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Increase in Disaster Risk due to inefficient Environmental Management, Land use policies and Relocation Policies. Case studies from Sri Lanka

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Abstract

Sri Lanka was affected by multiple hazards during April and May 2017 and it appears that floods and landslides of significant magnitude, triggered by the southwest monsoon are recurring annually. Climate hazards pose a significant threat to social and economic development in Sri Lanka. In addition to the climate hazards, there is also an increase in man-made hazards as a result of rapid urbanization in the country. The demand for land in cities in Sri Lanka has led to the use of marginal land, prone to natural hazards such as floodplains, unstable slopes, reclaimed land, unsuitable for any habitation. The municipal councils & the local authorities are unable to provide the basic infrastructure and services to these informal settlements and sometimes use vulnerable areas with low land value as disposal grounds for solid waste. It is very clearly mentioned in the National Disaster Management Plan 2014-2017 that solid waste has become a hazard and in the future, may take disastrous proportions. The recent collapse of the garbage dump in Sri Lanka can be attributed to poor environmental management with respect to solid waste in the country. This paper examines how efficient environmental management relates to the resilience of the physical environment by reducing disaster risk. The recent hazards in urban areas show that there are weaknesses in control of development in urban areas of the country. It is highlighted that regulation of urban expansion is an effective mechanism for disaster risk reduction (DRR) and land use planning (LUP) be an integral part of national development planning. The urgent need for a resettlement/ relocation policy in Sri Lanka, that address the needs of people who are displaced and to resettle disaster affected and vulnerable populations are discussed with reference to the literature available and make policy recommendations to address them.

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1. Introduction

Sri Lanka's hydrological resources consist of a network of river basins with varying degree of water availability. There are 103 distinct river basins which cover 58,550 sq. km. (90%) of the land mass [1]. It has been published by many researchers [2] that the wet zone in Sri Lanka is likely to receive more rainfall due to the effects of climate change and is proved by the erratic rainfall patterns during the southwest monsoon in the recent years. Sri Lanka was affected with multiple hazards during April and May 2017 and it appears that floods and landslides of significant magnitude, triggered by the southwest monsoon are recurring annually. Climate hazards pose a significant threat to social and economic development in Sri Lanka and the economic damage assessment of the floods in May 2017 is yet to be done. Ratnapura is one of the few municipalities that experience recurrent extensive disasters [3] and was seriously affected by the May 2017 floods. In addition to the climate hazards, there is also an increase in man-made hazards as a result of rapid urbanization in the country. It is also evident that natural hazards are further aggravated due to population increase, rural-urban migration and scarcity of safe lands. Therefore, the recent multiple hazards and resulting disasters arising from increased vulnerability, experienced by Sri Lanka draw the immediate attention of the authorities to address poor urban planning. Land use planning is required for entire river basins to be more resilient to disasters.

Urban population in Sri Lanka is around 3,848,520 in 2015 and there is a difference in the urban population figure reported by the Department of Statistics of Sri Lanka and the actual urban population [4]. The existing settlement pattern in Sri Lanka is given in Figure 1 and most of the settlements are in the wet zone of Sri Lanka that receives high rainfall during the southwest monsoon. It has been estimated that the population in greater Colombo metropolitan area is 5.6 million [5] and when the large floating population in Colombo is considered, it is apparent that the generation of the waste can cause serious environmental problems. The demand for land in cities in Sri Lanka has led to the use of marginal land, prone to natural hazards such as floodplains, unstable slopes reclaimed land, unsuitable for any habitation. It has been confirmed by Colombo Municipal Council that 10,000 illegal constructions in the city of Colombo alone and many high rise buildings were also put up without proper authorization [6]. The municipal councils & the local authorities are unable to provide the basic infrastructure and services to these informal settlements and sometimes use the vulnerable areas with low land value as disposal grounds for solid waste. The recent collapse of the garbage dump in Sri Lanka can be attributed to poor environmental management and monitoring with respect to solid waste in the country. It is also noted that on some occasions high end housing complexes are built on floodplains and canal banks etc. Also the waste management of apartment complexes has not been duly considered in the planning stage and the waste load has significantly increased in the cities.

Under the National Physical Plan of Sri Lanka (2011-2030), Sri Lanka aims to focus on five metro regions – Colombo, North-Central, Southern, Eastern, and Northern and nine metro cities [7]. The Western Region Megapolis Project is an opportunity for sound urban planning in cities in the western province. The key goal of the Megapolis project is to transform the entire Western Province by improving/developing essential infrastructure, such as ICT, transportation, communication, power and energy and creating the most exciting and livable cosmopolitan modern city with an all 'inclusive development plan' spanning for more than three decades [8].

Societal resilience depends on resilience of the physical environment. Resilience of the physical environment can be measured across five indicators [9], namely, Environmental performance, Exposure of physical assets, Implementation of and adherence to building codes, Quality of existing infrastructure and Resilience of critical-infrastructure.

Vulnerability to natural hazards and disasters can be reduced through development and poverty reduction efforts that enable people to settle in safer places, make their livelihoods and assets less vulnerable, and provide them with the tools and support needed to cope with shocks [10].

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