

Blind Spots:

Reaching Marginalized Women in Peri-Urban India for Gender-Inclusive Climate Action

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Cover photo: Participants select image stills as part of a PAR film-making activity (photo by authors)





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FIGURE 1. A residence next to a main waterway in Amballoor (photo by authors)

Executive Summary

Despite Kerala's strong record in social development and female political representation in India, intersecting inequalities persist there and are intensified by peri-urban transitions such as declining agriculture, fragmented infrastructure, and heightened exposure to climate hazards. Women, who shoulder the core responsibilities of household survival and community resilience, are disproportionately affected, yet remain underrepresented in climate adaptation and development policymaking.

This study focuses on Amballoor, a peri-urban area near Kochi in Kerala, to examine how women experience and navigate climate change within a patriarchal social context. Using ethnographic

and creative methods — including workshops, interviews, 3D scanning, and filmmaking — we co-produced knowledge about everyday challenges, from the double burden of work and care to gendered health impacts and the erosion of ecological knowledge amid youth migration.

Our findings reveal that empowerment remains unfinished business. While state-led initiatives foster agency, entrepreneurship, and collective resilience, structural inequalities continue to constrain women's capacity to respond to climate risks. We therefore argue for gender-inclusive climate policy that mainstreams, rather than silos, women's perspectives, and recognizes the value of local knowledge systems in sustaining livelihoods under climate change and wider socioeconomic transformations.

Context: Gender, Climate Change, and Kerala's Peri-Urban Spaces

We set out to learn about marginalized women and how their precarity is affected by climate change challenges. We focus on peri-urban areas in particular because they demand specifically tailored approaches for gender and development, which are further complicated by climate change, and their under-representation across policy and research. Our research focuses on peri-urban Kochi, Kerala, a state along India's southwestern coast. Although small in scale relative to other Indian states, covering 1.18 per cent of India's total land area, Kerala has one of the highest population densities in the country. With a population of 33.4 million according to the 2011 census, it ranks as the third most densely populated state in India. This density results in a unique settlement pattern across much of the state which is characterized by an integrated continuum of rural and urban uses.

GENDER

Kerala is widely recognized for its development successes. The 2022 Human Development Index ranked it second highest of India's states, following Goa.¹ The "Kerala model" of social development, developed through strong local government, welfare provision, wealth redistribution, and political participation, is celebrated as a model for gender development in India, with its impressive indicators in literacy, life expectancy, access to healthcare, low infant mortality rates, decentralization of power to local levels of government, land reform, political

mobilization, and civil society's active involvement in political decision-making.

The Kerala model has increased women's visibility in the social and political spheres, yet they still experience persistent patriarchal oppression and the devaluation of their labour. Many marginalized groups have been identified as the "outliers" of the Kerala model, including Dalits, Adivasis, and fishing communities.² Women with intersecting identities — particularly lower-caste, or socioeconomically vulnerable women — experience a double burden of oppression and exclusion. These women now face increasing inequality, unemployment, and both interpersonal and institutionalized violence and systemic injustice.

Since 1997, the Government of Kerala has directed significant attention and resources to poverty eradication and gender empowerment through its *Kudumbashree* (literally "prosperity of the family") program. Its policy interventions through the program aim to alleviate poverty by organizing women into neighbourhood self-help groups that engage in micro-enterprise, farming, and governance. For example, during the COVID-19 pandemic, *Kudumbashree* groups organized collective farming initiatives and supported household food security.³ The program is extremely popular and far reaching, with a membership of 4.8 million women as of March 2025. A large portion of the program focuses on empowering women through microcredit loans, offering lower interest rates compared to private microfinance institutions, and allowing women to initiate their own entrepreneurial ventures.

However, initiatives such as *Kudumbashree* have been criticized for reinforcing a gendered division of labour and "echo[ing] the socio-cultural narrative of housework being primarily

1 "Subnational HDI (v8.3)," Global Data Lab, 2022. [🔗](#)

2 John Kurien, "The Kerala Model: Its Central Tendency and the Outlier," *Social Scientist* 23, nos. 1–3 (1995): 70–90.

3 Resmi P. Bhaskaran and Rajesh Ravi, "Women and Agriculture in Kerala State: Collective Responses by Kudumbashree During the COVID-19 Pandemic," *Focus on the Global South* policy paper, 2022.

the responsibility of women.”⁴ When women do use the financial or institutional support of *Kudumbashree* to begin their own ventures, they are not relieved of domestic duties, so they often face a double burden of work.



FIGURE 2. Women tend to rice paddies in Amballoor (photo by authors)

CLIMATE CHANGE AND VULNERABILITY

India is highly vulnerable to climate change. The Notre Dame Global Adaptation Initiative global vulnerability ranking positions it as the 59th most vulnerable out of 187 countries.⁵

Kochi, our area of study, is especially vulnerable because of its coastal geography, and it is exposed to flooding

Including women in policy formulation, implementation, and evaluation ensures more inclusive approaches to climate action, resulting in what many call the “mainstreaming” of gender in climate policy.

(coastal and fluvial), coastal erosion, extreme heat, and water scarcity.⁶ Vulnerability to climate change is not only bio-physical exposure to climate impacts — such as extreme weather events or slow-onset events — but is also heavily influenced by the socioeconomic context. To understand vulnerability to climate change we have to consider both of these dimensions and their intersections.

