Climate change and food insecurity are widely recognized as global challenges for this century. South Asia, in particular, is among the most vulnerable regions in the world to these two concerns on account of its diverse topography, susceptibility to natural disasters, extensive poverty and a high proportion of population dependent on climate-sensitive resources for livelihood. There is mounting evidence that the effects of climate change are already being felt in South Asia and these are expected to intensify, presenting a formidable challenge for efforts to reduce poverty and achieve the Millennium Development Goals. Research and policies are increasingly being directed towards the linkages between climate change and food security, but the impacts of climate change are generally considered in physical, economic and environmental terms rather than social terms. This briefing paper focuses on the gender dimensions of the impacts of climate change on food security in the South Asian context. Gender here refers to the social roles and relations between men and women in a given culture or location.
Climate change impacts on food security: The gender dimension

Though South Asia occupies only 2 percent of the world’s landmass, it is home to about 20 percent of the world’s population. Three quarters of this population live in rural areas, with one third living in extreme poverty. Agriculture is the backbone of the region. Although agriculture growth averages less than 3 percent, far below the growth rates of other economic sectors, it is the main source of employment for nearly 60 percent of the labour force and contributes 22 percent of regional gross domestic product. South Asia is also predicted to face the greatest yield decline in almost all crops due to climate change.

According to latest estimates, almost 70 percent of employed women in South Asia work in the agriculture sector (as high as over 97 percent in Bhutan and Nepal, 82 percent in Afghanistan, over 50 percent in Bangladesh, India and Pakistan, about 42 percent in Sri Lanka, and 14 percent in the Maldives). Women also comprise nearly 50 percent of the rural population in each of these countries.

These women, who are dependent on agriculture for their livelihood, are vulnerable to climate change risks (Box). The sections below explore the key linkages in four areas which directly influence food security and make women more vulnerable: i) food production in relation to land, livestock and water; technology, financial services and markets; and agriculture extension services; ii) access to food, water and fuelwood; iii) natural disasters; and iv) decision-making.

Box Why are women vulnerable?

Women, particularly in least-developed countries, are disproportionately vulnerable to climate change risks because of their:

- dependence on bio-fuels and other natural resources;
- responsibility for water procurement and household care;
- role in securing food and fuel;
- predominant presence in low-technology agriculture; and
- greater exposure to risk in crisis and severe weather events that may have been influenced or impacted by climate change.


Food production

It has been documented that yields on plots managed by women are generally lower than those managed by men. That is not because women are less productive than men, but because they do not have the same access to inputs as men. Based on empirical evidence, it has been estimated that if women used the same level of resources as men on the land they farmed, their yields would increase, they would produce more and so overall agriculture production would also increase. Clearly, there is a difference in what women do and what women can do.

Land, livestock and water

In developing countries, rural women are less likely to own land. There are limited data available on women’s ownership of land in South Asia. Only 8 percent of total agriculture land holders in Nepal are women and in India, the figure is 11 percent. Women also usually manage small plots for income or sustenance. In Bangladesh and Pakistan, the average size of land holding in male-headed farm households is more than twice the size in female-headed households. Also, the land that women control is often of poorer quality. Data on this aspect are also limited for South Asia.

Similar gender inequalities exist in the case of livestock, the other key asset in the mixed farming systems prevalent in the region. Women farmers tend to keep fewer livestock, as compared to men, and frequently do not control the income from the typically small animals they manage.

Men traditionally have control over productive resources. There are limited data available on how pervasive this is in South Asia. However, from the International Fund for Agricultural Development’s (IFAD) latest Report and from the Social Institutions and Gender Index (Table), it is evident that women in South Asia do not have the same rights as men to buy, sell or inherit land, and even where legal rights exist on paper, they are not honoured in practice. This means that women farmers have less assets overall to depend on, not only as a store of wealth but also as a buffer during times of crises.

Another aspect specific to agriculture in South Asia which makes women farmers more vulnerable is related to the dominance of two cereal crops—rice and wheat—in overall cultivation. Together, these two crops occupy the most fertile and cultivated land in
the region. However, since three fifths of the cropped area in South Asia is rain-fed, the rice farmers, in particular, are highly vulnerable to the risks from water scarcity (from failure of monsoons) in addition to the risks from excesses of water (from flooding). The vulnerabilities are manifest in the extensive poverty generally found among rice farmers. Furthermore, there is increasing evidence that the predicted temperature rise will severely impact rain-fed rice and wheat yields. Since rice farming in South Asia is highly female-labour intensive, women engaged in this sector are most vulnerable to impoverishment.

