EXECUTIVE SUMMARY

Today, climate change has drawn the attention of the scientists across many sectors and it has universally recognized as the fundamental human development challenge of the 21st Century. It has proven that climate change considerably affects every sector including agriculture. Therefore, it is critical to mitigate and adapt to the anticipating changes of climate for a country to continue its development journey unhindered. Furthermore, developing nations like Sri Lanka are more vulnerable to the impact of climate change, as they are lack in adaptive capacity to cope the challenges. Occurrence of extreme climatic events such as droughts, intensive rains and floods and landslides are few devastating effects of climate change in the context of Sri Lanka and incidence frequency has risen in the recent decades.

Therefore, understanding the level of impacts/vulnerability and the possible strategies to overcome the impacts of climate change could make the decision making more effective and climate proof. Although some strategies are already in place in the national level agenda, Sri Lanka is still lagging in terms of application at field level. In the face of climate change impacts such as droughts, rainfed agricultural systems are more vulnerable than any other agricultural water system, mainly due to lack of reliable water source for supplementary irrigation and proper water management mechanisms. Moreover, farmers operating under rainfed system comparatively lack livelihood assets (i.e. natural, financial, physical, social and human resource assets). As rainfed farmers constitute a significant portion of the rural sector, negative impact of the income of the same group could have an adverse effect on the development of the country. Therefore, addressing the impacts of drought to the rainfed farmers and understanding adaptation measures is critical in achieving country's long term development goals.

Hence the main objective of the study is to understand the level of vulnerability of rainfed farmers to the drought conditions, while identifying the ways of narrowing the gaps in enhancing their resilient capacity to the drought conditions.

The cropping systems which mainly depend on the rain water; cropping systems that obtained water from agro-wells; and cropping systems which cultivated with the water taken from small tanks / village tanks and rain water harvesting ponds (a common feature of all these water holding structures is that they do not have any external water feeding source except rains) were taken in to consideration for this study.

Seasonal crops *i.e.*, the crops which harvested within a season (short term crops) were selected considering the potential impact of the specific crop to the drought. Therefore, paddy, other field crops and vegetable crop systems considered for the study (perennial crops or long term crops and plantation crops were not considered as they are comparatively less vulnerable to seasonal or short term drought).

Multistage sampling technique was used to derive the study sample. In the first stage, Kurunegala, Puttalum, Moneragala, Badulla, Killinochchi and Mullaitivu districts were selected based on the drought prone area assessment done by the Ministry of Environment (2011). At the second stage, two Agrarian Service Centers (ASCs) were selected from each district (a total of 12 ASCs) based on the (highest) extent of cultivation of seasonal crops under rainfed conditions. As the third stage, two GNDs from each selected ASC were selected (total of 24 GNDs) in compliance with prerequisite of the study (*i.e.* no tanks with external water feeding were available in the GND area for cultivations).

A total of 30 households from each ASC were selected for primary data collection. The exact number of households for each GND (within one ASC area) was allocated proportionately by considering the total number of farmers operating under rainfed systems in each GND. Questionnaire survey, focus group discussions, and key informant interviews, were used to collect primary data for the study during the period of August to December 2015.

Assessing the vulnerability levels of farmer households to drought was carried out with using the Livestock Vulnerability Index as per the IPCC approach (LVI-IPCC). Accordingly, vulnerability in this study is considered as a function of exposure, sensitivity, and adaptive capacity as described by LVI-IPCC. Selection of variables/indicators for each sub-indices was done according to past studies. Primary data collected in relation to each

indicator was normalized using the min-max method to take all data in to a same scale.

The study found that the rainfed farming community in the study area is subject to frequent drought conditions and their cultivations and other livelihood activities are in great jeopardy due to drought conditions. Majority of the interviewed farmers are older than 40 years with a fair level of education. Main income source of the majority was crop farming while 35 percent had a secondary income source in livestock, agricultural labour or non-agricultural self-employment activities.

The farmers stated that frequency of drought has increased during the past decade and the length of the drought period has also increased. Amount and intensity of *Maha* season rains had increased while amount and intensity of *Yala* season rains has decreased. Cropping intensity has lessened as water scarcity prevailing in the *Yala* season compelled the farmers to cease cultivation. It found that the majority of farmers were aware of the term 'climate change' and had a good understanding on climate change and its impact on agriculture.

According to the LVI-IPCC analysis, exposure to drought related impacts were highest among Northern Provincial area farmers while sensitivity to drought impacts was highest among North Western Province farmers. However, adoptive capacity was also highest among North Western Province farmers. Overall LVI-IPCC was lowest for North Western Province. where it was the least vulnerable area. On the other hand, The Northern Province has the highest LVI-IPCC value where it was the most vulnerable area.

The study recommends to give priority to support construct agro-wells and rain water harvesting ponds. Abandoned village tanks should be made operational and the capacity of the existing tanks should be improved through participatory action and government support. Farmers should be educated on drought mitigation actions and drought adaptation strategies including the perennial crop cultivation. Empowering them to diversify their household economy towards income earning activities other than farming is also vital. Promotion of research related to drought adaptation strategies is a timely need and financial and capacity building assistance should be provided simultaneously.

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