

# DROUGHT CONDITIONS AND MANAGEMENT STRATEGIES IN CAMBODIA

## FOREWORD

Throughout the course of human history, drought has been a problem affecting our welfare and food security. Of all human endeavors, agriculture was perhaps the first sector for which humans recognized the strong relationships between crops and weather. Short-term rainfall deficits prompted early humans to find alternative food crops. However, even a single year with a severe drought during the rainy season resulted in crop failures, which most likely led to humans migrating to other areas. Therefore, in early human history, even limited droughts had large impacts.

In recent times, short-term drought adaptation mechanisms have improved, but extended periods of drought are now the main concern for human welfare and food security. These periods of dryness, when coupled with other climatic factors, such as extreme rainfall and wind events or unsustainable agricultural and development patterns, can result in land degradation and, if unchecked, in increases in desert land areas or desertification.

The pattern of risks faced by the poor and vulnerable in rural areas of Cambodia, as a consequence of drought disaster, is posing an increasing threat to their livelihoods. One third of the past three years has been taken up either with drought. The period of this natural disaster was more prolonged than in the past. The damage caused by drought was comparable, although the drought of 2002 was the most extensive of the disaster in Cambodia.

There is a strong need at the policy level to design social protection interventions to emphasize ex-ante instruments rather than the ex-post response to natural disaster as focusing on emergency assistance and relief.

## INTRODUCTION

The pattern of risks faced by poor and vulnerable people in rural areas, particularly those involved in agriculture and other ecosystem-dependent livelihoods, is becoming a major cause of chronic poverty. Dependency on subsistence agriculture, in particular for the rural poor in Cambodia, accumulates the impact of stresses and shocks (such as droughts). This has profound implications for the security of their livelihoods and for their welfare. Such stresses and shocks, on the other hand, will not necessarily always lead to negative impacts, as risks and uncertainties that are often associated with seasonality are embedded in the practice of agriculture, and there is considerable experience of coping and risk management strategies among people working in this sector. However, in the face of climate change, the magnitude and frequency of stresses and shocks is changing and, therefore, approaches such as social protection, disaster risk management and climate change adaptation will be needed to bolster local resilience and supplement people's experience.

The basic nature of disaster impact in Cambodia seems to be the occurrence of relatively moderate drought events combined with a high level of vulnerability and major limitations in the ability of rural people to cope with the impact of these events on their livelihoods. Yet the more moderate magnitude and intensity of droughts that are encountered in Cambodia are enough to threaten livelihoods and to cause widespread suffering among rural people. By understanding that natural disasters have a huge impact on social and economic welfare, policies to manage them need to be integrated and well-grounded to the specificities of natural hazards as well as local capacities in terms of fiscal, administrative and economic capabilities.

## DROUGHT MONITORING AND EARLY WARNING SYSTEMS

Considerable progress is being made in drought monitoring and early warning systems in many countries. The increased emphasis on improving these systems is largely the result of the mounting impacts of drought, reflecting greater societal vulnerability. Heightened monitoring capability, including the expansion of automated weather station networks and satellites and the Internet are contributing to such improvements. The Internet allows for improved access to critical data and information to assist in climate and drought assessments and the delivery of this information through a wide range of tools or decision support products to users in many sectors.

A drought is considered a period of abnormal dry weather that causes serious hydrological imbalance in the area. Under a normal year, typical rainfall distribution from May to October and the heavy rainfall from August till mid-October with a dry spell for about 2 to 3 weeks in between July and August. In a year when this dry period is extended too long, an agricultural drought could occur in addition to the late rain and early end of rainy season.

There are four characteristics of agricultural drought in the country:

1. Unpredictable delays in rainfall onset in the early wet season
2. Erratic variations in wet season rainfall onset, amount, and duration across different areas
3. Early ending of rains during the wet season
4. Common occurrence of mini-droughts of three weeks or more during the wet season, which can damage or destroy rice crops without irrigation

Localized drought is also becoming increasingly apparent and significant - again throughout many areas of the country, including areas that are also flood-affected. Drought has impacted in a number of areas in 2001, 2002, and 2003. The direct impact has predominantly been in terms of water stress on agricultural crop production, especially rice and vegetable production, with 80% of agricultural fields lying idle in most areas for six months and to a somewhat lesser extent in terms of increased rates of water-related disease mortality and morbidity.

