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## Climate Change Induced Migration: A Gendered Conceptual Framework

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### Abstract

An emerging body of research explores the relationship between climate change and migration. Much of this literature has been gender-blind, but where gender has been considered, the literature suggests that migration responses have differed between men and women. Existing theoretical approaches to migration do not provide a conceptual framework for understanding these differences. In this paper, we ask how existing conceptual frameworks explaining migration might be combined and extended to specifically incorporated gendered climate impacts and responses, and we propose such an extended conceptual framework. Specifically, this paper does three things. First, it critically reviews existing theoretical frameworks on migration through a gender lens. Bringing insights from feminist economics and related empirical research to bear on existing frameworks explaining migration, we identify five pathways through which gender differences can influence climate-induced household decision-making about migration. Building on this, we propose a gender-aware conceptual framework to explain the gendered decision-making processes behind climate change-induced migration.

**JEL Classification:** Q54, O15, J16, D13

**Keywords:** Welfare; Climate Change; Migration; Gender; Decision-making

### Introduction

According to the Intergovernmental Panel on Climate Change's (IPCC's) Sixth Assessment Report, the global average temperature is likely to rise by at least 1.5°C by the next two decades (Pörtner et al. 2022). This is expected to intensify heatwaves, result in longer summers, increase the frequency of occurrence of droughts, cause variability in precipitation across regions, raise sea levels, and trigger flooding. Nearly 3.5 billion people (about 40 percent of

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the global population) are dwelling in regions vulnerable to climate change (World Bank 2023).

Rising average temperature levels and changing precipitation patterns have immense adverse implications for society, ranging from loss in physical and natural capital, to regional economic setbacks, to reduction in standards of living and other negative impacts on the welfare of the individuals and communities. The effect of climate change is likely to be especially severe for agricultural communities, as evidence suggests that extreme temperatures will negatively impact agricultural productivity and income (Ibáñez et al. 2022). The recent Global Climate Risk Index report indicates that the top ten most affected countries by long-run climate events are from the Global South, especially from sub-Saharan Africa and South Asia, areas characterized by widespread poverty and overwhelming dependence on agriculture for living (Eckstein, Kunzel, and Schafer 2021).

As climate change impacts livelihoods and resources, it is expected to increase migration, with the nature of the relationship between climate change and migration (positive or negative) varying with the nature of changing climate scenarios such as dry spells and elevated temperatures (Thiede and Gray 2017). Migration may result from climate impacts on agricultural and animal production (Gray and Mueller 2012), extreme climate events such as floods, cyclones, longer or intensified droughts which directly affect standards of living at the individual or community levels (Black et al. 2011; Davis et al. 2018; Atapattu 2020), or displacement when the original region becomes uninhabitable due to rampant destruction caused by extreme climate events (Gemenne et al. 2021; Draper 2022). Contemporary research has also identified climate change as one of the key drivers leading to political unrest and unarmed conflicts which trigger international migration, as in the case of Syria (Reuveny 2007; Abel et al. 2019; Aksu and Sirkeci, 2023). When the affected population are unable to adapt to changing climate conditions and climate extremes in their place of origin, they may leave their original location or country (Pörtner et al. 2022) to seek new income opportunities in urban and peri-urban areas (Rao et al. 2021). However, other researchers have also pointed out that environmental changes can impact people's income and capital and lower people's ability to bear the cost of migration (Government Office for Science 2011). Displacement, when it occurs, is more likely to be local than transnational (Clement et al. 2021; Government Office for Science 2011) as international migration involves greater expense, as well as navigating the cross-border legal systems (Berkeley, Khan, and Ambikaipaker 2006).

When climate change causes direct and indirect displacement, migration patterns are not uniform in response to climate shocks but vary across population sub-groups. Gender plays a crucial role in climate-induced migration, one that has not yet been explored thoroughly in migration literature. Some studies suggest that women may face heightened vulnerability to climate change due to their limited capacity to migrate (MacGregor 2010; Chindarkar 2012). Conversely, other studies have found a correlation between temperature increases and a surge in non-labor migration among women, typically within provinces or over short distances. (Gray and Wise 2016; Thiede and Gray 2017). However, men's migration patterns following climate change are primarily driven by labor-related factors and often involve longer distances (Gray and Wise, 2016; Thiede and Gray, 2017). Only a few studies have explicitly examined various drivers generating gender differences in migration, including ownership of assets, nature of land occupation and marital status (Findley 1994; Chindarkar 2012; Curran and Meijer-Irons 2014; Bleeker et al. 2021).



