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WOMEN'S ROLES AND CONSTRAINTS IN WATER GOVERNANCE IN THE FACE OF CLIMATE CHANGE[1]

Introduction

Cambodian women have long been active as farmers in their own right and, alongside their male counterparts, involved in the development of land and water management systems (Kumar *et al.* 2000; Ross and Savada 1989; Khmer View 2013; Nang 2013). Largely resultant of climate change, the increased frequency of hydrological extremes in Cambodia's flood-and-drought dominated regime has had a critical impact on water security, agricultural production, and food systems stability. For example, the widespread flooding in 2009 and 2011 severely damaged agricultural crops, livestock, ecosystems, physical infrastructure, human health and human settlements, and even took many human lives. In many of these contexts, women and children (in particular female-headed households and orphans) are more vulnerable than men, primarily because they are dependent on natural resources for their livelihoods, face social and economic barriers that limit their adaptive capacity, and tend to be physically weaker and therefore more prone to infectious diseases (WEN 2010).

Women and children are more vulnerable than men to climate change impacts, especially flood and drought, Prey Veng province, October 2011.

Cambodia has abundant water resources, yet current supplies for agriculture are still highly dependent on rainfall and surface water, either directly or via small-scale local irrigation systems and traditional reservoirs. Wet season rice, therefore, continues to be the mainstay of agricultural production and the main source of livelihood in rural areas. In recognition of the need for greater stakeholder (grassroots men and women) participation in agriculture water management, the principles of integrated water resources management (IWRM) and participatory irrigation management and development (PIMD) have long

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been integrated into national plans and strategies. These aim to improve the performance of irrigation systems, and consequently enhance rice production, support livelihoods and build resilience to climate change impacts (MOWRAM 2005; MOWRAM 2007a).

Despite their constrained conditions and the fact that they are disproportionately affected by the adverse effects of climate change, women are effective agents of change in mitigation, adaptation and disaster reduction strategies. It follows then, that women are not only important stakeholders in agriculture and natural resources management, but their active participation in efforts to better manage these resources, in particular water for agriculture, is also of paramount importance (UN WomenWatch 2009).

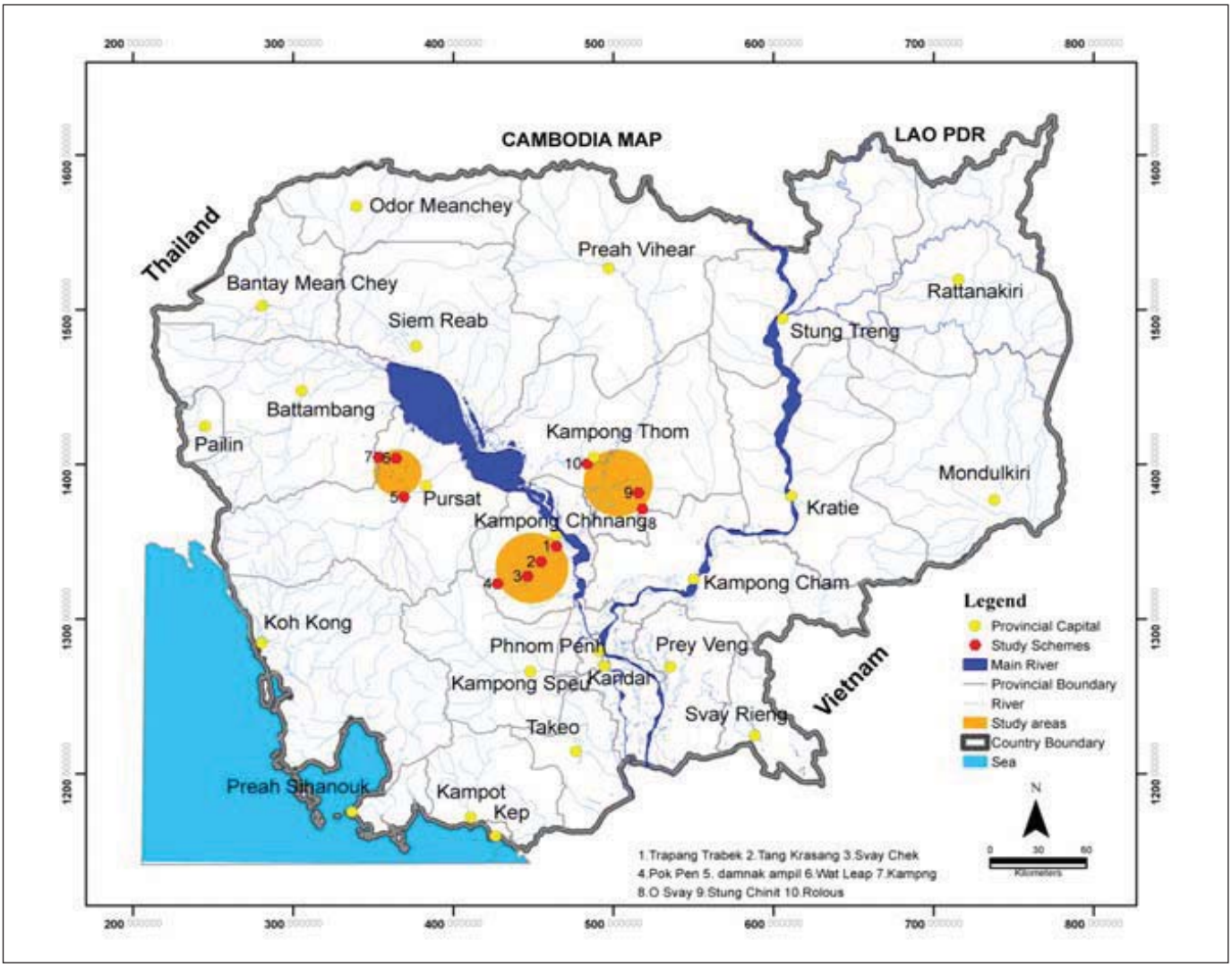
This study analyses women's involvement in water management, and their needs and constraints in agriculture, water governance, support services and adaptation policy in the face climate change. It also assesses what resources are needed to improve the active engagement of women in the sustainable management and development of water resources for agriculture and poverty reduction, and priorities for minimising the constraints.

