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MENA DEVELOPMENT REPORT

Adaptation to a Changing Climate in the Arab Countries

A Case for Adaptation Governance and
Leadership in Building Climate Resilience

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Gender-Responsive Climate Change Adaptation: Ensuring Effectiveness and Sustainability

The purpose of this chapter is to develop a better understanding of gender-based vulnerabilities and opportunities in climate change adaptation in Arab countries and to propose policy options to address them. The chapter argues that (a) climate change impacts in this region are not gender neutral, (b) specific gender inequalities intensify vulnerability to climate change by increasing sensitivity and reducing adaptive capacity, and (c) to strengthen resilience to climate change, it is essential to build a holistic and gender-responsive approach to adaptation that empowers women as agents of change. This chapter concentrates on rural populations because, generally, they are the most vulnerable to climate change and because the gender-related aspects of climate change are arguably more pronounced. Rural livelihoods are more exposed to climate events, and lower human development, higher poverty rates, and limited access to resources contribute to greater sensitivity and gender disparity. Thus, all references to women and men are to rural populations unless otherwise identified.

This chapter first provides background on vulnerability, the three main arguments listed above, and the global and regional policy background for gender and climate change. The next section develops a profile of gender-based vulnerability to climate change in Arab countries. The third section provides examples of how adaptation can be approached from a gender perspective, with four case studies from the Republic of Yemen, Morocco, the Syrian Arab Republic, and Jordan. Finally, the chapter concludes with policy options.

Background

Understanding Vulnerability

Climate vulnerability is defined as “a function of the sensitivity of a system to changes in climate, adaptive capacity, and the degree of exposure of the system to climatic hazards” (McCarthy et al. 2001; also see chapter 1 of this volume). Climate change exacerbates the existing vulnerabilities of individuals and households who have limited or insecure access to physical, natural, financial, human, social, political, and cultural assets (Flora and Flora 2008). These assets determine how well people can cope and adapt. Availability of, and access to, assets is socially differentiated, because it is shaped by formal and informal inequalities in many aspects of life, including by gender (Otzelberger 2011; UNFPA and WEDO 2009). Therefore, gender-based vulnerability can be defined as vulnerability caused by inequalities in men’s and women’s access to the assets, opportunities, and decision-making power that would enable them to adapt successfully to new climate conditions.

Climate Change Impacts Are Not Gender Neutral

Gender is an important variable in the relationship between climate change and its human impacts. Specifically, gender-based inequalities, which persist in different areas of life across Arab countries, result in men, women, boys, and girls facing different vulnerabilities—and potential opportunities—in the face of climate change impacts. However, gender roles and relations are highly context specific and therefore differ among and within the Arab countries. They are also flexible and likely will undergo significant evolution as climate change continues to affect the environment and society (Espey 2011; Resurreccion 2011). These characteristics mean that the gender-differentiated impacts of climate change, and the roles that men and women play in the process of adaptation, must be studied and addressed in local contexts. Despite regional diversity, one can identify some broad trends in patterns of gender roles and relations, which determine poverty and vulnerability among men and women and shape the gender-differentiated impacts of climate change in Arab countries.

The sociocultural gender dynamics and power asymmetries that underpin these patterns tend to make women particularly susceptible to chronic poverty (Espey 2011) and lower adaptive capacity. In particular,

the prevailing sociocultural constructions of masculinity and the resulting economic and legal frameworks that privilege men's roles as providers mean that female heads of household and their dependents—whose numbers are increasing—are one of the region's most vulnerable groups (IFAD and FAO 2007).¹ Still, it is important to note that gender inequalities and differences in traditional roles not only affect women, but also can result in men facing specific vulnerabilities (Demetriades and Esplen 2008; Otzelberger 2011; UNFPA and WEDO 2009).

Specific Gender Inequalities Intensify Vulnerability to Climate Change

The drivers of gender-based vulnerability to climate change can be separated into three general areas of inequality: access to resources, opportunity for improving existing livelihoods and developing alternative livelihoods, and participation in decision making. In the rural areas of Arab countries, structural inequalities and sociocultural norms most often disadvantage women, and especially poor women, in these three areas, thus intensifying their exposure and sensitivity to climatic changes. As a result, rural women are more likely to have lower adaptive capacity than men. Their lower adaptive capacity results in exacerbated well-being, impacts on individuals, households, and communities.

Holistic and Gender-Responsive Adaptation Builds Resilience

In looking at gender and climate change adaptation, one must recognize that building resilience requires two types of adaptation actions: first, actions intended to adjust and protect livelihood systems from specific climate change impacts, and second, actions that focus on reducing the underlying drivers of gender-based vulnerabilities to climate change. The first response deals directly with the immediate impacts from a given climate change event; the second is in line with broader sustainable development practices (with a particular focus on factors that drive gender-based vulnerability to climate change, such as unequal access, opportunity, and participation). A commitment to addressing the underlying causes of gender-based vulnerability to climate change—the economic, political, and sociocultural mechanisms that maintain gender-based inequalities—is a prerequisite for building resilience. The two approaches to climate change adaptation are mutually inclusive and beneficial.

Global and Regional Policies Increasingly Recognize Gender as a Factor in Adaptation to Climate Change

A growing number of global and regional policies comprehensively address gender in climate change. These have evolved from simplistic policies that emphasize only women's participation and women's roles toward more holistic approaches with a greater focus on gender equity.

Significant progress has been achieved in integrating climate change into United Nations Framework Convention on Climate Change (UNFCCC) processes. In 2007, the United Nations (UN) and 25 international organizations formed the Global Gender and Climate Alliance (GGCA), which aims to ensure that global climate policies are gender responsive. The Intergovernmental Panel on Climate Change now recognizes gender as one factor that shapes vulnerability to climate change. In 2010, the Cancun Agreements recognized gender equality as integral to adaptation. At the 2011 Conference of Parties (COP-17) in Durban, South Africa, references to gender and women were strengthened in a number of important areas, for instance, in countries' guidelines for programs under the UN National Adaptation Programme of Action (NAPA), in the Nairobi Work Programme,² and in the operationalization of the Cancun Agreements, including the Green Climate Fund, the Adaptation Committee, the Standing Committee on Finance, and the Technology Mechanism (WEDO 2011a, 2011b). Overall, however, advocates argue that gender concerns are not yet sufficiently addressed under the UNFCCC (Otzelberger 2011; WEDO 2010a).

Gender has begun to appear on the adaptation agenda in Arab countries as well. Gender-based vulnerabilities and the role of women in adaptation are acknowledged in the Arab Framework Action Plan.³ At the national level, countries such as Bahrain, the Arab Republic of Egypt, and Jordan have made efforts to mainstream gender into adaptation policy, and several Arab countries have referenced gender in national communications to the UNFCCC.