In this paper, we ask how existing conceptual frameworks explaining migration might be combined and extended to specifically incorporate gendered climate impacts and responses, and we propose such a unifying gendered conceptual framework. In Section 2, we examine the main existing conceptual frameworks for understanding migration, and the limited ways in which the role of gender has been included to date. In Section 3, we review evidence suggesting that climate impacts and responses, including migration, are likely to be gendered, focusing specifically on internal migration and rural households. In Section 4 we propose a conceptual framework which incorporates the channels of gendered impact discussed in Section 3. Section 5 concludes.

### **Conceptual frameworks explaining migration**

The mechanism through which climate change leads to migration is not straightforward, and few of the existing theories of migration have directly addressed possible channels through which climate change might lead to migration. Migration theories grounded in neoclassical microeconomic theory suggest that individual agents decide to migrate by evaluating associated benefits (particularly increases in wages in the destination location compared to the home location) and costs of migration (e.g., travel, permits) (Castles and Miller 1998; Kaczan et al. 2020). The Push-Pull theory developed by Lee (1966) contends that migration decisions are not only based on simple comparisons of costs and benefits, but also depend on social factors (e.g., gender, ethnicity) and non-economic factors (e.g., ongoing trends, awareness) that push and pull individuals to migrate (Lee 1966; Berkeley, Khan, and Ambikaipaker 2006). Even though some of these factors, such as business cycles impacts on wages, constitute uncertainty, the role of uncertainty and risk is not well developed in these theories. Climate change, inducing losses to agricultural income and increasing other stressors in the place of origin, could act as a push factor for migration. However, scholars using this framework have not directly addressed the effect of climate change on migration.

More recently, scholars have highlighted the institutional and political aspects that can affect the migration decision process, especially in cross-border migration. In addition to the factors already considered, scholars focusing on new immigrants in Britain and the EU suggest that legal systems of destination regions, such as work permit systems and immigration acts, play an important role in shaping migration patterns around the world (Berkeley et al. 2006; Robinson and Reeve 2006; Vertovec 2007). They also suggest that stringent laws result in undocumented entrants who are not reflected in official data and are often associated with informal markets (Berkeley et al. 2005; Vertovec 2007), factors which increase risks compared to documented migration. The role of legal systems has come up in discussions of climate change induced migration; however, most evidence suggests that climate-driven migration is more likely to be internal rather than cross-border (Clement et al. 2021), making this framework less appropriate for understanding climate-driven migration.

Recently there has been an increased focus on understanding uncertainty and risk<sup>4</sup> as factors affecting migration decisions. The recent COVID 19 pandemic and its adverse implications have focused attention on shock-related migration, or shock mobility (Xiang 2021). Shock mobility includes displacements, distress migration and forced migration which are often

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<sup>4</sup> Risk refers to decision-making when desired outcomes are not certain but the decisionmaker knows the probabilities of different outcomes, whereas uncertainty is when outcomes or their probabilities are unknown to the decisionmaker. So the same event can increase risk and uncertainty based on the knowledge of the decisionmaker.

created by the state of alarm in a crisis situation which offers limited alternative choices to escape the associated threats (Hear 1998; Xiang 2021). Such shocks go beyond pandemics and also include short-lived socioeconomic shocks (e.g., 1997 Asian financial crisis, 2008 Economic recession) (Xiang 2021). Climate change and related extreme weather events are one of the biggest contributors to (relatively) low-probability but high-impact risk factors in the 21st century (Pigué et al 2011). This framework is particularly relevant in explaining migration during natural disasters. However, the theory focuses more on flows and does not address the decision-making process of the individual actors (migrants) or possible reasons for variations in impact by gender.

Another prominent theoretical framework which has examined climate induced migration decisions is the New Economics of Labour Migration (NELM) (Taylor 1999). Under this framework, when faced with increased uncertainty, households are expected to respond by diversifying their income sources. A household agrees on the migration of at least one eligible family member to maximize household welfare through diversification. Williams and Gray (2020) argue that changing weather patterns influence migration decisions by aggravating vulnerability – as weather variability increases so do uncertainties about crop yield, reducing capability of households to support themselves. Households respond by having a member migrate to urban areas for non-agricultural jobs (Cai et al. 2016), as these jobs may offer not only higher wages and also lower variance (An and Becker 2013). The NELM framework makes two important contributions to understanding migration. First, this theory conceptualizes migration as a mechanism of diversifying income in order to reduce the risks associated with one income source. Secondly, this theory views migration as a household decision rather than an individual one.