Data Collection and Analysis

The study sites were restricted to ten irrigation schemes in three provinces – Kompong Chhnang (KCH), Kompong Thom (KTH) and Pursat (PST) (Figure 1). Each irrigation scheme has its own farmer water-user community (FWUC),[2] officially established and accredited by the Provincial Department of Water Resources and Meteorology (PDWRAM). To collect information, ten focus

[2] They are Trapeang Trabaek, Tang Krasang, Svay Chek and Pok Pen in Kompong Chhnang province; Wat Leap, Kampang and Damnak Ampil in Pursat province; and O Svay, Stung Chinit and Rolous in Kompong Thom province.

Figure 1: Study Sites



Source: Nang and Chhuong 2014

group discussions (FGDs) – one in each scheme – were conducted. These FGDs consisted of five to seven people: two women farmers, two or three FWUC committee members and two commune councillors. In addition, 11 key informant interviews (KIIs) were held with stakeholders such as FWUC leaders, farmers, village leaders and commune council members. KIIs were also held with staff of the provincial departments of Women's Affairs (PDWA), Water Resources and Meteorology (PDWRAM), Environment (PDE), and Agriculture, Forestry and Fisheries (PDAFF).

Data was summarised in a matrix format to identify gender differences and inequalities. This included information on access to and control over resources, social or community roles and responsibilities, practical and strategic gender needs, and constraints and benefits.

Women's Roles and Constraints

Access to Public/Community Work

Women understand the current issues surrounding water governance – such as the determination of irrigation service fees and collection, the utility of collective savings, and the need to maintain canals and dams – and know how to deal with them better than men do. A provincial department representative in Pursat noted: "Women are more aware of their roles in agriculture as well as in the management of water. They have changed their attitude from asking the men to be responsible for water allocation, to doing the work by themselves or working alongside men."

