



BIODIVERSITY: one of the most pressing issues of our generation

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RESEARCH SPOTLIGHT

Earth System Governance • The International Water Management Institute • Conservation International
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Adapting farming systems to global climate change in West Africa



Mamadou Sangare, of CIRDES, seeks to help the agrosilvopastoral community adapt to climate change

CLIMATE VARIABILITY HAS had a considerable impact on the landscape of West Africa in the last half century, with a particular impact on the region's forestry and agricultural sectors. Many West African nations are reliant on the primary sector, thereby amplifying the negative repercussions of climate hazards on the quality of life and on the environment. Burkina Faso is an obvious example of the impact of climate change as agriculture represents 32 per cent of its gross domestic product and employs around 80 per cent of the working population. However, economic uncertainty, in part caused by climate variability, has led to high levels of emigration – leading to further economic decline and a lower quality of life.

This RIPIECSA-backed project, Adapting farming systems to global climate change in West Africa (ASECC), seeks to determine the direction and scope of climate variability in the region and ascertain its impact on its production environments to produce adaptation strategies.

A transect of land has been selected in the Sahelian zone, which spans Africa from the Sudan to Guinea. A number of sites have been

selected throughout this transect based on the gradient of increased aridity, a primary threat to agriculture in West Africa.

ASECC is working closely with farmers in the region to develop and implement a set of best practices to inform their production methods and an effort to lessen the impact of both their activities and climate change on agricultural land. ASECC are concurrently working with policy makers to enlighten them to the impending dangers and to encourage swift action that could aid long-term stability.

The investigations are being conducted by a multidisciplinary team who will characterise agropastoral adaptation strategies to climate hazards, quantifying the impact of agriculture and climate change on ecosystems, animal production and health. Once they have made their assessments they will produce a set of climate scenarios to determine the best outcome for each of the selected sites and their vicinity. This project not only provides valuable environmental benefits to the region's farmers but should also have a profound impact on the societies of West Africa.

expertise of the African States to form the foundations of a system of collecting, storing and exchanging scientific, environmental and socioeconomic data – an invaluable tool in reducing the region's vulnerability to climate change.

This will be complemented by a programme to hone agricultural management skills, which will operate in close contact with local communities to encourage the exchange and promotion of best practices, employing

an innovative approach and disseminating technological expertise.

The development and optimisation of the cowpea model presents a particularly innovative approach by setting up dialogue between partners and increasing the transfer and commercialisation of technologies, which promises to reduce the climate vulnerability of the region, which in turn could play a pivotal role in helping local populations to adapt to the adverse effects of climate change.

Karité

Césaire Gnangle, Centre de Reserches agricoles, assesses the management of shea butter in the context of climate change



LIKE MANY WEST African nations, Benin is reliant on subsistence farming for the foundation of its economy, with the shea tree and the locust bean forming two of the country's most valuable products. These tree species serve a number of social and economic purposes for both the rural and urban populations, given that their diverse uses range from a food source, a traditional medicine and a valuable export; shea butter is now used in cosmetic products in developed countries.

Temperature increases, stronger winds, later seasonal rains and floods have had a significant impact on the yield of these trees in recent decades. However, very few studies have been conducted to assess the management of the five identified parklands in Benin which host shea trees and locust beans. Now Karité, a RIPIECSA-backed initiative, will endeavour to ascertain the repercussions of climate change on these valuable crops in a region which has already witnessed the effects of climatic variability.

The governance of these parklands has fallen to the neighbouring populations who rely on traditional methods of management. Karité will focus on the three most prevalent influences on the production rates of these trees: natural change; technological advances; and anthropogenic activities. The team are working closely with the local populations to analyse their perspective of the effects of climate change on the agroforestry system, so that the adaptive strategies which they produce will be adopted and implemented to the greatest effect.

The shea tree faces the greatest threat from climate change, requiring between 10-15 years to begin bearing fruit but not reaching its full yield potential until around 20 years' old. The Karité programme is working with the local peoples to promote grafting techniques which could reduce fructification from 20 to just five years. If this proves to be successful, it has the potential to significantly increase Benin's capacity to produce shea fruit and its associated products and provide a considerable boost to the country's economy.