A recent conceptual framework which incorporates the view that households are an important unit of analysis in migration decisions is the Conflict Migration Model (CMM) (Sirkeci 2009; Aksu Kargin and Sirkeci 2023). The CMM views migration as a result of human insecurity that originates from three levels of conflict: macro (conflicts at the state level), mezzo (conflicts experienced at the community/society level by women), and micro (tensions between family members). This framework emphasizes the way that a complex of different factors will play into migration decisions. In addition to focusing on the ways that the three levels of conflict can result in deficits that the household or individual seeks to address through migration, this framework recognizes that migration requires resources (capabilities). A decision to migrate will result not only from an evaluation of costs and benefits (here defined broadly in terms of human well-being), but also from the capabilities (defined as financial capital, social capital, human capital, and physical capital).

The migration frameworks reviewed here<sup>5</sup> either ignore, or do not adequately address, the role of gender in migration. The neoclassical framework focuses primarily on the costs and benefits of migration, particularly wage differentials between current and expected occupations. While one could extrapolate that men and women face different wages, which would affect their evaluation, this is not directly considered by the theory. Lee's (1966) push-pull theory goes a step towards including gender, considering gender to be one of the social factors that can affect the decision to migrate, but does not explain why decisions might differ

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<sup>5</sup> As well as other frameworks outside economics (Pessar 2003).



by gender. The shock mobility theory, when bringing in the concepts of uncertainty and forced migration (Xiang 2021), does not consider whether men and women would face different levels of risk or respond to the same risk differently. The NELM theory considers the household's role in migration decision-making, with costs, benefits, and risks pooled by the household (Stark and Bloom 1985), but follows the unitary model of the household (Alderman et al. 1995). The NELM does not consider how the preferences of household members with respect to migration might differ by gender, or how households make decisions in the context of members with different preferences. The CMM framework, like the others, could be adapted to incorporate gender differences, but to date this has not been done.

The conceptual gap is important given that empirical research shows that mobility varies significantly by gender. Studies show that men and women circulate differently for economic opportunities (Piper 2005), and that extreme weather events and climate shocks have different effects on men's and women's mobilities (Gray and Mueller 2012), with women more likely to cope using measures other than migration. For example, a review of the literature finds that when men choose to migrate in response to climate change, women are more likely to adjust production in small scale agriculture or petty trade (Call and Sellers 2019). In an interdisciplinary review of Mexico-US migration studies, Donato et al. (2006) find that gender-specific dynamics within households, as well as safety expectations at the border (which vary for men and women), influence migration decisions. Mobility due to the pandemic was also found to be highly gendered both in both industrialized and less industrialized countries (Caselli et al. 2022; Borkowski, Jażdżewska-Gutta, and Szmelter-Jarosz 2021; Porter et al. 2021). A study of Italy, Portugal and Spain found that the mobility of young women was the most affected among all demographic groups, as lockdown regulations increased their child care burden of out-of-school children (Porter et al. 2021), whereas in Nigeria, South Africa, and Tunisia, women were found to be disproportionately affected by lockdown regulations but also changes in public transportation availability, leading to their lower mobility (Caselli et al. 2022). In our next section, we propose a framework for understanding factors that may give rise to such differences in climate change-induced migration.

### **Evidence of the Need for a Gendered Conceptual Framework**

A significant literature in feminist economics and related fields provides evidence of channels through which climate change could affect men and women differently, influencing their decisions about migration and their ability to migrate. Household bargaining models, which recognize that households are made up of members with diverse preferences, and that gender affects how these preferences are considered in household decision-making, provide frameworks for analyzing how the gendered impacts of climate change might be translated into decisions about migration. In this section, we review likely channels through which gender will differentiate climate impacts on men and women, their adaptations, and their choices, citing examples of the evidence.

Following this review, in Section 4, we propose a gendered framework for analyzing climate impacts on migration which incorporates these dynamics. Our framework focuses mainly on internal migration, as it is a more common response to climate change and extreme weather events, being relatively more affordable and easier to undertake. Much of the framework could equally apply to decisions about international migration, however, understanding that decisions related to international migration require more time and resources, and that there

may be gendered impacts of legal and institutional factors related to migration which are not considered here. We focus particularly on dynamics in agricultural households, as these are “most likely to be affected by climate change” (Call and Sellers 2019) but, again, the framework could be adapted to model urban areas. Finally, while migration decisions involve a comparison of current conditions with conditions expected in the area to which migration is being considered, here we focus mainly on demonstrating how the evaluation of current conditions, and the capability to respond to these, will differ by gender. Evaluation of the potential destination would be similarly gendered, although the specific types of income or infrastructure considered in the evaluation might differ if the intended destination is an urban location. Our focus is consistent with the existing literature on climate-driven migration.

