

Importance of Remote Sensing and Information Communication Technology to Improve Climate Resilience in Low Land of Ethiopia

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Abstract : The issue of climate change and its impact is a major contemporary global concern. Ethiopia is one of the countries experiencing adverse climate change impact including frequent extreme weather events that are exacerbating drought and water scarcity. Due to this reason, the government of Ethiopia develops a strategic document which focuses on the climate resilience green economy. One of the major components of the strategic framework is designed to improve community adaptation capacity and mitigation of drought. For effective implementation of the strategy, identification of regions relative vulnerability to drought is vital. There is a growing tendency of applying Geographic Information System (GIS) and Remote Sensing technologies for collecting information on duration and severity of drought by direct measure of the topography as well as an indirect measure of land cover. This study aims to show an application of remote sensing technology and GIS for developing drought vulnerability index by taking lowland of Ethiopia as a case study. In addition, it assesses integrated Information Communication Technology (ICT) potential of Ethiopia lowland and proposes integrated solution. Satellite data is used to detect the beginning of the drought. The severity of drought risk prone areas of livestock keeping pastoral is analyzed through normalized difference vegetation index (NDVI) and ten years rainfall data. The change from the existing and average SPOT NDVI and vegetation condition index is used to identify the onset of drought and potential risks. Secondary data is used to analyze geographical coverage of mobile and internet usage in the region. For decades, the government of Ethiopia introduced some technologies and approach to overcoming climate change related problems. However, lack of access to information and inadequate technical support for the pastoral area remains a major challenge. In conventional business as usual approach, the lowland pastorals continue facing a number of challenges. The result indicated that 80% of the region face frequent drought occurrence and out of this 60% of pastoral area faces high drought risk. On the other hand, the target area mobile phone and internet coverage is rapidly growing. One of identified ICT solution enabler technology is telecom center which covers 98% of the region. It was possible to identify the frequently affected area and potential drought risk using the NDVI remote-sensing data analyses. We also found that ICT can play an important role in mitigating climate change challenge. Hence, there is a need to strengthen implementation efforts of climate change adaptation through integrated Remote Sensing and web based information dissemination and mobile alert of extreme events.

Keywords : climate changes, ICT, pastoral, remote sensing

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