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The gendered trap: climate policy, inequality, and adaptation lock-ins in Global South Cities

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Abstract

The differential vulnerability to climate change across genders is already well acknowledged, highlighting the differential experiences of women at the intersection of gender, power dynamics, social structure and norms. Despite increased attention to women in climate change policies and actions, women continue to remain one of the most vulnerable groups and in many instances their vulnerability is increasing. The paper argues that this is (partially) due to the inadequate conceptualisation of women in relevant policies, and the problematic implementation of climate change policies and programmes. Using Dhaka as the case study, it specifically focuses on women living in low-income-urban-settlements and unpacks the nuanced and complex processes that form systemic gendered barriers within climate adaptation. Systems analyses is adopted not only to develop a holistic understanding of how those barriers are produced but also to explore their implications. Utilising data collected through surveys, focus groups and interviews, and analysed via a grounded theory-systems analysis approach, the paper demonstrates how inadequate conceptualisation of ‘women’ and problematic implementation of climate change policies can often lead to gender(ed) maladaptation and further reinforce gendered vulnerability. Furthermore, it demonstrates how the conventional macro-level adaptation practices are creating ‘adaptation and development lock-ins’ trapping the women. This paper calls for a paradigm-shift in conceptualising women in adaptation policy discourses, recognising the discursive and pluralistic processes that create systemic adaptation barriers. By unpacking the underlying processes that generate these systemic barriers, policy discourse can move towards a more holistic understanding of vulnerability and adaptation, thereby enabling the promotion of truly meaningful inclusion.

1. Introduction

Climate change is arguably one of the greatest challenges that humanity has ever faced. Global temperature rise has shown an upward trend since 1980, with 2024 being the warmest year on record (NASA 2024). Such changes have aggravated a wide range of climatic disasters across the world-including the most recent California wildfires to cyclone Freddy, Amphan and Mocha, droughts in the eastern horn of Africa to floods in South Asia-with devastating impacts on societies. IPCC (2021) projects the global surface temperature will continue to rise at least until the mid-century causing significant increases in both intensity and frequency of weather extremes, precipitation, droughts, tropical cyclones, glacier melt and sea level rise. While these risks are global, their impacts are disproportionately concentrated in the Global South¹ (which houses the majority of the world’s population), where poor development contexts and economic dependence on climate-sensitive sectors heighten vulnerability (Mishra *et al* 2023). Studies

¹ In this paper, ‘Global South’ is used as a blanket term to refer to the developing and least developed countries, rather than the geographical representations of the countries located in the southern hemispheres.

project that the events triggered by climate change will affect 143 million people across the Global South by 2050 (Almulhim *et al* 2024).

Within the climate scholarship it is now well acknowledged that even with similar exposure to climatic risks, the vulnerability is not equally distributed across these societies (Thomas *et al* 2018). Women are one of the most vulnerable groups to climate change, where vulnerability predominantly derives from societal norms and associated practices, leading to differentiated adaptive capacity to respond to climate change in comparison to their male counterparts and also through the complex interplay of societal power relations in response to climate risks (Sultana 2013). Moreover, the data (e.g. mortality rate during climate disaster², climate migration³, poverty⁴, gender-based-violence during and after disaster⁵), particularly from the Global South, indicates a *feminisation* of climate vulnerability. Studies also point out the varying nature of climate vulnerability across genders, highlighting the differential experiences of women at the intersection of gender, power dynamics, social structure and norms Djoudi *et al* 2016, Rao *et al* 2019, Andrijevic, 2020. However, despite decades of targeted climate adaptation policies, women remain among the most vulnerable groups globally (UNEP 2021). This paper argues that these policy failures are rooted in a specific policy discourse that inadequately conceptualises women.

Dominant discourse on climate change and development have demonstrated reductionist images, where women are frequently framed by a 'victim' narrative (de Wit 2021). Such conceptualisation presents women as a static, vulnerable category overlooking the structural power dynamics that produce such vulnerability (Resurrección *et al* 2019). This victim framing is problematic for two reasons: it ignores women's existing agency despite growing evidence of women's potential role in climate change adaptation [for example, their local and practical knowledge on sustainable resource management and sustainable practices at the household and community level, multiple and simultaneous responsibilities as well as roles in productive areas (Cohen *et al* 2016, Resurrección *et al* 2019, Andrijevic *et al* 2020)], and, it obscures the intersectional power relations (e.g. gender, class, and social norms) that actually dictate adaptive capacity Djoudi *et al* 2016, Rao *et al* 2019. This paper intervenes in climate adaptation discourses by utilising feminist political ecology to investigate the interaction between the narrow policy portrayals and the constituting structural mechanisms that create systemic adaptation barriers and perpetuate the feminisation of climate vulnerability.

The impact of this conceptual tension is most acute in the rapidly urbanising Global South, where 90% of global urban growth is expected by 2050 (UN DESA 2018). This urbanisation is defined by the proliferation of low-income-settlements (LISs)⁶ with over one billion people currently residing in such settlements globally, a figure expected to triple within the next three decades (UN Stats 2023). In these spaces, chronic developmental deficits and acute climatic hazards converge, creating a unique landscape of risk (Haque *et al* 2020). Women within these LISs are situated at a critical intersection of economic and social inequality, which compounds their exposure to climate-related hazards. Consequently, this study specifically focuses on women living in Global South LISs to interrogate the systemic root causes of their vulnerability.

Using the case study of Dhaka, this paper demonstrates how current adaptation practices, derived from inadequate conceptualisations of women in adaptation policies, is not only leading to maladaptation and further reinforcing gender(ed) vulnerability and inequality, but also creating 'adaptation and development lock-ins' and trapping urban women. These systemic traps effectively entrench the marginalisation of urban women, curtailing their transformative potential within the climate-stressed landscape of the Global South. Taking the problematic conceptualisation of women in Bangladesh's adaptation policy discourses as an entry point, the paper unpacks the nuanced and complex processes in Dhaka's LISs that form systemic adaptation barriers and indicates the way forward for truly transformational climate pathways.

² According to UNDP (2022) women's mortality to climate disasters are 14 times higher than men.

³ 80% of the population displaced by climate change are women and girls (UNICEF 2022).

⁴ UNWomen (2023) projects 2.5 million more women in comparison to men will be pushed into poverty due to climate change by 2030.