Gender is one such element that influences vulnerability to climate change. Women are often directly affected by climate impacts and also carry additional burdens and responsibilities in redressing/repairing what is damaged or lost. There are thus gendered distinctions in the personal assessment of climate risk, experiences of climate impacts, and adaptive capacities. Including women in policy formulation, implementation, and evaluation ensures more inclusive approaches to climate action, resulting in what many call the “mainstreaming” of gender in climate policy.⁷ The government of India emphasizes the gendered elements of vulnerability in its National Action Plan on Climate Change, but framings of inclusion of women in state policies varies greatly. In an assessment of

28 state actions plans on climate change in India, Singh, Solomon, and Rao identify how Kerala frames “women as ‘virtuous’ and more amenable to adapting, undertaking behavioural change,” reflecting the persisting patriarchal view of women and

embedded gendered dynamics of climate impacts and adaptation.⁸

4 Aswathy S. and Shewli Kumar, “Women Farmers in Kerala, India and the Gendered Division of Labour: The Kudumbashree Experience,” *Intersections: Gender and Sexuality in Asia and the Pacific* 47 (2022).

5 “ND GAIN Country Index 2025,” Notre Dame Global Adaptation Initiative. [↗](#)

6 “Climate Risk and Resilience Assessment,” City Lab Kochi, University of Stuttgart and Fraunhofer, 2021. [↗](#)

7 Chandni Singh, Divya Solomon, and Nitya Rao, “How Does Climate Change Adaptation Policy in India Consider Gender? An Analysis of 28 State Action Plans,” *Climate Policy* 21, no. 7 (2021): 958–75.

8 *Ibid.*, 965



FIGURE 3. Rice paddies with residences in the background (photo by authors)

Peri-urban Geography

Kerala's topographical contrasts have pronounced effects upon its socio-urban configuration. Around 58 per cent of the state lies below 100 metres elevation before rising quickly into the foothills and scarp slopes of the Western Ghats.⁹ This gives rise to a unique tripartite division of land typologies: highlands, midlands, and lowlands. Because of their difficult and remote terrain, the highlands remain largely forested, with most of the built environment concentrated in the coastal and riverine lowlands and the foothills of the midlands.

The dense landscapes of the mid- and lowlands have resulted in a continuous urban sprawl cutting across agricultural areas. This distinct and extensive morphology across the state of Kerala has been termed the "rural urban continuum" or RUC.¹⁰ The term RUC is a rearticulation of other proposed terms to capture the unique land use in Kerala, such as the term *gragaram* which draws together two Malayalam words: *gramam* (rural) and *nagaram* (urban). With the exception of major

urban zones such as Kochi, the development of the mid- and lowlands are a fluid patchwork of agrarian fields, water bodies, and settlements associated with commercial, residential, and industrial purposes. Within this continuum are many Hindu temples, mosques, and churches that represent the state's highly diverse population. The RUC results in a visual phenomenon in which the edges of jurisdictions are difficult to identify because towns and villages dissolve into one another. It also has a diffusion of urban and rural practices, services, and economies. This contributes to a situation in which Kerala residents often maintain employment situations, social networks, and traditions that do not neatly fit into conventional notions of the urban and rural.

The combination of mixed land use, social and economic configurations, and population density, positions Kerala's RUC as a key example of peri-urbanization. *Peri-urban* is a unifying term to encapsulate the dynamics, patterns, ecologies, practices, and economies occurring between the traditional socio-spatial categories of the urban and the rural. Peri-urban areas are generally associated with rapid urbanization as cities expand into previously rural spaces. These areas are frequently "heterogeneous mosaics" at the edges of cities where hybrid attributes from both rural and urban systems can be identified, resulting in unique challenges such as a loss of agricultural land and economies, increased competition for natural resources and land, and inadequate infrastructure for transportation and services.¹¹

Peri-urban areas are a "multifunctional interface" between the city and the countryside, containing functional linkages necessary to support the rigorous demands of urban expansion.¹² These include new housing situations as formerly rural

9 Srikumar Chattopadhyay, *Geography of Kerala* (New Delhi: Concept, 2021).

10 Mohammed Firoz, Haimanti Banerji, and Joy Sen, "A Methodology to Define the Typology of Rural Urban Continuum Settlements in Kerala," *Journal of Regional Development and Planning* 3, no. 1 (2014): 49–60.

11 Adriana Allen, "Environmental Planning and Management of the Peri-urban Interface: Perspectives on an Emerging Field," *Environment and Urbanization* 15, no. 1 (2003): 135–48.

12 Heheub Sahana, Joe Ravetz, Priyank Pravin Patel, Hasem Dadashpoor, and Alexander Follmann, "Where Is the Peri-Urban? A Systematic Review of Peri-Urban Research and Approaches for Its Identification and Demarcation Worldwide," *Remote Sensing* 15, no. 5 (2023): 1–30.

residents are drawn to jobs in the city resulting in speculative bubbles and intensive land development which strains existing ecological areas and agricultural practices. Additionally, the peri-urban is increasingly perceived as a logistics and resource cache,¹³ characterized by “metabolic” landscapes associated with stockpiling materials flowing between urban and rural areas, such as water, construction materials, waste, and goods.¹⁴

Focusing on the peri-urban as a “flow-based” space has been a productive lens by which to analyze many Indian contexts. This is particularly true in contexts where peri-urbanization occurs as

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a concentric form around cities, resulting in defined boundaries between the rural and urban. However, the blurry and dispersed settlement patterns of Kerala’s RUC produce a distinct form of peri-urban space that challenge this function-based role. This resonates with calls to highlight the situated and regional complexities of peri-urban spaces, enhancing the concept as an umbrella term that draws together the multiple and heterogeneous perspectives.¹⁵ The unique form of Kerala’s RUC holds an important opportunity to highlight the ways in which the peri-urban is more than a spatial resource or transitional zone, and instead a distinct space.