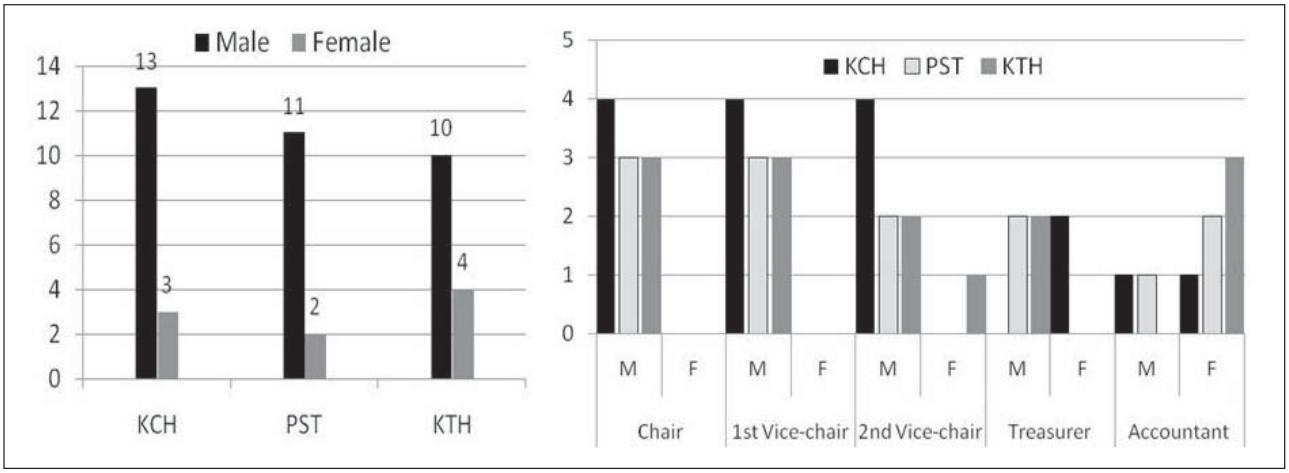
However, the numbers of women assigned responsibility on FWUC committees, commune councils, and in provincial departments are still low. Various factors hinder women from fully participating in public life and decision-making. For example, women have many household jobs in addition to running home businesses and farming. Lack of public confidence in FWUCs because they are slow to respond when they have to address certain issues – such as closing or opening water gates without permission and refusing to pay irrigation service fees – is among the key factors that make women unwilling to take on public roles. Another prohibiting factor is that managing water resources and irrigation is physically demanding work requiring physical strength.

In addition, women's limited capacity (some FWUC members referred to this as inexperience or lack of skills) in the water sector is a potential obstacle. Full involvement needs commitment and experience in related issues such as water and irrigation management, agriculture, infrastructure development, gender issues, disaster risk management and mitigation, and climate change adaptation. Local elections provide opportunities for helping women to move into leadership roles. However, because women candidates are generally placed at the bottom of the nomination list, they rarely get the chance to stand for election let alone get elected, although their participation is reported to be generally welcomed.

Water Governance

The tasks involved – for both men and women – in securing water for farming include operating and maintaining irrigation systems, sharing and disseminating information relating to water and farming, and collecting and managing irrigation service fees. Other tasks include consulting community members and villagers on water

Figure 2: Gender Roles in Farmer Water User Communities



Source: Authors' calculation

allocation quotas, and participating in agricultural development projects, water management plans, and the management and maintenance of irrigation structures. The demand for water has risen because more farmers now have the opportunity to increase their productivity by double-cropping rice. Consequently, there is increased competition for water between agriculture and other users, and between upstream and downstream farming communities. In times of water shortage, this has led to frequent conflicts over the use of water and water allocation during the cropping season. Women have increasingly assisted men in mediating these conflicts because they can find viable and peaceful solutions. This indicates a social and environmental role for women that is as essential as that of men. The empirical data also indicates gender differences in that men tend to focus more on productive work such as growing crops, managing and allocating water, or selling their labour. In contrast, in addition to earning cash from small businesses and various productive roles working alongside men, women tend to be more involved in reproductive (unpaid domestic) work like childcare, collecting food and fuel wood, and fetching water.

IWRM and PIMD have been integrated into national policy and accepted as core strategies to promote local participation in agriculture water management. In response, the FWUC, a community-based organisation managed by locally elected committee, was established. However, the number of women in decision-making positions on the FWUC committees generally remains low. As Figure 2 shows, among the 43 committee members of the FWUCs in the study, only nine were female. Most of the leadership positions in FWUCs are held by men: women mostly hold positions as treasurers and accountants, while men tend to take overall management roles.