### **Differential impact on production and income**

As is well-documented, men’s and women’s agricultural production varies (FAO 2011). Men and women often cultivate different crops and have different levels and forms of commercialization, owing to differences in assets, preferences, and social and cultural norms (FAO 2011). A common pattern is for men to focus on market production while female farmers focus on crops for self-consumption, as was reported, for example, in a study of crop choices among farmers in Bangladesh and West Bengal of India (Nidumolu et al. 2022). In many countries, women commonly rear poultry and smaller livestock, while men herd larger cattle (Kristjanson et al. 2014; Meurs et al. 2022). Relatedly, men and women have different production goals. In Bangladesh and West Bengal, men focused on profit while women focused on reducing time demands (Nidumolu et al. 2022). In a study in Kenya, women similarly saw livestock as a means to securing family nutrition, while men viewed them as long-term investments (Kristjanson et al. 2014). These differences are tied to social norms regarding the household division of labor, but women’s different emphasis on commercialization may also be linked to limitations on women’s market access. Men’s and women’s plots may have different access to roads and markets, or women may face mobility constraints imposed by social and gender norms. Women with higher burdens of unpaid housework may choose to sell nearby at lower prices, rather than travel to further markets for better profits. All these differences result in different productivity for men and women and may also mean that their production is affected differently by climate change.

Gender differences in access to assets, inputs and information also contribute to different climate impacts in agriculture. Women generally have access to less and lower quality land, as well as less access to finance and technology (Meinzen-Dick et al. 2014; Doss 2014). Women may thus be more quickly impacted by climate change. Women farmers also report less access to extension information services that affect their knowledge of good agricultural practices (Kristjanson et al. 2014), which can lead to greater negative impacts on productivity and income in the face of changing climate. Gendered impacts may be mediated by other factors. Women from socially excluded and economically vulnerable groups may be even more likely to lack resources. For example, women from poorer households in rural Pakistan were more likely to work in agriculture and to have livelihood vulnerability from climate change than women in more economically developed areas (Qaisrani and Batool 2021).

Even when men and women share the same plot or crop production, women often have different roles in the production. Women may mainly contribute to tasks considered to be household work (for example, crop processing and food preparation), caring tasks (care for



young or sick animals) (Meurs et al. 2022), or specialize in tasks such as weeding, which are seen as “helping” (Doss 2014). When working as wage laborers on others’ land, women may be mainly hired as seasonal workers (Doss 2014). If climate change or extreme weather events particularly increase the time spent on watering or weeding, raise the disease burden of livestock or change the seasonality of agricultural work, these are likely to impact the labor of men and women in divergent ways.

Changes in precipitation and temperature may not have the same impact on different crops and livestock. As a result, climate change may affect men’s and women’s agricultural labor, production and income differently. These varying impacts on production and income create different incentives for migration, as well as on men’s and women’s ability to bear the costs of migration, if income is not fully pooled in the household. On one hand, lower income and assets may limit women’s ability to afford migration. On the other hand, impoverishment and landlessness can motivate women to migrate in search for better income opportunities in response to climate shocks (Curran and Meijer-Irons 2014; Patel and Giri 2019).

### Unpaid Work

Households depend heavily on unpaid work in domestic and caregiving activities performed within and between households, including cleaning, cooking, childcare, producing food. Women do the vast majority of this work globally (UN Women 2023). Climate change is causing massive, and little-studied, impacts on this unpaid domestic and care work. Floods, drought, and intense heat and wind disrupt normal practices of water and fuel access, can force households temporarily or permanently relocate, and can increase disease and injury, particularly among the very young and very old. All of these changes are likely to directly impact unpaid work time (Butt, Shah, and Yahya 2020; Abbasi et al. 2021; Tamang and Udas 2021). In addition, extreme weather events often damage infrastructure, interrupting access to water, transport, and electricity, and further increasing unpaid work time. For example, chronic droughts in Karnataka in India have changed the water landscape, resulting in a shift from community management to individual extraction systems. For families that are unable to afford groundwater extraction systems, the burden of collecting water from far away places fall mostly on women and children (Singh 2021). To date, there has been little research on the impact of climate change on unpaid work.<sup>6</sup> One current project examines impacts of climate change on unpaid care work in Mongolia. Preliminary results suggest increasing time needed for fuel collection (during colder winters), and increased disease and injury and related care, as well as increases in unpaid work related to dislocation of the household or of the agricultural activities—rebuilding shelter, moving, or daily traveling long distances to places where animals are being kept safe (Personal Communication, October 3, 2023).