⁵ 718 cases of gender-based violence against women and girls were documented between January and June 2010 after the Haiti earthquake (Plan International 2013). After the 2004 tsunami, out of the 3250 surveyed affected population in India, roughly nine out of ten women experienced physical violence and out of 3833 surveyed affected population in Sri Lanka, six out of ten had experienced physical violence within two years post disaster (ActionAid 2007).

⁶ In this paper, LIS and slums are used interchangeably to refer to the living conditions in such settlements. I have adopted the UN Habitat (2006, p.1) definition of slums (and referred the same as LIS) addressing the precarity of the settlements as defined by lacking one or more of the following: 'a. durable housing of a permanent nature that protects against extreme climate conditions. b. Sufficient living space which means not more than three people sharing the same room. c. Easy access to safe water in sufficient amounts at an affordable price. d. Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people. E. security of tenure that prevents forced evictions the living condition'.

This paper proceeds by discussing the theoretical and practical tensions around adaptation decision-making, followed by an introduction to the empirical context of urbanisation and climate vulnerability of the case study and the methodology used for data collection and analysis. The subsequent section explores adaptation policies and problematic implementations of adaptation actions in the case study and demonstrates the development of the adaptation lock-ins and associated processes that reinforces women's vulnerability to climate risks.

2. Conceptualising 'women' in adaptation (policy) discourses and theoretical tensions

How 'woman' is conceptualised and framed in climate change scholarship and discourse has direct implications on how 'adaptation' is enacted in policy and practice. Dichotomous framings of agency and vulnerability influenced by the dualism of men-women still dominate climate change discourse: reinforcing erroneous binaries between resilient and at risk, powerful and powerless. The gender(ed) narratives in climate change literature tend to portray women as victims, lacking the capacity for decision-making and acting in response to climate risks. Such simplistic dichotomies and stereotyping normative perceptions of women as vulnerable and helpless fail to capture the complexities of the dynamics of 'vulnerability' (e.g. how the vulnerability is produced in the first place), effectively treating the feminisation of climate vulnerability as an inherent trait rather than a socio-political product. Consequently, the discourse shies away from explaining *why* this vulnerability occurs, masking the complex causal relationships among political, economic, and social factors that drive the feminisation of climate vulnerability in the Global South and moves the attention away from their capabilities and potential agency⁷ (Garcia *et al* 2022).

Moreover, the concepts of 'vulnerability' and 'adaptation' as defined by IPCC (which are the widely adopted definitions) demonstrate a lack of clear(er) conceptualisation going beyond the 'climatic' factors/stressors and engaging with the socio-political factors (see Eriksen *et al* 2015). Eriksen *et al* (2015), p. 525) highlights the attempts in adaptation planning and academia to isolate the messiness in the societal processes from the vulnerability and adaptation framing to retain the 'conceptual clarity and analytical purity'. Such lack of engagement underplays the complexities by overemphasising climatic factors over social factors (Garcia *et al* 2022). Scholars increasingly call for conceptualising adaptation as a social process (not as standalone measures), acknowledging the contested socio-political processes that steer how individuals and groups deal with climate risks (*ibid*; Haque *et al* 2020). To summarise, (although it is slowly changing) climate change discourses tend to focus more on the subject-position itself (e.g. women), than the process of subject-making, i.e. the processes which put the subject into that position (Garcia and Tschakert 2022). Such stereotyping promotes internalisation of the 'vulnerability' narrative for women and thereby risks reinforcing the inequality and reproducing vulnerability by (further) promoting the dominant (patriarchal/social) normative ideologies in the adaptation arena, e.g. who gets to decide and act on climate risks? Thereby, climate change scholarship risks to further drive the inequitable adaptation outcomes.

However, feminist political ecology theories have refrained from using such narrow gender binaries (*ibid*) through embracing the 'intersectionality' lens to investigate the multidimensionality of inequality. This involves investigating the 'interlocking systems of oppression and difference' elucidating the lived experiences (Sultana 2020, p 3) which allows for a more nuanced understanding of how the feminisation of vulnerability is (re)produced through environmental and climate stressors. It reveals how 'oppression' is enacted through multiscalar power hierarchies overlapped with patriarchal agendas as well as how this oppressive masculine structure is internalised and normalised in every aspect of our society. Although gender is often identified as one of the various factors influencing vulnerability, studies show this multidimensional nature of inequality by demonstrating how gender intersects with other factors that constitute climate vulnerability and create adaptation barriers (Van Aelst and Holvoet 2016, Khandekar *et al* 2019). Hence, an intersectional lens allows to develop such nuanced understanding of the discursive process/es of how gendered vulnerability is (re)produced as well as how adaptive actions are inhibited. Overlaying the feminist political ecology discourses with climate justice discourses reveals how women in LISs occupy an *intersection within an intersection*, i.e. spatial marginality and gendered power hierarchies.

⁷ The concepts of adaptive capacity and agency are often used interchangeably. Here I refer to agency as the overarching concept that includes adaptive capacity as an underlying phenomenon. Adaptive capacity refers to the potential capacity to act and agency indicates the ability to make strategic decisions (Rao *et al* 2019). Such framing of agency highlights the 'power' dimensions of the concept, including bargaining, negotiation or resistance as well authority to make choices drawing from the adaptive capacity. Hence the concept of agency also demonstrates the potentials to drive transformational changes.

While recognitional justice (acknowledging the social norms that render women invisible) and procedural justice (ensuring equitable inclusion in decision-making) address the social roots of marginalisation, these are compounded by distributive justice (the fair distribution of material resources and environmental protections). For women in LISs, these injustices converge: they are socially isolated by patriarchal norms while being spatially trapped in resource-deprived geographies. This overlap of social and material neglect materialises adaptation barriers and institutionalises the feminisation of climate vulnerability, as women face restricted access to both the decision-making platforms and the infrastructure to survive climatic shocks.

3. Adaptation decision-making and practical tensions

While section 2 critiqued the conceptualisation of ‘women’ in adaptation discourses and the resulting theoretical tensions, this section examines the practical tensions that institutionalise these injustices in the urban Global South. It shifts from discursive critiques to the lived mechanisms -*the politics of knowledge* and *the politics of citizenship rights*-that drive the feminisation of climate vulnerability. By analysing how women’s knowledge is sidelined and their rights as urban citizens are restricted, this section illustrates how the *intersection within an intersection* (as discussed in section 2) functions as a practical barrier, transforming social exclusion into lived climate risk.