However, more could be done to mainstream gender into climate-related policies in Arab countries. For example, not all NAPAs specifically incorporate a gender perspective on adaptation (Elasha 2010). This absence is partially due to insufficient collaboration between the institutions concerned and, in many countries, the fact that women's commissions are barely engaged in the activities of ministries of environment or agriculture, and vice versa. The GGCA, the International Union for Conservation of Nature (IUCN), and the Council of Arab Ministers Responsible for the Environment are working to promote instruments for mainstreaming gender into climate action, and encouraging the integration of a national gender perspective into UNFCCC negotiations and COPs.

Gender Roles and Relations Help Shape Responses to Climate Change in Arab Countries

This section looks at the current gender context in Arab countries, and outlines how specific gender roles and inequalities relate to adaptation to changing climatic conditions. Increasingly, the process of adapting to a changing climate will constitute an opportunity for the negotiation of gender roles and relations.

Gender Roles in Rural Livelihoods Create Challenges for Women and Men

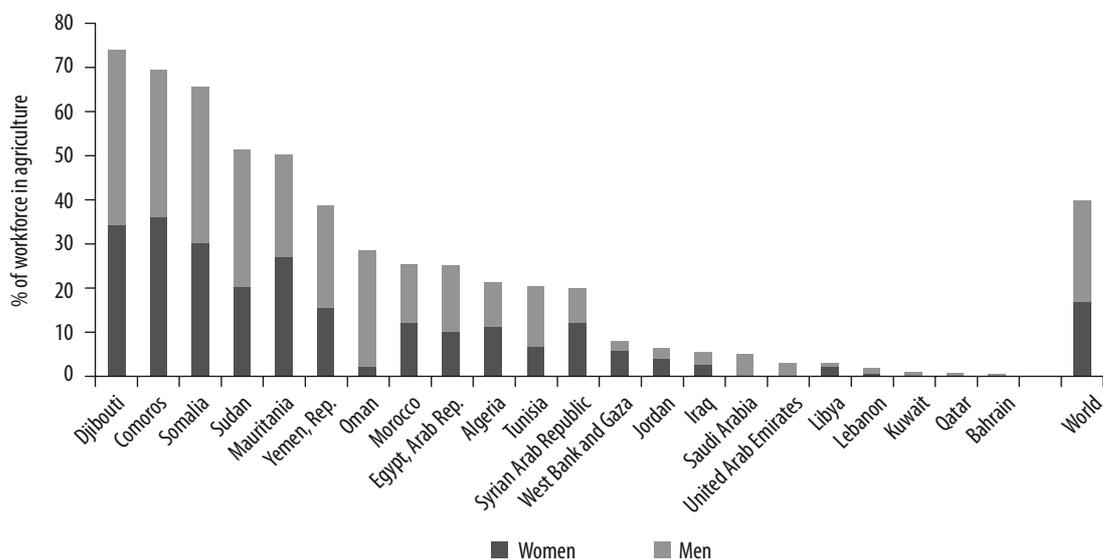
Women and men generally have different roles in rural societies in Arab countries. In some countries, women are often responsible for tending the land and livestock during the day and attending to household chores in the evening. Men typically handle the finances, trade in the market, and, if needed, migrate. Because natural resources are directly affected by the climate, women's roles in rural areas are often the most sensitive to climate change. Changes in rural livelihoods across Arab countries represent major challenges, but they also offer potential opportunities for flexibility and long-term change in the economic, political, and sociocultural mechanisms that maintain gender inequalities. Gender roles can be less rigid than they might appear (Obeid 2006; Resurreccion 2011), and climate change may present an opportunity for them to evolve in rural areas.

Rural women play a key role in managing natural resources and sustaining livelihoods

Across Arab countries, the division of labor in poor rural households is such that women undertake a large portion of the labor required to sustain natural resources and rural livelihood systems. Women's roles in agriculture are particularly significant, although their involvement in the sector varies between countries (figure 7.1). They typically work long hours, engaged mainly in nonmechanized, labor-intensive, non-capital-intensive activities (FAO 2005). Women also have primary responsibility for the husbandry of small animals and ruminants, as well as for taking care of large-animal systems, herding, providing feed and water, maintaining stalls, and milking (Elasha 2010; FAO 2005).

The agricultural work traditionally performed by women in Arab countries has long been "invisible," as a crucial but seldom acknowledged contribution to household and national income (FAO 2005). Women work on their own farms and as laborers on other farms, but most of them are not paid for their efforts. About 75 percent of women working in agriculture in the Republic of Yemen are unpaid, as are 66 percent in Syria, 45 percent

FIGURE 7.1

Women and Men Engaged in Agriculture, 2004

Source: Authors' representation, based on FAOSTAT.

in the West Bank and Gaza (FAO 2005), and 70 percent in Egypt (Egyptian Organization for Development Rights 2011). But the female role in livelihood and natural resource systems is crucial; the work women perform is central to ensuring food security for the family and community and maintaining adequate levels of productivity among the rural labor force (FAO 2005; FAO, IFAD, and ILO 2010; IFAD and FAO 2007).

This traditional role of women as natural resource managers in rural communities in Arab countries makes them especially vulnerable to climate change for two reasons. First, these systems are highly reliant on the climate for their productivity, which makes them highly exposed. Second, because women are often not paid for this work and have less access to and control of land, they have less capacity to adapt. For example, women are the largest group of direct water users, but they do not normally have an equal voice in managing the use or distribution of water.

Women are the primary caregivers in rural families

Women perform vital, but economically unrecognized and unremunerated, activities that contribute to the overall well-being of the household. These activities, which act as a social safety net in the absence of public service provisions, include functioning as caretakers and sometimes as contributors to household income. Caretaking activities are particularly

BOX 7.1**Women's Roles in Buffering against Shocks**

“Women in most Arab countries play a key role in adapting households and buffering the family against unexpected climatic shocks. Their knowledge of ecosystems, their skills and abilities, social networks and community organizations help communities mitigate hazardous conditions and events, and respond effectively to disasters.”

Source: Elasha 2010.

demanding where birth rates are high, such as in Mauritania, Oman, the West Bank and Gaza, and the Republic of Yemen. This problem is further exacerbated when women suffer poor access to reproductive health services (FAO 2005).

These roles make women highly vulnerable to climate change for two main reasons. First, when climate hazards occur, women play a vital role in maintaining the functioning of the home (see box 7.1). Second, the increased likelihood of illness as a result of climate change is a burden that will fall primarily on women, who are responsible for taking care of sick family members.

Migration decisions are heavily influenced by gender roles⁴

Gender norms, roles, and inequalities play an important role in determining who migrates, when, and where. Migration is not necessarily an equally viable option for all members of the household. For example, those with limited resources or who are responsible for care—often women—are less likely to migrate (Demetriades and Esplen 2008). In Arab countries, men are normally the first to migrate (Elasha 2010). Thus women often remain in the affected community with the burden of assuming the former duties of male household members, in addition to their already heavy workload. At the same time, men face new sets of challenges. For example, when men migrate to the city they are often unskilled and stigmatized. Generally, both women and men face vulnerabilities from migration, as well as potential opportunities.

