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WOMEN'S ADAPTIVE CAPACITY FOR LOCAL CLIMATE RESILIENCE IN CAMBODIA'S FOUR AGROECOLOGICAL ZONES

Introduction

Cambodia is among the three countries most vulnerable to climate change in Asia and the 10 most vulnerable worldwide (UNDP 2013 and Kreft et al. 2013). In part this is due to inadequate financial, technical and institutional capacity in building climate resilience, the dependence of the majority of its population on climate-sensitive livelihood sectors notably fisheries and agriculture, their limited awareness of climate change issues, and lagging integration of climate change adaptation into long-term planning (UNDP 2013). Climate change impacts are expected to amplify and compound existing development challenges in Cambodia (Solar 2010). Climate projections show that Cambodia can expect higher temperatures, more frequent and intense flooding and drought and extreme storms, and temporal changes in rainfall patterns (MOE and UNDP 2011). These direct effects can eventually lead to indirect impacts such as water scarcities, crop losses, inundation of low-lying land, and epidemics of infectious human and animal diseases.

Participants in a focus group discussion contributed ideas on how to build their adaptive capacity and resilience to climate change. Preah Vihear, July 2018

Knowledge and information about climate change and adaptation responses in Cambodia is generally lacking (Va 2015). The top-down nature of information flows leaves most climate information concentrated at the national level and largely unavailable to stakeholders at local and subnational levels. Similarly, local knowledge and expertise does not flow upwards, let alone get integrated into decision and policy making. Further, the complex nature of scientific and technical information means that much of the climate information that is available is largely inaccessible to the general public. This means that local people's sources of knowledge about changes in the environment are their own experiences and local knowledge, perhaps supplemented with sporadic training provided by outsiders. Other constraints shaping climate change awareness are insufficient budget allocation

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at the subnational level and limited localisation and applicability of climate data due to a lack of downscaled climate modelling (Sam and Ouch 2014).

Climate change commonly affects women disproportionately. Because women are the primary carers within the household and shoulder the burden of domestic work such as securing adequate food, water and fuel, climate change makes their daily life even more difficult (UN Women 2009). The pivotal role of women in supporting their households and communities means that the potential to mitigate and build local resilience to climate change is lost when women are neither heard nor have the right kinds of spaces to contribute their knowledge and experience (UNFCCC 2010). In Cambodia, rural women are expected to suffer the most because of their dependence on highly climate-sensitive sectors, particularly agriculture, fishing, livestock and forestry (NCCC 2013). Yet not all rural women, who in 2014 constituted 47 percent of Cambodia's total agricultural workforce, are aware and informed about their vulnerability to climate change, not to mention what they can do to prepare for and protect their livelihoods from major risks (NIS 2015).

Clearly, increasing women's participation in leadership and decision making at local and community levels is vital for building the long-term resilience of vulnerable communities to the impacts of climate change. Yet women's equal political participation and their access to information, education and financial support that would help them manage climate-related risks remain limited due to the lack of specific mechanisms facilitating women's participation in development and their equal access to resources (Nang et al. 2014). Traditional cultural attitudes assign women lower status in the socioeconomic hierarchy; for instance, they are not expected to take part in public affairs. Such social and cultural barriers to women's fuller representation and participation in public and political life discourage women from building the self-confidence and self-esteem they need to voice their concerns and solve their problems. Constraints of time and place also limit women's participation in community development planning, strategy and policy development. Therefore, despite a gradual increase in women's representation, men continue to dominate decision making and leadership positions (Moul 2013).

This paper draws on a two-year participatory research project conducted by CDRI with support from the United Nations Democracy Fund to assess local women's awareness of climate change and their capacity to respond to climate change impacts (Nong, Chhaing and Sorn forthcoming). The aim of the study was to identify the problems met by women adapting to climate change in rural areas and the constraints limiting their ability to access reliable information on climate change and adaptation measures.