Politics of knowledge: the dominant narrative/s around women’s agency in the climate change discourses (as discussed above) also influence dismissing the idea of women as credible knowledge-holders and in turn disregard their agency in devising adaptation solutions (Carr 2019). Studies have identified the internalisation of the women-as-victims narrative as the dominant entry point to adaptation decision-making including gender mainstreaming and this exclusion is a primary driver of the feminisation of climate vulnerability, as it ensures that adaptation measures lack the contextual complexity and fluidity of women’s everyday lives (Gonda 2019 Resurrección *et al* 2019). However, adaptation decision-making spaces involve a complex powerplay which goes beyond the ‘credible adaptation knowledge’ or ‘climate victim’ debates. The politicisation of adaptation decision-making is influenced not only by political power but also by economic, social and cultural power. How power operates to subjugate and promote specific knowledge-holders potentially reproduces or reinforces gendered vulnerability (Wijsman and Feagan 2019). Hence, acknowledging and incorporating endogenous, situated knowledge and norms in adaptation decision-making is not just a matter of inclusion, but a necessary step in deconstructing systemic adaptation barriers (Ziervogel *et al* 2017, Castan Broto 2020).

Politics of citizenship rights: the ‘intersectionality’ lens (discussed in section 2) further elucidates the feminisation of climate vulnerability of women living in the LISs through the agency-citizenship nexus. Sultana (2020) defines citizenship as a concept that ‘is lived and experienced through spaces of inclusion and exclusion and in their rights and privileges’ (p 3). The urban poor-state relationship is demonstrated through a constant juggle between the un-acknowledgement of their presence (e.g. addressing the precarity of their lives associated with basic citizenship right), and the acknowledgement of their presence (e.g. through slum eviction) (ibid). The notion of justice is central to the concept of ‘citizenship’ through which citizens (ideally) engage with the politics that affect their lives. However, the urban poor are often considered as ‘citizens without city’ because of the deprivation of that fundamental right (Appadurai 2001, p 27) which is demonstrated through being largely marginalised from the decision-making process. Studies identify various reasons behind such marginalisation e.g. lack of macro-level political incentives to engage with the urban poor due to their lack of voting rights in cities (Haque 2021); lack of formal tenure (Huthicnson 2007). Historically citizenship has been framed as masculine and it is even more evident in patriarchal societies where the access to civil, political and social citizenship rights is gendered, deriving not only from the lack of access to power, voice and representation but also the legitimacy of these (Sultana 2020). The societal norms not only marginalise women to participate in the decision-making process but also influences if/how those contributions are valued when practised (Lister 2012). The continuing binary categorisation of men and women (as discussed earlier) further adds to the gendered division of citizenship rights. The hegemonic expectations of gendered roles and behaviours derived from patriarchal gender dichotomisation leads to a ‘tyranny of gender’ as Doan (2010) identifies it, that influence every aspect of spaces- private and social - to public and political spaces where citizenship rights are exercised.

4. The empirical context of Dhaka

Dhaka, the capital of Bangladesh, is one of the fastest growing mega cities in the world and at the same time it is also one of the most vulnerable cities to climate change (Haque *et al* 2020). Historically Dhaka is prone to flooding due to its geographical location. Additionally, changes in climatic systems have direct implications on the region through increased weather extremities, e.g. prolonged and intense rainfall and extreme heat waves. The other factor contributing to Dhaka's climate vulnerability is its rapid and unplanned urbanisation. It is already one of the most dense cities in the world (World Population Review 2024). Urban flooding is a regular phenomenon in the city, derived from the overlapping risks of climate change (increased rainfall) and unplanned urbanisation (lack of drainage). Out of 19 million inhabitants, nearly 40% of the city's population live in slums and 70% of this population migrated to the city experiencing environmental hardship (Cities alliance 2009). The primary climate vulnerabilities in these slums are driven not only by their geographical location in risk-prone areas but also by the flimsy structures, high population density, precarious access to drinking water and sanitation, tenure insecurity, lack of drainage and garbage disposal services, lack of access to health and education. Forced eviction is a regular event in the city (IDS 2018). Lack of formal tenure combined with the risk of forced eviction results in a lack of effort and investment to upgrade housing which further exposes the slum/LIS-dwellers to climatic risks. However, with regards to women living in these LISs, there is hardly any data available. For example, there is no available data on gender distribution of this slum-population [however, the country census indicates an (almost) equal share between men and women for its urban population (BBS 2022)].

5. Methodology

The research adopted a combined grounded theory-systems analysis approach (Haque *et al* 2020) to investigate women's⁸ vulnerability to climate risks. The grounded theory approach allows us to uncover complex social processes, unpacking latent social patterns, relationships and behaviours to explore an observed social phenomenon in real settings (Glaser and Strauss 2000). Considering the lack of data and relevant existing studies on the case study, the grounded theory approach also allows conceptualisation directly deriving from the evidence.

The discussions in section 2 and 3 indicate the complexities involved in gender(ed) vulnerability and adaptation processes, including interactions across a wide array of factors (e.g. social, economic, political). These factors interact in a dynamic complexity and can (often) lead to unpredictable outcomes. Such functioning is difficult to understand if not seen from a 'whole-systems'⁹ perspective. Systems thinking is increasingly adopted by the scientific community due to the growing acknowledgement of the complexities of contemporary real-world challenges—which are difficult to comprehend by looking at elements in isolation. The application of systems thinking is further justified by the call for investigating the underlying processes behind women's climate vulnerability (see section 1). Note that, the focus here is on the relationships amongst different systems elements/factors to comprehend the underlying phenomenon.

5.1. Research methods

Data Collection:

The research applied questionnaire-survey, focus-group-discussions (FGDs) and key-informant-interviews (KIIs) to collect the required primary data. Such an approach was governed by the need to collect data covering different scales and actors. Data was collected between 2022 and 2024. 400 households (female respondents) were surveyed covering 20 LISs. The surveyed settlements were selected based on some pre-defined criteria, e.g. location, size, accessibility, acknowledgement status. The survey included a wide range of variables including demographic attributes (e.g. household-income, education), tenure, housing type, access to basic services, access to government and NGOs, impact of climatic events, interaction about climate risks, responses to climate risks, adaptation barriers, communal activities etc. The survey served as a critical foundational layer for the study, providing a comprehensive demographic profile of the households while facilitating a deeper qualitative exploration of the system's drivers (see the data analyses section).

