Towards active community participation in implementing Climate Change Adaptation Policy (CCAP) in Cambodia

Nop, Sothun

Royal University of Phnom Penh

25 March 2015

Towards active community participation in implementing Climate Change Adaptation Policy (CCAP) in Cambodia

Nop Sothun
Royal University of Phnom Penh (RUPP),
Visitting Researchers, Kyoto University, Japan

Working Paper
March 2015

Abstract

This paper explores main opportunities and key challenges for community participation in implementing climate change adaptation policy (CCAP) in Cambodia. It also determines potential priorities that can help promote community to actively involve in CCAP implementation. This study reveals that communities remain passively participate in implementing CCAP because key challenges seems to outweigh the opportunities. To promote community to actively join in the process of CCAP implementation, relevant policy legislations that established to fully empower local communities to effectively manage their livelihood resources need to be strictly enforced. Also, the exclusive livelihoods improvement programs and infrastructure projects, which help sustain incomes of vulnerable communities, upgrade their capacity, and promote their security, should be increased.

Key words: community participation, implementation, climate change adaptation policy

Introduction

Climate change is expected to boost development challenges because its impacts will increase global threats to lives and livelihoods. The negative effects of climate change have been assessed as relatively high in developing countries since livelihoods of people depend very much on climate-sensitive natural resources and there are limited resources and skills to cope with climate hazards (Nuorteva, Keskinen, & Varis, 2010). Cambodia is one of the developing countries in Southeast Asia where around 80% are rural population and about 45.9% live in multidimensional poverty[1](UNDP, 2013b). Apart from being the fact that Cambodia is a least developed country in the region, it is more vulnerable to climate change due to its limited adaptive capacity. (UNDP, 2013c; Yusuf & Francisco, 2010).

Cambodian is affected by climate changes in four ways: increase in temperature, change in rainfall pattern, floods and droughts, and sea level rise (Nang p., Sam S., Lonn P., & Ouch C., 2014). Study concentrated on two provinces of Cambodia (Koh Kong and Mondolkriri) suggested that the temperature of these two province is projected to increase between 0.7 to

[1] The Multidimensional Poverty Index (MPI) was developed in 2010 by Oxford Poverty & Human Development Initiative and the United Nations Development Programme and uses different factors to determine poverty beyond income-based lists.

1^0C by 2025 (Unknown, 2014). According to Baran, Schwartz, and Kura (2009) temperature of Cambodia is expected to increase between 0.3 to 0.6^0C by 2025. Another study similarly confirmed that Cambodia temperature is projected to increase between 0.7 to 2.7^0C by 2060s, and between 1.4 to 4.3^0 C by 2090s (McSweeney, New, & Lizcano, 2008).

Cambodian rainfall has not been shown any consistent increase or decrease since 1960s, but this is projected to increase in the magnitude of 1‐ and 5‐day rainfalls of up to 54mm and 84mm respectively by the 2090s (McSweeney et al., 2008). However, Diepart (2014) contended that even though there is no significant variation in term of the amount of rainfall, there are changes in relation to rainfall pattern. He argued that before 1930s rain started falling down in May and increased to its peak in July, then declined until November. But later 1980s, less rain started falling down in May and continued increasing to its peak in September, and declined till November. The changes of rainfall period leads to the failure of agricultural crops due to lack of water supply and more loss and damages due heavy rain during late crop calendar in September.

Although there is no clear statistic indicates about the current impacts of sea level rise on coastal areas of Cambodia, there are lots of concerns regarding this problem. McSweeney et al. (2008) claimed that sea-level in the region is projected to increase between 21 to 52 cm by 2090s. Meanwhile, sea level in Koh Kong province was projected to increase 10 cm by 2025 and between 40-60 cm by 2090s (Unknown, 2014). This study also suggested that one-meter of sea-level rise will lead to loss of about 44 km^2 of coastline in Koh Kong. Also, this can cause significantly increase the risk of severe flooding in Koh Kong City, which will impact fresh water quality in the arrears.

Cambodia experienced more extreme floods and droughts during the last decades. According to National Committee for Disaster Management (NCDM) cited by L. A. Heng (2014), trend of floods intensity has increased between the year of 2000 and 2013. In the 2013, 20 of 25 provinces of Cambodia affected by floods. Consequently, lives and crops were lost and people were seriously affected by vector-born diseases. The same study also indicated that the trend of drought intensity has also increased in the same period. In 2012, for instance, 14 of 25 provinces of Cambodia affected by drought, which leaded to crops failure and land degradation.

In the current situation, Cambodia is confronting with many potential climate related hazards including floods, drought, windstorms, landslides, and diseases. With greater frequencies and intensity of these climate risks, lives and livelihoods of communities have been severely affected and are at high risk (CDRI, 2012b; Nguyen & Shaw, 2010; RGC, 2013; Sreng, 2013). Climate change impacts not only exacerbate lives and livelihoods of poor communities through bringing them with more serious problem such as food insecurity, ill health, loss of livelihoods activities, but also burden government in achieving its goals of poverty eradication and sustainable development.

In response to these issues, the Royal Government of Cambodia (RGC) developed its climate

change adaptation policy (CCAP), which aims to increase roles and responsibilities of relevant ministries and institutions from national to grassroots levels (CDRI, 2012b; RGC, 2006a; Sreng, 2013). For instance, the National Adaptation Program of Action (NAPA) was established in 2006 and the Cambodian Climate Change Strategic Plan (CCCSP) 2014-2013 was developed in 2013. The establishment of these policies, strategic plans and framework is a commitment of the RGC aiming at both assisting communities for better adapt to climate related hazards and contributing to fulfilling global targets in addressing climate change issues (RGC, 2013).

Intergovernmental Panel on Climate Change (IPCC) (2001) contended that climate change adaptation means "adjustment in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts. This term refers to changes in processes, practices, or structures to moderate or offset potential damage or to take advantage of opportunities associated with changes in climate". In this regard, Saito (2013) advocated that climate change adaptation policy must be integrated properly into national development plans and it needs to be ensured that those plans are well mainstreamed and implemented from national to local levels. Also, the support from civil society organizations, including non-governmental organizations (NGOs), donor agencies and development partners is significant (D'Agostino & Sovacool, 2011; UNDP, 2011; UNDP, 2013c).

Although lots of efforts and huge amounts of finance have been allocated to implement climate change adaptation projects, capacity of communities to cope with climate related issues remain low. Consequently, the number of communities, which are affected annually by the issues of climate change, has proliferated; also there are more concerns about future impacts (D'Agostino & Sovacool, 2011; Ros, Nang, & Chhim, 2011). NCDM (2013), for example, confirmed that between 1996-2013 2050 people were killed due to disaster impacts. About 1.7 million ha (account for 67% of total losses) of paddy field were damaged by floods, while around 0.77 million ha (31%) were devastated by droughts. Physical infrastructure including 45,372 house, 194 hospitals, schools, roads, and irrigation system were also affected. According to UNISDR and WB (2010), average annual economic loss of Cambodia was $16.1 million from floods affects and $7 million from drought. One aspect that was seen as an attribute to this constant great loss and concerns was because of limited participation of communities in implementing CCAP. The purpose of this study is to scrutinize main opportunities and challenges for communities to participate in CCAP implementation. It also aims determine potential alternatives and mechanism for improving active community participation in implementing CCAP in Cambodia.

Rationale for the study

Since climate change impacts is a global issue, collective action among all relevant stakeholders is significant. The idea of "think globally, act locally" reflects the view that active public participation, especially of grassroots communities, in implementing CCAP is one of the key tools to achieve policy's goals.

A comprehensive understanding and highlighting possible options for promoting active community participation in implementing CCAP is crucial because it can better help communities to lessen vulnerabilities and improve their capacities. Promoting public participation in implementing CCAP is considered a strong strategy in building community resilience because the negative impacts of climate change could be minimized when local communities are well prepared and ready to cope with climate change impacts.

Cambodia was selected as the case for this study because it is one of the developing nations in Asia where issues of climate change have become a hot topic and there are more concerns for the future. Also, as Cambodia has had its national climate change adaptation policy since 2006, it is worthwhile to analyze how well the policy has been implemented.

In addition, this study will contribute to providing information to policymakers or planners who are willing to assist communities in effectively developing climate change adaptation strategies as well as strengthening grassroots communities' capacities for participation in other policy implementation.

Literature Review

Common issues of policy implementation in developing countries

National policies designing to improve social welfare, environmental management, and national development often expect to be well implemented. However, the level of successful policy implementation often varies between contexts due to different commitments, capacities, and political circumstances of each country. Pressman and Wildavsky (1984) argued that effective policy implementation relies on three important elements including: (1) adequate financial resources to cover all necessary costs ;(2) sufficient human resources for policy designing and implementation; (3) a well-functioning state administration to promote public participation and facilitate the reform process. According to Pressman and Wildavsky (1984), this concept has been successfully applied in policy implementation in Oakland, in the United States of America, in improving economic development and increasing employment for local people. Even though this concept was extracted from an old book and the case elucidated the situation in the developed country of the US, this principle is relevant to the context of many developing nations. Therefore, this concept is used to reflect the process of policy implementation in less developed nations such as Cambodia.

