

## Drive rural diversification to help Sri Lankan farmers adapt to climate change

To help farmers in Sri Lanka cope with the impact of climate change, policies should be put in place that will make it easier for rural households to diversify their income and find off-farm work. Climate change policies should take into account the fact that predicted changes in rainfall and temperatures will affect different regions and agricultural sectors in different ways. Such an approach is vital to ensure that the livelihoods of rural farmers remain sustainable, as it is clear that climate change will have a negative impact on many agricultural sectors in Sri Lanka, reducing potential incomes in some by up to 100%.



### Background

In Sri Lanka, as in many developing countries that have agriculture at the centre of their economies, there is significant concern that climate change will reduce agricultural productivity and food security. As part of the response to this challenge, income diversification has been made a key focus for the country's rural development policies.

In order to provide information to help shape these policies, Jagath Edirisinghe from Wayamba University, has studied how small-hold farmers change their livelihood strategies to adapt to climate change and how their adaptation strategies affect their livelihoods. He has also looked at the potential welfare impacts of future changes in climate and assessed which livelihood choices are most resilient to these changes.

### Approach

Edirisinghe used data from the Income and Expenditure Survey (2006/07) carried out by the Department of Census and Statistics of Sri Lanka. This survey provided information on 4,861 agricultural households in 19 districts. Climate data was collected from weather stations situated in each of these 19 districts. The impact of changes in temperature (maximum and minimum levels) and rainfall (total amounts and durations) was assessed. A set of climate change scenarios predicted by IPCC was used to model future climate changes.

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According to these projections, the temperature in South Asia will rise by 1.5 °C and the rainfall will increase by 10% by 2035.

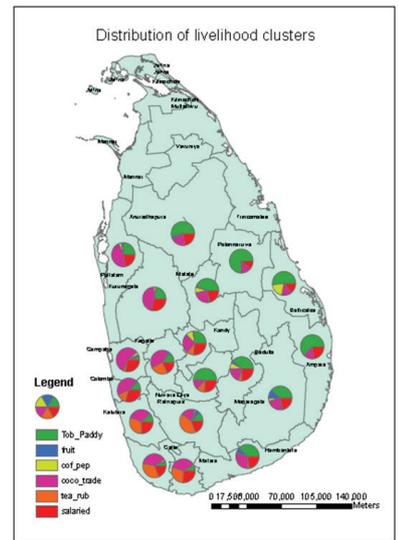
Six key livelihood strategies were identified amongst the farmers covered by the survey. These strategies were: Tobacco and paddy production, fruit cultivation, coffee/pepper/betel cultivation, coconut cultivation and trade, tea/rubber production and wage labour. It was found that households formed clusters were the majority of farmers employed the same livelihood strategies. For instance, tobacco and paddy clusters were located in Sri Lanka's major paddy growing districts such as Anuradhapura, Polonnaruwa, Batticaloa and Ampara.

## Results

Climate plays a significant role in the livelihood choices made by farmers, as most of the livelihood strategies have been negatively affected by changes in climate. Only three strategies were found to be resilient to changes in climate. These were: tea and rubber, coffee/pepper/betel and wage labour. For all three, changes in climate have had a positive impact on the welfare of households.

Fruit cultivators are expected to experience the highest losses due to future climate change, while tea and rubber producers are expected to receive the highest positive change in income. Fruit cultivators are predicted to experience a percentage drop in their current income of around a 100% by 2035, while tea/rubber producers are predicted to see an income rise of almost 35% in the same period. This suggests that, due to climate change, farmers may move out of fruit production in the future and may move into tea and rubber production.

The impact of climate change is not uniform. For example, the wage labour strategy is not influenced by rainfall but is affected by temperature changes. The impact of climate change on livelihood strategies also differs regionally. Some strategies show resilience in some districts while the same strategies are not resilient in others. For example, the tobacco and paddy strategy shows resilience in ten districts, whereas the fruit cultivation strategy shows resilience in five districts.



**Table 1: Welfare effect of climate change across livelihood strategies by 2035**

Variable	Mean Change in Per Capita Income	Percentage Change over present income
Tobacco and paddy cluster	-43.20	-1.37
Fruit cultivators	-10831.45	-113.20
Coffee/pepper/betel producers	429.26	8.85
Coconut cultivators/traders	-3130.03	-30.91
Tea/rubber producers	2532.53	34.89
Wage laborers	49.86	1.69

## Recommendations

As the impact of climate change differs spatially it is difficult to make a blanket recommendation to support any particular group of livelihood strategies. Any policy targeted to assist any of these strategies will have to take into consideration the location of the farmers that it is trying to help.

The vulnerability of many livelihood strategies to climate change highlights the importance of developing off-farm economic opportunities for farmers. An economic environment that makes it easier for farmers to find alternative employments should be promoted. Rural non-farm growth should be enhanced.

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