In Syria, a recent, multi-year drought affected over a million people (Sowers, Vengosh, and Weinthal 2011; and chapters 1, 3, and 6 of this volume), and led to a massive migration from rural areas to the outskirts of nearby urban centers and to Damascus and Aleppo. Estimates for the number of people who have been forced to migrate, either permanently

or semipermanently, range from 40,000 to 60,000 families (Solh 2010; UN 2009). In June 2009 it was estimated that 36,000 households (approximately 200,000–300,000 individuals) had migrated from the Al-Hassake governorate alone (ACSAD and UNISDR 2011; Solh 2010; UN 2009). In a region in which men are attributed primary responsibility as income earners, male family members in particular were expected to leave the community to find alternative sources of income (Elasha 2010).

This type of migration has contributed to the increase in the number of female-headed households in many areas.⁵ Other contributing factors are the greater numbers of disabled males (caused by conflict), widowhood, and higher divorce rates (FAO 2005; IFAD and FAO 2007; UNDP 2005). In Egypt and Morocco, female-headed households are estimated to be 17 percent of all households, though the true numbers are likely to be higher as a result of male out-migration (FAO 2005).

Although male migration can lead to increased decision-making power for women, it can also contribute to vulnerability. Some female-headed households show improved well-being in some indicators, especially if the woman's situation is out of choice (UNDP 2005). However, most households headed by women are poorer than the small proportion of households headed by unmarried men (UNDP 2005). Among women heads of household in Egypt, roughly 80.5 percent have no landholding, which leaves them without an independent source of income. Dependence on male relatives for access to land and other assets connected to land ownership makes female-headed households particularly vulnerable. Also, the illiteracy rate for rural female heads of household is 73 percent, roughly 10 percent higher than the rate for all rural women (IFAD and FAO 2007). Illiteracy leaves women with less capacity to improve and diversify their livelihoods.

Despite Some Progress, Gender-Based Inequality Persists for Some Indicators

Gender-based inequalities make women and men vulnerable to climate change in different ways. Gender-based vulnerabilities are shaped by the interactions of gender with other factors, because women and men are not able to draw equally on the resources needed for adaptation. The poorest socioeconomic groups are typically the most affected and the least able to adapt. In the rural areas of Arab countries, women make up a large proportion of these groups, which include small farmers and the unemployed (IFAD and FAO 2007).

Countries in the Arab region have achieved great advancements on key gender indicators. Investments in girls and women's education and health,

TABLE 7.1

Selected Gender Indicators for the Arab Region and Subregions, 2009 or Latest Available Data

Subregion	Maternal mortality rate (deaths per 100,000 live births)	Literacy rate (% of population ages 15 and above)		Ratio of female to male primary enrollment (%)	Labor force participation (% of population ages 15–64)		Proportion of seats held by women in national parliaments (%)
		Females	Males		Females	Males	
Least developed countries	613.0	55.0	79.0	84.3	34.9	76.2	11.8
Gulf	19.7	84.3	90.5	100.4	29.0	84.2	5.9
Maghreb	104.1	58.7	78.4	94.3	32.4	81.9	13.3
Mashreq	73.0	66.1	73.0	93.8	57.5	86.3	14.4
All Arab countries	201.7	63.9	81.1	91.7	27.6	78.8	9.2
Low- and middle-income countries, globally	290.0	74.9	86.0	96.0	55.5	83.1	17.6

Source: Authors' calculations based on Genderstat data.

Note: Subregional data are calculated as an average of country data weighted by population except for parliamentary seats held by women, which is calculated as an arithmetic average.

and some advances in women's civil and political participation, have made major inroads in closing the gender gap in these fundamental human rights. These significant improvements in the status of women have resulted in observable progress on important social indicators. Women's life expectancy has increased, and fertility rates and maternal mortality rates have decreased. Arab countries have made significant strides in female literacy and education, largely catching up with other low- and middle-income countries (IFAD and FAO 2007; UN and LAS 2010; UNDP 2005) (see table 7.1). In the Arab Gulf states, more women than men graduate from universities.

But challenges remain, and these improvements have not necessarily translated into gender equality in other domains. Women continue to suffer legal and sociocultural constraints to their agency both within and outside the household (World Bank 2012). Women continue to have less access to land, fewer economic or other livelihood opportunities, and lower civic and political participation rates. In fact, Arab countries have some of the lowest rates for women in the world on these indicators (see table 7.1). However, data on such indicators do not necessarily represent women's economic or social and political roles accurately: much of women's work—especially in rural areas—is invisible in national statistics, and their roles in social and political development are often underestimated (box 7.2).

BOX 7.2**Data: A Fundamental Challenge**

Shortcomings in gender-disaggregated data related to the links between gender and adaptation in Arab countries is a fundamental challenge in two ways. First, the availability of socioeconomic data is limited across the region, especially for rural areas. Where data exist, they are typically only available for the most basic indicators. Second, innovative data collection methods that capture gender-relevant information are not as commonly used as they could be. Some of the tools that would improve data collection include qualitative methods such as time-use surveys, focus groups, direct observation, and informant interviews.

Overcoming these shortcomings is crucial for capturing a better picture of women's capabilities and their roles in sustaining

livelihoods and human welfare. These roles are significantly undervalued in national accounts across the region, which mostly ignore informal markets and unpaid family labor and production. The indicators on decision-making processes, used in current quantitative methods, do not capture the informal and indirect influence women may have. Women's vital roles in agriculture, as household managers, and as stewards of natural resources and ecosystems are not accounted for in national data collection and statistical tools. This is because these tools derive from models of human production that measure contributions in terms of goods and services exchanged in the market and their cash values, which do not reveal the significance of unremunerated work.

Sources: IFAD and FAO 2007; Jensen et al. 2011; Obeid 2006; UNDP 2005.

Rural women's access to resources is limited

Many people lack secure access to property, land, and resources in rural areas in Arab countries. However, women's access to productive assets, especially fertile agricultural land, is further limited by sociocultural practices that reinforce male control and ownership of those resources, despite the role women often play in their management.

Overall, women make up a small proportion of total landowners:⁶ 24 percent in Egypt, 29 percent in Jordan, 14 percent in Morocco, and only 4 percent in Syria. When women do own land, they tend to own smaller plots (IFAD and FAO 2007).

Few formal regulations prohibit women from owning land. Islamic law protects women as independent legal persons entitled to own land, property, and money in their own names, regardless of marital status. However, this protection is sometimes weakened by a combination of the lack of awareness among rural women, in particular of processes of land acquisition and titling and of their rights, customary discrimination, and the persistence of the cultural idea that land is owned by men (Obeid 2006).

Women can lose their formal rights as a result of informal practices such as delaying or controlling women's marriages, giving women cash compensation in place of land, or employing customary laws to ensure that land cannot be divided. These practices exclude women from land ownership to avoid the division of land or to keep land in the family (Obeid 2006). In some countries there is also a lack of land ownership records, and particularly sex-disaggregated data, which compounds the problem and constrains analysis (box 7.2).

