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Why Gender Matters: Climate Change and Agriculture in India

Somiha Chatterjee



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Climate change is a threat to all livelihoods.

However, people engaged in agriculture, particularly women, are disproportionately burdened by the vagaries of climate.

ABSTRACT

Climate change is a threat to all livelihoods. However, people engaged in agriculture, particularly women, are disproportionately burdened by the vagaries of climate. As a consequence, existing gender inequalities in agriculture are likely to widen. This paper examines gender issues in Indian agriculture with respect to climate change and identifies gaps in integrating gender into India's climate change and agriculture policies. It also examines the National Mission for Sustainable Agriculture (NMSA) under the National Action Plan for Climate Change (NAPCC) and the State Action Plans for Climate Change (SAPCC) of Odisha, Kerala, and Gujarat to gauge the level of gender mainstreaming in these state policies.

INTRODUCTION: CLIMATE CHANGE, AGRICULTURE AND WOMEN

In 2020, India ranked 112 out of 153 countries in the World Economic Forum's Global Gender Gap Index. It also has one of the lowest economic participation levels and opportunities for women, ranking 149 out of 153 countries (World Economic Forum 2020). Such gender inequalities coupled with social norms, stigma, limited mobility, low literacy rate, lack of financial resources, restricted rights, and a muted voice in shaping decisions make women highly vulnerable to climate change, which is likely to magnify existing patterns of gender disadvantage (UNDP 2007).

Evidence shows that women in agriculture tend to opt for food crops as opposed to men, who mostly opt for cash crops (UNDAW & UNESCO 2010). Due to climate change, by 2050, South Asia's rice production is anticipated to drop by 14%, wheat production by 49%, and maize production by 9% (Asian Development Bank 2013: 10). While the impact of climate change will vary across countries in this region, sharp price increases are inevitable for these major food crops. Because of the increased proportion of women among small-scale food crop producers along with their low bargaining power (ibid), the subsequent impact of a spike in prices will severely affect women.

Additionally, women are primarily responsible for collecting water to satisfy household and irrigation needs. Climate change has resulted in extended dry periods, resulting in women having to cover longer distances with added stress to collect water. This hinders their capacity to invest time in activities that can generate income. Given that the dry season is a critical time for farming, using water for irrigation is prioritised over household needs, indicating the limited influence women have in decision making. The existing economic constraints and social influences render women disproportionately vulnerable to disasters and the negative impact of climate change (GoK and CCIP 2018: 24). In fact, women experience the effects of climate change more sensitively than men. A study conducted by the International Food Policy Research Institute (IFPRI) in 2015 found that women were more likely to notice impacts of climate change than men on reduced water availability (18% vs 9%), agricultural productivity (87% vs 72%), and livestock problems (17% vs 8%) (P. Kristjanson et al. 2015: 1).

In India, around 65% of female workers depend on agriculture, and they contribute to 55-66% of the total agricultural production (Census 2011). Women constitute a higher proportion of casual agricultural labour, while more men take up wage labour in the non-farm sector. Women doing casual labour are reportedly poorer than men doing wage labour (Kapoor 2011). The Economic Survey 2017-18 noted that with the outmigration of men, there is a growing feminisation of agriculture in India, leading to an increasing number of women in roles such as cultivators, agricultural labourers, and entrepreneurs (PIB 2018). This has led to an increased burden on women as their farm work is treated as an extension to their household work. Because of low remittances, they are also unable to hire more workers to compensate for absent male family members, which also amplifies their workload (Roy & Nangia 2005).

In rural areas, about 80% of rural women are engaged in agricultural activities. According to reports on gender-differentiated impacts of climate change by the Food and Agriculture Organisation of the United Nations (FAO), women working

in the natural resources sector like agriculture are likely to be the most vulnerable to climate change. This is especially acute for women from developing countries where they are primarily responsible for procuring water, food, firewood, and fuel — all of which are natural resources significantly affected by climate change. At the same time, they have limited access to resources like technology, finances, training, land rights etc., which affects not just their economic agency, but also limits their productivity. Thus, it is fair to say that men and women experience and cope with climate change differently due to gender roles and gendered access to resources.