⁸ This study considers women aged 18 and over.

⁹ A system is formed with interacting elements.

Post the initial analyses of the survey data, 8 FGDs were conducted with the LIS communities: 6 of which included only women, and 2 FGDs included both women and men. Such a mix was important to address diverse perspectives and narratives on the studied phenomenon and also to capture the nuances from the diverse lived experiences and power dynamics. The average size of the groups were 10. The FGDs were instrumental in capturing community perspectives on key issues (including those derived from the survey data) such as climate vulnerability, participation in decision-making, responses to climate risks, adaptation barriers, and influence of social networks. A roundtable/FGD was conducted (post the FGDs with the communities) with 15 representatives from the government¹⁰, NGOs, civil-society, and female slum-leaders. This roundtable aimed to investigate knowledge exchange and demonstrate the complex interactions within adaptation decision-making. It provided practical insights into how different stakeholders perceive and influence policy space. Purposive sampling were used to obtain the appropriate representation in the FGDs, including income group, occupation, tenure, age group, and length of residency. For the roundtable, a combination of convenience and purposive sampling was used to access government and NGO officials while ensuring the required representation (i.e. different sectors and policy experience).

38 KIIs were conducted post the FGDs: with 20 women from the LISs, 10 government-officials (including policymakers) and 8 NGO-officials. The KIIs allowed us to develop (further) nuanced understanding of the relationships amongst the system elements, including triangulating data collected via other methods. Furthermore, the KIIs with the policymakers provided direct insights into policy space and the decision-making process/es. It also provided an opportunity to discuss any specific issues derived from the FGDs. FGDs and KIIs within the communities were critical to map the emergent properties in the systems analyses. Purposive sampling was applied to ensure the representation of specific groups (e.g. female-headed household, working women, housewives; policymakers). Snowball sampling enabled us to identify specific households, for example, households with access to NGOs and government schemes.

Data analysis:

The primary qualitative analyses of the survey data helped to identify some key patterns (e.g. the relationship between tenure and access to NGOs; location and access to early warning systems, income and social networks) and indicated the influencing factors which were subsequently integrated into the FGDs and KIIs for further exploration, allowing for a more nuanced investigation into how these factors influence lived experiences. The system diagram (figure 1) serves as a structural abstraction of the qualitative data, mapping the feedback loops identified through grounded theory analysis. A manual coding process¹¹ was adopted for grounded theory analysis to facilitate a cognitive analysis of the qualitative data, prioritising a deep understanding of lived experiences, subtle narratives, and linguistic nuances. A combination of open coding, axial coding and selective coding was applied to analyse the qualitative data. Open coding involves descriptive labelling of raw data (e.g. income, health, tenure). During axial coding, higher-level analytical categories (e.g. social norms, access to basic services) were introduced to systematically integrate the lower-level categories. During selective coding, a core concept is identified (e.g. time poverty), around which the other categories from the axial coding phase (e.g. social norms, self-development) were grouped to explain the observed phenomena. This iterative comparative analyses involved constantly moving between data and categories to refine sub-categories and ensure the resulting systems analyses accurately reflect the lived experiences of the participants.

The next section discusses adaptation policies and associated practices to investigate the (potential) root causes and the underlying processes that drive climate vulnerability of women in the LISs in Bangladesh.

6. Women and adaptation policies in Bangladesh: the implications of the victim narrative

The key climate change policies in Bangladesh-Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009, National Adaptation Plan of Action (NAPA) 2005, National Adaptation Plan (NAP)

¹⁰ Government and NGOs in the roundtable represented 3 sectors: environment, development and gender.

¹¹ For more details on the data analysis, coding and the development of the systems diagrams, please refer to Haque *et al* (2020) a similar process has been followed here.

2022, and the Climate Change Gender Action Plan (ccGAP), 2024-demonstrate how the victim narrative (discussed in section 2) is institutionalised in practice. BCCSAP, for instance, has been criticised for a lack of public participation and an infrastructure-focused approach that overlooks community-level knowledge (Hossain 2009). This top-down bias is often driven by external funding requirements, as a senior government-official indicated: *'Finance has always been an issue for us, hence we had to incline the focus towards large-scale infrastructure to match the adaptation finance architecture.'* This was further confirmed during the roundtable with all the stakeholders. By prioritising international finance over local expertise, these policies systematically sideline women's knowledge, directly contributing to the process for *feminisation of climate vulnerability* by stripping women of their role as active agents for adaptation and positioning them as mere passive recipients of aid.