In many developing nations, although their policies are well designed and clearly documented, putting those policies into practice remains restricted. These common constraints associate with limited financial and human resources and cooperation (Kalame, Kudejira, & Nkem, 2011; Saito, 2013). The implementation of CCAP, for example, in less developed countries (LDCs) in Asia such as Bangladesh, Lao People's Democratic Republic, Maldives, Nepal, Bhutan and Cambodia has done mostly at the most basic level, particularly

at the stage of mainstreaming and awareness raising, due to resource constraints (Koh Kheng & Lovleen, 2011; Saito, 2013).

Also, shallow integration and cooperation between relevant government agencies was seen as a barrier for effective policy implementation (Juhola, 2010; Kalame et al., 2011). In Cambodia, for instance, CCAP has been developed under the authority of the Ministry of Environment (MoE). Principally, this policy which align with other national policies should sufficiently receive both technical and financial support from relevant institutions, especially Ministry of Planning (MoP) and Ministry of Economic and Finance (MEF), for the implementation. In reality, however, CCAP implementation remains ineffective because only MoE has carried major responsibilities with limited financial and technical assistance from relevant states agencies (Kalame et al., 2011; Siato, 2013).

Besides, poor understanding and knowledge about the policies can result in ineffective implementation. Due to limited channels for policies dissemination, not many people, especially remote communities understand the national policies. It is unlikely, therefore, for them to take part and contribute toward effective implementation of those policies (Makinde, 2005). In Cambodia, for example, although NAPA has been established since 2006, but many people do not know about this and do not know how they can involve in the process of the implementation. (DCA/CA, 2009; Nguyen & Shaw, 2010).

Public participation in Cambodian context

In line with national reform policies aimed at promoting good governance, the first commune-level council elections were conducted in February 2002. These elections were a cornerstone of the Cambodian government's policy of decentralization, which aims both to enhance and expand local democracy, and promote development and eradicate poverty (CDRI, 2012a; Pellini & Ayres, 2007; RGC, 2006b). The core aspect of this policy reform is to empower and promote the role of local governments, and to encourage public participation in managing development activities at the grassroots level. In this sense, the main component of the relationship between commune councils and local communities is to promote the participation of citizens in all processes of local planning and decision making (Pellini, 2007; Pellini & Ayres, 2007).

Community participation refers to the process that individuals and communities engage in decisions about things that affect their lives. With this regard, "communities are playing an active part and have a significant degree of power and influence" (Burns, Heywood, Taylor, Wilde, & Wilson, 2004). Public participation, especially through involvement at the grassroots level in development activities, has become a common and important approach in improving inclusive growth as well as achieving long-term development goals (Jacobs & Price, 2003; Kawakami, Tong, Kannitha, & Sophorn, 2011; Pellini, 2007; Pellini & Ayres, 2007). Community participation has played a critical role in addressing immediate issues in communities and in helping development programs to achieve their goals more effectively. When communities participate, they gain more knowledge and feel greater ownership and

commitment in response to the issues involved (Arnstein, 1969; Burns et al., 2004; Pellini, 2007).

Pellini (2007) emphasizes this by giving examples of community participation and contributions in order to address local education issues. In the initial stage, communities have contributed their local resources such as cash, labor and available materials to build a local school. Besides this, the participatory method is a key tool for mobilizing community members to work together in order to improve safety, health, and the environment as well as improving the informal economy and livelihoods of rural communities and workers (Jacobs & Price, 2003; Kawakami et al., 2011). Those human networks are not normally visible to outsiders, but this social connection is very active and influential in sustaining their employment and achieving community development goals. Also, the participatory approach seems to be more effective when it is fully supported by local government (Jacobs & Price, 2003; Kawakami et al., 2011).

In terms of how to achieve better outcomes from community participation, Jacobs and Price (2003) suggested that using the existing community networks such as farmer associations or Buddhist pagodas seems to be more effective and sustainable than setting up new systems because these networks have more influence on local communities. The existing structures, which consist of clear systems for information sharing, may work more effectively in promoting health programs as well as overcoming other community issues through organization, leadership, management, and resource mobilization. Moreover, Ui et al. (2010) proved that non-governmental organizations (NGOs) have played critical roles in promoting community participation in development activities and in addressing communities' issues because NGOs have frequently promoted empowerment strategies through building capacity and including communities in decision making and project implementation processes. Furthermore, NGOs have helped in sharing information and building networks between communities, local authorities and other relevant stakeholders, which are useful for promoting effective community participation.

However, Pellini (2007) indicated that this community participation may not accomplish the expected level of output because the policy guidelines designed for participatory forums have not addressed the issues of the complicated hierarchical structures of local decision making. Also, the influence of poverty and illiteracy, and the competition between community development programs for grassroots involvement, are key factors framing community participation. Pellini and Ayres (2007) further suggested that the problem of community engagement is significant since research has shown that community members could not explain clearly the structure of the new commune councils, their main roles and responsibilities, and the way in which community members can participate in commune council activities. There are three main reasons for this challenge: (1) the legislation for the decentralization policy reform has not clearly stated the roles and opportunities for civil society participation, (2) a top-down approach is used to frame spaces of public participation in local governance, and (3) community solidarity has been constrained as a result of the civil war during the Pol Pot regime and the later increase in individualism.

Public Participation and Development

The RGC has opened for more participation of relevant stakeholders including development partners, donors agencies, private sector, and local communities in the process of development (RGC, 2004, 2014). At the same time, the RGC has strengthened partnerships between the private sector and the government in order to achieve economic growth. Although stakeholder involvement in development is considered an important factor for inclusive growth, however, many studies strongly indicate that to achieve the government's mission of modernization, public participation in local planning and decision-making processes has in practice been overlooked (CDRI, 2012a; Marwaan, 2008; S. Phonphakdee, Visal, & Sauter, 2009).

Despite the commitment of the current government to eradicating poverty in Cambodia, its activities continue to exclude poor people from the process of development (Somsak Phonphakdee, Sauter, & Visal, 2009). Further, as the cities become more developed, poor communities are forced away from their urban settlements through the redevelopment and replacement of their dwellings with commercial buildings or trading centers. For example, in order to achieve the goal of economic growth, many areas in Phnom Penh city such as Bueng Kak Lake, Sam Bok Cap, and Borey Keila have been given to private investors to develop and local communities have been forced to move to the slum communities in the outlying areas of the city (Khemro & Payne, 2004; Mgbako, Gao, Joynes, Cave, & Mikhailevich, 2010; Somsak Phonphakdee et al., 2009).

Also, many forestry areas in the provinces have been given to private companies as economic land concessions. This kind of concession activity brings about many negative impacts to local communities since their basic rights are disregarded (Kirkpartick, 2005; NGO Forum on Cambodia, 2005). As a consequence of these development processes, local communities have lost their properties, livelihoods, cultures and their already limited access to public services such as health care, education, clean water and environment (Khemro & Payne, 2004; Marwaan, 2008; Somsak Phonphakdee et al., 2009). This model clearly reflects the modernization theory of development, which marginalizes the poor as mere externalities of development.

The evidence seems to reveal that development activities have reflected poor law and policy implementation in Cambodia despite government rhetoric expressed in reforming legislation. When poor people are excluded from development activities, the poverty reduction intentions of government cannot be accomplished. The exclusions will exacerbate the problems of poor communities and make them even more vulnerable. The negative impacts from this are that when the social, cultural and economic rights, and civil and political rights of communities are discounted, the participation of community groups in any development activities, as well as the implementation of national policies, will face a lot of challenges.

The development of CCAP and community resilience

Cambodia is currently facing many problems as a consequence of increasing national resources degradation, which is related to the overuse of natural resources such as forests, land, water, and minerals for achieving goals of economic development and supposedly to promote pro-poor development activities. These environmental issues bring about increased temperatures and precipitation as well as a rise in sea levels; these are considered key challenges for Cambodian development (Lay, 2011; Sreng, 2013). In response to these climate change issues, the RGC has made significant reforms through increasing roles of state institutions and creating and adjusting strategic guidelines and policies. The primary aim of these reforms is to build communities resilience for disaster risk reduction (DRR) and climate change adaptation (CCA).

Resilience is the term that is more frequently used, especially when talking about DRR and CCA. Resilience can mean different things to people from the different fields. The term resilience is defined as "*the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a potentially hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions*" (Lavell et al., 2012, p. 34). Building community resilience, therefore, is a process of enhancing ability of communities to withstand and recover from adversity through a strong system, which actively participated by all relevant actors.