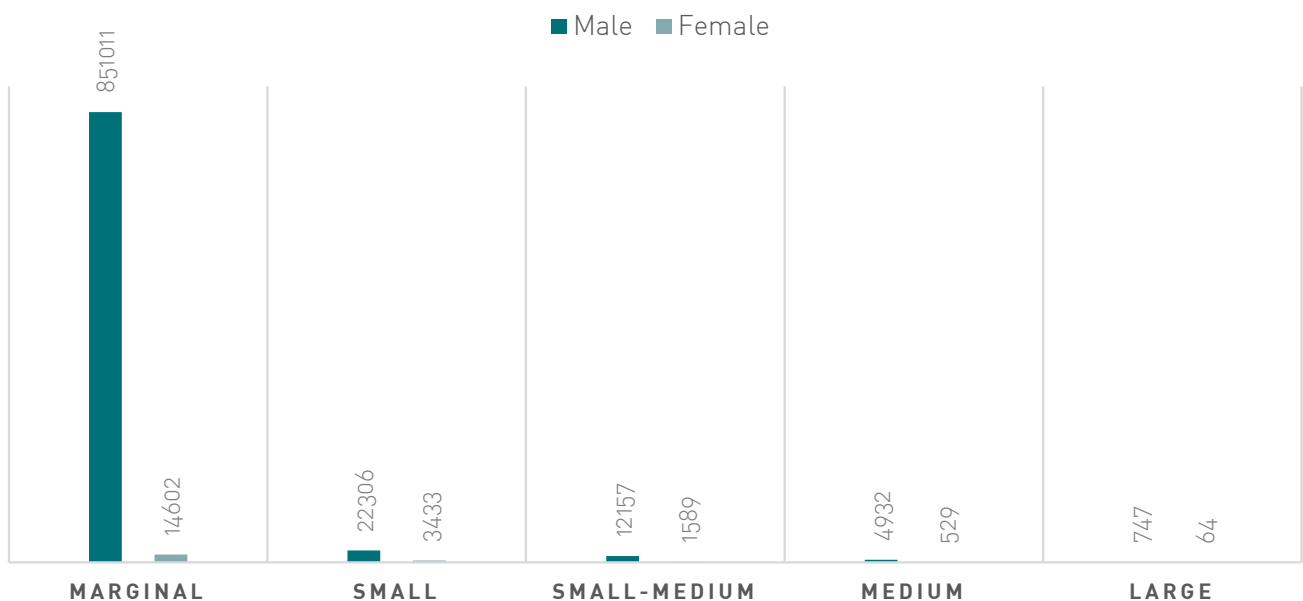
The following subsections discuss India’s agricultural sector’s gendered dimensions and how they directly impact women’s ability to adapt to climate change.

GENDER RELATED ISSUES IN INDIA’S AGRICULTURAL SECTOR

Limited Ownership Rights

According to a Census (2011), nearly 65% of India’s total female workforce is engaged in agricultural work, yet only 13.87% of the landholdings are operated by women (Figure 1). While the percentage share of female operational holders has increased from 12.79% in 2010-11 to 13.87% in 2015-16, with an increase in the area operated by women from 10.36% in 2010-11 to 11.57% in 2015-16 (MoAFW 2018), the level of ownership continues to remain relatively low as compared to their male counterpart.

Figure 1: Number of Operational Holdings by Gender - All Social Groups, All India



Source: Agricultural Census 2015-16

While women in India have the legal right to own land, very few actually do. They also have limited control over the land and its assets like machinery, equipment, and other facilities. The Indian Human Development Survey (IHDS) findings reported that India is one of 15 countries in the world where patriarchal traditions prevent women from enjoying equal property ownership rights (Mehta 2018). The lack of ownership rights results in women being unable to access institutional credit and bank loans, and they are unable to avail government schemes for agricultural benefit, impairing their decision-making powers and productive capacities (Saxena 2012).

A recent study, conducted by the International Union for Conservation of Nature (IUCN), found strong evidence indicating a positive causal relationship between climate change and gender-based violence. In India, women are at a disadvantage in terms of ownership rights, making them more susceptible to exploitation. A study on marital violence and property ownership found that almost 49% of property-less women experienced physical violence (Srivastava and Srivastava 2017). Additionally, the study pointed out that women's ownership rights declined with an increase in violence (ibid).

Climate change threatens women's land rights through desertification, soil degradation, and increased contestation over demand for arable land. Additionally, "land grabbing" for investment, large scale industrial agriculture, biofuel production, or as a result of market-based carbon schemes further undercuts women's land rights (Asia Pacific Forum on Women Law and Development et al., 2016: 2). In the long run, climate change threatens to marginalise women further than they already have been, making it harder for them to access, control, and make decisions about land and vital natural resources (ibid).