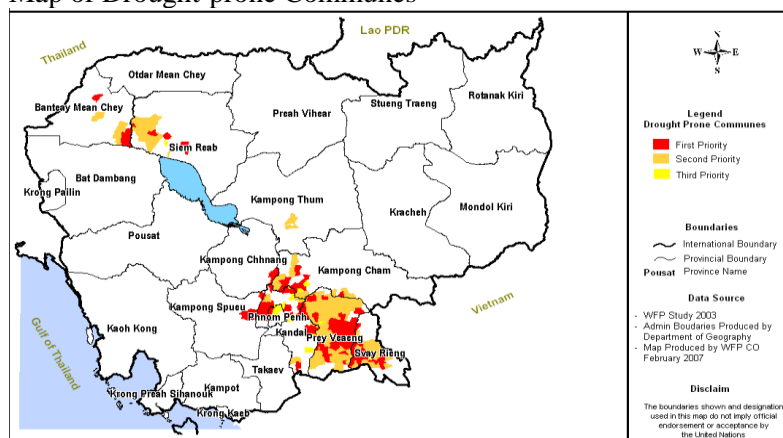
## VULNERABILITY ASSESSMENT

Land degradation is considered as the biggest vulnerable issue in agriculture in Cambodia. Land degradation resulted from traditional agriculture land use and depletion of forest cover has threatened the overall agriculture production including agro-industry of Cambodia. Productivity, security, and sustainability of major part of agriculture land in Cambodia are influenced by limitation of natural soil nutrient, traditional land use practice, and impacts of climate change.

Other underline factors include socio-economic conditions, poverty pressure, and unplanned human settlement and land use. The country remains one of the least developed countries in the world reflecting the impact of 30 years of war and social and political instability with human development index (HDI) rank of 138 (0.54) in 2013. In addition, poverty is a key determinant of the people's vulnerability to disasters. A study made by Cambodian Red Cross (CRC) has shown that the poverty in Cambodia has variety according to the geographical area that attributed to the people vulnerable to floods and droughts. Besides that, the unplanned patterns of human settlement and land use have resulted into dramatic increases in the population of people living in the Mekong floodplains. Irrigation systems and water conservation measures remain inadequate particularly in the face of an increasing incidence of drought.

The vulnerabilities to natural hazards are formed around these linkages between physical, social, economic and environmental vulnerabilities that prevent many of its people to live in a safe environment. The last major drought in the country took place in 2002 when unusually dry weather during the rainy season affected some 420 communes in 76 districts located in the 10 provinces of Prey Veng, Kandal, Kampong Speu, Takeo, Svay Rieng, Kampong Thom, Kampong Cham, Kratie, Odor Meanchey and Banteay Meanchey. The drought prevailed until the onset of rains in mid-August and covered 62,702 hectares. Statistics from the NCDM indicate that the drought had affected 2,047,340 people or 442,419 families and was the worst drought to affect the country. The cost of the drought was estimated to be more than US\$21.50 million.

Map of Drought-prone Communes



## EMERGENCY RELIEF AND DROUGHT RESPONSE

There are several frameworks, strategic policies, and agreements that influence Cambodia policy in agriculture:

### 1. HYOGO FRAMEWORK FOR ACTION (HFA) 2005-2015

HFA 2005-2015 is adopted by 168 countries; and Cambodia is one of the signatory countries. HFA is a solid legal framework for imparting knowledge on natural hazards and disasters and the implementation of disaster risk reduction measures around the globe. The HFA sets out three strategic goals and outlines five priorities for action, which cover the main areas of disaster risk reduction. The five priorities for action are:

- i. Ensure that disaster risk reduction (DRR) is a national and a local priority with a strong institutional basis for implementation
- ii. Identify, assess and monitor disaster risks and enhance early warning
- iii. Use knowledge, innovation and education to build a culture of safety and resilience at all levels
- iv. Reduce the underlying risk factors
- v. Strengthen disaster preparedness for effective response at all levels

### 2. ASEAN AGREEMENT ON DISASTER MANAGEMENT AND EMERGENCY RESPONSE (AADMER)

AADMER is a regional legally-binding agreement that binds South East Asian Nations (ASEAN) Member States together to promote regional cooperation and collaboration in reducing disaster losses and intensifying joint emergency response to disasters in the ASEAN region. AADMER is also ASEAN's affirmation of its commitment to the Hyogo Framework for Action (HFA). AADMER contains provisions on disaster risk identification, monitoring and early warning, prevention and mitigation, preparedness and response, rehabilitation, technical cooperation and research, mechanisms for coordination, and simplified customs and immigration procedures.