Community resilience can be enhanced through many different strategies and approaches. Studies found that ecosystem-based disaster risk reduction (Eco-DRR) and ecosystem-based adaptation (EbA) are non-regrets strategies to DRR and CCA. Eco-DRR focuses on combining the sustainable management of ecosystems and DRR integrating planning tools (e.g. early warning system) and engineering infrastructures, EbA focuses on the use of biodiversity and ecosystem services as a part of overall strategies to assist people and communities adapt to the negative effects of climate change at local to global levels. Eco-DRR and EbA, which focus on promoting sustainable management, conservation and restoration of ecosystems, aim primarily at preventing disasters and recovery, mitigating hazards, and adapting to climate change. (UNEP & CUAS, 2015).

Ecosystems have played significant roles in maintaining well-being of community through its provisioning, regulating, and cultural services. Biodiversity and ecosystem services have largely contribute to sustain livelihoods of the communities. For instance, ecosystem goods such as clean water, food and fiber are the crucial livelihoods assets for reducing poverty in many third words nations. Maintaining biodiversity and ecosystem can also contribute to protect the local identity and cultural heritage, especially in the forest-dependent communities and locations. Moreover, the ecosystem services such as erosion control, soil fertilities maintenance, water purification and carbon storing has a strong connection to hazard and climate change mitigation. For example, protecting vegetation and reforestation in upper watersheds can reduce potential risks of flooding and landslide (UNEP & CUAS, 2015).

Eco-DRR and EbA are the cost-effective tools for minimizing disaster risks and adapting to climate change impacts. Studies which focus on comparing green solution (natural infrastructure) and grey solution (engineering infrastructure) suggested that green solution seems to spend less and last for long time, while grey solution is costly and still cannot prevent all losses and damages. The healthy and well-managed ecosystems such as forests, wetlands or coastal systems is one of key tools to build up community resilience because these can act as natural infrastructure and help reduce physical exposure to hazards and enhance socio-economic resilience of the communities. In this sense, local people and communities can sustain their livelihoods through accessing essential natural resources including food, water, and construction materials (Nehren U. et al., 2014; UNEP & CUAS, 2015).

Methodology

Data collection method

This study primarily relied on qualitative methods. Desk research involved collecting relevant documents from different sources including research institutions, non-governmental organizations (NGOs), and government agencies. Secondary data from various journal articles, working papers, and reports was used to provide background and discuss the overall aspect of Cambodian CCAP development and its current status. It was also used to analyze key successes and barriers in implementing CCAP. Key suggestions/recommendations stated in the previous studies on how to improve community participation in CCAP implementation were captured to compare with the information gathered from in-debt interview and the discussion during the workshops.

Primary data was collected from field observations, in-depth interviews with key informants, and workshops. Field observations included field visit to some provinces including Kampot, Takeo, Kampong Speu, Kampong Chhnang, Siem Reap, Kampong Thom and Battambang province to observe general situations at the grassroots communities, activities of community members during farming seasons, general perception and involvement of community in CCA activities, and available physical infrastructures such as roads, irrigation systems in the communities. The in-depth interview involved 33 respondents, including 15 community members, 5 NGO representatives, 7 local authorities, 2 relevant government officers, and 4 academic representatives. Key discussion questions focused on the opportunities and problems in implementing CCAP, and the alternatives in promoting active community participation in implementing CCAP in Cambodia. In addition, key points related to the topic, which was presented and discussed during two research workshops, was also captured for this study.

Data Analysis:

This study employed Thematic Analysis (TA) approach and NVivo software was used for coding, analyzing and synthesizing all collected information. The analysis focused mainly on

the opportunities and problems for community participation in implementing CCAP in Cambodia. It also discussed the potential options, which can help to promote active community participation in implementing the CCAP.

Limitations

Due to limited time and resources, primary data was only collected from some provinces of Cambodia. Therefore, it needs to be acknowledged that the information may not be well represented in every context of Cambodian. However, the analysis is based on the existing information, experiences, and the current trends of Cambodian development shown in the literatures as well as key informants.

Cambodia and Climate Change Adaption

The overview of Cambodian context

The kingdom of Cambodia is located in mainland Southeast Asia. It covers an area of 181,035 km^2 and is divided into 25 provinces. The total population in 2013 was 15. 14 million (WB, 2015). Cambodia is surrounded by three countries (figure 1). The mainland of Cambodia is divided into three main parts (the middle, the mountains and the coast). The flat areas are in the middle of the country around Tonle Sap Lake, which are the main areas for rice cultivation. Cambodia is surrounded by plateaux and mountainous areas, which are mostly located in the north and northeast of the country including the Dangrek, Cardamom, and Elephant mountain ranges. Those areas are useful for agro-industrial crops such as rubber, cassava, cashews and so on. The third region is the coastal zone located in the south-west of the country, which is beneficial for some kinds of agro-industrial crops particularly palm oil. Also, some parts of this area are covered by mangrove forests (Nguyen & Shaw, 2010; RGC, 2001; UNDP, 2013a).

Figure 1: Administrative Map of Cambodia

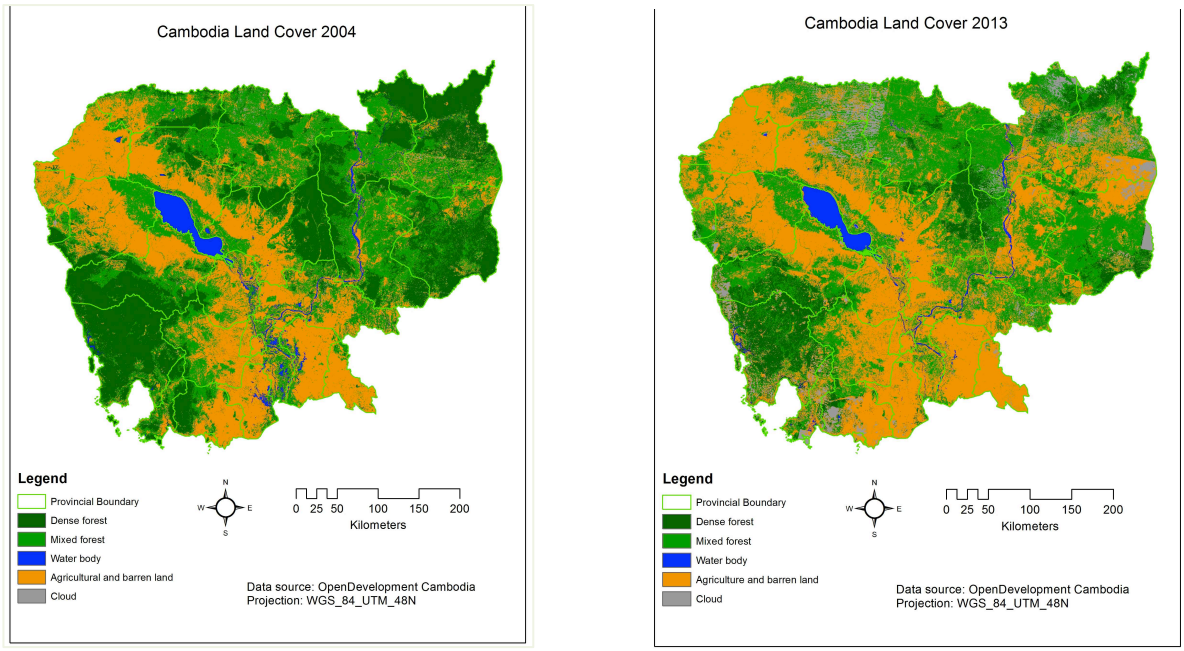
Source: Nationasonline.org

As a tropical country, Cambodia has almost year-round sunshine with a high average temperature. Cambodia has two distinct seasons namely the dry and the rainy season. The rainy season lasts for six months and goes from May to October, with south-westerly winds accompanying the clouds that bring around 75% to 80% of the annual rainfall, often in spectacular intense bursts for an hour at a time with fantastic lighting displays. Another half year is the dry season, which runs from November to April and when the average temperatures range from 27 to 40 degrees Celsius. The most comfortable and coolest period in the country is between October and January (Nguyen & Shaw, 2010; RGC, 2001).

Cambodia is known as a developing country, which experienced a long civil war and 'dark age' (Pol Pot regime between 1975-79). Cambodia is an agrarian country since more than 80% of the total population live in rural areas with about 52% living in the central plains and about 30% living around Tonle Sap Lake. The process of restoring the country socially and economically faces many problems because the physical infrastructure was substantially destroyed during the civil war (Nguyen & Shaw, 2010; RGC, 2001; UNDP, 2013a).