Kerala’s peri-urban spaces are susceptible to being misclassified or obscured within planning

and policy frameworks. Latent vulnerabilities that confront the state (for example, heightened risks of coastal flooding and waterlogging, fragmented infrastructures, rising service costs, loss of ecologically sensitive areas, declining agricultural livelihoods, and intensifying competition over land values) are exacerbated within its peri-urban areas through a state decision-making system that classifies areas as either rural or urban. This binary results in neglect and ill-targeted interventions because peri-urban area classified as rural contend with less allocated funding and

personnel than urban areas.¹⁶ For Kerala’s peri-urban residents, particularly those already in precarious circumstances, their vulnerabilities also extend into the creation of a blind spot regarding existing

local strategies of negotiation and adaptation. This results in planning and policy frameworks that neither provide adequate support in times of crisis nor incorporate existing mitigation strategies.

The difficulty of addressing the complexity of Kerala’s peri-urban spaces extends beyond the domain of planning and policy. The spaces of South India that are conceptually positioned as ambiguous, peripheral, or difficult to classify are vital locations for representations, stories, and imaginations that are themselves at risk of disregard.¹⁷ Consequently, Kerala’s peri-urban areas are vulnerable to decision-making challenges, but also to a potential diminishment and loss of the heterogeneous and overlapping narratives of place.

13 Cecilia Tacoli, “Rural-urban Interactions: A Guide to the Literature,” *Environment and Urbanization* 10, no. 1 (1998): 147–66.

14 Neil Brenner and Nikos Katsikis, “Operational Landscapes: Hinterlands of the Capitalocene,” *Architectural Design* 90, no. 1 (2020): 22–31.

15 Alexander Follmann, “Geographies of Peri-urbanization in the Global South,” *Geography Compass* 16, no. 7 (2022) 1–20.

16 Susan Cyriac and Mohammed Firoz C., “Dichotomous Classification and Implications in Spatial Planning: A Case of the Rural-Urban Continuum Settlements of Kerala, India,” *Land Use Policy* no. 144 (2022): 1–19.

17 Jerri Daboo, Anindya Sinha, Sharada Srinivasan, and Cathy Turner, *Performance at the Urban Periphery: Insights from South India* (London: Routledge, 2022).



FIGURE 4. A residence next to a fallow field (photograph by authors)

Amballoor

Our research identified Amballoor as a key site where the challenges and opportunities of gender and climate change intersect within Kerala's peri-urban landscape. Situated roughly 18 kilometres south of the major metropolitan area of Kochi, as an administrative entity, Amballoor lies within the taluk (administrative subdivision) of Kanayannur on the southeastern edge of Ernakulam District. It is easily accessed by road, with a network of bus routes that connect to nearby urban areas. Although there is no dedicated train station, Kanjiramittam Station with trains to Kochi's Ernakulam Junction is 1.5 kilometres away from the town's central intersection.

Despite this geographic and jurisdictional proximity to Kochi, Amballoor exemplifies the RUC of Kerala with a dense collection of residential and commercial structures among

a patchwork of agricultural fields and fluvial backwaters. The housing stock varies from large family homes associated with older landlords as well as recent entrants into the Kerala upper-middle class, and smaller homes associated with labouring classes. The two main roads are lined with commercial businesses such as family restaurants, pharmacies, and bakeries; light industrial yards for steel and timber merchants; and a mix of schools, temples, churches, and mosques. Scattered across Amballoor's built environment are fields containing the crops associated with household farming within the mid- and lowlands of Kerala such as rice, spinach, and coconut. Some fields have been replanted to grow rubber trees, an important cash crop, while others lie fallow. Amballoor contains both the mid- and lowlands: a network of rivers and waterbodies run from the backwaters in the east through coastal flatlands before halting at the town's modest topography of small hills.

Women and women's groups have a strong presence in local governance and decision making. In the mid 1990s, a series of decentralizing reforms in Kerala, including the People's Planning Campaign in 1996, bolstered the presence of women in the leadership levels of the local panchayat (local self-government body). By the 2000s women made up one-third of local political bodies, and by 2010 this number had increased to half.¹⁸ Gender inclusion in local governance resulted in a strong network of social and cultural programs but whether it has succeeded in bringing the women of Amballoor from different social classes into contact with each other remains unclear. Alongside these developments, NGOs such as the Sustera Foundation work with women from both marginalized and established backgrounds to promote climate resilience and gender equality. Together, these developments and activities suggest that Amballoor is a town where women are firmly embedded in local decision making, despite the ongoing exclusion of certain marginalized groups.

Their intersecting social inequalities are intensified by peri-urban transitions such as the decline of agriculture, fragmented infrastructure, and exposure to hazards including heat waves, flooding, and water scarcity. These challenges not only expose the governance blind spots of peri-urban regions but also highlight the disproportionate burdens carried by women, who remain central to both household survival and community resilience.

These issues made us frame our research through the UN Sustainable Development Goals (SDGs). By advancing SDG 5 (Gender Equality), the project

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seeks to amplify women's voices and document their exclusion from climate adaptation; through SDG 10 (Reduced Inequalities), it foregrounds their lived experiences that are often overlooked in development planning; and by addressing SDG 13 (Climate Action), it generates evidence to inform inclusive and gender-sensitive climate resilience

policies. Our project positions gender-inclusive climate action in peri-urban Kerala as a matter of social justice and as essential to achieving sustainable development more broadly.



FIGURE 5. Signage to facilities stand in the centre of Amballoor's main roundabout (photograph by authors)

Hard to Reach

Women are considered hard to reach because of the deeply patriarchal system that operates in India. While significant progress has been made in recent decades, especially in Kerala, there is still an entrenched gender divide across society and policymaking. Furthermore, not all women experience climate change or other social or

¹⁸ This information was reported by Interviewee #03, pseudonym Alna.

economic issues in the same way. Women with intersecting marginalized identities, based on caste, class, religion, geographic location, and economic precarity, experience additional forms of marginalization which makes them the hardest to reach.

