

# DISCUSSION

## ● A - Summary of research findings

The research results show how men and women farmers perceive and experience climate variability and demonstrate how these experiences lead them to make choices to ensure their food security, choices that may be rational in individual circumstances but ultimately threatening to ongoing food security. The evidence presented here supports the hypothesis that, due to gender roles (the behaviours, tasks and responsibilities a society defines as “male” or “female”) and due also to differential gendered access to resources, men and women experience climate variability differently and have diverse coping strategies. The results reveal that gender is a significant factor in coping with climate variability and ensuring food security as well as overall well-being.

The gender issues of responding to climate variability identified in this research can be summarized in four broad categories. These findings are locally-specific but the hypothesis and methodology would be applicable to other locations and populations.

### **1. Perceptions of climate variability**

An analysis of the climatic record for the study area and the recollections of the men and women farmers reveal that men and women farmers have similar or identical perceptions of temperature and rainfall trends on a decadal basis and over time; these perceptions match well with the climate records which show an increase in drought conditions over the past three decades.

Thus, both men and women’s memories of historical climate trends can be useful resources for understanding the past in particular with regards to extreme events or changes over time. Additional research would be needed to understand if there is a difference in men’s and women’s perceptions of climatic trends on different timescales than those studied here.

### **2. Experience of climate variability**

Men and women farmers in the study area link changes in the climate over the past thirty years to changes in key farming activities; however the changes are perceived in different areas of activity according to gender. In addition, there were differences in gender in the perception of who was affected by changes in climate.

Therefore, it appears that climate variability is experienced through gender roles. Furthermore, it is likely that men's and women's accounts of how climate interacts with livelihood activities would be influenced by gender and thus the involvement of both men and women is needed to fully document perceived impacts of climate variability and change.

### **3. Coping strategies in response to climate variability**

The women and men in the study area perform complementary activities to ensure farm productivity and they elect similar coping strategies to ensure sufficient yields in response to abnormal rainfall. When the farm production and income are low due to low rainfall, men and women share the burden of obtaining additional income, with men tending to feel the burden of loans. Traditional coping strategies for coping with food scarcity have a strong gender component in terms of distribution of food in the household and become exacerbated during dry years. Men and women demonstrate different preferences for longer-term coping strategies. In response to persistently unpredictable weather, more male respondents preferred migration in search of wage labour as a coping strategy, whereas more women preferred local wage labour to migration as a coping strategy. Men play the dominant role in decision-making in the short term, but it appears that in crisis, decisions are more equally shared.

It appears that gender roles in decision-making are in flux, and it is unclear how men's and women's different preferences for coping strategies or adaptation strategies would be negotiated given current gender roles in decision-making. First indications suggest that there is a process of negotiation going on, especially in the younger families as younger women experiment with increased participation in household decisions. Further research is needed to understand how longer-term changes in climate may interact with evolving gender roles, as they may determine shorter-term coping and long-term adaptation strategies. Additionally, further research would be needed to understand if the burdens of responding to climate impacts will fall more heavily on either men or women or if they will be distributed more equitably between them as conditions become exacerbated.

### **4. Institutional support for coping with climate variability**

As farming no longer entirely supports the needs of the farmers' rural families in the study area, the farmers have come to rely largely on support from government employment and food distribution schemes as well as on loans and migration in order to earn additional income. While this support is accessed by all family members, it appears that services related to on-farm activities are available to men more so than women. The research has shown that farmers are getting by with this institutional



support, but they are not thriving. In addition, there appears to be a gap between the advice provided and its uptake by farmers. Informal institutions, including traditional knowledge and neighbours, continue to be important sources of information for the farmers.

Additional research would be needed to understand how institutional support to farmers can meet their needs and be more willingly and meaningfully taken up by them. In addition, further study would be needed to understand how to overcome in policy-making existing gender inequalities that hamper women more so than men from receiving institutional support as households seek to adapt to changing climate conditions to ensure their livelihood. The increased pressure on men to find loans intersecting with women's increased engagement in wage labour may herald new (and perhaps unwelcome) outcomes for inter-household dynamics.