Increases in unpaid work resulting from climate change and extreme climate events can fall heavily on women, directly affecting their perspectives on migration. In addition, the increasing unpaid work burdens, including collecting water or cleaning up after floods, may leave women with less time for education and income-generating activities, indirectly impacting their migration decisions (Andersen et al. 2014). At the same time, caring responsibilities for dependent family members may lead women to remain as men migrate, in

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<sup>6</sup> One qualitative study provides some limited evidence (Butt, et. al. 2020); for indirect effects, see Hellden et. al. 2021.

order to fulfill these care needs. As men migrate though, this can further increase women's unpaid work. Studies have shown that unpaid work burdens escalate among family members left behind, creating dynamic effects on migration incentives (Lam and Yeoh 2019; Rao et al. 2020), but possibly also further limiting women's capability to migrate. Factors such as educational attainment, occupation, ethnicity and geographical location play important mediating roles, as unpaid work burdens and market substitutes for unpaid work vary across women and households.

## **Gender Differences in Preferences**

There is significant evidence that men and women have different preferences in economic situations. In experimental settings, women tend to be more inequality averse and altruistic than men (Eswaran 2014). This can affect women's preferences with respect to household allocations of resources. Empirical research shows that women, relative to men, spend more of their income on food for the family and children's health, possibly due to being socialized to be the caretakers of the family (Quisumbing et al. 1996).

Men and women also have different levels of risk preferences that can affect their economic decisions. Studies in controlled experiments find that women are more risk-averse than men (Booth and Katic 2013), and that the differences are more prominent in traditional patriarchal families where fathers have more power than mothers (Grasmick et al. 1996). Empirical studies looking at men and women farmers Tanzania and Ghana find that women are generally more risk averse than men in their agricultural practices (Magnan et al. 2020; Asravor 2019).

However, risk preferences may change based on circumstances. Some studies indicate that while women generally perceive risks as higher than men, this difference gets smaller in stressful situations (Greenberg and Schneider 1995). This could mean that when climate change stressors are not acute, men and women have more divergent risk perceptions and preferences compared to when climate change stressors are strong. In fact, a study of risk preferences after a typhoon in the Philippines found that, following the natural disaster, fishers affected by the typhoon were more risk-taking – a result driven mostly by changes in women's risk preference (Abatayo and Lynham 2020).

Education levels, experience, and access to information can also greatly affect risk perception and preferences (Villacis et al 2021), and these factors often vary significantly by gender. Despite being more risk averse, numerous studies find that women are less likely to buy weather-index-based agricultural insurance than men, a preference that may be driven by other differences in preferences and information, including women's greater lack of institutional trust and lower financial literacy (Aker et al. 2016; Delavallade et al. 2015).

With regards to migration itself, limited, descriptive findings of migration patterns suggest that women have different preferences in migration decisions than men. For example, some scholars argue that women may have a preference for migrating to urban areas to escape traditional gender-roles and gender-based discrimination at home (Jollie and Reeves 2005). Others find that women are less likely to migrate internationally without documentation (Donato and Patterson 2004), and rural women generally migrate internationally only if strong social networks are in place or recruitment agencies can facilitate the whole process (IOM 2012)--differences potentially linked to the male-female gap in risk preferences.





Gendered differences in preferences can affect climate change-induced migration decisions in two ways. Firstly, because men and women have different preferences, climate change may affect issues they care about differently. For example, if climate impacts affect access to schooling or causes more childhood disease, women may react more strongly than men do. Secondly, men and women may see migration risks differently and therefore reach different decisions in the face of the same climate disruptions.

### **Variation in the Adaptation Strategies**

Faced with climate change and extreme weather events, individuals and households will consider a range of adaptation strategies as alternatives to migration. Available adaptation strategies, and the costs and benefits of these strategies, will vary by gender (Mekonnen 2022) due to the above-described differences in production focus, task specialization, income, assets (Call and Sellers 2019), unpaid work burdens, norms and preferences. Comparing male and female heads of farm household in Ghana, for example, researchers found that men were more likely than women to adopt resource-using climate-adaptive practices such as investing in drought-resistant seeds, and soil and water conservation practices, while female heads adapted to climate impacts mainly by borrowing money or selling wild fruits and vegetables. Men were also more likely to sell assets (livestock) or migrate than women (Assan et al. 2018). In a second study of Ghana (Wrigley-Asante et al. 2017), the researchers found that in response to climate change men were more likely to engage in on-farm agronomic practices such as the use of artificial fertilizers, while women were more likely to take up off-farm trading. In Kenya, Caretta and Börjeson (Caretta and Börjeson 2015) demonstrated that women in farming communities utilize low resource-requiring strategies like alternative seed varieties and collecting forest products in response to climate shocks, while men were more prone to migrate. In the absence of other adaptation strategies, women may often fall into a cycle of borrowing and repayment. Multiple studies in South Asia found that the loan burden among households went up with its female to male ratio (Udas, Prakash, and Goodrich 2021; Singh 2021). Gender variation in adaptation strategies may contribute to both gender differences in motivation and ability to migrate.