Analytical framework

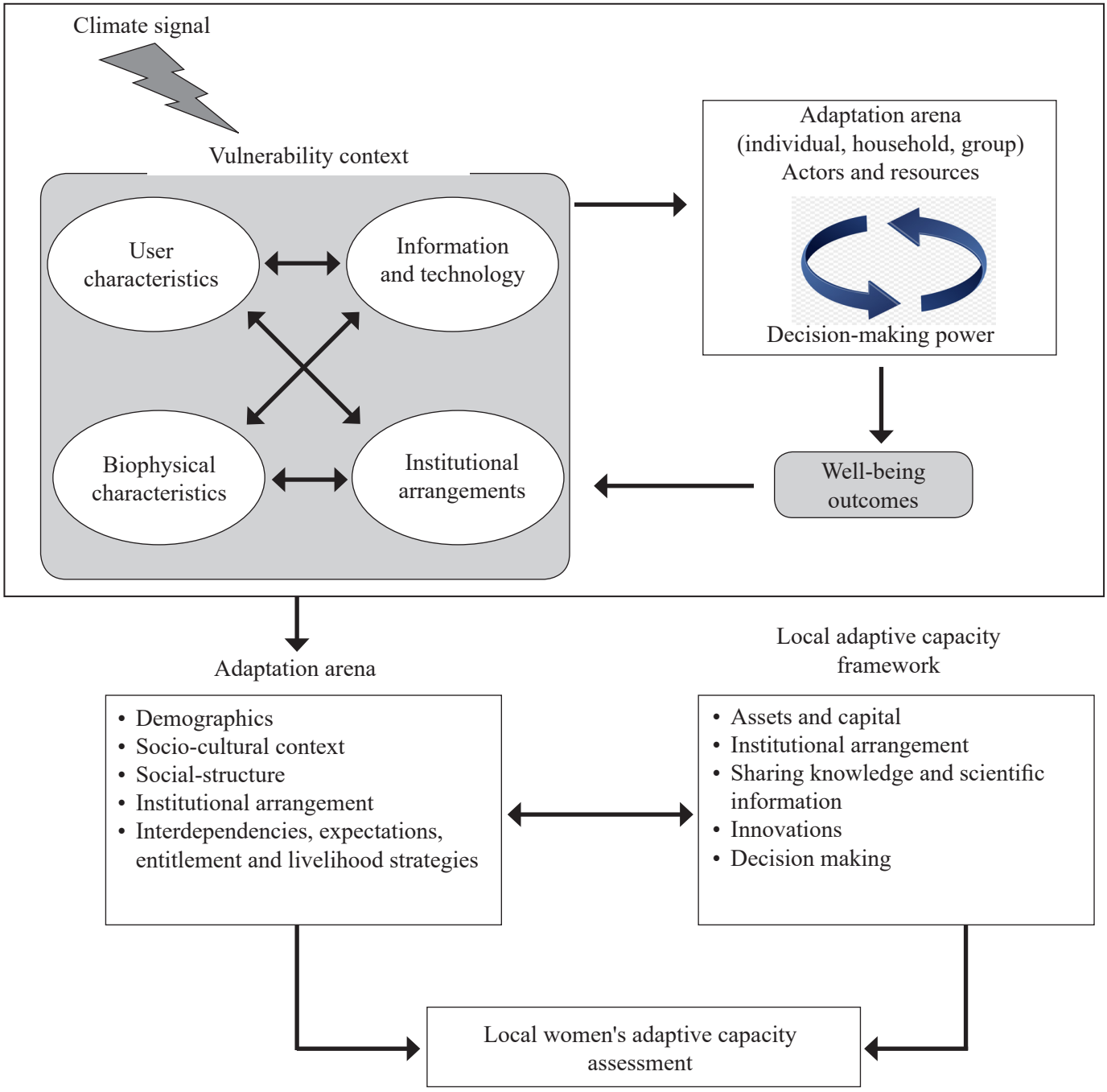
The study follows the framework for analysing rural women's capacity in the arena of climate change mitigation and adaptation developed by Behrman, Bryan and Goh (2014) and the local adaptive capacity (LAC) framework of Jones (2011). The LAC framework, depicted in Figure 1, represents a shift from a sole focus on livelihood assets or capitals (human, social, natural, physical and financial) to include capabilities at the local level by paying more attention to the dynamism of local adaptive capacity. In the words of Jones (2011, 2), it seeks to recognise "what a community does that enables it to adapt such as fostering innovation; promoting forward looking flexible governance; and re-defining maladapative norms, behaviours and institutions" as key coping strategies.