Lack of Access to Financial Resources

Women's ability to adapt to climate change depends largely on the extent to which they can control and have access to economic and financial resources (UN 2009). However, most rural financial programmes in India are designed with a male head of household as the intended beneficiary, failing to recognise women as productive agents in the agricultural sector who also have financial needs and constraints (Fletschner and Kenney 2014). Landlessness also limits the options available to women in accessing rural credit, as they have no collateral security to offer. Furthermore, women are unable to buy fertilisers, better seeds, pesticides, and adopt sustainable agricultural practices that can increase agricultural productivity, owing to a lack of funds designated for capital investments.

Without proper access to financial resources, women engaged in agriculture are vulnerable to losing the few assets they possess in the event of droughts, floods, and other natural calamities. According to the Reserve Bank of India report on basic statistical returns from 2019, the share of females comprising total credit and aggregate deposits of individuals was 20.4% and 32.8% (RBI 2019). While this share has increased from previous years, the coverage still remains quite poor. In 1998, the central government introduced the Kisan Credit Card scheme to make credit easily accessible to farmers. However, low awareness amongst women augmented gender biases, preventing a large number of women from benefiting from the scheme. According to a report, merely 5% of women have been issued Kisan Credit Cards in India (Seethalakshmi 2017).

Another impediment in accessing financial resources is a lack of financial literacy among rural women. A study conducted by Shawn Cole et al.¹ (2011) found that the financial literacy rate is low in rural India, with the mean score being 34%. The study also found that rural women demonstrated the lowest level of financial literacy amongst all respondents. While the central government has attempted to address the issue of financial inclusion and literacy by introducing the Prime Minister Jan Dhan Yojna (PMJDY) scheme and setting up Financial Literacy and Credit Counselling (FLCC) centres², the usage of such financial services remains low among rural women. Out of the 40.98 crore beneficiaries of the PMJDY scheme, about 22.44 crore beneficiaries are women. Despite this high number, more than half of the new accounts are inactive. The FLCCs, owing to their limited outreach, have failed to impart financial education among rural women. A study conducted by the National Bank for Agriculture and Rural Development (NABARD) reported that only 8.9% of women were exposed to information sessions on financial education (NABARD, 2016: 9). The absence of women in financial literacy programmes reflects an overall need for engendering financial literacy programmes in India.

Lack of Training in Agriculture

Without training in alternative cultivation methods, efficient use of water resources and domestic energy, women from rural areas are hindered in their capacity to use scarce resources economically. Training in cultivation methods allows for crop security, even in case of natural resource depletion or unforeseen weather events. This is essential for women from these regions in securing or expanding their livelihood options (Ajani et al., 2013). In 1996, the central government began setting up Krishi Vigyan Kendras for the education and training of women engaged in agriculture. However, these Kendras only focused on areas like home economics and ignored women's productive role in agricultural operations (Srivastava and Srivastav 2017).

There is a lack of training programmes that educate women in climate and weather information, including helping them build their capacity to use this type of information, which hampers their ability to adapt to climate change. The agricultural extension services provided by governmental and non-governmental agencies for training and technical advice cater mostly to men, the provisions of which emanate from an inherent male bias. Such biases towards men and lack of facilities when it comes to training have led to the exclusion of women farmers and has compounded a structural issue of the invisibility of women within the agricultural sector.

¹ The study measures the level and predictors of financial literacy, and its relationship to demand for financial services, in two of the most populous countries of the world. They conducted two large household surveys in India and Indonesia, and found strong relationships between financial literacy and financial behaviour.

² In 2007, the RBI launched a programme aimed at setting up Financial Literacy and Credit Counselling Centres (FLCCs) across the country to promote financial literacy by combating information asymmetry, to enable informed financial decisions. The RBI later revised the FLC guidelines in 2017, and launched a pilot project for setting up Centres of Financial Literacy (CFLs) in 80 blocks across nine states (NABARD, 2018).

Gender-insensitive Technology Choices

Technology supports an efficient way to utilise natural resources and improve farmer's income by increasing agricultural production. While appropriate technological choices can significantly reduce women's burden in activities like transplanting, sowing of crops, nutrient management etc. (Khatri-Chhetri et al., 2020), the lack of consideration towards women while building these technologies leads to widespread exclusion. There is evidence that the mechanisation of agriculture in India progressed with an insensitivity towards gender, leading to large scale unemployment among rural women post the Green Revolution (Singh et al., 2013).