Having assets which can be sold may facilitate the choice of migration as an adaptation, but one key agricultural asset, land, appears more likely to serve as an anchor. Despite being important agricultural producers, women own little agricultural land (FAO 2011). A study by Gray and Mueller (2012) of extreme weather events and migration in Bangladesh found that landownership was inversely related to choosing migration as an adaptation. Women own little land in Bangladesh, and the study finds that flood events and crop failure led more women to migrate than men. Similarly, in El Salvador, landowners were less likely to migrate compared to landless workers in response to temperature shocks, since they could better adapt by altering production techniques or accessing credits and insurance (Ibáñez et al. 2022).

In a review of 131 papers on the topic of climate adaptation and gender, Call and Sellers (2019) found that women were consistently less likely than men to engage in climate-responsive adaptation, in part because women, already faced with the double burden of paid and unpaid work, saw the available strategies as increasing labor burdens without sufficiently contributing to their income. Call and Sellers (2019) found that disparities in information and access to natural resources also contributed to the differences in adaptations.

Costs and benefits of migration as an adaptation strategy also vary by gender. Migration can have particular costs for women. During the migration process, women are susceptible to gender-based violence, encompassing physical, sexual, and psychological abuse (CARE International 2020). Moreover, women who migrate may experience disruption of their extended family and social networks. With the loss of these networks, women may find face greater burdens of care and unpaid work, and therefore reduced economic opportunities in destination regions. Even in cases where migration is unwelcome, and people are forced to move due to disasters, it is often men who migrate, as alternative livelihoods such as construction and mechanized farming are considered to be more suitable for men (Udas, Prakash, and Goodrich 2021).

### **Intrahousehold Bargaining**

Over the past two decades, household decision-making has increasingly been modeled as the outcome of an intra-household bargaining process (Ott 2012; Katz 1997). Men and women in households are recognized to have both distinct preferences, and different levels say in household decisions. Studies in South Asia, for example, often find that in agricultural societies, it is men who mostly control economic decisions for both men and women (Tamang and Udas 2021; Qaisrani and Batool 2021; Solomon and Rao 2021). This inequality of say is often modeled as bargaining power (for an example, see the Nash bargaining model in McElroy and Horney (1981). Characteristics such as education, access to income, social networks and ownership of assets, women's age and education relative to their spouse, as well as legal rights and institutional support outside the household, are thought to affect bargaining power in the household (Ghysels 2004; Agarwal 1997; Meurs and Ismaylov 2019). Social norms, and unpaid labor burdens may prevent women from having equal access to these sources of bargaining power, leaving women less able to negotiate outcomes in their interest (Deere and Doss 2006). Studies of joint families with multiple generations of family members show that bargaining can be complex, however, and social norms may play an important role in how decisions are made. A study in Pakistan, for example, found that older women in joint families have higher authority than younger generations, and are often consulted in decision-making by the men of the family (Qaisrani and Batool 2021).

Numerous studies have found that when women have more bargaining power in the household, they increase their participation in decisions, including those related to childbearing and care, allocation of household resources, occupational participation, and mobility (Eastin 2018). This suggests that, when women's bargaining power is low, household migration decisions may not fully reflect women's preferences. Jollie and Reeves (2005) argue that rural women's migration is especially influenced by intra-household gender relations and hierarchies. Their qualitative study of migration decisions in Andhra Pradesh, India found that women are much less likely to migrate for seasonal work even with strong financial incentives, due to the patriarchal norms and women's limited ability to negotiate reductions in their responsibilities for unpaid household work (Garikipati 2008). Studies in the US and Germany find that in dual income households where the man is considered the primary bread-winner, the family is more likely to relocate for the benefit of the man's income than to benefit the woman's (Bielby and Bielby 1992; Jürges 2006). Boas and Rothe (2016) specifically identify household bargaining power as a factor in migration decisions.