Research method

The study used both quantitative and qualitative research approaches. A household knowledge, attitudes and practice (KAP) survey on climate change was conducted in November 2017. It was administered to the household head or the principal adult[1] decision maker (312 females and 89 males) in 401 households in 43 villages across 10 communes in four provinces. Battambang, Preah Vihear, Prey Veng and Kampot provinces representing the Tonle Sap, Plateau and Mountain, Plains, and Coastal areas, respectively, were selected because they are consistently ranked among those most vulnerable to climate change. Information was also collected from 19 key informant interviews (KIIs) with local women, local authorities, provincial line department officials and local NGO representatives, and 16 focus group discussions (FGDs) – two female-only

[1] Adult is defined as age 16 years and above.

Figure 1: Analytical framework of the study



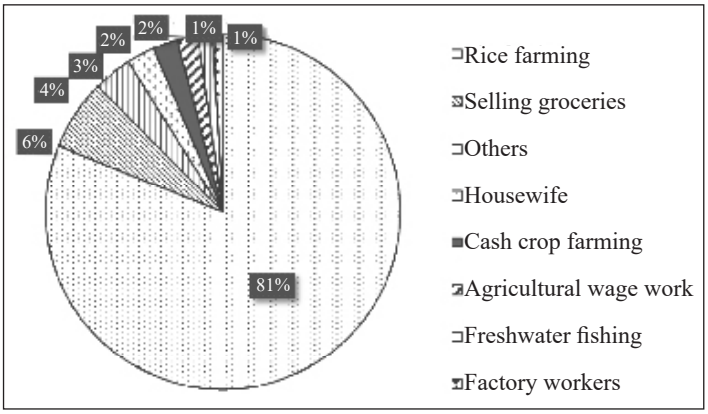
Sources: Behrman, Bryan and Goh 2014; Jones 2011

Table 1: Age profile of survey respondents (percent)

Respondents	16–24	25–39	40–54	55+	Average
Female (n=312)	6.09	30.77	33.01	30.13	45.17
Male (n=89)	1.12	25.84	39.33	33.71	45.55
Total (n=401)	4.99	29.68	34.41	30.92	46.81

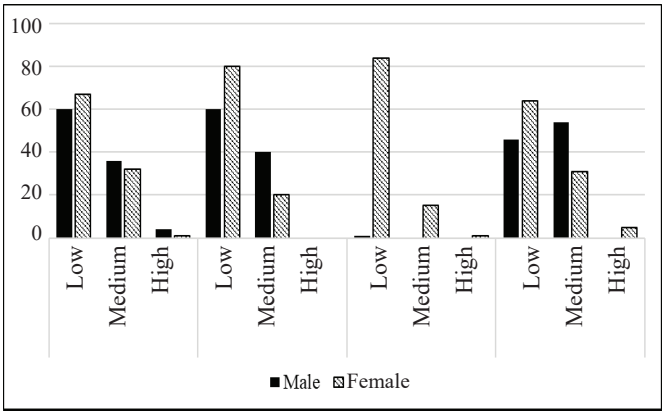
Source: KAP survey, November 2017

Figure 2: Main occupation of female respondents (percent)



