

Project Evaluation Series

**Evaluation of the project
“Strengthening the adaptive capacity and
resilience of rural communities using
micro watershed approaches to climate
change and variability to attain
sustainable food security in Cambodia”**

**Project code: GCP/CMB/036/LDF
GEF ID: 4434**

**Annex 10. Additional climate change challenges
and their implications in Cambodia**

1. **Climate change challenge.** Cambodia is considered one of the most vulnerable countries in the world to the effects of climate change. Cambodia is exposed to the full spectrum of hydrometeorological events from floods, tropical cyclones, storms and droughts (Thoeun, Heng Chan, 2016). Secondary impacts of these events include wildfires and landslides. Of the disasters recorded in Cambodia between 1980 and 2011, 65% of total disasters were caused by flooding which in turn affected 62% of those impacted by disasters. This was followed by drought which accounted for 22% of the disasters and 37% of the people affected. A 2014 vulnerability assessment classified 17% of Cambodia's communes as "highly vulnerable," and 32% as "quite vulnerable" to climate change related hazards. Under high emission scenarios, the assessment projected that the likelihood of flood and drought conditions, the two greatest inhibitors of agricultural productivity in Cambodia, would dramatically increase, with growing periods contracting to less than five months in some areas, and decreasing wet season rainfall impacting yields of rain-fed rice by up to 70%, and irrigated rice by 40%. Climate change will also place Cambodia's fishing and forestry sectors at risk
2. **Climate projections and their implications** (RGC, 2013). Over recent years temperatures in Cambodia have been rising and this trend is projected to continue with mean monthly temperatures increasing between 0.013°C and 0.036°C per year by 2099, depending on location, with higher rates in the south of the country. Although there is inconclusive evidence of climate impact on rainfall, projections of the mean annual rainfall indicate an increase in rainfall for Cambodia. There is an increasing trend in seasonal rainfall between June and August in the northwest, and a decreasing trend in the northeast of the country.
3. **Implications of CC for agriculture** (ibid.). Increasing temperatures are likely to affect agricultural productivity. According to the International Rice Research Institute, rice grain yield will decline by 10% for each 1°C increase in growing-season minimum (night) temperature in the dry season. The Mekong Adaptation and Resilience to Climate Change demonstrated that rainfall will get higher in the provinces of higher elevation during the wet season, but will get drier during the dry season, which could hamper the production of some crops. Given that only 7 – 8% of total production land area is under full irrigation, it is difficult for Cambodia to achieve 5% annual agricultural growth in order to meet the target of agricultural production export by 2030 under climate change impacts (e.g. drought), especially for some cash crops such as rice, without further investment in the expansion of irrigation schemes.
4. **Implications of CC on ecosystem services** (ibid.). There is limited strategic forest management and/or associated land use planning to safeguard watersheds and associated ecosystem services in Cambodia. Deforestation in upland watersheds is accentuating climate-related impacts particularly for the rural poor who are most vulnerable to external shocks. During the past two decades, large foreign agro-industrial companies have negotiated economic concessions covering vast tracts of forests in protected areas and reserves in upper and mid-catchment areas throughout Cambodia. These companies have cleared forest cover for industrial cropping purposes, which have been accompanied by further forest encroachment by local farmers seeking more fertile soils for agriculture. This reduction of upland forest cover has caused increased siltation and the intensity and impact from run-off has become more severe as natural water retention capacities diminish.