Climate change may act as a catalyst to strengthen or worsen women's bargaining power. Climate change can exacerbate prevailing norms and power differences, negatively affecting women's bargaining power. In a study of low- and middle-income countries, Eastin (2018) finds that climate shocks and disasters decreased gender equality by reducing women's economic and social rights, and these effects were more concentrated in patriarchal and agricultural societies. Climate impacts on production, assets, and unpaid work can all affect bargaining power through their impact on women's access to income. Climate-induced poverty can contribute to early marriage and fertility for girls, factors thought to reduce bargaining power (Meurs and Ismaylov 2019). A key link between extreme climate events and early marriages is the financial transactions between the families involved, as climate-affected families face financial distress. Corno et al. (2020) show that droughts led to an increase in marriages among girls aged 10-17 years in Sub-Saharan Africa, particularly in countries where bride prices exceeded 50 percent of the average in Sub-Saharan Africa. Khanna and Kochhar (2020) demonstrated that floods have causal relationship with early marriages, especially in communities where dowry<sup>7</sup> is customary.

### Proposed Unifying Gendered Framework

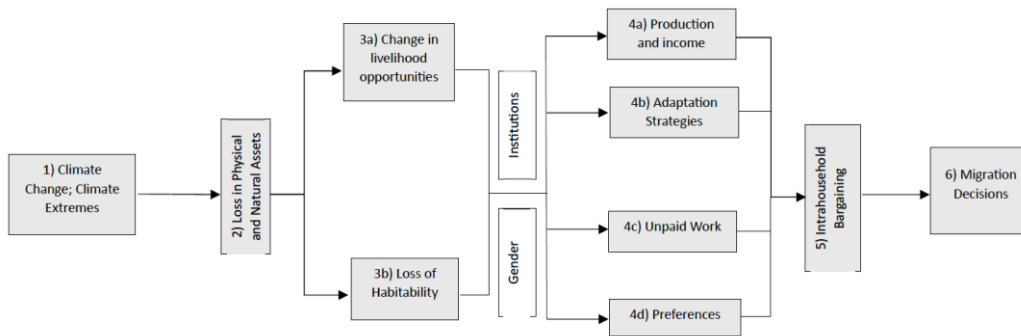
The gendered conceptual framework that we propose for understanding climate-related migration builds on existing migration theories in seeing migration decisions as driven by a cost-benefit analysis, where costs and benefits are broadly defined and include social and institutional considerations, as well as by considerations of risk and uncertainty. We incorporate the NELM approach of analyzing decisions at the household level, and the CMM argument that migration depends on capabilities as well as costs and benefits. The contribution of the framework is in defining 5 specific channels through which the costs, benefits, capabilities and decision-making are gendered. These channels summarize the material outlined in Section 3) above and are detailed in Figure 1.

Figure 1 depicts our framework for understanding climate-driven migration decisions. The elements 1-3 of the figure are consistent with existing cost-benefit frameworks. Climate change is expected to result in loss of physical assets (including infrastructure) and natural assets (land, animals, plants) which will, in turn, affect livelihoods and incomes, as well as the habitability of the areas where individuals reside, thus creating costs to which migration may be a response. Gendering these existing frameworks would add the insight that these losses are often experienced differently by men and women, as they have distinct occupations and property.

Our main contribution is to add the elements 4a-d and 5 in Figure 1. The material reviewed in section 3 provides the arguments for the inclusion of these channels. Men's and women's production and income will be affected differently by climate change and extreme climate events (4a). In the face of these impacts, they will have access to different adaptation strategies (4b). Climate change will have important impacts on unpaid house and care work, which will fall predominantly on women (4c). Women and men will experience these changing options and constraints through systematically different preferences, including risk preferences (4d). The differences in production and income, adaptation strategies and unpaid work will also impact on men's and women's capability to migrate in distinct ways.

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<sup>7</sup> A traditional payment made by bride's family to the groom's family in India.

**Figure 1.** A Gendered Conceptual Framework Linking Climate and Migration

Men and women bring their different experiences with climate impacts (4a-4c), and their different preferences (4d), to a household bargaining process (5) in which migration decisions are made. In this process, many women will have less bargaining power than men, although it will vary with their education, expected income and access to other physical, natural and social assets, as well as with their institutional setting (laws and social norms). Household decisions about whether to migrate, and who migrates, will reflect this uneven weighting of the distinct preferences.

This gendered analytical framework suggests that climate change and extreme climate events are likely to affect rural men's and women's migration in different ways, depending on the gendering through these key channels. Are men's crops more affected, or women's? What are the relative impacts on cash income more affected versus unpaid work? How are the costs and benefits of available adaptation strategies distributed across men and women? What capabilities do men and women have with which to undertake migration? How unequal is bargaining power in the household and who has more say? And how do climate change and events change bargaining power itself?