In addition, when other sources of food such as livestock, fishery and forestry also become more scarce or unpredictable due to climate change, women are disproportionately affected. That is because in developing countries, women are responsible for 70–80 percent of household food production.

**Technology, financial services and markets**

Women farmers, like men, require access to technology, financial services and markets to adopt new methods of production to improve yields as well as protect themselves from climate risks. It has been documented, however, that women use less credit and other financial services like insurance. Also, they are much less likely to purchase inputs such as fertilizers, improved seeds and mechanical equipment. In Bangladesh and Nepal, for example, this disparity is observed when comparing the percentages of female- and male-headed farming households adopting mechanization. This is related to women’s lack of purchasing power and also to the non-availability of complementary assets such as land, credit, labour and education associated with female-headed households. Under such conditions, women’s capacity to cope with climate change-induced impacts on crop production and yields is, therefore, limited.

Recent studies show that rural, female-headed households in South Asia are increasing in number in Bangladesh, India, Nepal and Pakistan. Therefore, women’s adoption of technology and access to financial markets/services are arguably significant to reduce their vulnerability to climate risks.

**Agriculture extension services**

The provision of agriculture extension services in developing countries remains low for both women and men. Moreover, women tend to make less use of extension services than men. The higher level of illiteracy among women is a primary obstacle for them to use the services. Although gender differences in education in South Asia have significantly declined in recent decades, the gap persists especially in rural areas. Consequently, even where access is provided to agriculture information and extension services, women cannot make use of the information, especially when provided in written form.

**Access to food, water and fuelwood**

In developing countries, although rural women and men play complementary roles in guaranteeing food security, women tend to play a greater role in natural resource management and ensuring nutrition. In addition to growing crops, women (and girls) also have primary responsibility for raising small livestock, fetching water for drinking, cooking and other household uses, storing and preparing food, collecting fuelwood, engaging in trade and marketing, caring for family members and maintaining their homes. Therefore, when climate change risks include water shortages, destruction of forest cover, droughts and floods, and damage to roads and other rural infrastructure, the impacts disproportionately place a higher burden on women and girls. In response to dwindling resources, they walk longer distances from the homestead to collect resources, be it water, fuelwood, or other forestry products. This has a considerable impact on their health and wellbeing in addition to undermining their education and livelihood options.

In addition, in those instances where the water collected from distant and inaccessible sources is contaminated, women and girls also pay the heaviest price. They indirectly endanger the health and wellbeing of the entire family/household (as well as the livestock) who depend on them. In countries like Nepal where water shortages are projected due to climate change

<table>
<thead>
<tr>
<th>Country</th>
<th>2009 SIGI rank (out of 102)</th>
<th>SIGI value 2012</th>
<th>2012 SIGI rank (out of 86)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nepal</td>
<td>65</td>
<td>0.215373</td>
<td>36</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>45</td>
<td>0.279624</td>
<td>53</td>
</tr>
<tr>
<td>Pakistan</td>
<td>94</td>
<td>0.294459</td>
<td>55</td>
</tr>
<tr>
<td>India</td>
<td>96</td>
<td>0.304458</td>
<td>57</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>90</td>
<td>0.352318</td>
<td>63</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>101</td>
<td>0.363417</td>
<td>69</td>
</tr>
</tbody>
</table>

Notes: *non-OECD countries  
Higher SIGI values indicate higher inequality  
Source: http://genderindex.org
change, the adverse impact on women and girls will be significantly more than on men.

Natural disasters

Natural disasters have devastating consequences for food security on account of their immediate impact on crops and livestock. They worsen the situation of those who are already food insecure and also endanger/destabilize the food security of a part of or the entire population in the affected area.

Women are affected more than men when disasters strike. There is evidence that the number of fatalities of women is disproportionately higher than that of men. The reasons range from lack of information, mobility, decision-making power, access to resources and training to gender-based cultural norms and barriers. In the case of surviving floods, for example, it has been observed that women and girls face a higher risk in countries where boys are taught to swim at an early age, but not girls. These socio-culturally defined constraints also affect women’s survival in the aftermath of disasters. Post-disaster recovery studies show how such constraints have often prevented women from leaving their homes or taking refuge in public shelters on their own without being accompanied by male relatives.

