Guideline for climate change vulnerability assessment of forest ecosystem services in adaptation of water resources in West Africa

Yacouba Noël Coulibaly[A], Monica Idinoba[A] and Johnson Nkem[A]

[A] Center for International Forestry Research (CIFOR), 06 BP 9478 Ouagadougou 06 Burkina Faso, y.coulibaly@cgiar.org

The forest ecosystem plays a key role in regulating the hydrological cycle in relation to the quality and quantity of water, through many services; forests play important roles in controlling floods, detoxification of water and in the control of runoffs, rainfall levels and infiltration. Major water sources in the region are located in catchments under forest cover that are severely affected by degradation and deforestation. As climate changes, forests further degrade and so does the water resource increasing the vulnerability of the community. This study presents a proposed guideline for assessing vulnerability of a water resources to climate change in West Africa in relation to the forest ecosystem. Using 3 principles of Exposure, Sensitivity and adaptive capacity as determinants of vulnerability : **V= f(E+S+AC)**, criteria and indicators were developed for each of these as a guide for assessing vulnerability of watersheds and its dependent communities to climate variability and change in West Africa. This guideline is a necessary step for planning appropriate adaptation strategies in the region. It is an indispensable aspect for successful development of policy formulation for achieving increased resilience and adaptive capacity of forest-dependent livelihoods.