Women tend to be crowded-out in the adoption of technological choices that require greater interaction with the mainstream market. They lack cash and have fewer opportunities than men to use transport facilities, limiting their access to new technology. Agricultural technology, including farming tools and vehicles like tractors, is often incompatible with women's physiology, as it fails to properly aid the tasks women perform and tends to be irrelevant to the local conditions of the productive system that women engage in (Ogechi 2016). Most machines are male-biased, designed to be larger, faster, and more powerful while virtually ignoring needs that women may have technologically. This issue exemplifies the need to integrate a diverse group of user needs in technological development, which will strengthen the adaptive capacities of women in combating climate change (UN Women Watch 2009).

ASSESSMENT OF GENDER SENSITIVITY IN THE NATIONAL MISSION FOR SUSTAINABLE AGRICULTURE

In response to the 2007 Intergovernmental Panel on Climate Change's (IPCC) fourth assessment report, which warned countries about the intensifying impacts of climate change and the increasing frequency of extreme weather events, India published its 2008 National Action Plan for Climate Change (NAPCC). The National Mission for Sustainable Agriculture (NMSA) is one of the eight missions under the NAPCC that aims to adapt and mitigate climate change's effects on agriculture. It recognises existing issues and challenges related to agriculture and the possibility of these issues being exacerbated by climate change. The key components of the mission include: Rain-fed Area Development (RAD), Sub-mission on Agroforestry (SMA), soil health management, national bamboo mission, and climate change and sustainable agriculture monitoring. While the NAPCC recognises that women are disproportionately affected by climate change issues, it fails to address the dimensions related to gender in its adaptation measures (Kapoor 2011).

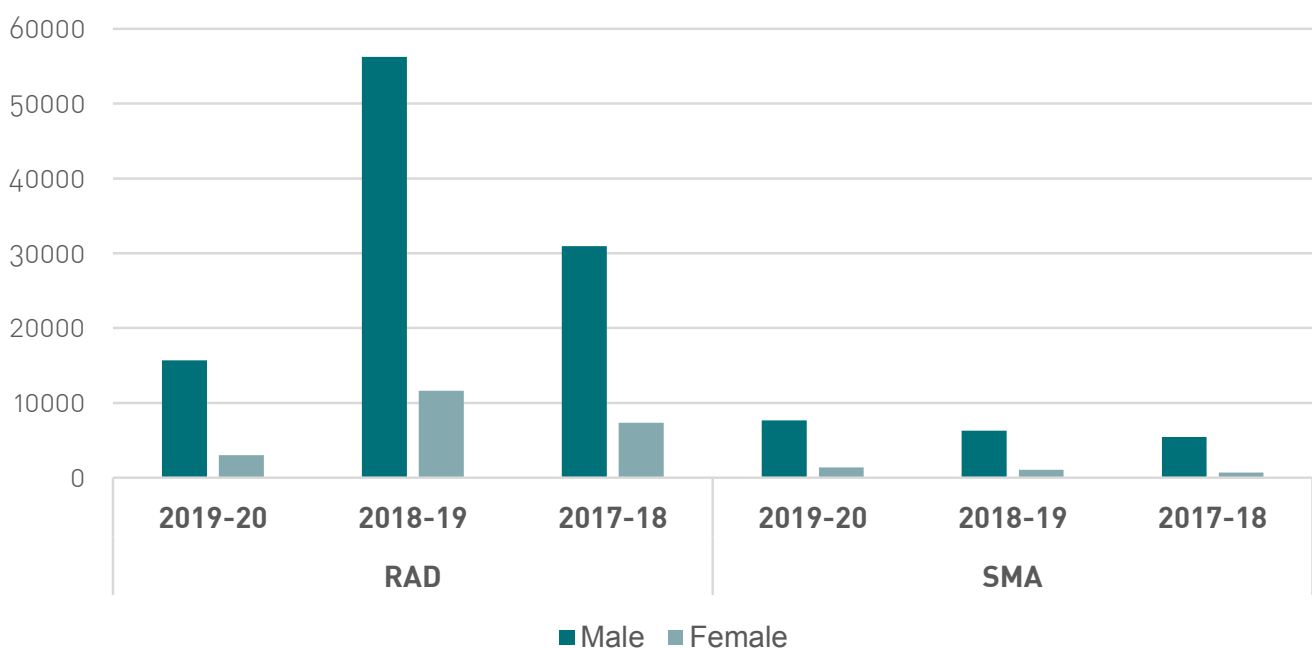
Some of the mission's major achievements include developing degraded land, increasing agricultural storage capacity, and increasing micro-irrigation to promote efficient use of water (Singh 2017). Upon careful evaluation, the mission's techno-managerial nature is revealed aside from a lack of focus on marginal farmers, who are most vulnerable to the effects of climate change. As discussed in the previous section, adaptation measures are crucial for women engaged in the agricultural sector due to their rising vulnerability in the face of