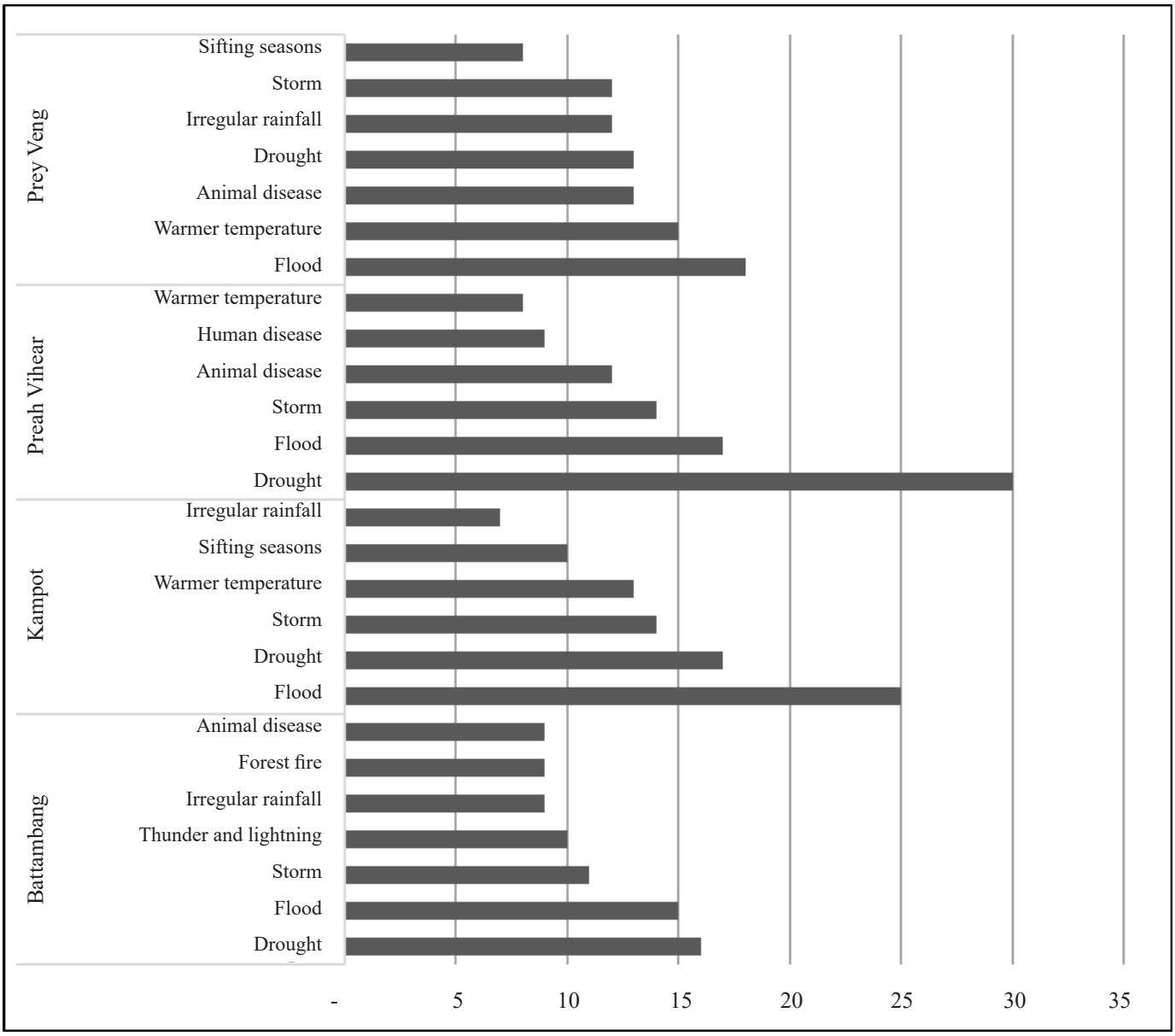
Source: KAP survey, November 2017

Figure 3: Education level of respondents (percent), by gender



Source: KAP survey November 2017

Figure 4: Disaster occurrence by province (percent)



Source: KAP survey, November 2017

and two male-only FGDs in each province. The KIIs and FGDs were conducted in June 2018.

The findings

Characteristics of survey respondents

Respondents were categorised by age into four groups, as shown in Table 1. The largest proportion of respondents (34.41 percent) fall into the 40–54 age group. There is little difference between the average age of female and male respondents. Figure 2 shows female respondents' main occupations, which for the majority (81 percent) is rice farming.

For education level, the study used standardised categories; these are expressed as low (no education, primary), medium (lower secondary, upper secondary, basic vocational training), and high (university education, specialised vocational training).[2] As Figure 3 shows, in three of the four provinces (except Preah Vihear), more female than male respondents have a low-level education; conversely, more male than female respondents have a medium-level education. None of the male respondents in Preah Vihear province have a medium- or high-level education, and none of the respondents in Kampot have a high-level education.