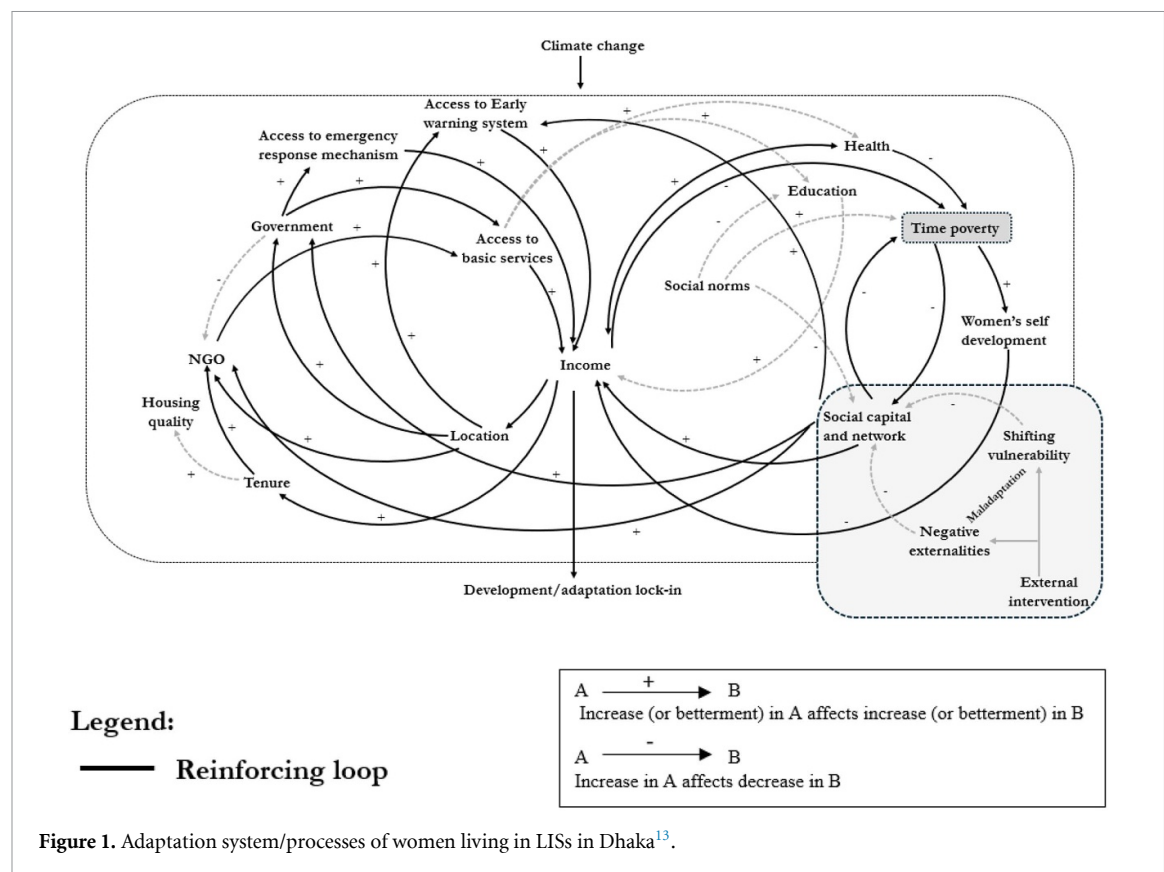
Both NAPA (2005) and NAP (2022) further illustrate this through the structural marginalisation of the urban poor. Among the fifteen prioritised actions in NAPA (2005), urban adaptation to climate change is present in only one through urban drainage improvements, and it fails to consider eviction risks for slum-dwellers. For women in these settlements, this neglect represents the *intersection within an intersection* as discussed in sections 2 and 3: they are marginalised not only by their gender but also by their precarious residency in LISs which are ignored by formal policies. Furthermore, the NAP (2022) stereotypes women's vulnerabilities alongside the elderly and disabled. When questioned on this, a mid-level government official stated: *'this is a guidance document, it is not possible to expand on the vulnerabilities of each group of population'*. This stance confirms that the specific, intersectional risks faced by urban women are collapsed into a generic category.

The ccGAP was produced in 2013 (updated in 2024)), focusing more on gender mainstreaming to the plans and programmes developed through BCCSAP and NAP. The ccGAP further cements this problematic conceptualisation of women by institutionalising the victim narrative as its foundational rationale. A government official involved in the policymaking process admitted: *'The research and academic development in the field is always the primary source for any policy framing and ccGAP is no different.'* This highlights how the reductionist academic discourses critiqued in section 2 directly shape policy. The ccGAP includes 'situation analysis' per priority area (e.g. natural resources, livelihoods, infrastructure and settlements, women's leadership and participation) and none of the analysis acknowledges any agency or capabilities that women hold but includes extended lists of vulnerabilities. Hence, it is not surprising that the action plans developed based on such situation analysis do not take into consideration any (potential) agency of women. The power dynamics driving the decision-making process/es was revealed by one of the NGO officials involved in the policy-making process: *'Government consult us as a "tick boxing" activity as they have to show this to the external organisations like UN, but the question is whether they consider our advice while taking the decision...when we attend final sharing event then we realise whatever we have said in the consultation phase, none is considered...as they hold the ultimate power of decision making'*. This demonstrates the complex decision-making processes: by upholding predetermined agendas and policy framing and ignoring women's agency the state ensures that women situated at the intersection of gender and urban poverty are left with a heightened climate vulnerability, as the policy framework fails to address the root causes of gendered vulnerability required to navigate their specific risks. The ccGAP has been mainstreamed into the National Women's Development Policy (2023), hence it creates a domino effect across multiple policies by overlooking women's agency and (potentially) structurally marginalising them from formally¹² participating in the adaptation processes.

7. Development of adaptation lock-ins and trapping of urban women

Building on Haque's, 2020 study, it identifies that the LIS-dwellers in Dhaka are subjected to a dual trap, i.e. poverty and (climate) vulnerability traps, which are predominantly created through the complex interactions between the urban poor's access to the governance system (e.g. access to government and NGOs) and exposure to climate risks. For instance, the majority of the LISs are located in areas prone to climate risks (e.g. low-lying and flood-prone areas) which makes them physically exposed to climate risks. However, the root causes of gendered vulnerability here are as much political as they are geographical. The majority of LISs in the city do not even exist in official documents (e.g. existing land use map). This has resulted from the fact that the government does not acknowledge most of these settlements. Responding to this a mid-level government official from the development authority mentioned, *'..if we acknowledge these settlements, we are liable to provide services to them. But we do not have the capacity*

¹² Women are actively participating to cope and adapt with climatic risks at the informal (household and community) spheres (Haque 2021).



for this'. Hence, these settlements are not only excluded in development planning but also many times force evicted (without any rehabilitation options) to implement development projects. By maintaining this grey area, the state ensures that the urban poor remain outside the bounds of formal citizenship (see section 3) and thereby create a fundamental institutional barrier through exclusion from the development processes. For women in these settlements, this institutional neglect materialises as an *intersection within an intersection*: they are marginalised by their gendered social roles and economic poverty, and further trapped by a spatial illegitimacy that denies them the right to the city. When the government prioritises development, the needs of these invisible citizens take a back seat.

The risk of eviction, coupled with tenure insecurity, results in a lack of incentives amongst the LIS-dwellers to upgrade their housing. The feminisation of climate vulnerability is thereby manifested through systematically eroding their adaptive capacities within these structural constraints of limited household-income and precarious tenure. In their (female LIS-dwellers) own words: *'I have very limited income which is not enough to even have three meals a day, hence I have to prioritise where and how to spend it. Although we are now facing floods almost every year, it is not a worthwhile decision for me to invest money on my housing as there is no guarantee that I will not be force evicted tomorrow...all my investments will be gone then'*. 82% of the surveyed population does not have any formal tenure. This also impacts their access to government and NGO services. For any financial services, e.g. loans and microfinance, the service providers are liable to track the beneficiary, and hence they require a registered address. Furthermore, their non-existence in the official documents also indicates that they are not included in the decision-making process/es. Resonating with the 'citizens without city' metaphor discussed in section 3, the people living in many of the LIUSs in Dhaka are deprived of their basic citizenship rights. Thereby, lacking access to basic services (e.g. water, sanitation, health facilities, education) and organisational support combining with their physical exposure to climate risks form the systemic adaptation barriers for LIS-dwellers. This leads to a self-reinforcing cycle: before a household can recover from one climatic event, another occurs. These recurring shocks, combined with a lack of institutional support, lock them into a poverty and climate vulnerability trap. This is demonstrated on the left-hand side of figure 1.