In term of economic factors, UNDP (2013) has demonstrated that Cambodia has experienced strong growth rates during the last decade. The Cambodian economy is estimated to have increased by 7.6% in 2013. Based on a statement from the Ministry of Economics and Finance (MEF), the current annual GDP per capita is US$1,036 compared to around US$200 in1992. This will assist Cambodia to become a lower-middle income nation in the near future. Meanwhile, it is observed that there have been significant changes in term of land used. In 2004, for instance, the forest areas largely covered Cambodia, but those areas have gradually declined and replaced by agricultural and barren land (figure 2).

Figure 2: Cambodian land cover change between 2004-2013



Cambodian's Policy and Legal Framework to Climate Change

Institutional arrangement and main focuses of CCAP

The RGC has ratified the policy of the United Nations Framework Convention on Climate Change (UNFCCC) (1995) and the Kyoto Protocol (2002). In 2003, the Cambodian government established a Climate Change Office, which was promoted to become a department in 2009. In 2006, the National Climate Change Committee (NCCC), which includes representatives of 19 ministries and government agencies, was created under Sub-Decree N^{o} 35. This national committee comprises of the Prime Minister as president, a minister from the MoE as chair and other officials from relevant agencies as members. To support to this National Committee, working groups and task forces were formed as a technical team (RGC, 2006a).

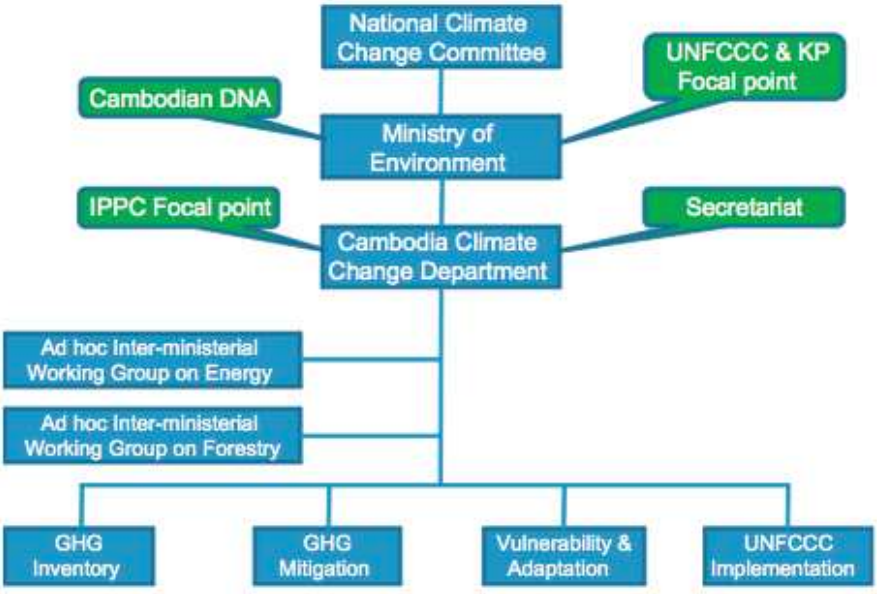
NAPA was established in 2006 and aimed at providing a framework to guide the coordination and implementation of adaptation initiatives through a participatory approach. NAPA is also to build synergies with like-minded institutions working on relevant environment and development programmes in order to building community resilience to climate change impacts (RGC, 2006a). To address the urgent and immediate needs and concerns of people at the grassroots level for adaptation to the adverse effects of climate change, Cambodia's NAPA combines priority projects in key sectors such as agriculture, water resources, coastal zone and human health (C. T. Heng, 2011). NAPA consists of 39 total projects and 20 of which are in high priority that require urgent funding support. The project activities of NAPA have been classified into three important categories, including capacity building/training, awareness raising/education, and infrastructure development (C. T. Heng, 2011; RGC, 2006a).

To accomplish gold of building community resilience, CCAP has been integrated into other national policies and strategic guidelines such as the Rectangular Strategies, the National Strategic Development Plan (NSDP) 2006-2010, and the NSDP-Update 2014-2018 that were established for poverty reduction and for overall national development. Also, to ensure successful implementation of CCAP, cooperation with relevant ministers, development partners and local communities has been taken into account (Lay, 2011; RGC, 2006a; Sreng, 2013).

- ***Mechanism and approaches in implementing CCAP***

There are several institutions and government agencies from national to local levels take part in implementing CCAP. NCCC, which is chaired by MoE ministers, is a lead institution that is responsible for carrying the implementation of CCAP and deals with the issues of climate change through disseminating those policies to relevant stakeholders and mobilizing resources and collective action for implementing the priority projects. The climate change institutional framework (figure 3) has been established to ensue effective implementation through involving multiple stakeholders.

Figure 3: Climate Change Institutional Framework in Cambodia

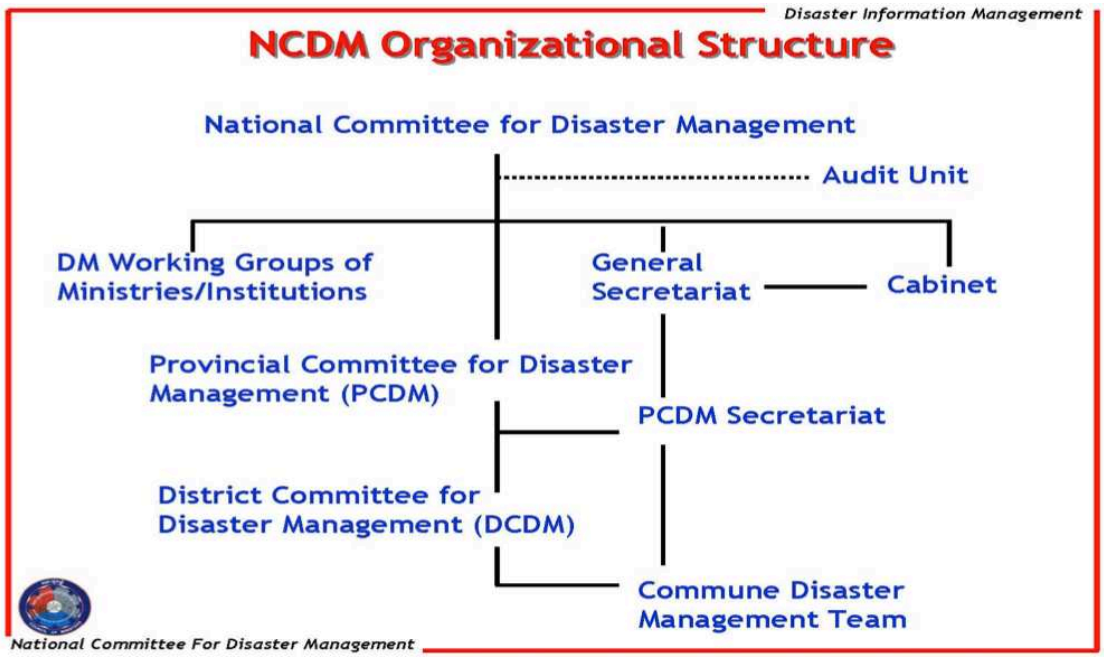


Source: Navann, 2009 cited by Nguyen & Shaw (2010)

However, it was suggested that MoE could not work effectively to address the issues of climate change and its related impacts such as drought and floods because it does not have line authorities connecting from national to the grassroots levels (Chhinh & Poch, 2013). Therefore, in responding to the contemporary climate related issues, MoE has worked in collaboration with National Committee for Disaster Management (NCDM).

NCDM is a key government body concerning with human security and Disaster Risk Reduction (DRR) through working closely with its sub-national branches (provincial, district, and commune committee disaster Management) (figure 4). Main roles and responsibilities of NCDM and its line authorities are to develop DRR strategic plan and action, provide early warning, evaluate disasters loss and damage and mobilize resources for responding to disaster impacts (Chhinh & Poch, 2013).

Figure 4: NCDM Organizational Structure



Source: NCDM cited in Sreng (2013)

There are other relevant ministries working in collaboration with MoE in dealing with the issue of disaster and climate change. NCCC shares work with MoE (and MoE itself has played a very significant role in taking the lead in this policy implementation) but it requires additional support from MEF in providing funding and support from MoP in providing technical help for the implementation process (Nguyen & Shaw, 2010; Saito, 2013). Also, Ministry of Agriculture, Forestry and Fishery (MAFF) and the Ministry of Water Resource and Meteorology (MoWRAM) works through their branches at sub-national levels (provincial departments and district offices) in improving key sectors especially agriculture and water resources. MAFF works to improve agricultural services such as training, supplying seeds and technical support, and marketing research, while MoWRAM focuses on water resource management, which includes building physical infrastructure, and supplying large-scale pumping machines where needed (Chhinh & Poch, 2013).