Lack of land ownership has serious implications for women's adaptive capacity. These challenges include the following:

- *Difficulty in accessing credit*—Land tenure and property rights are usually required as collateral for loans, which seriously constrains rural women's options for improving agricultural productivity and sustaining their livelihoods in the context of climate change.
- *Insecure access to water*—Because land and water rights are closely related, this lack of water rights also precludes women from membership in water user associations.
- *Limited membership in rural organizations*—Membership is often restricted to heads of households and titled landowners, which can cut women off from decision-making processes, support systems, new technology or techniques, and training.

Gender inequalities constrain rural women's opportunities to improve and diversify their livelihoods

Rural women often face gender-specific challenges to improving or diversifying their livelihoods, thereby increasing their vulnerability to climate change (FAO 2005; IFAD and FAO 2007; UNDP 2005). A limited labor market, restricted mobility, occupational segregation, a mismatch between skills acquired in school and labor market demands, and the strongly gender-based division of labor constrain both men's and women's ability to improve existing livelihoods or to find alternatives. However, rural women's opportunities are particularly limited because they tend to be poorer than men and have lower levels of human development. Poverty lowers a person's capacity to seek, train, or engage in alternative livelihoods, and the low level of human development leads to decreased skills and productivity in existing livelihoods. Rural women face additional challenges to improving existing livelihoods because they have less access to extension services and credit (FAO 2005; IFAD and FAO 2007; Kaisi and Alzoughbi 2007).

The overall rate of female participation in the labor force for the region is only 27.6 percent. This rate is well below the global average for

low- and middle-income countries, which is just over 50 percent (see table 7.1). Women represent approximately 50 percent less of the labor force than men in Arab countries. It is not that women do not work; it is that they are often not paid for their labor, and their labor is not always recognized as work (FAO 2005). Where women perform the majority of agricultural labor, as in a number of Arab countries (see figure 7.1), they often have fewer skills to apply to other types of work. In most Arab countries, rural men are expected to maintain their status as the breadwinner for the family, and they will typically seek alternative employment when faced with unsustainable rural livelihoods.

Challenges to human development, especially those related to health and education, are often different for men and women. This disparity has important implications for men's and women's opportunities to improve and diversify their livelihoods. Challenges to human development are exacerbated by continued population growth (IFAD and FAO 2007). Maternal mortality rates are 613.0 per 100,000 births in the least developed country subregion, higher than global developing country averages (see table 7.1). Although data are lacking, clear indicators show that other health problems disproportionately affect rural women and children. This finding is often the result of the inadequate provision of primary health care. Significantly, rural children are 1.7 times more likely to be underweight than urban children in Arab countries, and child mortality rates remain high in the region's least developed countries (IFAD and FAO 2007). Although Arab countries have made progress in education for women, gender gaps also still exist in literacy and education in the Arab world; on average, literacy rates are over 15 percent lower for women. This gender gap in literacy is particularly pronounced among rural populations. This finding is particularly troubling in terms of people's capacity to adapt to climate change, because illiteracy rates are strongly correlated with poverty (IFAD and FAO 2007).

In many cases, the increased productive skills and earning capacity of rural Arab women that result from greater education and human development are not being sufficiently taken advantage of to improve adaptation. For example, the low rate at which women transition from school to the labor market is a major obstacle to development in the region. Simulations using household survey data show that the benefits of enhanced participation of women in the labor force extend to the entire household, raising average household incomes by up to 25 percent (World Bank 2004).

Rural women's limited participation in decision making weakens a country's overall ability to adapt

Low female participation in decision making at household, community, and national levels is a major obstacle to sustainable adaptation. Women's

participation in parliament ranges from just below 6 percent to 15 percent in the Arab region, with an average of just over 9 percent (see table 7.1). This finding puts Arab countries significantly below the world average of 18 percent, and behind all other regions. The next lowest regional average is for South Asia, where women hold 14 percent of seats in parliament (World Bank 2009, 2007 data). At the community level, women's agency is also limited, including a limited ability to participate in formal groups, become members of rural organizations, and act independently. Though more research is needed to understand fully why this is the case, certain factors help explain the problem (FAO 2005). These factors include traditional restrictions on women's mobility and autonomy, sociocultural norms that weaken rural women's decision-making power, women's daily labor burdens, and their lack of access and rights to certain livelihood assets.

The importance of women in decision making and social and political development is sometimes underestimated. Gender roles and norms are not impervious to change, and many rural women in Arab countries do play significant roles in decision making at all levels. Within the household, women wield more power in decision making in areas in which they are central to the process of production. For example, in some regions women have significant decision-making power over the management of dairy and poultry production (FAO 2005; IFAD and FAO 2007; Obeid 2006). Recently, decision making related to rural livelihoods has been subject to significant change because of the introduction of new technologies and mechanization. Thus modernization has reduced the need for the time-consuming contributions of women (Chatty 1990, 2006; Obeid 2006) and has been detrimental to their authority. By contrast, women have been instrumental in leading and organizing the popular movements for political change in the region in 2011 and 2012.

Rural women possess valuable knowledge related to adaptation decision making. For example, in the southern region of Syria, women have specific local knowledge of indigenous plants and their uses for food or medical purposes. This experience can help reduce the risk of illness in the wake of exposure to climate change impacts (Kaisi and Alzoughbi 2007). Overall, women's knowledge can contribute to biodiversity protection (and lower sensitivity to climate change impacts), community resilience, and the increased effectiveness of adaptation projects (Demetriades and Esplen 2008).

Finally, it should be noted that 65 percent of the population in Arab countries is below 30 years of age and becoming younger. This demographic change will certainly alter current gender dynamics. The youth are likely to have been raised in smaller families (in households more separated from the extended family than has generally been the norm), where gender disparities are often less pronounced (World Bank 2004).

Regional Case Studies Demonstrate How Gender Consideration Makes a Difference in Adaptation

This section provides contextualized examples of the links between gender, climate change, and adaptation in Arab countries. These examples pertain to water scarcity in the Republic of Yemen, agricultural livelihoods in Morocco, and drought in northeast Syria. A fourth case study discusses Jordan's approach to improving gender responsiveness in adaptation.

Identifying Gender-Related Challenges Is Essential in Managing Water Scarcity in the Republic of Yemen

The Republic of Yemen's water crisis has been particularly detrimental for women and children for several reasons. First, the inadequate access to drinking water has led to the spread of diseases such as malaria, bilharzia, and diarrhea (Assad 2010; World Bank 2011a). Second, water scarcity has negative implications for food security and malnutrition, which often affect women and children disproportionately. Third, water scarcity increases women's workloads as distances to clean water sources increase, making the daily task of collection more time-consuming. In one study, 58.4 percent of women surveyed reported spending time collecting water, compared to just 7.8 percent of men (Koolwal and van de Walle 2010). Because of its impact on women's time, water scarcity has serious implications for many aspects of women's well-being and, by extension, for the well-being of the community as a whole:

- *Female education.* Increased workloads and time burdens for women mean that girls have less time to attend school.⁷ An already large gender gap in educational enrollment is widening in some areas because girls are increasingly needed to help collect water (Assad 2010; IRIN 2009; World Bank 2011a, forthcoming b).⁸
- *Women's potential to engage in income-generating activities.* In a study of two rural communities with no piped water or gas stoves, less than 25 percent of women's time was devoted to productive activities. By comparison, in communities with piped water and gas stoves, between 38 and 52 percent of time was devoted to productive activities (World Bank, forthcoming b).
- *Health.* Less time is available for caring for household members, which threatens the health of families. A one-hour reduction per day in the time it takes to collect water improves children's health, especially for girls (Koolwal and van de Walle 2010).