¹³ Although this figure represents a simplified version of the complex system only displaying some of the primary factors that drives the development of the adaptation lock-in/s, it is important to note that, the system boundary is restricted by the collected data from the surveyed sample and the causal relationships are directly guided by the data.

Now adding a gender lens to these systemic drivers reveals how the *feminisation of climate vulnerability* is constructed through a time-poverty loop. The data shows demand for more income (as demonstrated via the poverty loop discussed above) pushes women to engage in (more) income-generating activities in addition to their care and household responsibilities. And lacking the necessary skills and formal education, these women are more likely to engage in informal jobs¹⁴. As evidenced in the survey, 93% of the surveyed working women¹⁵ are working in precarious jobs (e.g. domestic maids, construction labourers) with no job security or safety-nets. This double burden, thereby, produces ‘time-poverty’ as an emergent property¹⁶ of the system (as demonstrated in the right side of figure 1). This time-poverty acts as a systemic barrier and is one of the primary root causes of gendered vulnerability by creating the *adaptation lock-in*. For instance, even if there are vocational training or adult education services provided by the government or NGOs, they cannot access those services due to lack of time availability. Also, in many instances, they cannot even access this information of available services as time-poverty breaks down (and/or does not allow them to build) their social network in addition to the underlying socio-cultural norms which restrict women from socialising outside their households. Therefore, women in these settlements either lack the opportunity or fail to avail the opportunities for self-development. This is where we see the *intersection within an intersection* phenomena in its most restrictive form: socio-cultural norms restrict women’s socialisation, while the economic necessity of informal labour physically consumes the time required to build the social capital vital for adaptation. In their own words: ‘*I am struggling for my and my family’s daily survival, I have no time or capacity for socialising*’; ‘*We do not have the time to interact with our neighbours as we used to do in earlier days, so we do whatever we can do on our own.*’ Out of 6 FGDs with women, in 4 of them, the participants mentioned their preference to do things on their own rather doing anything collaboratively with other women from the community. This is rather alarming in comparison to the previous database that the author collected during 2014–2017 where the existence of social capital was very evident in the surveyed LISs through community-based-adaptation practices and cooperatives (Haque 2021). Although this cannot be definitive considering the sample size, this certainly indicates the need for further investigation of the (potentially) declining social capital.

These gender-specific factors derived from the broader socio-economic and political systems further reinforces the poverty trap developed in the LISs and creates adaptation lock-in/s¹⁷ through reinforcing time-poverty, decay in social capital and thereby actively diminishing the adaptive capacity and agency of women.

Figure 1 demonstrates how these self-reinforcing mechanisms restrict adaptation for the women in LISs predominantly by eroding their two most vital resources: income and social capital and overlapping these erosions with the wider reinforcing loops created at the settlement level. Note that, there can be many other potential implications of these self-reinforcing mechanisms, but for the sake of simplifying the complexity, the study only focuses on some of the primary drivers and their implications. Acknowledging the complementarities between adaptation and development, this adaptation lock-in also indicates development lock-in/s, not only due to its implications on the income but also [taking a multi-dimensional understanding of poverty (Sen 2009)] how it restricts the fundamental capabilities required to seek developmental opportunities.

Stepping back and taking a wider view reveals the underlying factors-specifically path dependency—that sustain these adaptation lock-ins (Pierson 2004). At the macro-level, problematic policy legacies favour a victim narrative that overlooks women’s agency, reinforcing a status-quo that treats gendered risk as an inherent trait rather than a structural product (Howlett 2009). At the micro-level, this is mirrored by the normalisation of gendered social norms, such as disproportionate care responsibilities. During the FGDs and KIIs with the women from the LISs, climate anxiety and stress were evident, and this was identified to be exacerbated by the feeling of lacking agency: ‘*despite suffering the most, we cannot do anything...no one listens to us-neither at home nor at the government*’; ‘*no one asks for our opinion, we are ‘felani’¹⁸, no one cares about us, we do not matter...*’.

Thus, the multiscale deprivation and marginalisations (influenced by socio-cultural norms and inadequate policy framing as discussed above) are reflected not only materially (through lack of voice in decision-making and access to resources) but also emotionally. This also hampers empowering women

¹⁴ Note that, the paper is not trying to glorify formal economy here or demean informal economy, but trying to highlight the importance of safety net, social protection, job security, for example, in the formal sector.

¹⁵ 72% of the surveyed women are involved in some sorts of income generating activities.

¹⁶ Emergent property refers to the factor/s that was not directly mentioned in the data but inferred through the analysis of the interaction of multiple factors creating a new systemic phenomenon.

¹⁷ *Adaptation lock-ins* can be defined as mutually reinforcing constraints on adaptation action/s with inertial resistance to change and to systemic shifts (adapted from Groen *et al* 2023).

¹⁸ *Felani* in Bengali means someone who has been abandoned.

on their potential, negatively impacts their dignity and lowers confidence in their agency. This has long-term consequences: the victim narrative is eventually internalised by the women themselves. This was demonstrated during the FGDs and interviews- *‘why are you asking me? What can I do? I do not have knowledge, resources or final say in anything....ask my husband who is the “sarker” (government) in our home, or the “ashol sarker” (real government)’*. This illustrates the ultimate adaptation lock-in where women undermine their own potential because the governance and social systems have consistently rendered their perspectives invisible and their agency illegitimate. However, interviews reveals that many of them are very well aware of the climatic risks (as they frequently face flooding and water logging) and there is evidence of measures that some of the women have undertaken without any external or internal (household) support. One such practice¹⁹ is growing vegetables on the roofs and in the surrounding areas where space is available. The women could very well articulate how such practices can provide food security during periods of prolonged waterlogging or when the household income is affected during flooding. And they did not spend anything to purchase the seeds but prepared from the vegetables they consumed. The coexistence of fatalist behaviour²⁰ and insurance²¹ strategies demonstrates that the feminisation of climate vulnerability is driven by policy, not by the lack of capacity of the people; the adaptation barriers are manufactured by a system that refuses to validate or scale these autonomous practices.