Along with the government agencies, there are also many non-government agencies, such as NGOs, development partners and private sectors involve in addressing issues of climate change and disaster risks. The primary roles of these institutions are to help build knowledge and awareness of local communities about climate change impacts, provides inputs (technical

and finance) to vulnerable groups to improve their livelihoods, build small and medium scales of infrastructure to diversify income sources of local communities, and to dialogue and convince government bodies and relevant stakeholders for pro-poor policies and social justices. Beside this, another role of non-governmental agencies is to provide immediate needs to the affected groups in the areas where government cannot cover in order to ensure those communities can survive and soon recover from the disaster impacts (D'Agostino & Sovacool, 2011; UNDP, 2011).

Result and Discussion

1. **Main opportunities**

- ✓ ***The availability of CCAP and other relevant policies:***

The establishment of NAPA in 2006 and the CCSP in 2013 has granted opportunities for communities to participate in implementing CCAP. As stated in the policies, general publics are encouraged to partake in and benefit from project activity implementation. For example, the 39 priority projects of NAPA, which focused on improving agriculture, water resource management, coastal protection and human health, has given rise to communities in target areas to participate in the project activities implementation. Communities are more interested in involving these activities since these priority areas help protect their lives and maintain their livelihoods. Communities will have more chances to participate in CCAP implementation process, when this policy is well disseminated and its project activities are available across the country.

Besides, relevant national policies such as Rectangular Strategy, NSDP or Decentralization and Deconcentration (D&D) help promote community participation in CCCAP implementation. Literatures suggested that these national policies played a crucial role to eradicate poverty and empower local government to manage local development. Participatory approach, which has been employed in those national policies, becomes a great space for communities to participate in any development activities that may affect their lives (CDRI, 2012a; RGC, 2006; Sreng, 2013). It means that through involvement in local development activities, community can have more chances to improve their livelihoods and build their capacities in coping with climate related issues.

- ✓ **There are mechanisms and integration for CCAP implementation:**

To promote CCAP implementation, and integration mechanism, which include key relevant institutions in the process, has been developed. Literature revealed that the strategic approaches that the NCCC has established do not make up a stand-alone project which is run by a single institution, but rather is an integrated program which runs through a number of institutions from national to local levels (RGC, 2006a; Sovacool, D'Agostino, Meenawat, & Rawlani, 2012; Sreng, 2013). For example, key state agencies such as MoE, MAFF, MOWRM, NCDM and their branches at subnational levels have been involved in

implementing NAPA; and more than 9 relevant ministries and institutions have been included to implement CCSP-2013. Through these strategic framework, local communities have more avenues to take part in implementing CCAP when the concept of climate change adaption has been integrated in agriculture, water resource management, or DRR programs, which are implemented at local levels.

- ✓ **Recognition of community-based natural resources management**

Increasing attention and recognition of community-based natural resource management approach is a space that communities can participate in CCAP implementation. To achieve the goals of poverty reduction and long-term development, national policy legislations such as NSDP, Rectangular Strategy, D&D, Cambodian Millennium Development Goals (CMDGs), Strategies of Land Policy Framework, National Forestry Policy, National Water Resource Policy have established. These policy legislations have focused on improving roles and responsibilities of communities in the process of managing natural resources. This was done based on the view that natural resources can be well protected when it is under the management of that resource-dependent-community. Well-protected natural resource or healthy ecosystem provides lots of benefits to communities and regions through its services and goods. For example, well manage ecosystem such as forest and wetland can help sustain people livelihoods and protect them from potential natural hazards such as floods, droughts or storms. Therefore, policies and guideline which permit local community to protect their local natural resources is not only a key tool to maintain their livelihoods activities, but also is a strategies to build community resilience through reducing vulnerability and balancing ecosystem for the long-term benefit.

- ✓ **Support from NGOs and development Partners**

A part from government initiatives, there are external support from NGOs and development agencies, which help broaden opportunities for communities to participate in implementing CCAP. Literature revealed that NGOs and development partners have played very important roles to improve both livelihoods and capacity and knowledge of local communities through their development programs. With participatory and collaborative approach employed throughout those development programs/ projects, communities has been engaged in all the process of planning, implementation and monitoring and evaluation of most of local development programs (Sovacool et al., 2012; Ui et al., 2010; UNDP, 2011; UNDP, 2013d; UNDP, 2013e).

Those civil society organizations (CSOs) have also played an active role in helping disseminate and implement the government law and policy related to land, forestry, fishery, DRR, CCA and other social policies at the grassroots level. This mechanism not only helps government achieve their long-term objectives, but also help promote state accountability which was stated in the national policies. Also, supporting and coordination for social movement for policy advocacy is also the main task of CSOs in order to promote law/policy

enforcement and respect of human rights (CDRI, 2012a; CDRI, 2012b; Pellini, 2007; Pellini & Ayres, 2007).

Within integrated development programs, communities have received grant support to implement climate change adaptation projects. Technical and financial support from those agencies has been allocated to strengthen communities capacity through building physical infrastructure (dams, roads, water gate, cannels, water ponds, and wells) and livelihoods activities (loan for starting small business or for improving their agricultural production) (Namara, 2013; UNDP, 2011; UNDP, 2013e). Also through those development programs, communities have been introduced to new concepts and methods for farming (e.g System of Rice Intensification), ecological livestock productions, and selection of more climate resilience crop seeds. Communities have also been formed as core groups to protect local natural resources such as forest and wetland resources for sustaining their livelihoods.

- ✓ **Social Capital (cultural & religious)**

An invisible resource that is recognized as an important asset for communities is social capital. This has been valued as an opportunity for building strong solidarity, networks and promoting collective action in dealing with community issues including climate change impacts. As a part of cultural and religious belief, forestry and other wetland resources have been recognized as spiritual places that help maintain community's prosperity that add up on goods and services provided by those natural resources. From this perspective, groups of activists, including indigenous alliances and monks networks have been formed to protect natural resource and ecosystem. These activities often received both emotional and financial support from general publics. Literature indicated that social capital existing in communities has played a crucial role to promote the effectiveness of natural resource conservation because this is a good mechanism to share information and mobilize collective action for common benefits (Jacobs & Price, 2003; Kawakami et al., 2011). Recognizing and valuing social capital is a mean of accepting local knowledge and engaging locals in the problem-solving process. Through strong social capital, therefore, communities can actively involve in protecting local natural resources as well as in the implementation of CCAP at the same time.

- ✓ **Farmer associations and Shelf-help groups**

The existing of role model farmers association and self-help groups was seen a spaced where grassroots communities can initiate and mobilize more collective action for adapting to climate change. Group of role model farmers was formed through encouragement and support from government and development partners. Their key roles are to support agricultural research institutions to explore and take experiment crop varieties, which are more resilience to climate. The result that came up from the groups of model farmers is used for sharing with other communities.

Also, with community self help group, the community have been formed as social safety networks through investing their surplus income into the saving group. This mechanism can

help community feel more secure in case their families affected by any unpredictable disaster impacts. Through the group, community can have more chances to discuss about the issues of climate change that can affect their income sources; and also to discuss for all possible solutions in order to maintain their livelihoods. From this aspect, people start to understand the connection between protect natural resources for their communities. When ecosystem, therefore, are well protected, it is the activities of implementing CCAP.

2. Key challenges

– Limited law and policies enforcement:

Even though roles of local government and communities in managing natural resource have been valued and specified in Cambodia national policies, this remains ineffective in the actual implementation. Literature suggested that local governments have only performed minor tasks such as civil registration, basic conflict resolution, and socio-economic data collection for various national agencies (N. Kim & Henke, 2005). Regarding politically sensitive topics such as land, forest and natural resource management are still beyond the local governments' influence even though the responsibilities and authority have been delegated to them as specified in the legal framework (S. Kim & Ojendal, 2011).

Research also found that community-based natural resource management mechanism, which affirmed in the national policy legislation, remains ineffective because local communities have not been granted with full authority to control over their livelihoods dependent resources. Natural resource invasions including clearing flooded forest in Tonle Sap Lake, cutting mangrove forest along coastal zones and illegal logging in the mountainous areas remains uncontrolled. Limited agenda and mechanism for strict polies enforcement for protecting natural resources can cause environmental devastations and make local people livelihoods even more vulnerable especially to climate related hazards. When livelihoods resources of communities, therefore, could not be protected, it creates more constraints for involving and building community to combat with climate change impacts.

– Lack of resources (human & finance) for CCAP implementation

Insufficient human resources to disseminate knowledge on causes and effects of climate change to general public remain still a problem in Cambodia. Assessment report of MoE (2011) suggested that not many Cambodian people have scientific knowledge about climate changes. This limitation may associate with the fact that Cambodia has limited experts who deeply involve in climate change studies. Also, human resources constraints from the top to the grassroots levels have made poor integration of climate change adaptation concept in the overall local development plan.

Research also indicates that, due limited both financial and human resource all the 39 priority projects of NAPA have not been effectively implemented. Those policies could be implemented only at a basic level, particularly at the stage of mainstreaming (Lay, 2011;

RGC, 2006a; Saito, 2013; Sreng, 2013). These studies further proclaimed that to carry on the implementation of those projects, external experts and financial resources have been mobilized. When national institutions cannot fulfill their roles properly, it will affect the local level. This interrelationship can prevent public from actively involve in development activities as well as in implementing national policies.