Our project illuminates how climate change influences vulnerability and hard-to-reach groups which are also constantly shifting and evolving. Thus, even as climate change exacerbates vulnerability, we need to expand its typical identifiers. For example, people with other forms of socioeconomic privilege (race, gender, caste, class, etc.) can still be vulnerable if they live in an area that is climate sensitive.¹⁹ Vulnerability is inherently fluid; it is not a static condition but flexible and context dependent.²⁰ This is highly pertinent for our fieldwork, which took place toward the end of the monsoon season, when some people are even more difficult to reach than usual.

At the time of our research, many living in the low-lying areas that are worst affected by flooding had temporarily relocated to safer areas, often staying with relatives for weeks, or even months. We were therefore unable to invite them to participate in our research. This highlights the challenges associated with researching mobile populations. Although we were unable to speak to the hardest-to-reach groups, the women we did interview still experienced hardships caused by climate change.

People can be hard to reach for a variety of reasons, and are not represented by one homogenous community, raising questions of hard to reach for whom, and for what reason? Our research timeframe, with less than three weeks in

the field, was a significant constraint on our ability to build trust with the community and expand our participant pool to more marginalized women. Therefore our access to and interaction with

our interviewees relied on the access provided to us by local stakeholders, including NGOs and the local government, and the groups we were able to speak to were dependent on

which groups these stakeholders regularly work with. Often, this did not include the hardest-to-reach women, and so ultimately, we were not able to reach the hardest to reach in our research.

Our Research Approach

METHODOLOGICAL UNDERPINNINGS

Our fieldwork used an ethnographic approach, based on semi-structured interviews, workshops, and focus groups with a creative dimension, based on photography, 3D scanning (involving the creation of a 3D model through multiple photos of an object taken from different angles), and film making. The creative methodologies aimed to foster collaborative knowledge and skill sharing, while including the participants within the research dissemination outputs. Before entering the field, we obtained a high-risk ethics clearance from UCL where we saw ethical considerations as not only a matter of procedure, but as playing a central role in the research process. Reflexivity was particularly important, with all members of the team being mindful of the methods and research

19 Sneha Biswas and Sunil Nautiyal, "A Review of Socio-economic Vulnerability: The Emergence of Its Theoretical Concepts, Models and Methodologies," *Natural Hazards Research* 3, no. 3 (2023): 563–71; Kimberley Thomas, et al., "Explaining Differential Vulnerability to Climate Change: A Social Science Review," *WIREs Climate Change* 10, no. 2 (2019): e565.

20 Greg Bankoff, Georg Frerks, and Dorothea Hilhorst, (eds.), *Mapping Vulnerability: Disasters, Development, and People* (London Sterling, VA: Earthscan, 2004).



FIGURE 6. Participants engaged in mapping sessions (photo by authors)

approach to ensure it was appropriate both to achieve the research aims and be supportive for research participants.²¹ Working with our local academic partner, NIT Calicut, was key for our focus on vulnerabilities and also to think more critically about locally embedded co-production of knowledge.

Across both the ethnographic and creative approaches we decided to not use the term *climate change* to leave open the possibility of other names and to avoid any associations that were unknown to us. We therefore referred to “changes in the weather.” However, awareness of climate change in Amballoor was very high — as a result of both experience of climate impacts and strong local policy — and many individuals raised it unprompted.

Our participatory action research (PAR) approach emphasized collaboration and hands-on exchange between researchers and participants. Creative

PAR activities were embedded alongside ethnographic approaches, particularly workshops and focus groups. Prior discussion offered participants a thematic grounding, ensuring that creative tasks were less disorienting when new skills, methods, or technologies were introduced.

First, it enabled a more fluid movement from activities of talking and sharing into a space of making and doing. Based on previous researcher experience as well as existing literature regarding creative approaches, we determined that

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discussion would provide participants a thematic grounding ahead of creative activities.²² Second, the approach addressed time constraints. By

combining discussion and creative activity within single sessions, participants could engage in multiple forms of sharing during one day. This reduced the expectation of consistent attendance across the entire research period, while still allowing for collaborative outputs such as film making. However, this also meant that larger-scale

21 Louise Folkes, “Moving Beyond ‘Shopping List’ Positionality: Using Kitchen Table Reflexivity and In/visible Tools to Develop Reflexive Qualitative Research,” *Qualitative Research*, 23, no. 5 (2023): 1301–18.

22 Krista Harper and Aline Gubrium, *Participatory Visual and Digital Methods* (New York: Routledge, 2016).

PAR projects requiring long-term commitment were less feasible.

FIELDWORK AND DATA COLLECTION

Fieldwork was conducted between 17 July and 4 August 2025, comprised of two workshops in Amballoor, a stakeholder workshop with organizations working in the metropolitan region, and five semi-structured interviews. The first workshop was a full-day session attended by approximately 20 women. This three-part session aimed at understanding the participants' relationship to Amballoor: lived experiences of how weather or climate affects them, a group mapping exercise of the local area upon which key areas relating to personal experiences could now be charted, and a 3D-scanning workshop of objects and spaces using a smartphone application.

The second workshop, held at the end of our time in Amballoor, involved creatively engaging women in a filmmaking process to incorporate their views and experiences within a short participant-engaged film. Given limited time, we focused on production methods that enable participants to co-generate a "light-weight" film through writing and decision making, rather than an intensive process of co-production. This decision was supported by writings on PAR frameworks that recommend facilitating participation as a spectrum, in which participants may contribute to decisions according to their schedules and abilities, rather than an "in-or-out" binary, demanding full participation across the entire filmmaking process or nothing at all.²³

Following a focus group session, participants were asked to write a short paragraph about their hopes for the future women of Amballoor (see Figure 6). They were then invited to select two printed film-stills that resonated with their text from a table holding 80 images of footage from within Amballoor. Each film-still connects to a 30-second digital video file we recorded over

the research period. These texts will be used to produce voiceovers by Malayalam-speaking actors and consequently placed over the footage that participants selected.