Exposure to climate hazards

Respondents in the four provinces are affected differently by natural disasters. Those in Kampot and Prey Veng are most affected by flooding and those in Preah Vihear by drought. Droughts and floods are the most frequent and extreme events local people have to deal with, followed by windstorms, warmer temperatures and shifting seasons.

Knowledge of climate change, its meaning, causes and effects

Understanding the meaning of climate change

The KAP survey results shown in Figure 5 indicate that female and male respondents (71 percent vs 70 percent) are equally familiar with the phrase "climate change". Roughly half of them (50 percent female vs 47 percent male) have not heard of the phrase "global warming", and only 25 percent of female and 39 percent of male respondents have heard of it. A minority of respondents are uncertain or neutral about these scientific terms.

A KII with a disaster risk management committee (DRMC) representative in Kampot confirmed our survey findings. According to him, not all local people, women and men alike, know what the term climate change means. Roughly half of the people in his commune are aware of climate change issues such as changes in the growing season and rainfall patterns.

> In my view, people in my commune understand a lot about how climate change affects their lives, especially since we provided various kinds of information through training courses, leaflets and booklets to raise awareness about climate change impacts and adaptation. The level of understanding about climate change varies from region to region. For instance, 50 percent of people who live in project intervention areas have a comprehensive understanding of climate change issues.
>
> Male, DRMC representative, August 2018

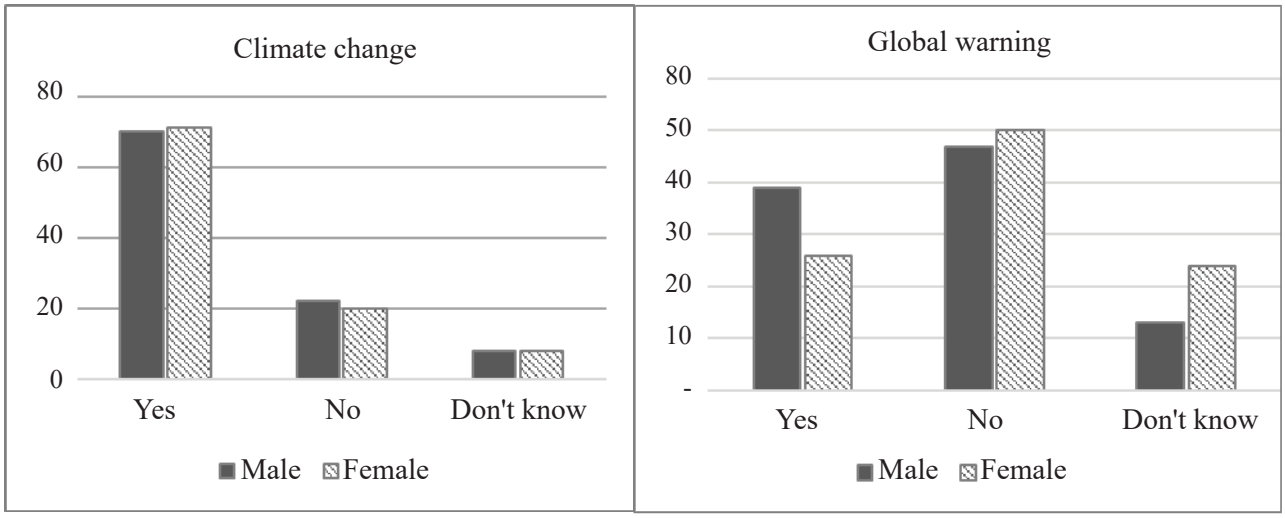
Unsurprisingly, therefore, few local people use the terms climate change and global warming. Instead, they talk about extreme weather – too cold or too hot, too much or too little or heavier rainfall, prolonged dry spells and stronger storms, as relayed by two NGO workers:

> …when talking [with local people] about climate change, I start by talking about the climate hazards in their villages like warmer or colder temperatures, too much rainfall or other weather issues, so they can understand [what I am saying]. Then, I explain the causes and effects of climate change. I definitely always use simple words or phrases to communicate with them. In my experience, compared to elders, young people are more aware of climate change because they learn about it through social media.
>
> Female, local NGO representative, August 2018

> A few villagers understand the phrase climate change in that it has affected their lives. However, most of them think the problems occur naturally. They don't think they stem

[2] The standardised categories are based on the International Standard Classification of Education from UNESCO (1999). Only completed education and training were taken into account. Incomplete training and educational attainments were coded to the next lower level.

