technologies, MHT is helping to ensure that women are able to access clean and affordable energy sources, which can improve their quality of life and reduce their reliance on polluting fossil fuels.

### Promoting the inclusion of a gender perspective in renewable energy policies and programs:

MHT has worked with local and national governments to ensure that the specific needs and challenges faced by women in the energy sector are considered in the development and implementation of renewable energy policies and programs. For example, MHT has advocated for the inclusion of targeted support for women entrepreneurs in renewable energy projects.

## 8. Analysis & Conclusion



Overall, these initiatives have had a significant impact on the participation of women in climate action, particularly in the areas of climate-resilient behaviour and renewable energy. By building the capacity of women in these areas, MHT is helping to ensure that these communities are able to adapt to the impacts of climate change and access clean and affordable energy sources, which can help to reduce greenhouse gas emissions and mitigate the impacts of climate change. MHT is currently training other grassroots organizations to replicate similar women-led groups in cities such as Bhubaneswar, Dhaka, and Kathmandu.

Unlike many other urban resilience programs MHT has made a determined effort to ensure that its objects are low-cost, culturally appropriate, and participatory. The programs, organized urban poor to acquire vital planning data in order to design their own solutions, negotiate with other urban stakeholders, and test and manage the implementation of these solutions. MHT's efforts have also sparked behavior change in communities toward making more informed decisions by enabling women to help better their homes and communities. As a result, they now have the knowledge they need to demand better government services.

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