The five semi-structured interviews were conducted with women in various roles and occupations to learn in depth about their perceptions and experiences of climate change in the area, land-use and livelihoods, gender dynamics, and the relationship between Amballoor and the city. All interviews were conducted in Malayalam, facilitated by our mentors Dr. Arabindoo and Dr. Rajendran, or colleagues from our local NGO partner Sustera. All interviews were recorded (with consent from participants) and later transcribed and translated to English for us to analyze in detail.

While the semi-structured interviews and participant workshops focused on lived experiences, the stakeholder workshop allowed us to understand the larger-scale and longer-term work being undertaken by the state, NGOs, private companies, and other actors around the themes of gender and climate change.

To complement the more formal activities of interviews and workshops, we collected observational data through handwritten notes, photographs, and short film clips which then became the visual source data for the film-making exercise in the second workshop. This diverse set of data collection methods reflects the interdisciplinary practices of the research team.

DATA ANALYSIS

We analyzed the interview transcripts and field notes first individually, then as a team, reflecting on the data collected and our personal experiences during our three weeks in Kochi. This analysis was primarily thematic, aggregating major issues that emerged from both existing literature and the focus group sessions. It was supported by

23 Claudia Mitchell, *Doing Visual Research* (Los Angeles: Sage, 2011).

group and individual review of the photographs and videos recorded across the research period. See Table 1 for a general description of the participants.

Table 1. Interview participants (all names are pseudonyms)

Interview	Occupation	Pseudonym
1	Retired teacher	Geetha
2	Retired nurse worker; also used to own cows and goats to sell milk	Deepa
3	Local government	Alna
4	Housewife [mother]	Fathima
	Recent graduate [daughter]	Anitha
5	Sanitation worker and day worker	Beena

Research Findings

OPTIMISM AND HOPE

In Amballoor, conversations often began on a positive note. Many participants brushed aside questions about hardship, with one participant, Deepa, insisting that “there are not many people with problems here.” Even in a climate-vulnerable, peri-urban setting, women often described their lives as largely free of major difficulties or challenges. However, as the discussions deepened, they began to identify common struggles that were interwoven with the impacts of climate change. For instance, when asked about heat, Deepa described the increasing difficulty of dealing with menopause in the rising temperatures, and infrastructural issues that

impact daily life: “so many people do face issues due to a lack of water supply. The pipe water is not always available.” Another interviewee, Fathima, understood gender empowerment as the absence of violence, claiming “I don’t think it’s a big problem here. Amballoor is safe. There are no criminal activities here.” Yet Fathima’s husband had prohibited her from working, leading her to turn to goat farming. We observed this pattern across multiple interviews. Women were initially hesitant to identify any major issues in Amballoor, or to link them to structural concerns related to gender or climate. When participants did identify issues, there was a general belief that they were resolvable.

This sense of optimism contrasted with the prevailing public discourse around gender and climate issues in scholarship, which often emphasize vulnerability and hardship. We were struck by how the women, despite living within patriarchal structures and facing climate-related risks, expressed confidence in their capacity to adapt and improve their circumstances. Part of this resilience may stem from Amballoor’s high level of social development and the presence of strong grassroots institutions. Organizations such as the Gender Resource Centre have created a space for women to discuss their problems and build solidarity through creative activities such as singing and magazine writing.

Similarly, the *Kudumbashree* initiative has provided critical support for women in building capacity and resilience. Participants described its support in launching entrepreneurial ventures through loans and guidance, as well as its role in providing food and essential household supplies during climate crises such as the 2018 floods. Its initiatives also extend to less logistical but equally important forms of empowerment, such as organizing trips outside of the neighbourhood, allowing women to broaden their horizons and build confidence. The presence of strong and successful local self-help groups and development initiatives that work on the grassroots level have contributed to the belief that ordinary citizens can create change.

All this said, participants' reluctance to acknowledge problems in Amballoor raises important questions of whether this tendency reflects genuine satisfaction or if the optimism masks underlying difficulties. Women of lower socioeconomic backgrounds were underrepresented in our conversations, so it remains a question whether they also carry this sense of optimism.

WOMEN CONTINUE TO CARRY A DOUBLE BURDEN

Women in Amballoor face a double burden of balancing domestic and professional responsibilities. While the Kerala model of social development and the work of programs such as *Kudumbashree* have opened the doors for women to enter the workforce and make a living for themselves, gendered cultural expectations remain in place and women are largely expected to do the cooking, cleaning, and childcare. Some women balance these multiple responsibilities by creating livelihoods within their domestic spheres, supported by microfinancing through *Kudumbashree*. Fathima, who has lived in Amballoor for 30 years, used loans to start a coconut oil manufacturing business and a farming business from her own house. However, women's domestic burdens often restrict the sphere in which work can take place: when asked if *Kudumbashree* had allowed her to go to work, Fathima clarified "not exactly 'going' to work, but being able to earn money." Certainly, the ability to earn her own money and reduce her reliance on her husband empowered Fathima, who also highlighted that when she was younger, women "could either get married or they could do the household chores. That was the only option they had."

While the women of Amballoor clearly have greater access to education and work than they did historically, they remained responsible for domestic chores, often leading them to choose work that allows them to maintain their households. Without a redistribution of household work or men taking greater responsibility, the

domestic burden has not decreased, often leading to "time poverty" — insufficient time to meet all their obligations.

