

Agricultural Response to Climate Change may be More Expensive than Expected

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Today, around 12% of the world's population (around 800 million people) is in danger of starvation. The malnutrition causes around 4 million deaths annually. Mostly it is observed in the Africa continental. Experts are doing a lot of research on the effects of climate change. Research results show that this situation may worsen due to upcoming climate change because temperature rises of 2 to 3°C will increase the people at risk of hunger, potentially by 30 - 200 million. It is stated that if the temperatures increase by 3°C, 250 - 550 million additional people may be at risk. They would be in Africa and Western Asia, where the declines in yield are greatest, dependence on agriculture highest, and purchasing power most limited. Indeed, food production is sensitive to climate change, because crop yields depend in large part on prevailing climate conditions.

As a result, many countries are trying to take measures by identifying various adaptation strategies in many sectors for the upcoming climate change. Agriculture currently accounts for 24% of world output, employs 22% of the global population, and occupies 40% of the land area. 75% of the poorest people in the world live in rural areas and rely on agriculture for their livelihood. In Africa and Western Asia, agriculture is made by small-holder farms. Consequently, such business types would be more suffer from climate change impacts. Adaptation is a key response to reducing vulnerability to the impacts of climate change. Adaptation strategies cannot combat climate change, but it can alleviate its negative effects. It is explained as an adjustment in natural or human systems in response to actual or expected climatic stimuli or effects, which moderates harm or exploits beneficial opportunities. There are many adaptation strategies that will be separated into three categories which are crop, livestock and other strategies. Planting of drought resistant varieties of crops, crop diversification, change in cropping pattern and calendar of planting, mixed cropping, improved irrigation efficiency, adopting soil conservation measures that conserve soil moisture, afforestation and agro-forestry, production adjustments, breeding strategies, livestock management building, capacity building for livestock keepers, labour migration, income diversification.

Strategies are clear and it can be increased. But whether many less-developed countries are ready to implement these strategies is just a puzzle. In addition, the costs per farm are very important and it is a matter to be solved. It is not possible to adopt climate change strategies in the countries which use traditional agricultural systems for ages. As for costs, the improved seed adoption cost was found to be 203 USD per hectare to 766 USD per hectare in a research. Cost of the technique of Run off and flood water farming was 383 USD per hectare in Ethiopia. Some agro-forestry techniques such as shelter belts, high input system, grass barriers, contour ridging were 1285 USD per hectare in Colombia. The grassland restoration that will be built in China was 65 USD per hectare. Numbers do not seem hopeful for small-holder farms due to financial constraints. If the adaptation costs are equal for all types of farms the share of adaptation costs in the revenues will be higher for small-holder farms. The less-developed countries are not responsible for climate change, but the cost of climate change will be much higher in those countries. Although the "adaptation" is the best response to agriculture, its costs are so important that countries with less-developed economies cannot do it alone. Mitigation is the most important issue to be discussed.

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