- **Multiple priorities and limited coordination mechanism**

Having too many priority agendas for the country's development can be a challenge for promoting community participation in implementing CCAP. Apart from assisting community to cope with climate change issues, the RGC has many other priorities for improving the country's welfare and reducing poverty. As a consequence of limited resources, government has given high priority to address immediate issues such as vector-born diseases, illiteracy, and emergency relief during natural disasters rather than investing the limited budget on adaptation programs (RGC, 2006b; Saito, 2013).

Shallow coordination between relevant key actors was seen as a gap in implementing CCAP in Cambodia. Study found institutions that involved in dealing with the issues of climate change seem to give more focuses and priorities on their main internal tasks rather than creating a system for long-term strategy. For example, although coastal protection project have been implemented, there is no information sharing system has been established. As the result all key actors especially local communities could not get and give information about weather hazard (CCCA, 2012). When stakeholders are not able to effectively communicate and local communities cannot report and receive information through early warning system, they will not able to work well together to cope with climate change impacts. Consequently, local community remains passive in involving climate change adaptation activities.

- **Lack of knowledge about CC impacts and CCAP**

Limited knowledge about the causes and consequences of climate change lead to passive community participation in implementing CCAP. Research shows that the knowledge of local communities about the impact of climate change remains narrow because it is associated with the level of education and the analytical skills of local communities. Also, because some areas are less affected by the impact of climate change or natural disasters, those communities still believe that climate change is just a curse from gods and it may not affect their communities in the future, if it may happen (CDRI, 2012b; Koh Kheng & Lovleen, 2011; Saito, 2013). Because of this belief, some communities are still reluctant to participate in prevention and preparedness activities and they continue to invade and pollute their livelihoods resources such as forestry and water source.

Besides, study also indicates that not many grassroots communities including staff of local organizations, commune chiefs or community leaders have heard and know about the contents of CCAP of Cambodia. This because they have not been involved in CCAP development and there is lack of dissemination of this policy to the public. According to the response of some

local NGOs representatives and community leaders, they have involved in supporting community to deal with climate change impacts by follow the principle of DRR of NCDM without knowing about CCAP. The argument suggested that active involvement of community in CCAP implementation cannot be ensured when public inputs was not incorporated in policy development process and there is limited dissemination to the grassroots levels.

- **Contextual Policy Design**

Limited public participation in implementing CCAP was criticized for its design, which adopted from the global level rather than from a context-based analysis. Literature showed that the RGC is committed to the development of its CCAP, in participating to the global mission for combating climate change (Saito, 2013; Sovacool et al., 2012). This commitment has been made by following the strategies and concepts of climate change issues from the global level since Cambodia is quite new to the issue and has very limited resources for running climate change adaptation programs. Cambodia has received considerable financial and human resource support to develop and implement a national CCAP. The policy development based on external factors and the lack of extensive studies may result in limited implementation because the level of local staff may not be sufficient to achieve the implementation of the policy (Nguyen & Shaw, 2010; Saito, 2013). In this case, when local staff has a limited understanding of implementation strategies, and cannot explain them convincingly, the level of public participation, especially in grassroots communities, remains narrow.

- **Many remote and vulnerable communities remain overlooked**

Although CCAP was established for implementation across Cambodia, many poor and remote communities have not been involved because the priority projects targeted to only some parts of some province of Cambodia. This has been designed based on the perception that most vulnerable communities would have received first support. Meanwhile, NGOs and development partners who work in supporting government in disseminating and dealing with the issue of climate change seem to be fragmented because they have just focused on their target areas. For some communities who have not been supported by government or NGOs development programs/projects have no clues what climate change adaptation is about; and they remain passively participate in CCAP implementation. Being unable to support every part of the country to adapt to climate change impacts, therefore, can cause people who live slightly above the poverty line become more vulnerable to climate hazards and more exclusive from the society.

- **Low income and Poverty**

A low-income generation in local communities has prevented them from active participation in CCAP implementation as they often spend most of their time earning an income to support the basic needs. This problem is one of the major challenges for communities in participating

in any development activities and implementing national policy. Studies show that food insecurity is still facing many poor families because they are landless or have very limited options for expanding their income (CDRI, 2012b; Nguyen & Shaw, 2010; Sreng, 2013). To earn for survival, therefore, they often sell their labor through working in the local areas or migrate to other provinces or countries. This situation has made poor families even more vulnerable, both socially and economically. Moreover, those families have been excluded from some development activities because they do not have time to either participate in events or to stay permanently in the communities. This indicates that poverty has prevented poor communities from participating in any development activities as well as from being involved in implementing CCAP. This is because they give more priority on addressing their immediate needs rather than being concerned about future issues such as the impact of climate change.

Priority to promote active community participation in CCAP implementation

- **Encourage more studies on climate change related topics:**

Enriching empirical findings on climate change impacts and better alternatives for better adaptation in the context of Cambodian is a key tool to promote active community participation. Study found that because of limited studies on climate change related topics especially in the local context, the discussion and education on this topic remain limited. Generally, communities have been imposed to discuss about climate change impacts through only group reflection and observation from the past time. Through encouraging more extensive studies on climate change topics can help build understanding and knowledge of community through empirical evidence based.

Furthermore, it was suggested that all study results should be available in Khmer language and compile them for distribution to grassroots levels. It will be very useful if those results have been integrated in schools curriculum, and shared among commune councils, farmers associations, and other groups in the communities; so that they can share among their members. It would be very effective and attractive when people start discussing about issues and threats that may affect their lives and livelihoods.

- **Changing communities' perceptions/attitudes through improving awareness raising of climate change impacts:**

Improving people's understanding on climate change could make people change their perception and habit. Education and awareness raising can make community more conscious, skeptical and proactive in responding to the issues more effectively. For example, when farmers are well informed about how climate change issues impacts their agricultural crops, they may well consider seeking for better alternatives through shifting their farming practice and crop seeds. Increasing capacity of farmer through scientific based evidence can help better change their attitude and behavior. For instance, if farmers understand the change in

rainfall pattern, they will be able to adjust their crop calendar and choose the best crop seeds to adapt to the changing situation.

Besides, helping people understand about climate change issues can better engage community in preserve local environment. Study found that due to limited understanding and knowledge, community continue cutting trees for cooking and clearing forest for expanding agricultural land. Also, to improve their agricultural productivities, farmers used chemical fertilizers without concerning about environmental impacts or the lost of useful organism. It is believed that education and further awareness raising is crucial to help influence and change communities' mindsets and behavior, without education, however, they will continue with the same practices.

The argument suggests that though increasing awareness about climate change issues, community will start changing their perception, attitude and behavior. When they begin realize the problems, they are more likely to consider, accept or explore better alternatives in responding to the problems. Therefore, when people have better knowledge and become more proactive, they will actively participate in activities that help maintain their lives and livelihoods in the face of climate change.

- **Enhance community-based natural resource management through providing communities with full authority, supports, and incentive:**

Providing communities with full power to manage and control local resources is a key tool to engage communities in the process of CCAP implementation. Majority of Cambodian people rely on natural resource as the main sources of their livelihoods. For example, people in the coastal areas rely on mangrove forest and marine ecosystem, people in flood plain especially along Tole Sap great lake depend very much on flooded forest and fishery, and people in highland areas rely on timber and non-timber forest product. Literature suggests that healthy and well-managed natural resources or ecosystems provide critical goods and services that enable communities to better cope with and recover from disasters (Gupta & Nair, 2012; UNEP & CUAS, 2015). For instance, healthy ecosystem such as mangrove forest, flooded forest and land forest plays important role as green belt protecting coastal areas and maintaining marine ecosystem, flooded forest plays its roles as fishery shelter, fresh water purification, flood control, erosion control or reducing run off. Also, forest resource plays its roles as carbon stock, which helps balance local temperature and reduce carbon release to the atmosphere.

Since natural resources are important for local communities through its goods and services, engage them to protect those resources will be their interests. There are several mechanisms to promote active community participation in preserving natural resource. First, government needs to strictly enforce the existing policy legislations to ensure that local communities are granted with full authority to manage their local resources. Strictly policy and law enforcement will help reduce illegal fishing, illegal logging and any other activities that create

losses and damages of ecosystem. In this regards, disciplinary and legal action need to be fairly taken with no discrimination.

Secondly, communities need to be provided with both financial and technical assistance in order to exercise their rights and power. For example, communities should be involved in awareness raising about the connection between healthy ecosystem and their livelihoods especially in the context of climate change. Moreover, they should be given materials and transportation means in order for them to guard and take action in preventing any illegal activities. Moreover, incentive, including cash and letter of recognition for those communities who are very active in protecting natural resource should be provided as a motivation.