This double burden is amplified when women are impacted by climate change. Alna, a government worker, told us, "If there is no water, as of now, the present role of women inside a house is to cook, clean the house, do the laundry, take care of the children and elders, etc. All of these are a woman's responsibility, right. So, if there is no water, they'll be the one who suffers the most." Women are responsible for maintaining the household, and this burden is particularly heavy in times of crisis. Speaking about the 2018 Kerala floods, Alna highlighted how "the restoration of the house, in making it fit for habitation again, is an ultimate responsibility that falls on the woman alone." The experience of finding refuge in a shelter during flooding is also deeply gendered, with a lack of adequate toilet facilities or menstrual products deterring women from taking shelter, at risk to their own safety and health. During climate crises, patriarchal expectations of women to be responsible for household maintenance are exacerbated. Women in Amballoor highlighted the fact that they do not experience climate vulnerability in the same way as men.

GENDERED VIEW OF CLIMATE HAZARDS AND IMPACTS

"The rain is not consistent nowadays. This year, it rained a lot, and it was also very hot in the summer. So, both rain and heat have increased."

— Beena

Residents complained that rainfall has increased in recent years, often preventing children from attending school. It has also become increasingly difficult to predict either the timing or intensity of rains. Some recalled that heavy showers once arrived reliably in June with the onset of the southwest monsoon. Now, however, such rains are less frequent, and heavy downpours often extend

well beyond August. In a similar vein, residents observed that temperatures have risen noticeably. Even December and January, once considered cooler months, are now uncomfortably warm. By March and April, the heat becomes so intense that many find it difficult to step outside their homes. One of our interviewees recalled, “I was allergic to dust. I had rashes on my skin [aggravated by the heat]. No matter how much water I drank, I was always sweating.”

The impacts of climate change were more pronounced for women, particularly in shaping their menstrual experiences. Despite the sensitive topic, an elderly resident spoke openly about it, recalling the social practices of purity and pollution

surrounding menstruation during her childhood.

She also noted how rising heat causes particular

discomfort for women undergoing menopause. Other respondents added that menstrual problems become especially visible during the monsoon season, when humidity leads to itching and related discomfort. Such accounts resonate with wider research linking climate variability to menstrual health challenges in coastal areas, where heat, humidity, and salinity are shown to aggravate discomfort and increase vulnerabilities for women.²⁴

These gendered health experiences cannot be separated from the broader ecological transformations that have altered the social and economic rhythms of daily life. In the past, people in Amballoor either purchased land or took it on lease to engage in rice paddy cultivation. Today, however, agriculture is practised on only a small scale, with some families using the yield solely for household consumption rather than for revenue.

Elsewhere, former paddy fields have been left uncultivated or converted into coconut and other plantations. As a result, during the rains, these fields quickly fill with water, which drains into nearby streams that already carry wastewater. Before long, the fields become overgrown with weeds and tall grasses, attracting reptiles and snakes that pose a danger to local residents who told us such problems began only after paddy cultivation declined.

Residents frequently referenced the severe floods that devastated Kerala in 2018. Triggered by unusually heavy rainfall during the monsoon, the floods led to high casualties across the state.

Amballoor, however, was unevenly affected: while

some families had to relocate to safer areas of the panchayat, water levels in other parts remained manageable thanks to the

wetlands. Even so, people experienced significant disruptions, especially in accessing clean drinking water after pipelines broke. Women in particular were left managing fragmented households, preparing for short-term displacements, and enduring inadequate shelter conditions in relief camps — all of which added to their emotional and psychological burden. This pattern echoes findings from Bangladesh, where women’s mental health was especially vulnerable to climate change impacts because of women’s caregiving responsibilities and associated social insecurities.²⁵

Climate change concerns in Amballoor therefore cannot be understood in isolation from wider socioeconomic problems. In some cases, shifting rainfall patterns and rising temperatures exacerbate existing social inequalities, while in others, social precarity overshadows climatic pressures altogether. As one woman observed,

Even December and January, once considered cooler months, are now uncomfortably warm. By March and April, the heat becomes so intense that many find it difficult to step outside their homes.

24 Arundati Muralidharan, Marije Broekhuijsen, Lady Lisondra, Aeka Guru, Jacquelyn Haver, and Sidra Irfan, “The Ripple Effect: Impacts of Climate Change on Menstrual Health and Paths to Resilience,” *Frontiers in Global Women’s Health* 6, no. 1569046 (2025): 1–7.

25 Jean-Marc Goudetl, Faria Binte Arif, Hasan Owais, Helal Uddin Ahmed, and Valery Riddel, “Climate Change and Women’s Mental Health in Two Vulnerable Communities of Bangladesh: An Ethnographic Study,” *PLOS Global Public Health* 4, no. 6 (2024): 1–24.

“Yes, people have shifted from this place. But no one went because of heavy monsoon or flooding. Some of them left because they were drowning in debt. That’s all.”

At the same time, Alna, one of our key informants, noted that awareness of climate change has grown in recent years. In the past, many assumed that financial hardship and climate-related risks were problems that affected only the poor. This perception began to shift after the 2018 floods and, more recently, with prolonged heat waves. She explained that rising temperatures not only create health problems but also increase household expenses for everyone. Increasingly, people are recognizing that material wealth alone cannot protect them from these risks. As she put it: “Though we don’t face the immediate effects, all of us are eventually moving toward that stark reality, are we not?”



FIGURE 7. A plantation of banana trees (photo by authors)

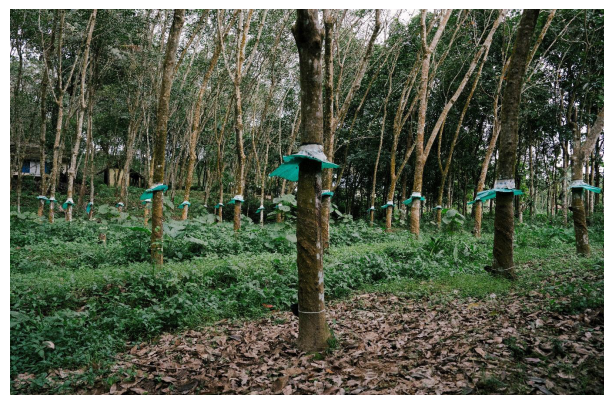


FIGURE 8. A plantation of rubber trees being tapped (photo by authors)

LAND-USE CHANGE, ECOLOGICAL KNOWLEDGE, AND YOUTH MIGRATION

“We would do it because we were involved in it. But now, everything has changed. There is no farming on these lands because our ways have changed.”