Men also provide technical input and make the final decisions. These unequal numbers and uneven power relationships have relegated women to passive and subordinate roles in which they are not directly involved in irrigation water management.

Climate Change Impacts and Adaptive Capacity

Climate Change Impacts

Farmers in all three provinces noted that they are facing more natural disasters and climate-related impacts, particularly floods, windstorms, high temperatures, vector-borne diseases and droughts (see Table 1). High temperatures bring increasing numbers of pests such as worms, grasshoppers, small caterpillars and brown leafhoppers: pest infestations can destroy many hectares of rice in just one night. As well as reducing crop growth and yield, high temperatures are also linked with increased prevalence and incidence of illness in children. Women in one of the schemes studied said that, in 2012, some young children contracted dengue fever, two of whom died. One farmer reported another tragedy that also occurred in 2012: "A strong windstorm hit the commune. Three children of one family died during the flood. Two drowned in the river. The other one, who had travelled by boat across the village, also drowned after high winds capsized his boat." Floods (followed by windstorms and prolonged drought) are seen as serious climate issues by rural people. Farmers in another scheme reflected on past disasters: "Our area faced big floods in 2000 and 2001, but they were smaller than the ones that took place in 2009 and 2011." Other farmers mentioned that the amount, frequency and duration of rainfall had changed, i.e. rainfall duration was sometimes shorter, longer or delayed. In other areas, the prolonged drought of one to three months in 2012 meant there was no rain from mid-May to mid-August. Rice crops were damaged or failed, rivers and streams began drying up, and grass (for feeding animals) withered. Farmers in Pursat commented: "In the past five to 10 years, at this time [August] the stream used to be full of water, but this year [2012] there is hardly any water in the main stream and no fish because the water is so low."

Other farmers reported that sometimes rain seemed imminent (dark clouds and strong wind), but lately rain had not materialised at all. Drought caused extreme problems for people living far from irrigation schemes because the water in canals or drainage systems was insufficient. Farmers needed to spend a lot on pumping water (pump hire and diesel fuel) for their fields, but some did not have the right equipment, and their paddy crops were damaged. The most vulnerable were the poor, children, and women-headed families/widows.

Field observations show that natural disasters affect men and women almost equally (see Table 1). However, women seem to have less adaptive

capacity than men, in particular in adapting to higher temperatures.

Table 1: Climate Extremes and Impacts on Men and Women

Climate extremes	Level of impact	
	Females	Males
Flood	S	S
Drought	S	S
High temperature	S	M
Vector-borne disease (people)	S	S
Vector-borne disease (livestock)	S	S
Pests	S	S

M=medium, S=severe; Source: Nang and Chhuong 2014

Climate Change Adaptation

The Provincial Department of Women's Affairs (PDWA) plays an important role in gender mainstreaming and women's empowerment, and women's participation in public life and community groups has been increasing. Village volunteer groups (consisting of men and women) and women's help groups have been created to assist vulnerable and marginalised groups, including women, and to ensure that women's rights and difficulties are addressed. In communes/sangkats and villages, Women and Children's Committees (WCC) have been formed, as have district and province-level Women and Children's Consultative Committees (WCCC). Both work to empower women and have been performing well. Awareness-building activities, focusing on such things as water management, village and commune investment plans, agricultural development and climate issues, are implemented through these. Women in these committees support each other and encourage other women to work equally with men. For example, in