The agreement has objectives to provide effective mechanisms to achieve substantial reduction of disaster losses in lives and in the social, economic and environmental assets of the Parties, and to jointly respond to disaster emergencies through concerted national efforts and intensified regional and international cooperation. This should be pursued in the overall context of sustainable development and in accordance with the provisions of this Agreement.

### 3. NATIONAL STRATEGIES DEVELOPMENT PLAN 2009-2013 (NSDP)

NSDP has been developed to serve as the implementation tool or roadmap for the implementation of the Rectangular Strategy for Growth, Employment, Efficiency and Equity. The NSDP 2008-2013 (phase II) covers the period of the Fourth Legislature and the Rectangular Strategy. The plan recognized natural disasters such as floods, droughts, typhoons, and epidemic diseases caused some losses of human lives, damaged to crops, properties as well as affected national economy. The plan envisages of addressing the underline factors causing community people more and more vulnerable through sustainable interlinked development works.

### 4. STRATEGIC NATIONAL ACTION PLAN ON DISASTER RISK REDUCTION 2008-2013 (SNAP)

SNAP 2008-2013 has been launched in 2008 to address the implementation of the Hyogo Framework for Action (HFA) in Cambodia. An inter-institutional task force co-led by National Committee for Disaster Management (NCDM) and Ministry of Planning (MOP) has been formed to spearhead the formulation of the strategy.

The primary motivation of the Royal Government of Cambodia in the formulation of an Action Plan for Disaster Risk Reduction (DRR) is to reduce the vulnerability of its people, especially the poor, to the effects of natural, environmental, and human-induced hazards. This can best be achieved by strengthening the disaster management system in Cambodia and by incorporating a disaster risk reduction perspective into the policies, strategies and plans of government in all sectors and at all levels. The Action Plan was conceived and formulated to serve as the “road map” or guide for strengthening and undertaking disaster risk reduction in Cambodia. Implementation of the activities and projects identified in the plan can contribute significantly to the attainment of government’s primary objective of poverty reduction. A strong emphasis is given towards strengthening sub-national capacities, particularly at the community level, to fully support the government priority of the poverty reduction as elaborated in national development plans and policies (i.e., NSDP 2006-2010, NPRS, CMDG, NAPA 2006).

The six key disaster risk reduction components appropriate for Cambodia are identified as follows:

- i. Ensure that disaster risk reduction is a national and a local priority
- ii. Strengthen sub-national and community-based disaster risk management
- iii. Identify, assess and monitor hazard risks and enhance early warning
- iv. Use knowledge innovation and education to build a culture of safety and resilience
- v. Mainstreaming DRR into Policies and Programs of Relevant Government Ministries
- vi. Strengthen disaster preparedness for effective response at all levels

## 5. NATIONAL ADAPTATION PROGRAM OF ACTION TO CLIMATE CHANGE (NAPA)

NAPA was endorsed by the council of Ministers of the RGC on October 20, 2006. The main goal of the Cambodian NAPA is to provide a framework to guide the coordination and implementation of adaptation initiatives through a participatory approach, and to build synergies with other relevant environment and development programmes. Cambodia's NAPA presents priority projects to address the urgent and immediate needs and concerns of people at the grassroots level for adaptation to the adverse effects of climate change in key sectors such as agriculture, water resources, coastal zone and human health.

Strategy for Agriculture and Water 2010-2013

This strategy, which was jointly developed by MoWRAM and MAFF, provides a single, transparent strategic framework that guides policy and planning processes in both ministries, and the various departments and sub-sectors within both. The strategy aims at improving agriculture productivities and productions through sustainable uses and management of water resources and at improving coordination amongst these two ministries whose institutional setting in agriculture and water sector is complex. The strategy serves the most “at the grass-root” because of the linkage of agriculture and water to rural affairs.