Figure 5: Respondents having heard the phrases climate change or global warming (percent), by gender



Source: KAP survey, November 2017

from climate change, let alone associate them with human activity. In their experience, intense rainfall and prolonged dry season happen more frequently and the growing season has changed rapidly.

Male, local NGO representative, August 2018

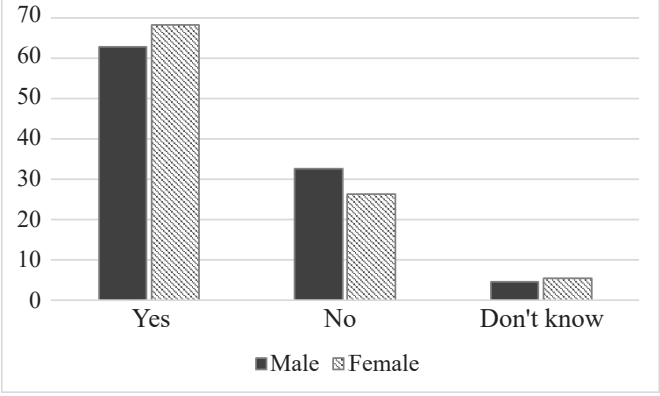
Understanding the causes and effects of climate change

Nearly half the respondents linked the causes of natural disasters with the impact of unsustainable and illegal logging and consequent deforestation and forest degradation, which is known to disrupt natural weather patterns, alter microclimatic conditions and impair ecosystem functions, and lead to increased weather variability. Thirteen percent of female respondents recognised that natural disasters result from natural processes and a few blamed human activities such as the burning of rubbish, wood and fossil fuels, the construction of too many buildings, and population growth.

Female and male respondents alike said they worry about climate-related health issues. They perceived that climate change creates challenges to agriculture, making it harder to grow rice and other crops and causing water scarcities. They were also aware of some indirect effects such as forest loss, uneven distribution of the impacts of natural disasters such as prolonged drought and extreme temperatures, declining agricultural productivity, and the risk of falling into poverty.

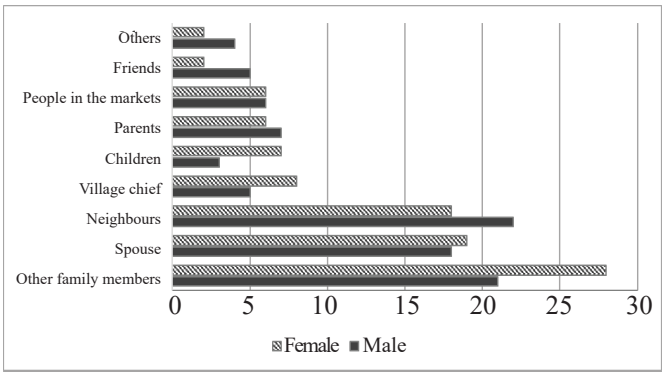
In my experience of working with local communities, people do not really understand what the phrase climate change means and not many people have heard about climate change. They never care or think about where