- *Participation in water management and decision making.* Despite women's crucial roles in water and natural resource management, their participation in water-related decision making remains weak (Assad 2010). Increased time burdens mean that women are less available to take part in water organizations and development or adaptation projects.

Box 7.3 gives an example of a water management project in the Republic of Yemen that seeks to address some of these challenges.

BOX 7.3

Community-Based Water Management in the Republic of Yemen: Improving Climate Change Awareness, Water Management, and Child Health, and Empowering Women

A community-based water management project in the Amran district of the Republic of Yemen has a strong focus on gender. The German Agency for Technical Cooperation (GTZ) project emphasizes the following:

- Building women's capacity to participate in water management-related decision making.
- Raising women's awareness of methods to conserve and purify water.

Several project strategies were used to empower women, including the following:

- Literacy classes were taught by young women from the community who received training in teaching adults.
- Thirty-eight village water committees (VWCs) were established and led by community members, with strong female participation.
- Sand filters were distributed to schools, mosques, and nongovernmental organizations. The Yemeni Women's Union played a leading role in raising awareness of the health benefits of sand filters.

Women were trained in filter use, cleaning, and maintenance.

Positive results occurred within several areas:

- *Water management.* Female VWC members noted that women's participation in committees meant that they were able to address the real needs of the water sector and to raise awareness about cistern management and use.
- *Health.* Achievements included reductions in waterborne diseases affecting children and decreased expenditure on health.
- *Attitudes toward women.* Women's effective participation, both in the project and in the VWCs, sensitized men and religious and community leaders to gender inequalities in adaptation.
- *Women's empowerment.* Some female committee members noted that women's participation encouraged them to take part in elections for the local council, increasing women's access to decision-making processes.

Sources: Assad 2010.

Women's Engagement in Agribusiness Sustains Rural Livelihoods in Morocco

The small farming communities in the High Atlas region of Morocco, which feed a large proportion of the country's urban population, are largely self-sufficient in terms of food security and productive activities. However, this region is highly exposed to climate change, which includes shifts in temperatures and rainfall patterns (Messouli and Rochdane 2011).

In these communities, women undertake all domestic duties as well as many agricultural tasks—indeed, women carry out more than 50 percent of agricultural labor in these communities. Furthermore, out of economically active rural women across Morocco, 92 percent are engaged in agriculture, around a third of whom are under the age of 19 (Messouli and Rochdane 2011). Women's agricultural tasks include gardening, milking, harvesting, olive collecting, and other work in the fields. Women are also heavily involved in cattle breeding and the cultivation of cereals, legumes, and industrial crops.

Interviews and focus group discussions by Messouli and Rochdane (2011) in these farming communities show that men and women have different priorities. In these discussions, men often spoke of migrating while women talked more about having to take on new activities at home. Men frequently undertake seasonal migration for herding and trading, leaving women to manage natural resources in the increasingly climate-sensitive ecosystem (Messouli and Rochdane 2011). As a result of this dynamic, agriculture has come to be increasingly managed by women in some Arab countries, including Morocco (FAO 2005). Box 7.4 provides a specific example of a women-run initiative in Morocco.

Gender Roles and Relations Inform How Communities Adapt to Drought in Northeast Syria

A recent multi-year drought in northeast Syria has had major impacts on rural women and men (see chapters 1, 3, and 5 of this volume). According to the United Nations, up to 80 percent of those severely affected (mostly women) lived on a diet of only bread and sugared tea. Women, unless pregnant, were often expected to forgo a meal during food shortages. School dropout rates were high, and enrollment in some schools decreased by up to 80 percent, partly because families were migrating and partly because children were being sent to work to supplement household incomes (UN 2009). According to local reports, girls were often the first to be taken out of school.

Migration is a highly gender-related phenomenon. In responding to climate hazards, men and women consider different options, at different

BOX 7.4**Addressing Gender-Related Challenges in Adapting Agricultural Livelihoods in Morocco**

In response to growing rural poverty, the Moroccan Ministry of Agriculture's 2020 Rural Development Strategy emphasizes the importance of empowering women farmers and recognizing them "as producers and managers of ecosystems." The government, with international assistance, is helping women improve and diversify their livelihoods. Initiatives to improve women's skill sets include reducing the use of wood for fuel, promoting biogas and solar energy, and digging wells. These initiatives improve agricultural practices and alleviate women's workloads, which enable them to diversify their livelihoods and boost incomes.

In Morocco's semiarid south, around the town of Sidi Ifni, every family has its own plot of land. With backing from the Ministry of Agriculture, young people and women are receiving training and finding employment in the production of new health and cosmetic products from the prickly pear cactus. The previous small-scale production of the plant is being transformed into a significant industry, creating a small economic miracle.

Cactus cooperative members say that the status of women has increased and lives have been transformed. Members stress, "We could never have imagined that we could get such a good income from (cactus products). You don't have to be educated to work in the factories. Our children are feeling the benefits. There is much more money to be made out of cactus and it is women who are earning it."

Source: Messouli and Rochdane 2011.

stages. In response to the Syrian drought, which compelled people to abandon traditional livelihoods (ACSAD and UNISDR 2011; World Bank, forthcoming a, chapter 1), men often travelled south to work as farmers and herders among nomadic tribes near the Jordanian border or to find employment in Jordan and Lebanon. By contrast, women often travelled west to the coastal zones, where greenhouse production of vegetables near Tartous provided employment opportunities. The impact of the drought on rural livelihoods has, in many cases, led to the estrangement of family members (ACSAD and UNISDR 2011). This breach with

customary family structures has immense impacts on men, women, and children.

Migration can also provide new opportunities. In 2008, a community of 20 families from the Sba'a tribe emigrated from the Badia rangelands and settled on the outskirts of Palmyra. The children, both girls and boys who previously tended to sheep, are now enrolled in primary school. Migrated families also reported better nutrition and improved access to health care. Among some families it is also acceptable for young women to migrate and take up work. As a result, women may gain greater social and financial independence through new economic opportunities. However, already high levels of unemployment and a lack of marketable skills for urban settings, particularly among young people and women, may mean that migration does not easily yield such opportunities.

In areas where men's skill sets are limited, migration is not necessarily empowering for males. Men may become vulnerable to exploitation, harsh working conditions, and low pay. Such an outcome can be frequent because it is common for young men to work outside Syria, often in Lebanon, and be expected to send home remittances.

Among those remaining in Syria's northeast, there has been a sharp rise in the number of female-headed households. This can be both a blessing and a curse. Some female heads of household, left behind by their migrating husbands, may fall into poverty if they lack the skills to engage in financially productive activities. Others, benefitting from remittances, may gain increased autonomy and authority.

