Tropentag, September 18-21, 2016, Vienna, Austria

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Participatory Climate Vulnerability Analysis of Watershed Communities: An Indicator Approach

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Abstract

Kerala state in India is severely threatened by vagaries of climate change because of its unique socio-economic, environmental and physical conditions such as high population density, mismanagement of water resources, encroachment of forests, wetland reclamations, peculiar slanting topography, humid tropical monsoon, excessive rainfall and hot summer. There is a strong decline in the groundwater level, change in rainfall patterns, deficit in monsoon rains and increase in temperature in recent years. Out of the total cropped area of the state, 86 % is under rainfed farming. Here, Watershed Management (WSM) programmes receive enormous attention due to their strategical approach and capacity to enhance production in rainfed agriculture, support livelihood system along with restoration of ecological balance and build adaptive capacity at community level. This study seeks to explore whether WSM does contribute in building adaptive capacities and thus reduce the vulnerability of local communities and ecosystems.

The paper analyses the vulnerability vis-à-vis climate change at watershed community level of two micro watersheds (<1000 ha) in which the programmes have been implemented by two different agencies. The developed climate vulnerability indicator comprises of three dimensions of vulnerability: exposure, sensitivity and adaptive capacity and its ten major components: socio-demographic profile, socio-economic assets, agricultural, livelihood, social networks, health, food, water, climate variability and natural disasters. The approach combines both quantitative and qualitative methods with emphasis on participatory research tools. Data is collected using Rapid Appraisal of Agricultural Knowledge System methodology with main instruments such as household surveys, focus group discussions and key informant interviews.

The watershed programme implemented by the Local Self Government shows less vulnerability than the Non-Governmental Organisation (NGO) implemented programme. The results also show that the community more exposed to natural disasters does not experience a high vulnerability, due to its low value in subcomponents. Furthermore, the community more exposed to climate vulnerability does not overlap with lower adaptive capacity. The NGO implemented watershed could build higher adaptive capacity despite it becomes more vulnerable due to higher sensitivity and exposure. The results suggest location specific policies to address enhancement of socio-economic assets, improvement of livelihoods, sufficiency in food and water for resilient communities.

Keywords: Adaptive capacity, climate vulnerability, exposure, sensitivity, watershed management

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