Figure 6: Discussing climate change issues (percent), by gender



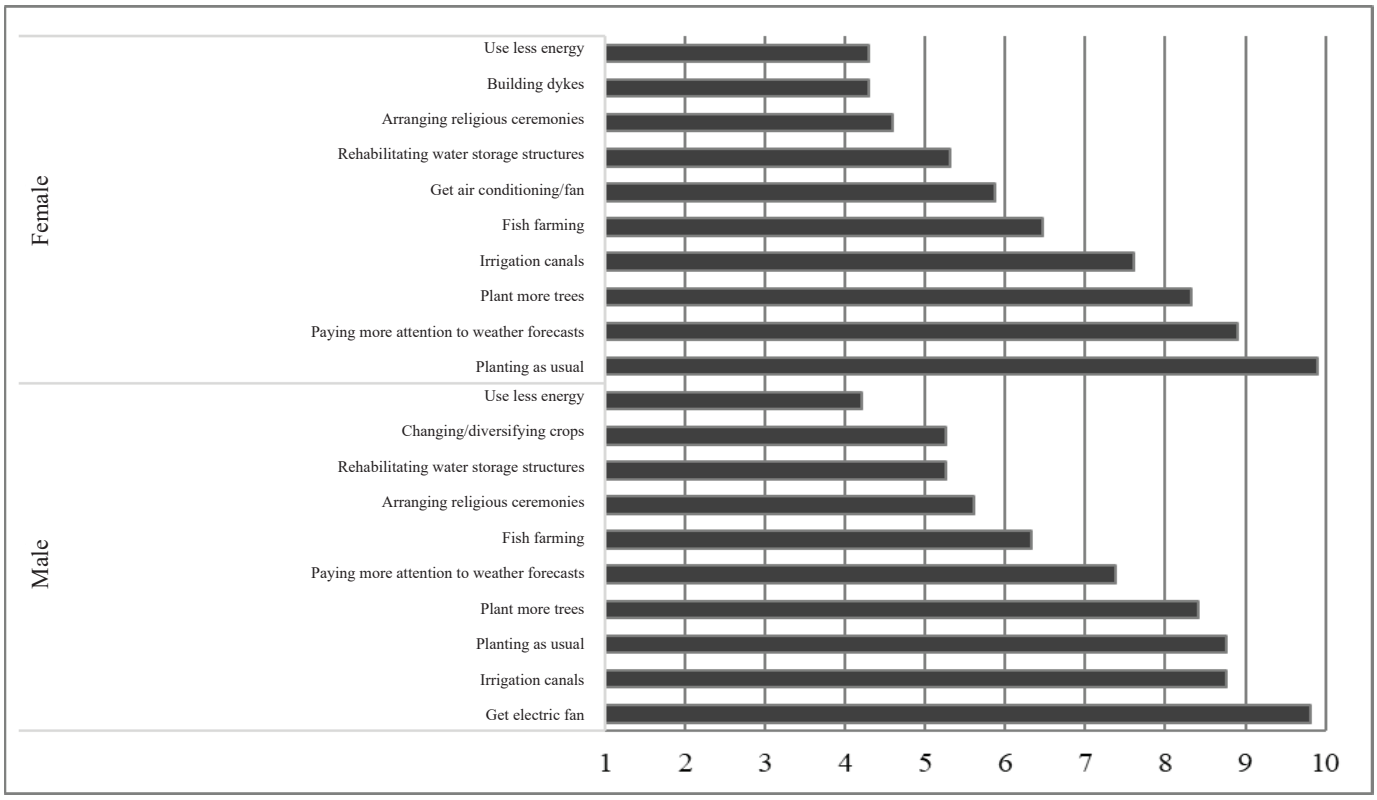
Source: KAP survey 2017

Figure 7: Persons with whom respondents have discussed climate change issues (percent), by gender



Source: KAP survey, November 2017

Figure 8: Respondents' top three solutions for dealing with climate change (percent), by gender



Note: Data represents the proportion of respondents selecting each solution among their top three choices
Source: KAP survey, November 2017

that hazard comes from – if they are hot, they just turn on the electric fan. All information about problems and issues related to climate change has to meet the needs of people especially at the community level.

Female, local NGO representative, 2018

Sources of knowledge on climate change

The KAP survey revealed that 45 percent of men and 46 percent of women learn how to cope with changes in the weather through their daily practices and experiences and those of their friends and neighbours. As Figures 6 and 7 show, 68 percent of the female respondents claiming to be aware of climate change have discussed the issue with their family, husbands, neighbours and local authorities such as village heads or commune chiefs. Twenty-six percent of them have not discussed the issue at all. Respondents have received little "outside" knowledge such as through training workshops on climate change. For instance, only 22 percent of male and 26 percent of female respondents had participated in training run by local NGOs.