- **Support community-based planning for DRR and CCA:**

With clear DRR and CCA plan and actions, local government and communities can better adapt to the issue of climate change. To ensure this local government should be encouraged to integrate DRR and CCA concept into the commune development plan with relevant stakeholder consultation. Also, these local institutions should have been equipped with skills on how to design project and allocated sufficient resources to implement the activities. Moreover, the local authority should be free from political pressure-meaning that local governments and communities should be fully empowered to manage local resources such as land, water or forest. Besides, they should be informed and involved in any decision making process, especially in local development activities which may affect their lives and livelihoods.

In the mean times, most vulnerable group should have been received extra support. Study found that the assistance, which is needed by the vulnerable groups includes livelihoods programs such home gardening and livestock production because this can help address their basic needs. Also, small infrastructure projects such as digging water ponds or wells for drinking water, building road connection for transporting their products to markets, establishing safety hills for floods risks is needed. Moreover, promoting social insurance where vulnerable groups can access to credit loans, crop seeds, and other supports is significant. In this regard, government should collaborate with NGOs and development partners to expand these activities throughout the countries.

- **Provide farmers with irrigation systems, water resource management tools, and introduce them to more climate resilience crops:**

Ensuring local communities especially farmers get access to irrigation system is an urgent need for them to better adapt to climate change impacts. As indicated in literature, farmer are more likely to face with water shortage or agricultural production (NGO Forum on Cambodia, 2014). To respond this, research found that proving communities with water irrigation system is a key. Necessary irrigation systems include water gate for blocking water in existing stream and the cannels that connect from the water source or reservoir to the baddy filed. Providing farmers with sufficient access to water can help maintain their livelihoods in both

rainy and dry seasons because they have will not completely depend on rain water for their agricultural productions. These irrigation systems will also plays a key role to bring floodwater from paddy fields to catchment areas or rivers.

At the same time, providing water resource management skills is also important because this can help reduce unsustainable use of water and avoid conflict among communities. Government agencies especially, department of water resource management need to expand collaboration with development partners to support community in forming local committees or groups to manage and control water sources. All decisions should be made through consultation with all relevant actors. This process not only provides them mean for maintaining their livelihoods activities, but also empower them to exercise their rights in protecting their local natural resources for their communities in both present time and future generation.

Moreover, local farmers should have been introduced to the varieties of crop seeds, which is more resilience to climate. In this sense, MAFF should improve collaboration with specialized agricultural research institutions and local farmers to conduct comprehensive studies and experiment in identifying the climate resilience crop seeds. Traditional crop seed preservation and development is one of the best options because it involves low cost and is more convenience for local farmers. Crop seeds research and development should be conducted based on contextual specific and farmers should be encouraged to share their experiences of failure and success through exposure visit where needed.

- **Increase CCAP dissemination to public and highly considered community's inputs in policy establishment:**

CCAP should have been widespread across countries from the national to the local levels. With knowledge and understanding about CCAP, general public especially farmers will be interested to participate in implementation because it help to protect their lives and livelihoods. The policy dissemination process can be enhanced through media (radio and TV), booklets, posters or verbal explanation during the local ceremonies or events. Local government under support from the central state agencies should play important roles in promoting this policy at grassroots level through the community meetings.

Also, open spaces for public inputs and comments for CCAP reform and relevant national policy development can also attract and encourages people to actively participate in the implementation process. When key priority and the needs of communities have been included in the CCAP, it is much more easy to explain back to them and they are willing to participate in any activities that benefit their families and communities. Although this bottom-up process seems to be costly and time-consuming, this can contribute to build a strong-grounded democracy and decentralization that can help Cambodia growth in the long run.

Conclusion

Based on finding, it can be concluded that communities are unlikely to vigorously participate in implementing CCAP in Cambodia because barriers seems to outweigh opportunities. Although the availability of CCAP and relevant national policy legislations, the support from non-government agencies, and communities' commitment are seen as main prospects for them to take part in implementing CCAP, inadequate enforcement of policy legislation, limited resources to extensively implement adaptation activities, poor knowledge on climate change topics, and poverty remain the key challenges preventing communities from active participation. Even though main focuses of CCAP were clearly identified and involvement of local government and communities has been regarded, this remains restricted in real practices. To promote active community participation in CCAP implementation, CCAP and relevant policy legislation need to be strictly implemented in order to ensure that local government and communities have full authority and are independent to manage their livelihood resources. Enhancing public understanding on climate change issues and the related policy legislations, including the dissemination of empirical research findings is also the priority. Moreover, supporting local communities to have their comprehensive plan for DRR and climate change adaptation, which involve livelihood improvement programs, infrastructure projects can help build their adaptive capacity. If the roles of local communities are fully promoted and protected by national policy legislations and they can fully access to necessary livelihoods resources, goals of building community resilience will be realized.

Acknowledgement: I would like to thank Center for Southeast Asian Studies (CSEAS), Kyoto University, Japan for supporting me to stay three months as a visiting researcher. I would also like to extent grateful thanks to Professor Kono Yasuyuki, Director of CSEAS, and Associate Professor, Satoru Kobayashi, and other staff members for their coordination and kind support during my stay in Japan.

Reference

Arnstein, S. R. (1969). A Ladder of Citizen Participation *American Institute of Planners, Journal, 35*(4), 216.

Baran, E., Schwartz, N., & Kura, Y. (2009). Climate change and fisheries: Vulnerability and adaptation in Cambodia. *Penang: WorldFish Center*.

Burns, D., Heywood, F., Taylor, M., Wilde, P., & Wilson, M. (2004). *Making community participation meaningful*.

CCCA. (2012). Assessment of Coping Strategies in the Coastal Zone of Cambodia. Phnom Penh, Cambodia: Cambodia Climate Change Allience.

CDRI. (2012a). Cambodia's Urbansation: Key Trends and Policy Priorities. *Cambodia Development Review, 16*(2), 1-24.

CDRI. (2012b). Challenge of Rural Livelihoods in the Context of Climate Change. *Cambodia Development Review, 16*(3).

Chhinh, N., & Poch, B. (2013). Climate Change Impacts on Agriculture and Vulnerability as Expected Poverty of Kampong Speu Province, Cambodia.

D'Agostino, A. L., & Sovacool, B. K. (2011). Sewing climate-resilient seeds: implementing climate change adaptation best practices in rural Cambodia. *Mitigation and Adaptation Strategies for Global Change, 16*(6), 699-720. doi: 10.1007/s11027-011-9289-7

DCA/CA. (2009). Public perceptions of climate change in Cambodia *Phnom Penh*: DanChurch Aid/Christian Aid

Diepart, J.-C. (2014). *Learning for Socio-Ecological Resilience: Insights from Cambodia's Rural Communities*. Paper presented at the Development Research Forum, Phnom Penh, Cambodia.

Gupta, A. K., & Nair, S. S. (2012). Ecosystem approach to disaster risk reduction. *National Institute of Disaster Management, New Delhi*, 202.

Heng, C. T. (2011). *Status of NAPA Implementation in Cambodia*. Paper presented at the Second National Forum on Climate Change Cambodia.

Heng, L. A. (2014). Country Report of Cambodia Disaster Managment Kobe, JAPAN: Asian Disaster Reduction Centre (ADRC).

IPCC. (2001). Climate Change 2001: Impacts, Adaptation and Vulner-ability", Working Group II Contribution to the Third Assessment Report of the Intergovernmental Panel on Climate Change, "Chapter 18: Adaptation to Climate Change in the Context of Sustainable Development and Equity. (pp. 877-912). Cambridge: Intergovernmental Panel on Climate Change.

Jacobs, B., & Price, N. (2003). Community participation in externally funded health projects: lessons from Cambodia. *Health policy and planning, 18*(4), 399-410. doi: 10.1093/heapol/czg048

Juhola, S. (2010). Mainstreaming climate change adaptation: the case of multi-level governance in Finland *Developing adaptation policy and practice in Europe: Multi-level Governance of Climate Change* (pp. 149-187): Springer.

Kalame, F. B., Kudejira, D., & Nkem, J. (2011). Assessing the process and options for implementing National Adaptation Programmes of Action (NAPA): a case study from Burkina Faso. *Mitigation and Adaptation Strategies for Global Change, 16*(5), 535-553. doi: 10.1007/s11027-010-9278-2

Kawakami, T., Tong, L., Kannitha, Y., & Sophorn, T. (2011). Participatory approach to improving safety, health and working conditions in informal economy workplaces in Cambodia. *Work (Reading, Mass.), 38*(3), 235.