Furthermore, in those areas where male out-migration takes place following disasters (due to resource shortages and unreliable job markets), the consequences for the women left behind are significant. They assume sole responsibility for farming in addition to household duties, raising children and caring for the elderly. Similarly, in the aftermath of disasters, during mass outbreaks of human and animal diseases, women are burdened with additional care giving. Also, in times of food shortages, the health of women and girls has been found to decline more than that of men and boys, further exacerbating household food insecurity.

Women farmers are also less likely to recover from the effects of disasters because of their low levels of capital accumulation, lower assets, and weaker access to credit and information, exacerbated by discriminatory land and inheritance rights. Under such conditions, the impacts of disasters get amplified for those who are poor and those who live in ecologically “fragile” areas such as on hillside slopes (as in Nepal) or in low-lying coastal plains (as in Sri Lanka or Bangladesh). There are limited gender-specific data on such marginalized communities and the impacts of climate change on them.

Decision-making

It has been observed in the context of responding to climate change that women are more likely than men to be absent from decision-making processes, whether in the household or at community, national and international levels—either because their contribution is not valued or because they do not have the time, confidence or resources to contribute. Other reasons to consider include socio-cultural norms/attitudes and low educational attainments.

In relation to time constraints, it is well documented that rural women in developing countries work much longer hours than men. For example, in the mountainous regions of India, women undertake 4.6 to 5.7 times the agriculture work that men do, and in Nepal, the figure is 6.3 to 6.6 times. This leaves women with very little time to participate in community decision-making processes. Furthermore, climate change and its adverse impacts on the availability of resources leading to women spending more time and labour in meeting household food security, as discussed earlier, place additional demands on women. The 2010 Women in Local Government Status Report on rural women’s participation in local governance shows that women make up fewer elected representatives in most rural councils.

This “absence” from decision-making means that women have no voice in how they or the larger community respond or adapt to climate change and food insecurity. This takes place at two levels: i) their needs, the constraints they face and their concerns are not articulated; and ii) their experience, insights, local knowledge and skills for resource management are not taken into account. On the other hand, when women have been empowered to exercise leadership within their communities, they have contributed effectively to climate resilience. When they have been put into leadership positions in emergency rescue and evacuation efforts and in post-disaster reconstruction, or in the management of essential natural resources, such as fresh water, they have made substantial contributions through their local knowledge and experience.

Clearly, when women play a key role in ensuring food security and are at the same time more vulnerable than men to climate change risks, what they can do depends on how meaningfully they can contribute to decision-making processes. Also, when their voices are not heard, climate change policies and action plans are less likely to be effective since the interventions are neither based
on their specific needs or constraints, nor drawn on their local insights and knowledge.

To sum up, the key issues in relation to the gender dimension of climate change and food security in South Asia are as follows:

- There is a substantial proportion of women in agriculture in South Asia who are highly dependent on small-scale/subsistence and mainly rain-fed agriculture for livelihood and food security; they are primarily responsible for food, water and fuel procurement as well as for the health and nutrition of the family; they are more vulnerable to natural disasters than men; and they are “absent” from decision-making processes.

- Women are affected differently and more severely than men by the impacts of climate change which create greater uncertainty and risks in food production and increase the burden on them in terms of time and labour spent on ensuring food security.

- Women are more vulnerable to the impacts of climate change than men because of gender inequalities in access to and control over productive resources (land, livestock, technology, financial and extension services); gender gaps in education, income and time use; and gender-differentiated roles and responsibilities in the household.

- Women’s adaptive capacity and resilience to the impacts of climate change and food insecurity are limited by social, cultural, economic, political and institutional constraints. Consequently, they respond differently than men to climate change initiatives and policies.

Strategies and policy initiatives in South Asia

It is widely accepted that there is an urgent need for developing countries to adapt to the unavoidable impacts of climate change. Following the mandate from the United Nations Framework Convention on Climate Change (UNFCCC) and the directives from the Intergovernmental Panel on Climate Change (IPCC), countries are committed to developing climate change strategies, policies and action plans to address four identified areas: adaptation, mitigation, financing and technology transfer.

The challenge for South Asian countries is confronting climate change risks and food security concerns while pursuing rapid economic growth to lift millions out of poverty. Therefore, across the region, climate change adaptation (CCA) has been linked to the national development agenda.

The key national-level policies/initiatives on climate change are the National Communications to the UNFCCC, the National Adaptation Programmes of Action (NAPAs) and the National Climate Change Strategies and Plans.

The National Communications to the UNFCCC and the NAPAs provide an overview of the specific country’s vulnerability to climate change by sector and set the context for adaptation policy options, and identify priority adaptation actions and projects. For all the countries, agriculture and food security are listed among the priority concerns along with natural disasters, and a number of projects and initiatives to reduce vulnerabilities to climate change in these areas are under varying stages of formulation or implementation.