Adaptation strategies to climate change

Climate adaptation initiatives can be planned or autonomous. Planned adaptation refers to a continuous strategy that enables people to sustain both their livelihoods and the environmental resources they rely on. Such initiatives usually involve effective resource use and planning, and focus on finding alternative livelihood options. Autonomous adaptation refers to short-term, reactive and immediate responses oriented towards survival, usually motivated by crisis – often as a result of environmental resource degradation – and prompted by a lack of alternatives (JCCI 2012).

In the KAP survey, only 22 percent of the respondents reported having adopted planned adaptation options, whereas 78 percent had adopted autonomous adaptation strategies. As Figure 8 shows, the most common practices reported by female respondents are planting crops as usual, paying more attention to weather forecasts, planting more trees and repairing irrigation structures. Information from the KIIs suggests that some villagers have changed the types of crops they grow and started to choose varieties that are more heat tolerant. Moreover, to adapt to the flooding risk

in their villages, they have stored food supplies, materials and other property in safe spots and made plans to evacuate their livestock to higher land.

> I have shared and explained information to [villagers] to help them understand climate change. Some villagers responded by planting different kinds of crops. Moreover, they use seed varieties that are resilient to climate change which they get through commune authorities. They have also adapted to the flooding risk in their village. Before a flood happens, some villagers prepare food, materials and property, take their livestock to a safe spot on higher land, and so on.
>
> Male, commune councillor, 2018

Others seemed reluctant to invest in disaster-risk preparedness and were going about their lives and livelihoods in the usual way, growing the same crops in the usual way and getting an electric fan or air-conditioner to cope with hot weather. Discussants in the women-only focus group in Preah Vihear stressed how in order for them to build their adaptive capacity and resilience to climate change, canals and ponds need to be rehabilitated and the lake deepened so they can store water for agriculture and domestic use. They also called on the Agricultural District Office to extend animal vaccination services and obtain drought-tolerant crop seeds, and requested that volunteer medical staff be placed in their villages to teach them about healthcare.

Discussion

The study participants mostly rely on "inside" knowledge and receive some "outside" knowledge and information about climate change through the media. A few have participated in formal training organised by local NGOs (Nang et al. 2014). Young women are more able than older women to access climate-related information through social media and the internet. However, local women generally find it hard to access climate-related information, affecting their ability to adapt to change quickly enough. Other important challenges are time constraints, limited resources and low commitment. Besides, women are rarely involved in public forums, workshops, farmer field schools and field visits, and farmer associations. Although the impacts of climate change affect women more than men, the results of the KAP survey and VAR suggest that local people are not aware of gender differences in vulnerability to climate change, let alone the potential implications of gender-differentiated and generation-differentiated impacts.

Conclusion and recommendations

The study demonstrates that a community's vulnerability and resilience to climate change vary depending on the agroecological zone in which it is located. People living in Prey Veng and Preah Vihear provinces are more susceptible to drought, higher temperatures and irregular rainfall, whereas those in Battambang and Kampot provinces are more susceptible to increased floods followed by drought, storms, and infectious human and livestock diseases. Most local women have heard of "climate change" but are less familiar with the term "global warming". Their awareness of the causes and impacts of climate change therefore lags behind national efforts to build local climate resilience. Some local women are able to respond to climate change adequately and cope with natural disasters by paying more attention to weather forecasts and maintaining irrigation canals and water structures. Others do not know how to prepare for predicted climate hazards, resorting to religious ceremonies, moving to live elsewhere, or getting an air-conditioner or electric fan.

Support for women to build their adaptive capacity to climate change should include the following actions.

- Raise awareness about climate change in the most vulnerable communities specific to the agroecological zone they are located in. This can be done through participatory action research coupled with tailored capacity building.
- Engage women at commune level in participatory action research to document best practices and available tools for building resilience to climate impacts on women's livelihoods. These include climate-smart agriculture, water resource management, access to finance, income diversification, and information about climate change adaptation and disaster risk reduction.
- Strengthen local governance by improving women's engagement and participation in the mainstreaming of women's knowledge and practices into climate change adaptation planning and initiatives in commune development plans.

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