climate change. Despite a budget of INR 1,08,000 crores approved for the NMSA mission under the 12th five-year-plan, no funds were dedicated to adaptation and coping mechanisms (Rattani 2018: 26-29).

A critical component of the mission includes promoting sustainable agriculture through improved soil conservation practices, the use of biotechnology, and improved seed varieties. Still, the mission has failed to devise a focused approach towards training marginalised farmers, especially women, in climate-smart agricultural practices (Rattani 2018: 29). In 2018, the central government introduced the Pradhan Mantri Kisan Suraksha Abhiyan Utthan Mahabhiyan (PM KUSUM) scheme for solar farming to make agriculture more sustainable and resilient in light of climate change. However, not integrating dimensions of gender into the plan limits women from benefiting from the plan in a meaningful way (Roy 2018).

The guidelines for most schemes related to NMSA envisage at least 30% of allocations to be for women (Ministry of Agriculture and Farmers Welfare [MoAFW], 2017). Considerations about gender are being integrated into ongoing policies in recent years under increased international attention. However, few women have benefitted from these schemes because there were hardly any efforts made to address fundamental challenges in achieving gender equality. The Rain-fed Area Development (RAD) component under the NMSA, which focuses on Integrated Farming System (IFS) for enhancing productivity and minimising risks associated with climatic variability, is one of the few components which has managed to properly utilise funds since the mission came into force (MoAFW 2020). The total allocation for this component, between the period of 2019-20, accounted for INR 58,187 lakh. However, only 16.4% of the beneficiaries under RAD were women. This trend has been recurrent across schemes.

Figure 2: Beneficiaries under RAD & SMA



Source: National Mission for Sustainable Agriculture (NMSA)

ASSESSMENT OF GENDER SENSITIVITY IN SAPCC

In 2012, the approval committee for the State Action Plan for Climate Change (SAPCC) at the Ministry of Environment, Forest & Climate Change (MoeF&CC) had asked all state governments to “highlight the gender component... with their special needs in the context of climate change as well as (ensure) their involvement in the implementation process” (Alternative Futures, 2014). According to a study conducted by The Energy and Resources Institute (TERI), 17 SAPCCs show synchronised values with Sustainable Development Goal - 5 on ‘gender’ (TERI 2020, 16). However, the adaptation strategies proposed in most states for the agriculture sector focus only on some of the general strategies. They lack a comprehensive approach to addressing gender-based issues within the sector.

Almost all states completely ignore or do not pay adequate attention to farmers’ income security, thereby reducing their adaptive capacity. Pertinently, the estimated budgetary allocation for the agriculture sector in most SAPCCs is minuscule (CSE 2018: 27).

Table 1: Agriculture Budgetary Allocation in SAPCCs

States	Estimated agriculture budgetary allocation in the SAPCC (in Rs crore)	Share of agriculture in total estimated budgetary allocation
Madhya Pradesh	1756	37%
Punjab	8979	15%
Odisha	1500	9%
Gujarat	585	2%
Uttarakhand	80	0.90%
Uttar Pradesh	103	0.20%

Source: Centre for Science and Environment 2018

The guiding principles of SAPCC outlined by the MoeF&CC mention “building broader stakeholder engagement to maximize the perspectives and to increase robustness of analysis”. However, the Ministry has neither published a proper framework nor any guidelines for conducting stakeholder consultations. A review of the SAPCCs shows that only a few states have undertaken detailed consultations; most have held negligible consultations, especially for affected communities (CSE 2018: 22).

