RESPONDING TO CLIMATE CHANGE SIGNALS AND IMPACTS: THE CASE OF SRI LANKA

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CLIMATE CHANGE SIGNALS AND IMPACTS IN SRI LANKA

There is ample evidence to suggest that Sri Lanka's climate has already changed. During 1961-1990, its mean air temperature has increased by 0.016 ^{0}C per year (Chandrapala 1996a), and mean annual precipitation- decreased by 144 mm (7 per cent) compared to the period 1931-1960 (Chandrapala 1996b; Jayatillake *et al.* 2005). However, the bigger question of national importance is what Sri Lanka's climate will look like in 50 or 100 years and how prepared is the country to face it. Few studies attempted to project future climate scenarios for Sri Lanka and to identify climate change impacts on agriculture, water resources, the sea level, the plantation sector, the economy and health. Even the ones that exist appear to have contradictory projections, especially with respect to future rainfall.

A recent review by the International Water Management Institute (IWMI) on the status of climate change research/activities in Sri Lanka suggests that Sri Lanka's mean temperature may increase by about 0.9-4 ^{0}C, over the baseline (1961-1990), by the year 2100 with accompanying changes in the quantity and spatial distribution of rainfall. These changes may lead to an increase in the wet (Maha) season irrigation water requirement for paddy by 13-23 per cent by 2050 compared to that of 1961-1990 (De Silva *et al.* 2007). Future projections on coconut yield suggest that production after 2040 may not be sufficient to cater to local consumption (Peiris *et. al* 2004), and reduction of monthly rainfall by 100 mm could reduce productivity by 30-80 kg of 'made' tea/ha (Wijeratne *et al.* 2007), thus impacting the country's exports.

AGRICULTURAL VULNERABILITY HOTSPOTS

The same study also attempts to identify the country's agricultural vulnerability hotspots, as well as ascertain existing knowledge gaps. It developed a pilot level Climate Change Vulnerability Index consisting of three sub indices (Exposure, Sensitivity and Adaptive Capacity) which was subsequently mapped at district scale. The maps indicate that typical farming districts such as

Nuwara Eliya, Badulla, Moneragala, Ratnapura and Anuradhapura are more sensitive to climate change than the rest of the country due to their heavy reliance on primary agriculture. Coupled with their low infrastructural and socioeconomic assets (or low adaptive capacity), and high level of exposure to historical hazards, they are the most vulnerable to adverse impacts of climate change.

RESPONDING TO CLIMATIC CHANGES

The response to climatic changes is generally in the two areas of adaptation and mitigation. Identification of adaptation and mitigation interventions requires knowledge on possible future climate scenarios and impacts. However, in the case of Sri Lanka, the few scenarios already available are riddled with ambiguity and contradictions. In the face of an uncertain climate, Sri Lanka needs to concentrate on "smart investments" and "no regrets" adaptation interventions that simultaneously deliver climate resilience and address current development needs. Both, rainwater harvesting, and restoration of the ancient tank system of the country, are two such adaptation options against future challenges in the water resources and agriculture sectors. Suggestions have been made for provision of rainwater harvesting systems to all households in drought prone areas (De Silva *et al.* 2007), making it a prerequisite to receive drought relief. Development of sustainable groundwater, promotion and adoption of micro-irrigation technologies, wastewater reuse, increasing water use efficiency and change of allocation practices are other adaptation options under consideration in the water resources sector. Six research institutes in the country conducting research on Rice, Field crops, Horticultural Crops, Tea, Rubber and Coconut, are in the process of developing pest, drought and salt resistant, short term crop varieties. The Coast Conservation Department (CCD) is formulating a Climate Change Action Plan for adapting to sea-level rise. However, equally important is creating awareness among different stakeholders on vulnerabilities, impacts and adaptation options, as well as the encouragement of farmers to take individual or communal action to prepare for climate change.

Sri Lanka is a signatory to the UNFCC and has ratified the Kyoto Protocol on Climate Change. Therefore, under its obligation to contribute to efforts to mitigate climate change, Sri Lanka made its Initial National Communication on Climate Change in October 2000. Its Second National Communication is under preparation. The country has initiated a host of activities aimed at reducing its GHG emissions including afforestation, reforestation, sustainable energy development and incorporation of emission reduction strategies to the transport sector. A number of non-governmental organizations are also active in the country implementing community based projects aimed at reducing GHG emissions to the atmosphere, such as through the Small Grants Program of the Global Environment Facility (GEF).

Apart from the above, reliable and detailed quality controlled climate scenarios and a comprehensive national study on river basin or district scale on vulnerability of Sri Lanka's water

resources and agriculture sectors to climate change are also urgently needed, in order to obtain a better idea of the risks and benefits of climate change and for strategic planning towards adaptation. It is equally important that such a study takes stock of Sri Lanka's present water resources in the form of a national water resources audit.

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