In addition to these findings on gender and climate variability, the study documented other trends that shape the lives of smallholder farmers. Over the past thirty years, farmers switched to cash crops and many came to rely on borewells to meet irrigation needs. Currently, most borewells are no longer a sufficient source of water as the water table has dropped. As borewells and rainfall are less reliable, farming itself becomes a precarious source of income. Farmers have found support through government programs, including guaranteed manual labour opportunities through the NREGS programme and subsidized food through the Public Distribution Scheme (PDS). The

typology of the farmer of today is therefore quite different from the farmer of three decades ago. The future of farming as a productive livelihood choice in these drought-prone districts remains uncertain, if significant investments in increasing agricultural efficiency and sustainability are not made. These investments would imply developing the capacity of farmers to make the best adaptive management decisions in a changing environment to ensure at least the possibility of remaining on the land and continuing to farm in a viable mode.

### ● B - Future implications

Although the findings presented here relate to climate variability, they are relevant for adaptation to long-term climate change because they illuminate how men and women do and do not cope with changes in their livelihoods and food security induced by climatic factors. Understanding how men and women have responded to climate variability in the past and how they are able to respond now, including what institutional support assists them, is a crucial baseline for designing strategies for long-term adaptation.

Looking to the future of the farmers in the study area, as well as broader implications outside this specific context in other parts of India, it is clear that there are multiple trends - global, national and regional - that threaten food security and rural well-being in the long term. These agricultural regions are increasingly reliant on food being brought in from outside as subsistence production declines, raising the question of how future food security will be ensured. The farmers have come to rely on loans in order to carry out their farming activities, but are often unable to pay these loans and it is unclear how the trap of indebtedness can be resolved. The livelihood choices farmers make are embedded in socio-economic as well as cultural traditions and practices which are also changing at various speeds. Farmer decision-making appears to take place most often on a short and less so on a long-term basis as farmers manage multiple and sometimes contradicting factors. This may call into question their capacity to plan for longer-term shocks to their livelihoods but it may also signal new opportunities for change and social renewal if the right support and capacity building is provided.

Given these trends as well as changes in climate, how will men and women farmers fare? In particular, how will men's and women's roles in decision-making and their access to resources shape the future of food security and livelihood activities? Furthermore, how might gender roles and relations change along with climate change? As women become increasingly responsible for the household income when the husband migrates, will this signal the greater empowerment and

agency of women? It would appear that as their social roles shift, women may gain confidence in dealing with other socio-cultural inequities they face daily. However, research in Australia for example (Alston, 2007) suggests that this would generally occur if external institutions supported and made visible the increased power of women in agriculture through overt processes of consultation and information sharing and through training and development programs addressed specifically to them in a regional or national context. Without external resources for women to become full-fledged farmers, their empowerment remains precarious and open to challenge.

### ● C - Methodological approaches

The use of multiple methodological approaches (sociological analysis of qualitative and quantitative data as well as climate analysis) helped to triangulate information thus ensuring that the farmers' reporting was substantiated and robust. Establishing direct causal links presented serious methodological challenges. While in some cases it is possible to link climate variability to changes in livelihoods, it is impossible to fully understand these dynamics without an understanding of the broader context, which requires a multi-disciplinary approach. By maintaining the focus on the farmers' perspective throughout all data collection activities, the results present a multi-faceted account of their point of view.

Qualitative focus group discussions presented opportunities for men and women to express their views separately and together, which allowed cross-referencing and verification. The quantitative questionnaire narrowed in all the nuances of perception and understanding. The climate analysis used the data available from weather stations for a period of 40 years and referenced it with the farmers' interpretations. The climate analysis provided the confidence needed to support the farmers' statements.

The perceptions of farmers were expressed in their own terms and within their own conceptual framework. Care was taken not to direct the farmers toward a discussion of climate variability but rather to place the research questions in the broader context of the farmers' lives and livelihoods. Much analytical work had to take place to ensure that the farmers' terminology was appropriately interpreted in the terms of the research framework. Terminology for understanding the approaches needed in dealing with short and long-term climate variability and climate change is diversified and evolving and will increasingly provide more rigorous outcomes.