Of course, not all women, or all men, will experience climate change in the same way or have the same capabilities for responding. As demonstrated in many of the empirical analyses reviewed in section 3, impacts of climate change are likely to be intersectional, with some groups of women facing strong impacts of climate change or extreme weather events, perhaps through multiple channels, while other women experience fewer impacts, or perhaps mainly through one channel. Women in wealthier households, or with more education, or residing in urban areas may have access to more resources to use in adaptations other than migration, and they may be better able to hire other women to attend to increasing unpaid work. Some groups of women may be more constrained in their adaptations, or have less bargaining power in the household, due to specific social norms. Likewise, some groups of men (for example, landless and less wealthy men) may have little access to resources to use in adaptation, making their adaptation choice set more similar to some women's. Age is also an important intersectional variable that affects migration decisions. Women of reproductive years tend to have more child-rearing responsibilities and therefore lower individual mobility, whereas men of the same age group are more mobile (Garikipati 2008; An and Becker 2013). Access to resources needed for migration will vary similarly. The proposed gendered framework, thus, identifies a set of factors that should be considered in analyzing climate-driven migration; it



does not argue that a specific a list of factors will always play a significant role in every situation or for every individual.

## **Conclusion**

To date, few theoretical frameworks for understanding migration decisions have directly attended to climate-driven migration as a distinct case. The theoretical frameworks have also been mainly “gender-blind,” saying little about how migration decisions might differ for men and women. Empirical papers in recent years have, nonetheless, provided evidence of significant climate-driven migration, and evidence of important gender differences in migration patterns (Gray and Mueller 2012; Thiede and Gray 2017; Bleeker et al. 2021). In order to adequately understand and predict climate-driven migration, and to develop policy which might support households in choosing alternative adaptation strategies, a gendered analytical framework for understanding climate-driven migration is needed. We have presented such a framework in this paper.

We began by reviewing existing theoretical frameworks explaining migration and their attention to gender difference. The neoclassical approach to migration serves as a useful analytical starting point, framing migration decisions as a result of cost-benefit analysis, but the framework fails to explore the ways that costs and benefits will vary by gender. More recent frameworks bring in considerations of uncertainty and political economy, including a focus on multiple forms of conflict. These, again, are important contributions, which we partially incorporate into our proposed framework but, in their current form, these theories too ignore ways that uncertainty and political economy contexts may affect men’s and women’s migration preferences differently. An important contribution, of NELM, is to recognize the role of the household in making migration decisions, but the usefulness of this approach is limited by its reliance on the neoclassical unitary model of households, which ignores the need for household members to bargain over the weight of their distinct preferences in migration decisions.

Our framework builds on existing literature in Feminist Economics and related gender research to lay out four channels through which climate change will impact on rural men and women differently: production and income, adaptation strategies, unpaid work and preferences. We review suggestive empirical evidence that men and women in agricultural households can be impacted differently through these channels. We argue that men’s and women’s migration choices, as impacted through these channels, must be bargained over to arrive at a household decision (a fifth channel through which migration decisions are gendered). The decision might involve men’s migration or women’s, or migration of the whole family. But it will result from bargaining over the best way to address the interests of the different household members. Knowing who migrated tells us little about who participated in the migration decision or what their preferences were. By integrating these diverse factors that contribute to migration decisions, accounting for the gender differences, our framework offers a holistic approach to understanding migration decisions, identifying variables that should be considered in future empirical work.

In this paper, we have focused on applying our framework to rural, agricultural households, and decisions related to internal migration. The framework could easily be made more general, however. Male-female differences in production and income, unpaid work, available adaptation strategies and preferences apply equally in other contexts, only the specifics will

vary. The incorporation of household bargaining, too, is a general modeling approach, not limited to the particular context we have focused on here. Further, we have focused simply on the decision to migrate, but migration decisions can vary in other ways, such as whether migration will be international versus internal, permanent or temporary, individual or with family, or whether to seek documents or travel undocumented.

The importance of understanding the causal pathways through which climate change affects men and women differently, and thus result in different migration decisions, is manifold. Perhaps most importantly, understanding the gendered decision-making process behind migration is necessary to develop effective supports for adapting to climate change while remaining in place, where that is possible. Reducing forced displacement and, when necessary, allowing for planned migration is beneficial for both those who migrate and those who stay behind. Understanding the gendered patterns of migration is also important for the development of effective urban policies to accommodate incoming migrants. Understanding the gendered patterns of who remains behind are equally important for developing policies support that the migrant-sending households, in the face of changing household structures and gender roles in agriculture in places of origin. The gendered conceptual framework proposed here provides a basis for beginning this work.

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