— Geetha

Agriculture was once central to everyday life in Amballoor, with even children actively involved in farming activities. Interviewees often reminisced about this past with nostalgia, sometimes breaking into a few verses of harvest songs during interviews. Until about 10 or 15 years ago, the agricultural calendar was carefully structured around three cultivation cycles: two rounds of rice paddies grown during the monsoons, followed by a summer crop of lentils, sesame, or cereals. Preparations for Edavapathi, the southwest monsoon beginning in early June, marked a key seasonal ritual: people cleared fields and canals, cleaned coconut tree bases, and cut and burned leaves from surrounding trees to ready them for cultivation.

This rhythm, however, has been disrupted by recent climatic changes. Rains now often arrive unexpectedly as early as April, long before preparations are complete, making water management impossible. Summer crops get washed away in the process. Climate unpredictability has led to repeated financial losses and made cultivation less viable, discouraging younger generations from taking up farming.

In the past, ponds in the area were unlined, allowing rainwater to percolate and recharge groundwater. Today, land fragmentation has resulted in 10 to 15 houses being built on what was once a single agricultural plot, each with its own well. Cement walls now surround these wells, preventing rainwater from seeping into the soil and recharging aquifers. These infrastructural

changes, combined with the declining number of active farmers and broader processes of development and social change, have further undermined cultivation. Geetha, a former teacher, reflected: “None of us is interested in paddy cultivation because we cannot manage it on our own. In the past, there were many workers available. But after literacy, everyone is educated and wants to do other [kinds of] work.”

The hardship of manual labour makes cultivation a less attractive and viable option. Although there are many migrant workers in the region, people explained that they are largely absorbed into the construction sector rather than agriculture. Paddy farming requires stepping into waterlogged fields, and many are reluctant to do so for fear of contracting contagious waterborne diseases. This reluctance, coupled with the broader shifts in employment, has sharply diminished the available labour pool for agriculture. Women have increasingly been drawn into this gap, though their participation has become more fragmented and precarious with the decline of agriculture as a primary livelihood.

In this context, women in Amballoor often engage in farming mainly to support their husbands’ livelihoods, although mechanization has reduced their involvement in harvesting to tasks such as planting seedlings, reaping, and weeding in the paddy farms. Beena, for instance, combined employment as a sanitation worker with farming activities to sustain her family because her husband was into “rubber tapping,” the process of harvesting natural latex from the bark of rubber trees — a job that had become increasingly precarious as a result of erratic, heavy, and unpredictable rains as well as global trade impacts.

The shift from paddy (food crop) to rubber (cash crop) in the region was initially framed as a strategy of profitability and labour efficiency, while also responding to changing water availability under climate change. One woman explained that in earlier years, families often

grew coconut and arecanut (also known as betel nut) trees in their backyards and sold coconut saplings to *Krishibhavan*, the local agricultural office. However, as these crops became financially unprofitable, many shifted to rubber plantations. Because rubber requires relatively little maintenance, paddy fields were also converted to rubber cultivation despite widespread awareness that rubber’s deep roots could harm surrounding crops. As one woman explained:

We want an income to live right. If we depend solely on food crops, we no longer generate any revenue. Even the children of our paddy field labourers are sending their kids to other labour, such as construction, or to towns and cities to seek education and employment. The younger generation doesn’t find this an attractive job. They prefer white-collar jobs, which offer them more dignity.

Due to patriarchal norms, women in Amballoor were often discouraged from seeking employment outside the household. Yet some carved out opportunities by engaging in agro-based businesses from home. Fathima, a housewife, for example, had established a small coconut oil manufacturing unit with the support of loans from the *Kudumbashree* initiative. She also procured seeds from the local *Krishibhavan* to begin vegetable farming, though these ventures became increasingly unviable with the onset of erratic rains. About a decade ago, Fathima turned to goat farming, drawing inspiration from her mother-in-law. Similarly restricted from working outside the home, her mother-in-law had once started a small goat-rearing venture, passing on her skills and knowledge to Fathima. This intergenerational learning not only enabled Fathima to adapt to shifting livelihoods but also demonstrates how women transmit practical strategies of resilience within households. Today, Fathima maintains the goats, grazing them in nearby grasslands, purchasing feed from local shops, and selling them to meat vendors in Amballoor. She also confided that her father remains unaware of this business. When he



FIGURE 9. Signs in Amballoor advertising for study abroad and visa services (photo by authors)

enquires about the goats, she conceals the truth, telling him they are not for sale.

With younger generations migrating or seeking alternative livelihoods, women's ecological knowledge systems

— rooted in attunement to the rhythms of water, soil, season, and other life forms — are becoming increasingly invisible. One woman farmer we

interviewed spoke at length about the two main types of paddy fields in Amballoor. The first, *Kari Padam*, with its black clay-like soil, had become unfit for cultivation because of the encroachment of weeds. The second, *Kara Padam*, is increasingly prone to flooding during the rainy season, followed by saltwater intrusion from the Arabian

With younger generations migrating or seeking alternative livelihoods, women's ecological knowledge systems — rooted in attunement to the rhythms of water, soil, season, and other life forms — are becoming increasingly invisible.

Sea in December or January. If this problem were resolved, she explained, *Kara Padam* could once again be made suitable for both *Mundakan* and *Viruppu* rice cultivation: in the former, seeds are sown, while in the latter, seedlings are directly transplanted.