The gender-sensitive approach employed in this research revealed many dynamics of vulnerability and coping at the household level that are key to overcoming changes in the climate. By speaking with men and women separately, their different perspectives

and perceptions of risk emerged, as did their distinct areas of knowledge. A gender-sensitive approach also served to reveal how changes in climate variability impact dimensions of lives and well-being beyond simple direct impacts on water availability and crop production. Further work along these lines, that also incorporates the important dimensions of caste and class (see Ray-Bennett, 2009), could increase the understanding of how to translate a gender-sensitive research approach into gender-sensitive policies and projects.

## ● D - Recommendations

The parameters of the study and the analysis that followed had limits, of course. The recommendations that follow are in the context of what was possible to research and what still remains to be researched.

### **1. Climate, crop and rainfall information dissemination**

In dealing with climate variability in the future it will be essential to have a system of information that is accessible to a wider social spectrum and is democratically applied without biases due to gender, property ownership, caste, age or religion. It is of crucial importance that institutional information is received by women as well as men through advice on radio and television in the form and content that is appropriate, and through legitimate community information sources as well as through women's organisations. This information should be tailored to the decision-making needs of farmers and must arrive in a timely fashion.



## **2. Methodology**

Further studies need to be undertaken in other parts of India and elsewhere to test the methodology and whether farmers' perceptions and strategies have a gender component.

More research based on gender analysis that recognises the heterogeneous nature of men and women farmers and the variety of strategies that they develop and employ continuously is needed as it would enhance policy recommendations. Further cross-regional intra-household analysis would illuminate the inequalities of the approaches in use and impacts for different members due to gender, age and access to resources. The methodology employed here, and the data collected for this study in Andhra Pradesh, could be used to explore similar issues in other regions. By signalling that the coping strategies farmers employ may have both a social benefit and/or an individual detriment, policies can provide safety nets as well as encourage innovative solutions. Further research would need to address the ongoing social transformation in Indian social structures, such as the increasing contribution of women and girls to household incomes and the absorption of poorer castes moving from the country side into wage labour in urban areas.

## **3. Food Security**

This study showed that the farmers' own production of food was tied to variations in the climate. Overall however, some food was available to them regardless of climatic variation because of the provisions made by the government food distribution program (PDS). While farmers felt that changes in the weather had put increased pressure on them to provide food, the majority did not report dramatic switches to different kinds of food even though they experienced decreased quality of food. Despite changes in the climate, the food that was mostly available to them seemed to meet their needs which seemed also to have been adjusted to the existing conditions of availability.

Production is very much affected by climate change but the access dimension of food security is also likely to be affected. The men and women farmers in the study population were able to access the food made available by the government mostly because of their socio-economic status as low income, small-scale farmers. Farmers also resorted to wage employment (in different degrees and of different characteristics), because changes in the climate were making farming an unreliable source of income. The income from wage employment enabled them to access food through purchase.

Access to food within the household had a gender dimension. Women's access to food was shaped by their role in the household, their rights to the family's resources, their relationship to their husbands and male children as well as to other women in the family such as mothers or mothers-in-law. Increased climate variability and climate change threatens family resources such as income from farming or wage income used to purchase

food. In this case, women's access to food may become even more tenuous. An unexpected factor (illness, unemployment) affecting the availability of food puts in peril farmers' access to food and therefore undermines food security.

Given the changes in livelihood activities that were taking place in part in response to changes in climate, it appears that future food security will probably be much more determined by the type and location of employment opportunities (which determine access to food), than by the availability of food through on-farm production. As farmers engage in increasing numbers in urban and peri-urban employment for part of the year, greater attention needs to be paid to the changing situation of farming in India to ensure food security in both rural and urban areas on the whole. Leaving farming for government employment programmes or outright migration may assist the household but may change permanently the role agriculture can play in development.

In addition, current coping strategies must be weighed against shorter term adaptation with a view to longer-term sustainability. As one survival or coping strategy, eating less may be helpful in assuring the overall existence of the household but it puts women at great personal risk and vulnerability. Using increasingly scarce resources such as water (from borewells) may assist the households to survive for the moment, but may be destroying forever the un-replenished aquifers of the future. Criteria to evaluate (for sustainability and efficiency) the documented coping strategies on a variety of levels from the personal to the household, community, regional, national and international will need to be applied. Otherwise such short term solutions and strategies might be detrimental to the available natural resources undermining the future capabilities of farmers to cope with crises in the long term.