Jordan Has Developed Policy Instruments for Gender-Responsive Adaptation

In May 2011, having recognized that addressing the gender-related dynamics of adaptation is critical to fulfilling the country's development goals, Jordan, in partnership with the IUCN, became the first Arab country to mainstream gender in climate policy.⁹ Jordan now has a framework for action (for 2011–16), including practical policy guidelines (referred to in annex 7A, panel a), and is moving toward a more integrated and sustainable approach to adaptation.

The gender mainstreaming process in climate policy and action began in 2008–09. National assessments examined the status of women and gender equality, the nature of climate change impacts, and how these issues are correlated in local contexts. Informed by field visits and research, the program was based on current national priority sectors (water, energy, agriculture and food security, and waste reduction and management). A workshop in 2010 attended by stakeholders from women's organizations; ministries of environment, water and irrigation, agriculture, finance, planning, and health; the United Nations Development Programme;

GIZ (German Agency for International Cooperation),¹⁰ academic institutions; and the National Center for Agricultural Research and Extension also constituted an important part of the process. Following this preparation, the government of Jordan plans to mainstream gender perspectives into its Third National Communication to the UNFCCC. This plan is to be achieved by completing a systematic gender analysis, collecting and using sex-disaggregated data, establishing gender-sensitive indicators and benchmarks, and developing practical tools to support increased attention to gender perspectives in adaptation.

Jordan is a signatory to several key international agreements, which commits it to gender mainstreaming. In 2007 it also ratified the Convention for the Elimination of All Forms of Discrimination against Women.¹¹ The government recognized that gender equality and women's empowerment are means for promoting development and adaptation, and has adopted a participatory approach in local governance for sustainable and equitable natural resource management. The 2012–16 Jordanian women's strategy, developed by the National Jordanian Commission for Women, incorporates climate change adaptation as an area of concern in its work. This complements and supports the program's emphasis on women as agents of change in adaptation.

Multiple Approaches Are Needed to Incorporate a Gender Perspective in Adaptation

Effective adaptation demands the full potential of entire societies. Thus, adaptation strategies must be inclusive and empowering to those who face barriers to developing their potential, namely women and other vulnerable groups. At the same time, climate change increases the urgency to address the underlying causes of poverty and gender-based inequality and vulnerability, which represent significant challenges in some countries. Persistent gender inequalities are already putting huge strains on political and socioeconomic systems—strains that climate change threatens to exacerbate. To improve the responses to these challenges, it is important to improve gender equality in rural areas, improve the gender responsiveness of rural development and adaptation projects at all levels, and improve the collection and availability of data relevant to gender and climate change in rural areas.

Build Resilience to Climate Change through Increasing Gender Equality

Tackling the specific drivers of gender-based vulnerability to climate change is critically important for adaptation. Holistic development is

essential for adaptation and cannot be achieved without tackling gender inequalities. Continued investment in achieving existing development goals, if harmonized within the region's adaptation needs, will reduce sensitivity to climate change and build adaptive capacity.

Arab countries should continue to address gender inequalities by tackling the sociocultural, political, and economic mechanisms that perpetuate them. Priority areas for the region are improving equality in access to resources, livelihood opportunities, and participation in decision making. This goal means continuing the progress toward gender equality, including addressing formal and informal practices that create inequalities in health, education, economic participation, agency, civil rights, autonomy, and participation at all levels. Also important are identifying and addressing drivers of gender-based vulnerability to specific aspects of climate change impacts, such as barriers to women's land ownership, low awareness of climate change, and limited skills for livelihood diversification (see annex 7A, panel c).

Government policies also must address constraints to building adaptive capacity among rural populations in general, including for men. Many Arab countries need to invest in their rural economies and develop social protection frameworks that benefit the most vulnerable (see chapter 4). Such policies should include solutions for poor men and women (da Corta and Magongo 2011).

Increase Gender Responsiveness in Adaptation Strategies and Projects in All Sectors

New frameworks, principles, and capacity-building efforts are needed for developing and implementing gender-responsive adaptation. There is no one-size-fits-all set of policies for addressing all the issues explored in this chapter. Standardized solutions from other contexts—if imported without modification—could lead to the erosion of local methods for increasing resilience (Magnan et al. 2009). The methodological tools developed by international institutions, and in other regions, for building a gender-responsive approach to adaptation are essential, but they should also be adapted to fit local sociocultural contexts. They should ensure the effective participation of women and men and aim to activate the full potential of gender-specific knowledge in adaptation.

National and institutional level

The overarching set of tools for building the capacity of institutions to integrate gender responsiveness in all aspects of adaptation planning and management is encompassed within gender mainstreaming. There is no

single way to mainstream gender, and several frameworks exist that can be considered.¹² An institutional framework and guideline of strategies for implementing a gender mainstreaming project at the national government level, based on the Jordanian experience, is outlined in annex 7A, panel a. Since the launch of that project, a number of other Arab countries, including Bahrain and Egypt, have initiated similar projects to develop gender-mainstreaming programs and build the capacity of institutions to address gender-related challenges and opportunities in climate change adaptation.

One key problem with gender mainstreaming, as experienced in other areas of development, is that it can be seen as an end in itself, instead of a tool and a process. For example, the inclusion of female participants, or the requirement to conduct training sessions on gender, has the tendency to become the goal, regardless of the actual impact that taking these steps has. The translation of national-level policies into effective and consistent implementation of gender issues at the project level requires leadership, capacity, accountability, funding, and expertise, both in national governments and among the managers and staff of relevant institutions.¹³ Furthermore, although establishing gender-mainstreaming mechanisms is crucial, this effort does not automatically offer solutions to gender-related issues in adaptation. Effective gender-responsive climate change adaptation in Arab countries also requires action on specific points such as those identified in this chapter.

Project level

Adaptation projects in all sectors must incorporate, as a matter of routine, instruments to identify and raise awareness of local gender-adaptation issues, and develop strategies to address them. Essential steps include context-specific gender analyses at the planning stage, monitoring and evaluation during and after implementation, and flexible mechanisms to adjust those steps if they are not working (see annex 7A).

Projects should address both the immediate and practical needs of women and men, as well as the strategic¹⁴ needs of women. Addressing women's strategic needs, by empowering them and building their adaptive capacities, will help tackle the underlying drivers of gender-based vulnerability in the long term. In Arab countries, particular attention should be paid to strengthening—by both quantitative and qualitative measurements—women's participation in decision making and leadership. In addition, project planners should focus on the potential effects of women's lower access to resources and more limited opportunities for alternative livelihoods.

A key concern is to move away from a narrow focus on “vulnerable women” to a more holistic gender analysis that emphasizes the existing gender power relations within society that contribute to other forms of socioeconomic inequality. These gender analyses must identify who holds the power to identify priorities and solutions, shape debates, and make decisions (Demetriades and Esplen 2008). Once these power relations are identified, solutions can be crafted.