Khemro, B. H. S., & Payne, G. (2004). Improving tenure security for the urban poor in Phnom Penh, Cambodia: an analytical case study. *Habitat International, 28*(2), 181-201.
Kim, N., & Henke, R. (2005). Commune Councils in Cambodia: A National Survey on their Functions and Performance, with a Special Focus on Conflict Resolution Phnom Penh: Asia Foundation.
Kim, S., & Ojendal, J. (2011). Accountability and Local Politics in Natural Resource Management. In H. Caroline & K. Un (Eds.), *Cambodia's Economic Transformation* (pp. 266-287). Compenhegen: NIAS Press.
Kirkpartick, C. J. (2005). *"A farmer without land can't be called a farmer": Natural resource commercialization and the impacts of restricted land and forest access on the livelihoods of rural people in Tumring Commune, Cambodia.* (Dissertation/Thesis), ProQuest, UMI Dissertations Publishing.
Koh Kheng, L., & Lovleen, B. (2011). Governance on Adaptation to Climate Change in the Asean Region. *Carbon & Climate Law Review : CCLR, 5*(1), 82.
Lavell, A., Oppenheimer, M., Diop, C., Hess, J., Lempert, R., Li, J., . . . Barros, V. (2012). Climate change: new dimensions in disaster risk, exposure, vulnerability, and resilience. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, 25-64.
Lay, K. (2011). *National Dialogue on Mainstreaming DRR into Development Practices and Trends* Paper presented at the Disaster Risk Reduction Forum.
Makinde, T. (2005). Problems of policy implementation in developing nations: the Nigerian experience. *Journal of Social sciences, 11*(1), 63-69.
Marwaan, M.-M. (2008). Cambodia: Development Plans Hightlight Urban-Rural Devide, p. 1. Retrieved from http://uq.summon.serialssolutions.com/link/0/
McSweeney, C., New, M., & Lizcano, G. (2008). UNDP climate change country profiles: Cambodia: School of Geography and the Environment of the University of Oxford. UNDP. Oxford.
Mgbako, C., Gao, R. E., Joynes, E., Cave, A., & Mikhailevich, J. (2010). Forced eviction and resettlement in Cambodia: Case Studies from Phnom Penh. *Washington University Global Studies Law Review, 9*(39), 39-73.
MoE. (2011). Understanding Public Perceptions of Climate Change in Cambodia Cambodia Ministry of Environment
Namara, K. M. (2013). *Community-based climate change (and disaster risk) assessments: Case study of the Pacific*. The University of Queensland.
Nang p., Sam S., Lonn P., & Ouch C. (2014). Strengthening Adaptation Capacity of Rural People in the Main Agro-ecological Zone in Cambodia, (Vol. 05). Phnom Penh: CDRI: Cambodian Development Resource Institute.
NCDM. (2013). Cambodia Disaster Loss and Damage Analysis Report 1996-2013. Phnom Penh: National Committee for Disaster Management/ United Nation Development Program.
Nehren U., Sudmeier-Rieux K., Sandholz S., Estrella M., Lomarda M., & Guillén T. (2014). *The Ecosystem-based Disaster Risk Reduction Case Study and Exercise Source Book*. Cologne and Geneva: Center for Natural Resources and Development and the Partnership for Environment and Disaster Risk Reduction.
NGO Forum on Cambodia. (2005). Fast-wood Plantations, Economic Concessions and Local Livelihoods in Cambodia. Cambodia: NGO Forum on Cambodia.
NGO Forum on Cambodia. (2014). *Farm Conservation and sustainalble Use of Cereals Diversity Through Participatory Plant Breeding and Securing Local Seed Systems in*

Climate Vulnerable Provinces of Cambodia. Phnom Penh, Cambodia: The NGO Forum on Cambodia.
Nguyen, H., & Shaw, R. (2010). Climate change adaptation and disaster risk reduction in Cambodia. *Community, Environment and Disaster Risk Management, 5*, 59-79.
Nuorteva, P., Keskinen, M., & Varis, O. (2010). Water, livelihoods and climate change adaptation in the Tonle Sap Lake area, Cambodia: learning from the past to understand the future. *Journal of Water and Climate Change 1*(1), 87-101. doi: 10.2166/wcc.2010.010
Pellini, A. (2007). Decentralization and Community Participation: School Clusters in Cambodia (pp. 175-194). Dordrecht: Springer Netherlands.
Pellini, A., & Ayres, D. (2007). Community Participation in Local Governance in Cambodia: Learning from the Village Networks Approach. *Development in Practice, 17*(3), 404-409. doi: 10.1080/09614520701337004
Phonphakdee, S., Sauter, G., & Visal, S. (2009). The Urban Poor Development Fund in Cambodia: supporting local and citywide development. *Environment & Urbanization, 21*(2), 569-586. doi: 10.1177/0956247809339661
Phonphakdee, S., Visal, S., & Sauter, G. (2009). The Urban Poor Development Fund in Cambodia: supporting local and citywide development. *Environment and Urbanization, 21*(2), 569-586.
Pressman, J. L., & Wildavsky, A. B. (1984). *Implementation*: University of California Press.
RGC. (2001). Draft second five-year socioeconomic development plan 2001–2005. Phnom Penh, Cambodia: Ministry of Planning.
RGC. (2004). *The Rectangular Strategy for Growth, Employment, Equity and Effeciecy in Cambodia*. Phnom Penh: The Royal Government of Cambodia.
RGC. (2006a). *National Adaptation Programme of Action to Climate Change (NAPA)*. Phnom Penh: Royal Government of Cambodia.
RGC. (2006b). *National Strategic Development Plan 2006-2010*. Phnom Penh: Royal Government of Cambodia.
RGC. (2013). *Cambodia Climate Change Strategic Plan 2014-2023*. Phnom Penh, Cambodia: National Climate Change Committee.
RGC. (2014). *National Strategic Development Plan-2014-2018*. Phnom Penh: Ministry of Planning
Ros, B., Nang, P., & Chhim, C. (2011). *Agricultural Development and Climate Change: The Case of Cambodia* (Vol. 65). Phnom Penh: CDRI.
Saito, N. (2013). Mainstreaming climate change adaptation in least developed countries in South and Southeast Asia. *Mitigation and Adaptation Strategies for Global Change, 18*(6), 825-849. doi: 10.1007/s11027-012-9392-4
Sovacool, B. K., D'Agostino, A. L., Meenawat, H., & Rawlani, A. (2012). Expert views of climate change adaptation in least developed Asia. *Journal of environmental management, 97*(1), 78-88. doi: 10.1016/j.jenvman.2011.11.005
Sreng, S. (2013). *Climate Change Issues in Cambodian Coastal Area related to Water*. Paper presented at the Climate Change Issue and Urban Flood Management, Daegu, Korea. http://www.unescap.org/esd/suds/egm/2013/urban-flood-management/index.asp
Ui, S., Heng, L., Yatsuya, H., Kawaguichi, L., Akashi, H., & Aoyana, A. (2010). Strengthening community participation at health centers in rural Cambodia: role of local non-governmental organizations (NGOs). *Critical Public Health, 20*(1), 97-115. doi: 10.1080/09581590902829173
UNDP. (2011). Promoting Climate Resilient Water Management and Agricultural Practices in Rural Cambodia (NAPA Follow Up) *Annual Project Report 2010*. Phnom Penh: United Nation Development Program.

UNDP. (2013a). About Cambodia Retrieved 22/08/2013, 2013, from http://www.kh.undp.org/content/cambodia/en/home/countryinfo/
UNDP. (2013b). About Cambodia Retrieved 15/01/2015, 2015, from http://www.kh.undp.org/content/cambodia/en/home/countryinfo/
UNDP. (2013c). Case Study in Cambodia Community Based Adaptation: Two Examples from Rural Affected Communities (pp. 1-32). Phnom Penh, Cambodia: United Nation Development Program.
UNDP. (2013d). *Listen to Villagers on Climate Change*. United Nation Development Program Cambodia. Retrieved from http://www.adaptationlearning.net/explore
UNDP. (2013e). *Stories from the field - Success stories of a Climate Resilience in Agriculture and Water project, Cambodia*. United Nation Developmen Program. Cambodia. Retrieved from http://www.adaptationlearning.net/explore
UNEP, & CUAS. (2015). Unit 4. Background materials to the MOOC: Disasters and Ecosystems: resilience in a changing climate. Geneva and Cologne: United Nations Environmental Programme and Cologne University of Applied Sciences.
UNISDR, & WB. (2010). Synthesis Report on Ten ASEAN Countries Disaster Risks Assessment: United Nation Office for Disaster Risk Reduction & The World Bank
Unknown. (2014). Supplementary Appendix M - CAM GMS BCC-PPCR Climate Change Impact Modeling and Vulnerability Assessments for Koh Kong and Mondulkiri Provinces in Cambodia.
WB. (2015). Cambodia Population Retrieved 20/02/2015, 2015, from http://data.worldbank.org/country/cambodia
Yusuf, A. A., & Francisco, H. (2010). *Hotspots! Mapping climate change vulnerability in Southeast Asia*: IRSA.