Table 2: Resources Needed, Priorities and Constraints

Type	Resources needed	Priorities	Constraints
Natural resources	Water, land, lakes, rivers, forests, fish and rainwater	Agriculture development and daily consumption Improving natural resource management and governance	Changing climate Geography Irrigation systems Governance of natural resources
Physical resources	Spillways, dams, canals and drainage systems Pumping stations, pumps Roads, water gates and bridges	Expanding irrigation systems Transportation Strengthening land and water management	Limited funds (construction, operation and maintenance) Governance of common pool resources
Financial resources	Household funds Banks Irrigation service fees Rice banks Savings groups Markets	Daily food and nutrition Health and physical energy Improving irrigation, infrastructure and agricultural development	Repaying loans Collecting and managing irrigation service fees Uncontrollable and unstable market prices for agriculture products
Human resources	PDWRAM, PDAFF, PDE, PDWA and other provincial line departments Local authorities and village groups	Agricultural technology, water governance and climate change adaptation Seedlings and farming techniques Processing and preserving of agricultural products Education and gender mainstreaming Improving women's empowerment, knowledge and capacity Increasing women's incomes and participation	Ability to deliver agricultural education, extension services, research and demonstration Farmers' attitudes and knowledge about rice seed selection and farming techniques Education, perception and actual practices used by farmers
Social resources	FWUCs Local authorities and villagers Red Cross and provincial Committee for Disaster Management WCCs, WCCCs, women's help groups, volunteers Savings groups NGOs	Providing support and trust in women's participation Enhancing women's empowerment, awareness and capacity Improving women's rights and access to and control over resources and decision-making	Lack of practical mechanisms for gender mainstreaming and empowerment Knowledge and skills of local stakeholders Education and cultural barriers Participation, opportunity and women's commitment

Source: Nang and Chhuong 2014

two communes in Kompong Thom, women from every village had participated in the volunteer groups[3] or village support groups[4] to help people in the commune during natural disasters, particularly floods and droughts. This reflects local women's vital contribution in improving livelihoods and food security and in adapting to climate change.

However, the time available to women, their capacity and experience, and the encouragement and support they receive from men, are still limited. PDWA and PDWRAM officials in Kompong Thom commented: "Women want to participate in all public work. However, due to their capacity, experience and household duties, only a few can actively take part. Some women are still afraid of the responsibilities that come with being elected as committee leader." Thus, although weakening, cultural barriers and perceptions mean that men are still regarded as the ones who should play the important roles in public and household activities. The effect of this perception varies, but it does inhibit women from participating in public work.

Resources Needed for Minimising Constraints

The empirical data indicates that access to and control over livelihood resources (human, natural, physical, financial and social) are key (Table 2) for integrating climate change adaptation fully into agriculture, fisheries, forestry, and food and water security, for secure local livelihoods.

Men and women have equal rights and access to resources, but natural and physical resources (land, water and irrigation systems) need to be better used and managed, taking into account women, children and other vulnerable groups. Financial resources are needed for the development, management and maintenance of irrigation systems, reservoirs, flood protection dams and rural infrastructure. Human resources are required to provide targeted and timely technical advice and support, and to monitor and enhance women's awareness, capacity, participation and representation, and to build their resilience. Provincial departments and authorities play important roles in supporting women to realise their rights and expand their roles.

At subnational level, women's networks are reactive mechanisms that can support local women in a timely and effective manner. For example, the PDWA rely on their own village-level networks (women's help groups) to support women in villages or communes affected by climate-related disasters because the response from district networks is sometimes slow or remote. Commune or village women's help groups can support local women at any time; they are quick to respond and capable of encouraging local women to take up learning and training.

During natural disasters, local, district and provincial authorities, through the Committee for Disaster Management, coordinate emergency response and assistance to inform and help people at their respective levels. The Cambodian Red Cross and a range of NGOs are also involved. Help can include the identification of safe locations for evacuation, and the provision of seeds, fertiliser, training and field demonstrations to help farmers to recover. Men, women and marginalised groups have equal rights to these services.

However, the fact remains that geographical location and the lack of irrigation systems mean that some farmers lack sufficient access to a reliable water supply to grow their crops, and this results in water shortage, leading to water use conflict and crop loss. Furthermore, in some of the schemes studied, poor rural women and female-headed farm households whose rice fields were far from main canals were unable to cope during natural disasters, despite the existence of help mechanisms (see Table 2). Generally, they own very small plots and lack both human and financial resources. Even access to credit from private companies and banks or microfinance institutions, although much better than in the past, does not solve the problems they face: farmers are reluctant to take out loans because they worry about their ability to repay. Further, although there are mechanisms for gender mainstreaming and women's empowerment (some undertaken by government institutions, local social groups and NGOs), knowledge (especially that of women) and socio-cultural norms in rural areas still hinder farmers from fully accepting and applying gender mainstreaming and women's empowerment.[5]

[3] These are supported by the provincial Red Cross and work closely with provincial and district Disaster Management Committees to help people during natural disasters.