Studies conducted by the Climate and Development Knowledge Network (CDKN) helped in identifying opportunities for mainstreaming gender into the SAPCCs of multiple states (Alternative Futures, 2014). They assessed SAPCCs of Madhya Pradesh, Uttarakhand, Uttar Pradesh, and West Bengal from a gender lens and proposed priority actions to incorporate considerations on gender into its design. While these studies aided the introduction of gender components to the SAPCCs of a few states, a significant gap still exists in policy and practice with respect to strengthening women’s resilience, especially within the agricultural sector. In the absence of a comprehensive climate impact and vulnerability assessment in most

SAPCCs, it is unclear if their proposed adaptation strategies are sufficient (CSE 2018: 18).

In addition to the states mentioned above, Odisha, Kerala, and Gujarat are few other states that have recognised the importance of gender mainstreaming in their climate policies for agriculture and allied sectors.

Odisha

In February 2020, Odisha became the first state to introduce a climate budget. After completing the first phase (2010-15), Odisha has been the only state to publish a SAPCC progress report, reflecting an effective monitoring and evaluation framework (TERI 2020: 11).

Currently, the state has 77 schemes that are 100% specific to women, and 434 composite schemes and programmes have a share greater than 30% that are focused on women's needs. The government of Odisha spent a sum total of INR 11,68,564.22 lakh on women-specific schemes within the agricultural sector in 2019-20, which is a considerable increase from the INR 3,36,074.67 lakhs that was spent in the financial year 2018-19. In 2019-20, Odisha's total expenditure related to 30% gender-specific schemes was 31.69% of the total spending and 8.14% of the total gross state domestic product (GSDP) (Department of Finance, 2019).

In addition to earmarking funds for women under various agricultural schemes, the state adopted multiple measures that integrate gender concerns into the second phase of its SAPCC (2018-23). The priority actions include encouraging climate-resilient cropping techniques, promoting System of Rice Intensification (SRI), creating awareness among farmers about climate change adaptation, just to name a few.

Table 2: Priority actions of Odisha's SAPCCs and their linkages

Key Priorities	Linkages
Continue the livelihood-focused, people-centric integrated watershed development programmes in rain-fed areas vulnerable to climatic variations.	Women's participation in WDT, water management
Capacity building of extension personnel	At least x% of the extension personnel should be women
Develop water-efficient micro-irrigation methods: individual and community farm ponds	Linkages with kitchen gardening, vegetable cultivation
Create awareness among farmers of climate change adaptation.	Special focus on women farmers
Establish a seed bank at the village level.	Involvement of women in Self-Help Groups
Promote SRI.	Involvement of women farmers
Encourage the adoption of climate-resilient cropping techniques.	Involving women farmers in diversification of fruits and vegetables, align the value chain

Source: Forest & Environment Department (Fo&ED), Government of Odisha, 2018: 161.

Kerala

The first phase SAPCC of the Kerala government was gender blind in nature. However, in 2018 a new report was released by the Directorate of Environment & Climate Change in Kerala's government, highlighting the need for incorporating gender concerns in the second phase of its SAPCC. The report acknowledges the need for including women financially and collecting gender-disaggregated quantitative/qualitative data for workload, decision-making roles, land ownership patterns etc. (GoK & CCIP 2018: 22). Kerala has already initiated gender budgeting. However, the state is yet to implement its new SAPCC.

Gujarat

The strategies outlined in the first phase SAPCC document of Gujarat emphasised the integration of gender issues into adaptation planning. Some of its key strategies included promoting alternative low-cost innovative technologies that could alleviate how women struggle, encouraging approaches that support a woman's well-being in times of crisis, access to resources etc. The plan also proposes conducting vulnerability assessments from the perspective of vulnerable groups like women and children.

The SAPCC mentions that it aims to showcase the links between climate change and exacerbating gender inequalities, with the ultimate goal to integrate these concerns into its policies. The state has been estimated to have allocated INR 0.7 crore from its budget in support of this front. Additionally, a small grant programme of 100 agencies has been established, which will work on implementing innovative ideas to promote alternative low-cost technologies and local traditional knowledge. An estimated budget of INR 3.5 crores was allocated to this project, spanning five years (GoG 2014: 177-178).

THE WAY FORWARD

To reduce vulnerability to climate change and improve the adaptive capacity of women engaged in agricultural work, there is a need for mainstreaming gender concerns into national and all provincial climate action plans. While the mention of "gender" or "women" has significantly increased in the context of national priorities in coping with climate change, the focus on gender-related climate adaptation in the agricultural sector could be much stronger. This is evident across most schemes and plans.