Finally, it is important to assess the farmers' ability to take on new risks by understanding the existing support infrastructure and gaps. Farmers' risk assessments may be different from official accounts and should be heard. Based on the study findings, it is legitimate to foresee that some people will try to leave agriculture and some of these lands will be abandoned. In view of the need to increase world food production, and promote better food distribution to ensure the food security of a growing population, it would be important to invest in increasing production efficiency, through institutional and technical support such as farmer educational programmes and advisory services addressing both men and women's roles and needs. At the same time, changes in access at the household and individual level due to changes in climate would also need to be addressed.

#### **4. Future resilience**

However, not all change should be seen as a threat. As the known patterns of agriculture undergo changes and the farmers seek to adapt, in this 'transitional adaptation phase' there may be emerging new empowerment opportunities. New resilience patterns are emerging both at the institutional and household level as the gradual breakdown of barriers to women's



empowerment is necessarily enhanced through the need to address new climatic emergencies that may result in new creative solutions. It is increasingly impossible to continue ‘business-as-usual’ in agriculture and the fact that external threats demand new solutions, opportunities emerge for women and men to participate in untried decision-making processes as well as to take on newly defined leadership roles. Gender relationships are also under flux (particularly within younger couples) and this creates new spaces for social change and the emergence of new social patterns and opportunities.

This research shows that opportunities in addressing climate change are being created, and for this reason institutional support and policies should focus on recognising and sustaining these new options. By strengthening emerging social openings for socio-cultural change, new role models may lead to the creation of longer-term sustainability options. The differences documented here by gender in perception of food security show the importance of consulting both men and women when seeking to understand how food security may be related to climate shifts, both short and long-term. What the research reveals is that gender does matter when assessing farmers’ responses to climate variability and long-term changes in the climate.

There is a need to continue exploring and defining the socio-economic characteristics of the new Indian farmer. Such research is already taking place in India and already exists in historic reference to agrarian change at key points of modernization. For adaptation to climate change, it will be critical to document this evolution in parallel to the impacts of increased and longer-term climate variability on agriculture in different ecosystems in India and elsewhere.

### ● E - Questions to continue exploring

- 1) How can farming in resource-poor areas become more efficient? How can existing agricultural practices be adapted so that men and women can produce more and better with less while ensuring long-term food security and sustainable resources?
- 2) How can knowledge and information support male and female farmers to make better management decisions? What type of gender-sensitive information and approaches are needed to ensure farmers make appropriate forward looking decisions?
- 3) Can short-term food security coping strategies be projected in the future to ensure that they work in the long run, or will adaptation to climate change require an entirely new set of strategies differentiated by gender?
- 4) What can traditional support systems (of “compassionate fallback”) that help worse-off farmers teach us about strengthening the self sufficiency of villages by addressing the existing social and gender inequalities and overcoming them?

5) What are the decision-making processes of government agencies and other local support institutions for dealing with increased climate variability; and how can better connections be made with male and female farmer decision-making processes to create greater synergy, accounting for the fact that strategies may change from year-to-year?

6) How does climate variability increasingly influence what the farmers (male/female) produce for the market and how does this impact their food security? Who is responsible for the decision-making on how to interpret climate variability and then decide what to produce?

7) How can the gaps between institutional advice and male/female farmer actions be addressed? How can women become more equal partners in the access and use of such support?

8) How can we better understand the causal linkages between climate variability and farmers' actions, in the context of other drivers, including development?

9) How can climate change adaptation become an opportunity for rethinking gender roles and improving gender equality?

#### ● F - Concluding remarks

Planning for adaptation to long-term change must be founded on men and women farmers' specific knowledge and experiences as they make choices in an uncertain climate. In addition, future plans and government policies must consider the reality of farming today, including migration and what the implications will be for longer-term community and family stability and the role of agriculture in development. In pursuing strategies for the future, the needs of women and men farmers need to be incorporated in regional, national and international development plans to ensure an integrated and gender-sensitive approach based on sound knowledge and strategies that build the resilience of the most vulnerable to the impacts of climate change and the enhancing role that agriculture can play in ensuring food security.