The National Strategies have set out action plans dealing with adaptation. These are multi-sectoral in nature. In the case of Bangladesh, for instance, the Bangladesh Climate Change Strategy and Action Plan identifies among its key sectors: food security, social protection and health; comprehensive disaster management; infrastructure; research and knowledge management; and capacity building and institutional strengthening. In India, the National Action Plan on Climate Change identifies eight core “national missions”, which include: solar energy; enhanced energy efficiency; sustainable habitat; water; sustaining the Himalayan eco-system; Green India; sustainable agriculture; and strategic knowledge for climate change. In the Maldives, the Strategic National Action Plan (SNAP) is considered a landmark initiative that integrates climate change adaptation and disaster risk reduction. Nepal’s Local Adaptation Programmes of Action inform local and regional sector policies as well as the NAPA.

Although these national strategies and initiatives include among their priority concerns agriculture, food security and disaster risk reduction, they do not explicitly address the gender dimension of climate change (with the exception of Nepal’s NAPA). They recognize adaptation as the means to increase the resilience and adaptive capacity of “vulnerable communities” against adverse climate change impacts in the key sectors, but there is no mention of gender-
specific vulnerabilities or the importance of drawing on women’s local knowledge.

In relation to agriculture, for instance, they recognize the need for agriculture to be “climate resilient” (for example, through identifying new varieties of crops, alternative cropping patterns, and credit and insurance mechanisms), but none of them systematically or effectively address the different needs and constraints faced by female and male farmers. Similarly, in disaster risk reduction, the key adaptation measures proposed (for example, strengthening community resilience, diversifying livelihood and providing insurance) focus on the vulnerability of groups like coastal populations (as in the Maldives’ SNAP and Sri Lanka’s National Climate Change Adaptation Strategy), but they do not consider the gender dimension explicitly. A recent review of current and planned adaptation actions in South Asia shows that gender-focused adaptation projects are absent or very limited. Nevertheless, Bangladesh, Bhutan, India, the Maldives and Nepal have initiated targeting gender-specific vulnerabilities in CCA. But in Afghanistan, Pakistan and Sri Lanka, the inclusion of gender issues in climate change policies and initiatives is yet to begin. In terms of women’s participation in policymaking, except in the case of Bangladesh, India and Nepal, where women have participated and provided inputs by participating in CCA consultation and policymaking processes, it has been almost absent.

Overall for South Asia, a gap exists in terms of mainstreaming gender into CCA, right from the policy-consultation process to the formulation and implementation of gender-focused projects and action plans. However, as shown earlier, the predominance of women in agriculture, and their vulnerabilities, which are different from those faced by men, make it imperative that national climate change policies incorporate the gender dimension in climate change plans for agriculture and food security. The existing policies fail to recognize the substantial contribution of women to food security, their specific needs and constraints and fail to engage them in decision-making processes. Consequently, this is not only likely to exacerbate existing gender inequalities and food insecurity, but also undermines the effectiveness of the policies and initiatives.

Recognizing that South Asia is particularly prone to climate change and natural disasters, the South Asian Association for Regional Cooperation (SAARC) has long emphasized the need for an effective regional response. The Thimphu Statement on Climate Change, issued at the 16th SAARC Summit in 2010, outlines the “deep concern about the adverse effects of climate change and its impact on the region, particularly on the lives and livelihoods of the 1.6 billion people of South Asia” and it recognizes that “effective responses, both on mitigation and adaptation should be formulated and implemented at regional and international levels.” Its key proposals and initiatives relate to regional cooperation for exchange of knowledge as well as transfer of technologies. It has proposed commissioning a study on Climate Risks in the Region and, among other intergovernmental initiatives, proposed a Monsoon Initiative to assess vulnerability due to changes in monsoon patterns and a Climate-related Disasters Initiative to integrate CCA with disaster risk reduction. These are closely linked to food security concerns, but there is no explicit consideration of the gender dimension of climate change impacts on food security.

The SAARC Regional Strategy and Regional Programme for Food Security was adopted at the 15th SAARC Summit in 2008. It was followed by the Colombo Statement on Food Security, which aims at evolving and implementing a “people-centred” short- to medium-term regional strategy and collaborative projects to increase food production, to develop and share agriculture technologies, and to manage climatic and disease-related risks in agriculture, among others. A priority project, reported to be under way as of mid-2009, relates to “enhancing productivity of small farmers in marginal and unfavorable areas/regions”. There are other projects in the pipeline on technical and policy support, promoting use of agriculture inputs, among others, but clearly the reference in all these policies is to “people” or to “small farmers” without distinguishing them as “men” and “women” farmers and identifying their different constraints, needs and potential contribution capacities.