Saltwater intrusion is not a problem for areas like Vypin, an island off the coast of Kochi. Farmers there have long cultivated a saline-resistant rice

variety called *Pokkali*, which has more recently been promoted in Kerala as an Indigenous form of “climate-smart agriculture.” This practice involves a traditional rotation between rice and fish (especially prawn) cultivation, guided by tidal inflows and seasonal changes in salinity. Amballoor, on the other hand, as one interviewee

emphasized, is not an island. “Fish farming is something we can try, but it is not easy. There should be a massive investment for fish farming,” she explained.

However, interest in any farming-based livelihoods has diminished by all standards in Amballoor, as more young people sit for the International English Language Testing System (IELTS) exams and migrate abroad for education and work. We were told that the youth are more inclined to undertake specialized courses in places like the UK than to remain in Amballoor, or for that matter even in Kerala, to pursue higher education. Despite this, elderly women continue to pass down ecological knowledge to younger generations in their own way, especially during festivals such as *Onam* (the annual harvest festival) and *Thiruvathira*. Celebrated in January, *Thiruvathira* brings women and children together for eight days at a local temple to perform traditional songs and dances. One such form is *Chinkupattu* in which agricultural themes feature prominently.

Researchers’ Key Challenges

There were many challenges encountered along the journey of this research, many of which are inherent to ethnographic fieldwork.

Time. Our project’s short timeframe exacerbated other challenges and constrained the potential of the research, especially the ability to conduct participatory and creative approaches. We would have liked to have repeat sessions with participants (dependent on their availability and willingness) to enable more participation in the film production, but this was not possible.

Access and trust. Building trust with the local partners and government was critical for this research because access to the community was mediated by these actors. Occasional

miscommunication between our team and the local partners, as well as among the partners themselves, meant that sometimes our research aims and plans were unclear and couldn’t be carried out in full. The local government in particular was (understandably) concerned about the image of Amballoor we would portray because they are a highly successful panchayat and do not want to be primarily presented as facing challenges. While we did work on building these relationships before arriving in the field, with hindsight we believe we could have done more to foster a clearer understanding of the project and to build stronger trust among partners, sharing more information and plans, and working with the partners to create a more detailed fieldwork plan.

Translation. While faculty mentors were able to converse with participants, none of the researchers could speak Malayalam, which meant a reliance on untrained translators to facilitate some of the interviews and workshops. In addition to the practical challenges this presents, it made for challenges regarding the suitability of questions and phrasing, and how to ask the right question for what we were trying to explore. For example, as a team we reflected on how to ask people about their relationship to nature and the land around them; it was visually evident that people were strongly connected to their surroundings, so much so that this distinction of people/nature did not seem applicable in the way it is in Global North countries.



FIGURE 10. Participants engaged within a co-mapping activity (photo by authors)

Lessons Learned and Plans for the Future

The empowerment of women is an unfinished work in progress. Although there has been significant improvement, there are still systemic gender divisions embedded in Keralan society that prevent empowerment at a meaningful scale. Critically, while most women now work, this does not mean their domestic burden has been reduced. Instead, women now carry even more responsibility than they did before. Moreover, women are often encouraged to pursue income activities that keep them at home, such as small businesses, so while they might have financial empowerment, they are still tied to the home. Political representation of women and inclusion in decision making is likewise improving but still requires more work in how this translated into everyday modes of empowerment. Often, gender issues are siloed as a separate item, whereas true representation would involve mainstreaming gender into all areas of policy.

While this case study is context specific, other places can learn from Amballoor. Regarding peri-urbanization it has a distinct and autonomous sense of identity that is independent from its transitional status between urban and rural systems. Many challenges that emerge there can be understood as typical to uneven transformation associated with rural retreat and urban encroachment. However, when discussing how these challenges are confronted and negotiated with participants and interviewees, the relationship to Kochi felt distant. The social relations, programs, and centres that have been constructed in Amballoor to address these challenges function through their proximity and situatedness, not as resources or caches for nearby urban development. Amballoor revealed through its complexity, frictions, as well as its generous capacity for storytelling that it is a situated and living place, not a merely a transitional point in accounts of Indian urban transformations.

To gain a better contextual understanding of Amballoor, we also visited the other peri-urban areas of Vypin, an island, and Perumbavoor, a northern, inland region. In exploring other peri-urban contexts, we saw stark differences across the region, an inherent quality of peri-urban spaces. Industries, bio-physical exposure to climate hazards, and population demographics varied greatly across these three peri-urban contexts, all of which are intrinsically tied to vulnerability to climate change. While these differences will undoubtedly result in different situated understandings and experiences of climate change, it is important to explore the potential for transferability wherever possible, so that regions can learn from one another and reduce demand on the capacity of local government bodies.

Our research was designed to have tangible benefits for the people of Amballoor. First, our local partner, Sustera, has ongoing projects in the area, and were grateful to learn skills for conducting workshops and focus groups, especially incorporating creative elements, such as 3D scanning. Second, the local government is in the process of developing a disaster-risk-reduction strategy, and we hope that a summary of our findings will strengthen the gender-climate lens in this policy. Finally, this research contributes to a growing body of literature on the gendered experience of climate change. This literature forms an important baseline and can be used to inform stronger policymaking across levels of governance, from the local to global.



FIGURE 11. A roadway in Amballoor (photo by authors)

Research Team



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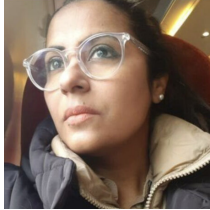


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Sustera. Our mission is to create a robust lot of passionate individuals who can drive change and lead climate action for Kerala. Our verticals of engagement are multidimensional in nature ranging from research, policy, and grassroots mobilization to entrepreneurship development and climate education. In the last 5 years, we have extensively worked towards handholding stakeholders in co-creating Climate Resilient & Climate Responsible Communities and scaling up climate solutions.



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