## 6. PRACTICES TO ALLEVIATE DROUGHT IMPACTS

The Strategic Plan of Action is built in line with the Strategic National Action Plan for Disaster Risk Reduction 2008-2013 (SNAP) interpreted from Hyogo Framework for Action 2008-2015. The strategy consists of five priorities:

- Priority 1: Strengthen institutional and technical capacities for disaster risk reduction and climate change in agriculture and enhance coordination mechanisms;
- Priority 2: Promote and enhance early warning systems for pro-active disaster risk reduction and climate change adaptation;
- Priority 3: Enhance knowledge management and innovation in support of disaster risk management and climate change adaptation in agriculture;
- Priority 4: Reduce vulnerabilities to disasters by improving technical options and implementing Community Based Disaster Risk Management and Climate Change Adaptation measures in agriculture;
- Priority 5: Strengthen effective preparedness and response capacities and integration of disaster risk reduction and climate change adaptation into agriculture intervention.

## ANTICIPATED OUTCOMES

The plan envisages achieving the results as below:

- i. Law on SLM revised in view of DRR/CCA and endorsed
- ii. DRR, CCA, and SLM integrated into planning and activities of all relevant departments, institutions, and stations within GDA
- iii. Farmers made use of agromet information and EWS for making decision on their improving their cropping production systems and their livelihood
- iv. Capacity of sub-national planner/extension workers on resilient agriculture technique enhanced
- v. Documents and good practices on agriculture resilience available and widely shared
- vi. Farmers received timely emergency response for agriculture

#### INDICATORS:

- i. Numbers of departments/institutions/stations of GDA developed DRR/CCA plan
- ii. Numbers of agromet bulletins issued/broadcasted/shared
- iii. Numbers of farmers apply good practice and resilient agriculture technique
- iv. % of agriculture sector contributed into GDP growth
- v. % of farmers in disaster prone areas affected by food insecurity

#### THE NEED FOR KNOWLEDGE AND SKILLS ON DROUGHT MANAGEMENT

##### CAPACITY DEVELOPMENT:

Strengthening institutional and technical capacities is necessary for effective implementation of the priorities. Though capacity development is specifically addressed under the Priority I, this applies to all the Priorities based on the need. The core areas of capacity development includes research and development, technology transfer, tools and methods for assessment, agriculture and crops services, policy advocacy, awareness raising and mainstreaming.

##### KNOWLEDGE AND COMMUNICATION:

There is a lack of knowledge and awareness about the disaster risk and climate change related measures and impacts at all levels. Communication between the research and development in general and to the extension system in particular are the key to transfer new innovations to the farmers. Generation, documentation, sharing and application of information directly contribute to meeting Priority III.

##### PARTNERSHIP:

Strategic partnership promotes an interdisciplinary approach in implementing the priority actions. The Strategic Plan of Action foresees partnership at all levels and amongst other General Directorates and Administrations within MAFF and amongst other Ministries, specifically MoWRAM and NCDM.

##### GENDER:

The gender dimension is crucial in DRM and agriculture sectors, where gender inequalities in access to and control over resources are persistent undermining a sustainable and inclusive development of the sector. Women leadership or women in the position of making decision is rather less in these sectors. The gender roles and relations affect food security and household welfare, critical indicators of agriculture development. Integration and mainstreaming of gender priorities in all activities is the key for successful implementation of this Strategic Plan of Action.

#### Annex 1: List of Author's names and affiliation

No	Name	Designation	Organization	Email
1	Ms. Chan Phaloeun	Deputy Director General	Ministry of Agriculture, Forestry and Fisheries (MAFF)	chanphaloeun@gmail.com
2	Ms. Khen Bopreang	Head Office	Ministry of Environment	preangk@yahoo.com
3	Mr. Cheth Kimngoy	Monitoring and Evaluation Officer	Ministry of Agriculture, Forestry and Fisheries (MAFF)	ngoy01@yahoo.com

#### REFERENCES

1. The Department of Agricultural Land Resources Management (DALRM) of General Directorate of Agriculture (GDA) of Ministry of Agriculture, Forestry and Fisheries (MAFF). November, 2013. Plan and Action for Disaster Risk Reduction in Agriculture in Cambodia for 2014-2018.
2. Vathana, S. Ouk, S. Kan, P. and Chervier, C. 2013. Impact of Disasters and Role of Social Protection in Natural Disaster Risk Management in Cambodia. ERIA Discussion Paper Series.
3. World Meteorological Organization (WMO). 2006. Drought Monitoring and Early Warning: concepts, progress and future challenges. Weather and climate information for sustainable agricultural development. ISBN 92-63-11006-9 (WMO-No 1006).