Finally, in responding to climate change–related disasters, Arab countries need to incorporate a gender perspective into all stages of planning and implementation of disaster risk management projects. Action is necessary at three stages: (a) predisaster, to build local resilience by identifying sustainable adaptation options to keep affected livelihoods from further deteriorating; (b) during a disaster, by implementing a gender-sensitive response through systematic gender analyses at all stages; and (c) post-disaster, by identifying those most affected and targeting efforts to address their immediate needs and promote new livelihood opportunities.

Improve the Collection and Use of Gender-Disaggregated Data

The systematic, accurate, and sustained collection of data on key indicators and their consistent use in research, policy making, and project design and implementation is crucial for addressing challenges and identifying opportunities related to gender in adaptation in Arab countries. Such data collection makes visible what is otherwise invisible, and tangible what is otherwise abstract. Data collection enables comparisons between communities, regions, and countries; assesses change over time; and measures the effectiveness of policies and projects (Aguilar 2002).

Quantitative as well as qualitative data improve the understanding of the implications of climate change and provide policy makers with the tools necessary for gender-responsive decision making in adaptation. Capturing data to reveal links between gender and adaptation requires research methods based on human welfare models (UNDP 2005). Thus countries must strengthen capacities and promote an enabling environment for qualitative research. Data collection methods could include focus groups, direct observation, and interviews, in addition to quantitative questionnaires and surveys.

Adaptation projects should include local data collection and the development of indicators that target and measure local realities. This approach will help ensure an awareness of underlying gender patterns; accurate assessments of women’s and men’s different needs for assistance; opportunities for capacity-building and adaptation initiatives; and information that can be used to strengthen the voices of vulnerable groups (box 7.5).

BOX 7.5**Unlocking Women's Potential to Help Drive Adaptation in the Gulf**

Adaptation to climate change in Arab countries demands equality of opportunity for men and women. Women are increasingly assuming leadership roles in many areas of life in the Gulf, and the huge increase in women's education and public participation is an important driver of change in the region. However, barriers to the development of women's capabilities persist in the science, technology, and engineering sectors. This situation weakens the potential of Gulf countries to develop creative and innovative climate change adaptation strategies.

Gulf countries are shifting toward building knowledge-based economies based on the sciences, but only a small proportion of students are enrolled in these areas, regardless of sex. More women and men are needed in the sector. Some of the measures Gulf countries can take to improve women's adaptive capacity through education include the following:

- Improving the understanding of how young people make education- and career-related decisions, to identify ways to encourage women to participate in science.
- Strengthening partnerships between higher education institutions, education's governing bodies, and the private sector to provide relevant programs, develop attractive career paths, and reach out to female students.
- Increasing the visibility and accessibility of female role models and building networks for women in science and technology.

Source: Authors' compilation.

Key Messages

- Climate change impacts are not gender neutral.
- Gender inequalities intensify vulnerability to climate change by increasing sensitivity to exposure to climate change impacts and reducing adaptive capacity.
- In Arab countries, women are often among those least able to adapt to the impacts of change because they are more likely to be poor than men, they are often responsible for natural resource and household

management, they lack access to resources and opportunities for improving and diversifying livelihoods, and they have limited participation in decision making.

- Women are key stakeholders in adaptation and important agents of change. Arab countries need to focus on further empowering women to be effective leaders in adaptation.
- Climate change constitutes a threat to development achievements and progress toward the Millennium Development Goals, including gender equality (MDG 3), because it threatens to deepen gender inequalities and worsen poverty.
- To build resilience to climate change, Arab countries need to do the following:
 - Increase gender equality in all domains, particularly in access to resources, opportunities for improving and diversifying livelihoods, and participation in decision-making and political processes.
 - Develop mechanisms to improve the gender responsiveness of adaptation policies and projects at both national and project levels.
 - Improve the collection and use of sex-disaggregated data on relevant indicators.

ANNEX 7A

Matrix of Proposed Policy Options

1. Increase gender-responsiveness in adaptation strategies and projects in all sectors: gender mainstreaming: Proposed policy actions

National and institutional level (based on the framework for Jordanian gender mainstreaming in climate policy and action) ^a	<p>Ratify international and regional conventions related to gender and adaptation.</p> <p>Establish coordination between all relevant government bodies and other institutions:</p> <ul style="list-style-type: none"> • Support the development of a network of gender and climate change experts or focal points. • Appoint a permanent gender expert on the national climate change committee or equivalent and establish a consultative support group to work with this expert. <p>Develop understanding of the main gender and adaptation priorities in the local context:</p> <ul style="list-style-type: none"> • Support research and data collection on the links between gender and adaptation (see panel b). • Disseminate data and results of research. <p>Establish regulations that enforce the incorporation of gender-related criteria in adaptation strategies and programs.</p> <p>Involve women's organizations in adaptation strategies and address adaptation in national gender strategy:</p> <ul style="list-style-type: none"> • Build awareness of climate change issues among women's organizations to enable them to identify opportunities for their full participation in the relevant processes. <p>Strengthen the capacity of institutions implementing the mainstreaming program:</p> <ul style="list-style-type: none"> • Develop a specific training protocol to form an integral part of the national mainstreaming program. • Carry out systematic and ongoing gender training workshops and courses on specific issues for all staff, policy advisers, and senior managers—adapted to their specific responsibilities—to build capacity to incorporate gender issues throughout the project cycle and promote gender equality through their roles. • Adopt a learning-by-doing approach to training, to distill lessons from the field, and support bottom-up policy development. <p>Establish and enforce gender-responsive budgeting practices to ensure that adequate resources are available for strengthening gender responsiveness in adaptation.</p> <p>Secure ongoing funding to ensure the continuation of the program, including through bilateral dialogue with international adaptation funding mechanisms.</p> <p>Monitor and evaluate progress regularly and update program priorities, methods, and training materials accordingly:</p> <ul style="list-style-type: none"> • Establish gender-sensitive reporting, monitoring, and evaluation systems. • Involve gender experts in the preparation of national climate change communications and negotiations. • Consider other measures of progress. For instance, in a key measure in Jordan in May 2011, the Jordanian National Committee for Women's Affairs' National Strategy for Women in Jordan included specific gender- and climate change-related objectives and activities.
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(Annex continues next page)

ANNEX 7A

Matrix of Proposed Policy Options (*continued*)