8. Problematic policy implementation and maladaptation

The practicalities around how these policies are formulated and implemented are highly relied on for how citizenship rights are perceived, experienced and practised in this context. There are multiple layers to this complexity of engagement: the first layer originates from the status of the (low-income) settlements. As mentioned earlier, the majority of these settlements do not exist in official documents, hence the communities living in those settlements are ignored in the decision-making processes. Also, many of these settlers have their voting rights in their places of origin, this further disincentives the political parties to engage with them. For the small number of large and old settlements acknowledged by the government, clientelistic practices of participation were identified, i.e. handpicking representatives who would not contradict the government's plans. The practice is more about ‘politicking’²² than meaningful representation (Haque *et al* 2021). The second layer of complexity originates from the policy-framing of women as vulnerable, which (as discussed in section 3) influences dismissing the idea of women as credible knowledge-holders to inform adaptation decision-making, and thereby creating a systemic barrier legitimising their marginalisation from the policy-making processes. During the round table, one of the female slum-leaders mentioned: *‘...we are never invited to the decision-making processes, we hardly get any opportunities to communicate our hurdles to the government’*. The roundtable clearly revealed lack of communications and knowledge exchange between the government and women in LISs (while it indicated somewhat better communication between the NGOs and the women in LISs) as demonstrated by the lack of knowledge of the stakeholders about each other's activities, lack of awareness of the government about the LISs vulnerabilities (let alone gender-specific vulnerabilities), as well as lack of awareness of the slum-leaders about macro-level adaptation initiatives. This potentially breeds misconceptions about the government's intention to serve the women in the LISs as demonstrated during interviews with a slum-leader, *‘there is no point to go to Sarker (government)...they will never listen to us, furthermore, if they know about our settlement they can evict us, as they do not want us or they will make our life harder to live with our communities’*.

Now adding further layers to this representation in patriarchal societies like Bangladesh, the politicking practices further marginalise women, ensuring that policies are developed without a contextual understanding of gendered needs. This process further illustrates the *feminisation of climate vulnerability*, which is actively produced through the intersection of social exclusion and top-down policy blind spots. When it comes to policy implementation, the study has identified the strategies and actions developed

¹⁹ There were more women-led household activities identified in field which demonstrates their knowledge and agency: activities ranging from using polythene sheets in the roof (temporary adaptation) to avoid leaking water, to teaching swimming to the children (insurance) and saving money as a security (insurance and recovery) during disasters (refer to Haque 2021 for the types of adaptation practices). Note that, documenting all those practices to demonstrate their knowledge and practices is beyond the scope and focus of this paper.

²⁰ Fatalist behaviour is basically a ‘non-strategy’ for survival, e.g. only praying to god and doing nothing to cope with climate risks.

²¹ Here insurance refers to any kind of security system (monetary or non-monetary) that assists people during the event of disaster (Haque 2021).

²² Politicking refers to ‘the everyday practice of “petty politics” where the politicisation of participatory processes undermines democratic governance by exploiting elected power and agency’ (Haque *et al* 2021, p 53).

through lack of such context-specific gender(ed) understanding, in many instances have led to maladaptation. There are NGO and government services in Bangladesh specifically targeted for (low-income) women through provision of loans, micro credits and resources (such as sewing machines) aiming to simultaneously empower women and improve adaptive capacity. While the intention of such services are not being questioned, implementing them without any contextual understanding has been evidenced to create negative externalities (i.e. creating new vulnerability or exacerbating the existing vulnerability). During the FGDs and further follow-up investigations through KIIs, reports emerged of increased domestic violence in some sites receiving these services; men were often not only jealous but also feared losing household control due to women's newfound access to financial resources. This backlash further demonstrates the feminisation of climate vulnerability, where vulnerability is actively reproduced by the intersection of patriarchal norms and poorly designed interventions. Such outcomes further restrict women's access to social networks, reinforcing the adaptation lock-in (see figure 1, the grey-highlighted section). Similar incidents are evidenced in other regions as well, e.g. Peru (Schipper 2020). This situation exemplifies how reductive governance practices, derived from policy framings that view women as lacking agency, justify top-down, ad-hoc approaches. Since patriarchal norms are so deeply entrenched and normalised, it is often difficult for policymakers to see beyond them. To limit these externalities, such women-specific interventions must move beyond targeting women in isolation and instead engage with male counterparts to understand the complexities of gender subjectivities and everyday negotiations, facilitating the two-way communication necessary for truly resilient services.

This study further identifies how ad-hoc interventions create social dividedness. While these communities are already marginalised by their geographical location, individual households face a second, nested layer of exclusion based on tenure status. In neighbouring settlements, it was observed that drainage upgrades in one *acknowledged* slum (i.e. that exists in the land use map) simply diverted floodwaters into an adjacent *unacknowledged* slum, shifting rather than solving vulnerability. Further evidence of shifting vulnerabilities through creating societal dividedness were found through FGDs and KIIs with settlements with access to government and NGO services. This divide was deepened within the same settlements by the requirement of a formal address to access financial services (as discussed in section 7); those with tenure were served by multiple organisations, while their immediate neighbours (without a tenure) were deprived of all support. This tenure divide triggers heated arguments and social tensions within the community, as seen during the FGDs. By dismantling existing social capital, these practices reinforce the constraints on adaptation actions, block the potential for systemic shifts and sustain the adaptation lock-ins that keep the most vulnerable trapped in a cycle of risk (see figure 1).

Sections 6, 7 and 8 together reveal the underlying processes by which problematic conceptualisation of women in the adaptation policy discourse in Bangladesh translates into structural marginalisation, demonstrating how such narratives actively construct systemic barriers to women's adaptation. This top-down framing facilitates the feminisation of climate vulnerability, where vulnerability is not merely a pre-existing condition but is (also) actively produced by problematic policy implementation. These processes trigger a series of causal interactions- such as the breakdown of social capital, the exclusion of women from both formal and informal governance and creating maladaptation- which ultimately entrenches adaptation lock-ins within the system. A critical finding is the emergence of 'time poverty', a byproduct of these system interactions that accelerates the decay of social capital and overlaps with the chronic lack of basic services in LISs. Section 7 and 8 also demonstrate how women living in Dhaka's LISs are subjected to multiple deprivation and marginalisation through the intersectionality of societal and economic status. The complex sociopolitical factors associated with such intersectionality have been identified to not only shift vulnerabilities within and beyond communities but also by creating negative externalities within and beyond these households.