Therefore, ensuring increased female participation in stakeholder consultations is a critical part of gender mainstreaming while also bringing to light the concerns and needs of women in agriculture. There is also a need for robust monitoring and evaluation mechanisms across all climate action plans at the state, sectoral, and lowest governance levels. It is essential to implement gender-based components and not merely pay them lip-service. The government must take cognisance of the gaps in both policy and practice, as it would construct the path to strengthening women's resilience to climate change's impact on the agricultural sector.

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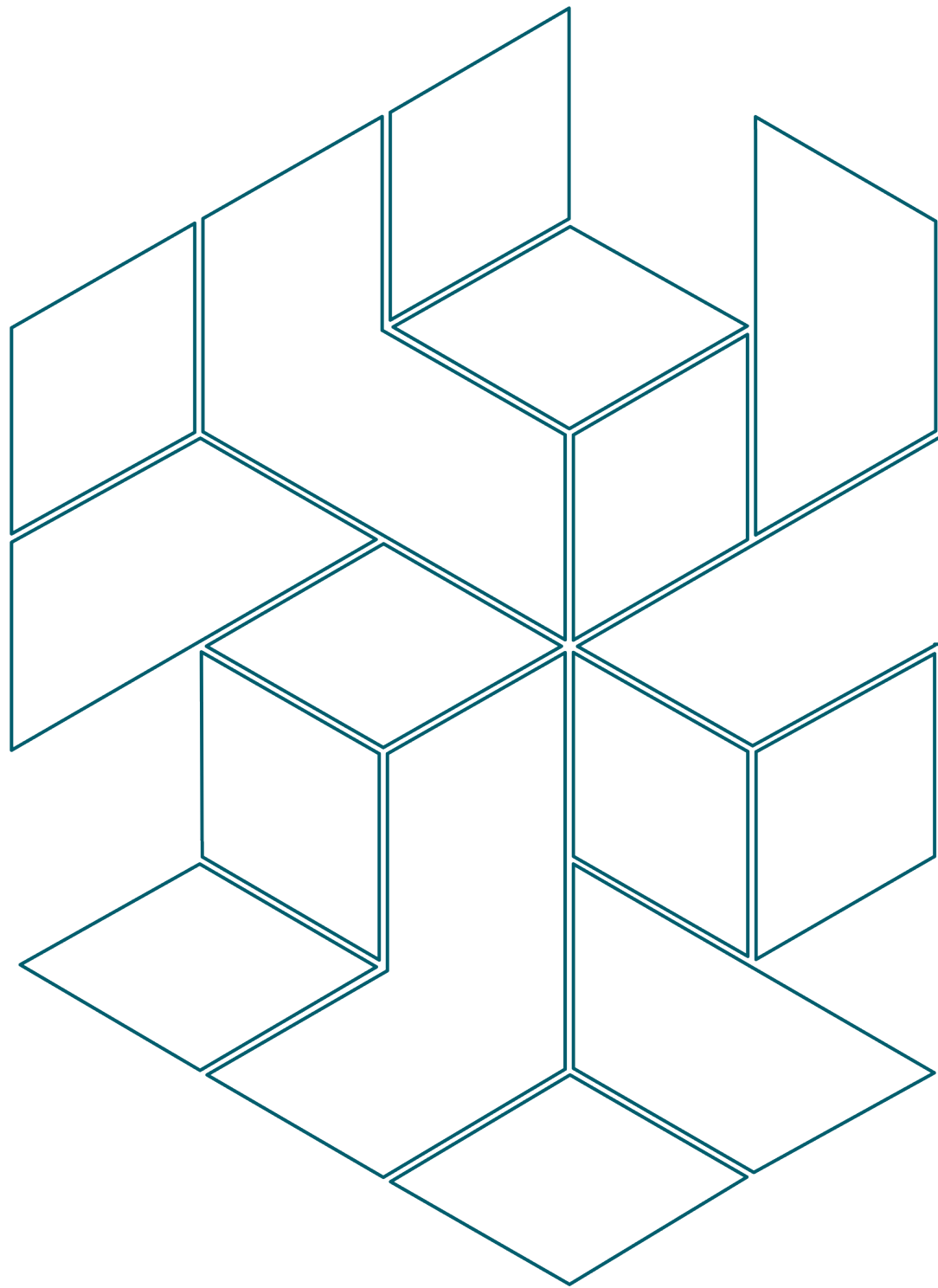
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