Project level ^b	<p>Allocate adequate financial and human resources for implementing gender mainstreaming.</p> <p>Carry out surveys and analysis of gender roles, norms, power relations, and gender-specific constraints.</p> <p>Ensure equal and effective participation of women and men in project and policy formulation and planning.</p> <p>Identify and address risks and opportunities for men and women.</p> <p>Identify women's and men's needs and preferences. Distinguish practical and strategic gender needs.</p> <p>Identify differing vulnerabilities of men and women along with other differences (such as age, wealth).</p> <p>Integrate results of all of these analyses in project aims and planning.</p> <p>Develop measures to address locally specific constraints, such as to women's participation in the project.</p> <p>Study, document, and build on women's and men's local practices and indigenous knowledge.</p> <p>Ensure equitable sharing of benefits between men and women.</p> <p>Include gender-related criteria in monitoring and evaluation.</p>
2. Improve the collection and use of data disaggregated by sex and by age: Proposed policy actions	
<p>There are several steps for improving the availability, accessibility, and analysis of sex- and age-disaggregated data:</p> <ul style="list-style-type: none"> • Determine the extent of existing sex- and age-disaggregated data. • Make available data accessible. • Strengthen analysis by presenting sex- and age-disaggregated data where available. • Improve data collection practices to ensure that all relevant data are disaggregated by sex and age where those disaggregated data are not available. <p>The following are examples of relevant data:</p> <ul style="list-style-type: none"> • Impacts of extreme events on health (mortality; diseases see chapter 8). • Indicators related to the longer-term impacts of climate change (including household-level microeconomic data). • Participation in rural land and water organizations and committees; sex-disaggregated data on numbers and categories of people participating in rural land and water organizations and committees and training courses. • Access to or ownership of land. • Principal source of household income. 	
Systematically integrate sex- and age-disaggregated data in projects and policy-level development and adaptation interventions via gender mainstreaming frameworks.	
<p>Climate change is likely to cause important shifts in, for example, the use of time and division of labor. Data collection must be expanded to encompass these changes, as in the following:</p> <ul style="list-style-type: none"> • Study the relationships between gender and climate change adaptation through data collection methods such as surveys on time use and division of labor, focus groups, direct observation, and interviews. <p>Support the collection of information on local knowledge and practices (for example, on local water management systems, agricultural practices, and biodiversity and ecosystem management) to help base adaptation projects and policies on women's and men's local knowledge and preserve that knowledge.</p>	

ANNEX 7A

Matrix of Proposed Policy Options (continued)

3. Build resilience to climate change through increasing gender equality: Proposed policy actions

Adaptation means continuing good development. Continue to invest in development and strengthen gains in gender equality in all areas of life: literacy, education, and skills development; health; employment; participation in decision making at all levels; and rights.

Ensure that campaigns to raise awareness of climate change and adaptation options (for example, on sustainable natural resource management and sustainable technologies and practices in agriculture) reach women and children:

- Analyze factors constraining women's access to information and target campaigns accordingly.
- Analyze gender patterns in sources of information to improve targeting of awareness campaigns, particularly where illiteracy rates are high.
- Train female community leaders to raise awareness.
- Link to general literacy and education initiatives.

Promote and invest in innovative new areas of business in rural economies:

- Emphasize improving opportunities for women.
- Conduct gender-sensitive value-chain mapping and foster women-centered value chains.
- Provide business-related training for rural populations.

Increase rural and urban women's skill-development and capacity-building opportunities. Particularly emphasize rural women's skills and opportunities in countries where feminization of rural societies is occurring (owing to out-migration of men) or where there are significant gender gaps in education, nonagricultural skills acquisition, and alternative employment opportunities.

- Develop training in community and political participation skills.
- Develop business-related training.
- Link to general literacy and education initiatives.

Promote inclusive extension services, addressing gender-specific barriers to access.

Train women extension agents.

Tailor infrastructure development to reduce women's domestic burden (increase service delivery for all):

- Improve roads.
- Increase access to fuel for heating and cooking.
- Improve water access.

Implement targeted social protection, including insurance schemes, rural pensions, access to credit, and cash transfer programs:

- Assess the needs of women-headed households in particular.

Reform regulations for accessing credit:

- Analyze gender differences in access to credit.
- Remove the criterion of being a named landowner.
- Design credit schemes specifically for women.

Reform property rights law and practices related to land and property:

- Allow joint spousal titling of land and property, to guarantee equal rights to property acquired during marriage.
- Reduce significance of marital status for legal status and land or property ownership.
- Review and reform laws and practices related to inheritance.
- Simplify and disseminate knowledge on land laws.
- Create mechanisms to improve the enforcement of existing land ownership laws.
- Improve existing land access programs, especially by increasing emphasis on gender issues in access to land.
- Support women's collective schemes for securing land access rights.

Reform membership practices of rural, land, and water organizations:

- Analyze gender differences in participation.
- Remove the common criterion of having to be a named landowner.

Source: Authors' compilation.

- a. Based on the IUCN (Regional Office for West Asia) Program for Mainstreaming Gender into Climate Change Initiatives in Jordan 2010, <http://www.iucn.org/ROWA>.
- b. Adapted from Otzelberger 2011; FAO 2010.

Notes

1. This sociocultural framework has been supported by macroeconomic factors that have limited women's participation in the workforce. The kind of social contract that governments in the region have adhered to since the mid-20th century, which has been underpinned by generous but costly welfare states, large public sectors, and generous subsidies, has often reinforced women's roles as homemakers (World Bank 2012).
2. The Nairobi Work Programme helps developing countries "improve their understanding and assessment of impacts, vulnerability and adaptation to climate change" and "make informed decisions on practical adaptation actions and measures" (see http://unfccc.int/adaptation/nairobi_work_programme/items/3633.php).
3. An Arab regional framework plan for climate change being developed by the League of Arab States includes specific programs on adaptation (including water, land, and biodiversity; agriculture and forestry; industry, construction, and building; tourism; population and human settlements; health; and marine and coastal zones), which will be implemented over a period of 10 years.
4. Although the relationship between climate change impacts and migration cannot be reduced to simplistic causality, the impact of climate change will likely be an important determinant of migratory behavior in the future.
5. Female-headed households are those headed by women in the absence—whether temporary or permanent—of adult males who otherwise supply the main source of income for the household.
6. Landowners may not live on or work the land they own. Landholders live on and work the land they own. Many middle-class female landowners—who often inherit land—rent their land to others, mainly men (IFAD and FAO 2007).
7. Existing constraints include the need for segregated classrooms and sometimes resistance from male family members. The female youth literacy rate is 24 percent lower than for male youth (72 percent versus 96 percent), and the ratio of female to male primary enrollment is 80 percent.
8. Some research has found that boys and men may assist girls and women in the collection of fuelwood in the Republic of Yemen when they have to travel long distances or it is dangerous. Energy poverty can therefore affect male community members also (El-Katiri and Fattouh 2011). This may also be the case where water is scarce.
9. The program was launched in November 2010. See <http://www.iucn.org/ROWA>.
10. At the time of the workshop, this entity was the German Agency for Technical Cooperation (GTZ), prior to its merger with two other agencies to form the German Agency for International Cooperation (GIZ).
11. Article 2(a).
12. Refer to World Bank (2011b) for one example.
13. Refer to World Bank (2011b) for more specifics on how to mainstream gender.
14. Practical gender needs are the immediate needs of individuals to ensure their survival, within existing social structures (typically concerning living conditions, health, nutrition, water, and sanitation). Strategic gender needs (of women) are needs whose fulfillment requires strategies to challenge male dominance and privilege, through addressing gender-based inequalities. Often practical and strategic gender needs overlap (Reeves and Baden 2000), but this distinction can be helpful in developing gender responsiveness in adaptation.

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