[4] These are created in each village and consist of two men and one woman, although in some villages all the members are men, and are chaired by the village leader.

[5] During the interviews in some areas, the views expressed by some farmers show that such social and cultural norms are still embedded: women should listen to, or obey, their husbands or leaders and should not talk much in public meetings; women should take care of work at home.

Conclusion

The government has progressively mainstreamed gender policy in water governance, agricultural development, and climate change adaptation to ensure better water allocation, crop production, drought and flood protection, and farmer livelihood resilience (MAFF 2006; MOWRAM 2007b; MOWA 2013). However, women generally still have less experience and expertise than men in water and irrigation management. Their participation in commune affairs is also hampered by the double-workload of both reproductive and productive roles. Men still dominate most of the important positions in the FWUC committees while women rarely hold decision-making authority. In turn, unequal numbers and uneven power relations undermine women's determination to participate. Women have less access to and control over resources to adapt to climate change than men. Because of this, women's voices in decision-making on irrigation system development, dam construction for drought and flood protection, and commune development projects can be overlooked and the constraints remain.

Farmers are facing more and more climate-related impacts: better water governance, irrigation expansion and local support are crucial to help them to cope and to build livelihood resilience. Since gender equality, women's empowerment and climate change adaptation are closely related, there is a need to integrate gender perspectives into the planning and implementation of climate responses at all levels and across sectors. Overall, this will ensure better climate change adaptation, along with water supply and flood protection, agricultural development and inclusive economic growth. It will also ensure that the rights, responsibilities, opportunities and benefits of men and women are equitable and well protected. Also, the collaboration among provincial departments, local authorities, communities and civil society organisations plays an important role in improving women's right, access to and control over resources needed to mitigate climate disasters.

References

KhmerView (2013), "History of Cambodia", http://www.khmerview.com/History-of-Cambodia.html (accessed 20 February 2013)

Kumar, Krishna, Hannah Baldwin and Judy Benjamin (2000), *Aftermath: Women And Women's Organizations In Postconflict Cambodia,* Working Paper No. 307, http://pdf.usaid.gov/pdf_docs/pnacj327.pdf (accessed 5 February 2013)

MAFF, Ministry of Agriculture, Forestry and Fisheries (2006), *Gender Mainstreaming Policy and Strategy* (Phnom Penh: MAFF)

MOWA, Ministry of Women's Affairs (2013), *Neary Rattanak IV – Five Year Strategic Plan 2014-2018 (first outline)* (Phnom Penh: MOWA)

MOWRAM, Ministry of Water Resources and Meteorology (2005), *Cambodia IWRM strategy and Road Map,* http://www.gwpsea.org/index.php?option=com_docman&task=doc_download&gid=5&Itemid=135 (accessed 2 January 2013)

MOWRAM (2007a), *Law on Water Resources Management of the Kingdom of Cambodia*. (Phnom Penh: MOWRAM)

MOWRAM (2007b), *Gender Mainstreaming Strategy 2007-2010* (Phnom Penh: MOWRAM)

Nang Phirun (2013), *Climate Change Adaptation and Livelihoods in Inclusive Growth: A Review of Climate Change Impacts and Adaptive Capacity in Cambodia,* CDRI Working Paper Series No. 82 (Phnom Penh: CDRI)

Nang Phirun and Ouch Chhuong (2014), *Gender and Water Governance: Women's Role in Irrigation Management and Development in the Context of Climate Change,* CDRI Working Paper Series No. 89 (Phnom Penh: CDRI)

Ross, Russell R. and Andrea Matles Savada (1989),"History of Cambodia", http://motherearthtravel.com/cambodia/history.htm (accessed 20 February 2013)

WEN,Women's Environmental Network (2010), *Gender and The Climate Change Agenda: The Impacts of Climate Change on Women and Public Policy,* http://www.wen.org.uk/wp-content/uploads/Gender-and-the-climate-change-agenda-21.pdf (accessed 6 May 2012)

UN WomenWatch (2009), Women, Gender Equality and Climate Change, http://www.un.org/womenwatch/feature/climate_change/downloads/Women_and_Climate_Change_Factsheet.pdf (accessed 28 January 2014)