On the other hand, SAARC has incorporated “gender” into its agenda from its earliest years and has taken many “gender initiatives” since then. The SAARC Social Charter recognizes the significance of empowering women. The creation of a SAARC Gender Info Base is under way and in its last Review Meeting held in 2011, the SAARC Gender Equality and Empowerment Programme was proposed. However, these gender initiatives are not directed at the specific vulnerabilities faced by women vis-à-vis climate change and food security. Clearly, climate change, food security and gender are seen as separate areas of concern.
Possible avenues for regional cooperation

South Asian governments individually are signatories to separate declarations on climate change, food security and gender in the wider context of the UNFCCC, the Millennium Development Goals and the Convention on Elimination of All forms of Discrimination against Women. However, national governments have been slow or lacking in mainstreaming gender into CCA policies. The main reasons are as follows.

There is a lack of awareness and understanding about the gender dimensions of climate change and food security in terms of what women do (the significant role they play in food production and ensuring food security) and what they can do (when given equal access to and control over resources as men, and when their knowledge and insights are taken into account and they are included in decision-making processes).

There is a prevalence of “traditional” attitudes and social norms regarding the roles of men and women at home, in the community and in the government, which exclude women and limit their capacity to cope with and adapt to climate change.48

Clearly, in order to ensure that the “gender” dimension is meaningfully integrated into CCA in the areas identified as critical to food security, it is imperative to understand in depth the gender-specific vulnerabilities and include women in decision-making, policy development and building adaptive capacity. Women and men bring different experiences and different knowledge and capabilities when it comes to coping with or adapting to climate change impacts. The roles women play and the roles women can play in addressing climate change concerns should be identified and integrated into climate change strategies for the region. In particular, an in-depth understanding of gender-specific patterns in rural resource use, access to productive resources and services in agriculture, and the perception and communication of climate change concerns is crucial across the region.

Along with individual country efforts, there are key areas where regional cooperation can help address the interlinked challenges concerning gender equity, climate change adaptation and food security along with sustaining the high growth rate that the region has been experiencing in recent years. They include:

- Funding for locally based research to establish linkages between climate change, food security and gender.
- Coordinating multi-country studies and synthesis of research evidence from across the region, involving female and male stakeholders at all levels.
- Encouraging women’s participation at different levels of decision-making and policy consultations on climate change and food security.
- Creating a gender alliance (database, tools and measures, sharing of information and cross-country experiences, and dissemination of research for improving the lives of women).
- Better networking and improving communication channels within the region.

Notes

1 In this paper, South Asia includes the eight countries that comprise the South Asian Association for Regional Cooperation (SAARC): Afghanistan, Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan and Sri Lanka.
7 “Agriculture” here, following the FAO definition, includes hunting, fishing and forestry.
9 ibid.
10 ibid.
13 Attention is directed throughout the paper to the paucity of gender-specific information on key aspects of socio-economic vulnerability in South Asian countries.
ibid.

ibid.


More about the Social Institutions and Gender Index, including values and ranks of many non-OECD countries, is available at http://genderindex.org


ibid.

ibid.

ibid.


Nellemann et al. (2011). Note 17.


Nellemann et al. (2011). Note 17.

NAPAs are for the least-developed countries (LDCs). In South Asia, these include Afghanistan, Bangladesh, Bhutan and Nepal. The Maldives graduated from the LDC group in January 2011.

Both adaptation and mitigation are included. For the purposes of this paper, the focus is on adaptation.


At the international level, the Cancun Agreement of the UNFCCC signed in December 2010 explicitly recognizes for the first time that gender is integral to actions on adaptation (and mitigation).

“To Thimphu Statement on Climate Change”, www.saarc-sec.org (accessed 06.07.12).

It is a collaborative effort between SAARC and FAO.


Under the SAARC Development Goals (SDGs) endorsed at the 13th SAARC Summit, the Livelihood SDGs includes two goals in this direction: Goal 6—“Reduce social and institutional vulnerabilities of the poor, women, and children”, and Goal 8—“Ensure effective participation of poor and of women in anti-poverty policies and programmes.”

It is a joint initiative between the SAARC and UN WOMEN.

Data disaggregated by gender and personal and household characteristics are very limited for the region.