9. Concluding remarks: ways forward

The multidimensional nature of the gender(ed) adaptation lock-ins developed through a complex interaction of an array of factors including institutional, societal, economic, and political factors, indicates that transformation is required across multiple fronts-from private to public actions and informal to formal arenas. This paper argues for a paradigm shift in conceptualising women in adaptation policy discourse recognising the discursive and pluralistic processes that create systemic adaptation barriers and constrain inherent agency. By unpacking the underlying processes that generate these systemic barriers, policy discourse can move towards a more holistic understanding of vulnerability and adaptation, thereby enabling the promotion of truly meaningful inclusion. A focus on intersectionality would be vital here to allow a nuanced understanding of 'vulnerability' and 'agency' as these are not universal.

Acknowledgement is key here, rightly mentioned by an NGO official during the roundtable: ‘*you have to acknowledge the problem first in order to address it*’. To start with: a. the agency of women (not only their vulnerability), needs to be acknowledged to break the vicious cycle of climate vulnerability, where (gendered) social practices are normalised demeaning women’s capability to deal with climate risks; b. the existence of slums/LISs needs to be acknowledged to be able to (meaningfully) incorporate them in the development and adaptation processes. This is fundamental to break such adaptation lock-ins created in the LISs and promote transformational adaptive pathways.

The complex causal relationships amongst the array of factors originated from the problematic conceptualisation of women in the policies and the grounded realities of the governance processes and societal norms also demonstrate the need to approach these lock-ins from a whole-systems perspective. Contextual conditions influence what mechanisms are activated or deactivated, at what intensity and with what outcome. For example, macro-level acknowledgement of the LISs can potentially activate better access to basic services and thereby deactivate the connection between health and income. Therefore, it is important to understand what aspects of these (contextual) lock-in mechanisms lead to stability and what can dissolve under certain conditions (Groen *et al* 2023).

The study also shows how such policy conceptualisation not only demeans women’s agency but also promotes a ‘deterministic trap’ (de Wit 2021) driving reductive accounts for women’s vulnerability in designing strategies and actions to address climate risks. It also demonstrates how such reductive accounts can lead to maladaptation through creating new vulnerability, which urgently calls for rethinking policy processes and actions.

Although there has been growing research demonstrating women’s agency for climate adaptation, more empirical studies documenting and evidencing women’s agency addressing the discursive and pluralistic dimensions (including intersectionality) will promote such policy reorientation on the basis of evidence-based decision-making. It is essential to build that alternate discourse and bodies of knowledge to aid the paradigm shift. Also, empirical documentation of maladaptive practices derived from such problematic approaches (as demonstrated in this study) is important to provide a cautionary note on how to break the adaptation lock-ins, and (again) to aid the evidence-based decision-making process.

It is important to go beyond documenting the physical vulnerabilities (and impacts) and incorporate the embodied knowledge and experiences from the ground to capture and understand the social dimensions of vulnerabilities (which is, in turn, influencing the physical vulnerability and creating reinforcing loop/s). To operationalise this, we need to create inclusive spaces for dialogues. Such spaces are vital where women’s voices and citizenship rights are acknowledged and (meaningfully) exercised. In addition to effectively using such spaces, skills training is required for women-particularly those living in LISs - to break social taboos (e.g. gendered responsibilities), recognising their agency and share/communicate their experiences, knowledge, and suggestions in a non-judgemental space. The knowledge developed from such spaces should work as the foundation for relevant policies and targeted project development/actions rather than the ex-post practices or clientelistic practices that are largely in practice currently. Using such spaces (and the knowledge developed from such spaces) as policy formulation tools can potentially promote a change in perspectives, drive the path changes and mobilise transformation by creating an enabling environment where women can access (more) opportunities to shape ‘just’ adaptation realities.

However, the hardest part is to bring the societal transformation at the micro-level—changing the (gendered) societal ways of thinking, and breaking the normalised (gendered) social practices—which are required to facilitate the social learning process/es (Ensor and Harvey 2015). Although the influence of policy environment is critical here, how policies and associated practices can bring about that societal transformation and support the social learning process/es (including changing the normative mindset, drawing from cognitive reasoning, and build on relational learning of societal understandings and framings) at the micro-level calls for further research.

10. Strengths and limitations

The study aims to unpack the discursive and pluralistic processes constructing women’s vulnerability, recognising that these are dynamic processes. By acknowledging that there is no single truth or system, the research centres on the messy, pluralistic realities created through fluid interactions across diverse, context-specific factors. The primary strength of this research lies in its triangulated methodology that operationalise feminist political ecology and adaptation discourses through combined Grounded theory and Systems analysis. This approach allows the study to move beyond merely documenting the symptoms of vulnerability to diagnosing the systemic production of gendered barriers and their implications (e.g. the adaptation and development lock-ins).

This study is non-prescriptive in nature, it does not aim to suggest any specific approach/es to address women's climate vulnerability rather it aims to highlight the importance of understanding the discursive and pluralistic processes underlying their vulnerability and thereby enabling a diagnostic investigation to map the architecture of gendered vulnerability and identify the systemic intervention points necessary to address that. The discursive and pluralistic nature of the system and the small sample size also highlight that the findings are context-specific and can be indicative of broader structural trends in the global South rather than be definitive. Furthermore, the complexity of informal urban environments imposes a granularity ceiling, where broad systems-mapping may not fully capture the pluralistic reality.

Finally, the analysis acknowledges a theoretical boundary: the interpretation of discursive processes is grounded in feminist political ecology and adaptation discourses, which purposefully prioritises systemic and power-based explanations over purely technical or economic frameworks. Ultimately, this study provides a critical diagnostic foundation for transformational change by exposing how vulnerability is structurally manufactured and sustained by conventional policy discourses and practices.

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Data availability statement

Restrictions apply. Data cannot be shared publicly via a URL/DOI. Due to ethical issues, the raw data cannot be shared.

Supplementary data 1 available at: <https://doi.org/10.1088/2752-5295/ae688b/data1>.

Ethical approval and consent statements

Ethical approval have been sought for every stage of the research presented in this paper. Ethical approvals have been provided by the Ethics Committee for the Department of Environment & Geography, University of York, UK. Informed consent has been provided by all the participants in this research. All the data have been anonymised to avoid the risk of potentially identifying any individual.

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