

Enhancing Climate Resilience in Madagascar's Cotton Farming: A Multi-Stakeholder Approach

Alban Gilquin, student, Environment Science, University of Antananarivo, Madagascar

Mirana RANOELIHARIJAONA, Research Scholar, Environment Science, University of Antananarivo, Madagascar

Abstract

This article examines the various strategies and collaborative efforts undertaken to build climate resilience in Madagascar, focusing on the agricultural sector. It delves into the geographical and climatic context of Madagascar, the impact of climate change on the island, particularly on the farming sector, biodiversity, water scarcity, and food security. The article also discusses the challenges cotton farmers face and the role of initiatives like the Better Cotton Initiative (BCI) in promoting sustainable farming practices. The importance of government and NGO involvement, education and awareness, and ongoing research and innovation in fostering climate resilience is highlighted.

Keywords: Madagascar, Climate Resilience, Agriculture, Better Cotton Initiative, Sustainable Farming, Environmental Challenges, Climate Change Adaptation, Cotton Farming, Biodiversity, Water Scarcity.

Geographical and Climatic Context of Madagascar

Off the southeast coast of Africa, in the Indian Ocean, sits Madagascar, the 4th most significant island in the entire globe. Due to its distinct geographic location, it has various habitats, from lush rainforests to barren deserts. The island has a diverse geography, including different outlying islands, a small coastal plain, and a steep centre plateau.

Madagascar has two different seasons based on its climate: a period of intense rainfall that runs from November to April and a cooler, drier season that runs from May to October. Because of its terrain and geographic position, the island is vulnerable to cyclones, droughts, and floods, among other natural calamities. These weather-related phenomena often significantly affect human settlements, agriculture, and biodiversity.

Madagascar is particularly sensitive to climate change due to its remarkable environment, which includes many species unique to the planet. These distinct ecological systems are in danger due to shifting rainfall patterns and rising temperatures. Deforestation and habitat degradation also increase the island's susceptibility to the impacts of climate change, resulting in biodiversity loss and soil erosion.

Overall, Madagascar's location and environment make it a land of natural beauty and diversity but also expose it to various climatic vulnerabilities that threaten its ecosystems and the livelihood of its inhabitants.

Impact of Climate Change on Madagascar

Madagascar is experiencing a significant and diverse range of effects from climate change, with the farming industry, biodiversity, lack of water, and food security being the most affected.

Agriculture: Due to its heavy reliance on rain-fed systems, Madagascar's agriculture is very susceptible to changes in the weather. Changed rainfall patterns and a rise in the frequency of extreme weather conditions like cyclones and droughts have caused crop failures. These disasters have affected commercial crops like coffee and vanilla and subsistence farmers.

Biodiversity Threats: The island's unique biodiversity is severely threatened due to climate change. Rising temperatures and altered precipitation regimes affect habitats, leading to species migration and extinction, especially among endemic species. This loss of biodiversity can disrupt ecosystems and the services they provide.

Water Scarcity: Climate change has exacerbated water scarcity in Madagascar. Irregular and diminishing rainfall patterns and deforestation have led to reduced water availability in many regions, impacting both human populations and wildlife.

Food Security: The cumulative effects of these changes have severe implications for food security. Reduced agricultural yields, loss of arable land due to extreme weather events, and declining freshwater availability have increased food insecurity, making the population more vulnerable to malnutrition and food crises.

The Plight of Cotton Farmers

Madagascar Cotton Farming: One of the main cash crops grown in Madagascar is cotton. However, since they depend on consistent weather patterns for cultivation and harvesting, cotton producers are especially sensitive to the effects of climate change.

Challenges Faced include reduced crop yields due to irregular rainfall, increased pest infestations, and soil degradation.

Building Climate Resilience: Better Cotton Initiative

The Better Cotton Initiative (BCI) is a commendable global effort that aims to transform the cotton industry by making cotton production more sustainable and beneficial for those involved in its cultivation. This non-profit organization focuses on enhancing the lives of cotton producers, safeguarding the environment where cotton grows, and securing a sustainable future for the cotton sector.

In Madagascar, BCI's multi-faceted approach focuses heavily on equipping local cotton farmers with the necessary skills and knowledge for sustainable agriculture. This includes training in water-efficient farming techniques, which is crucial given the increasing water scarcity due to climate change. Additionally, BCI encourages using climate-resilient cotton varieties, which are better adapted to withstand the erratic weather patterns and climatic challenges Madagascar faces.

Another critical aspect of BCI's strategy is integrating pest management practices. This approach helps reduce the reliance on chemical pesticides, which can harm the environment and promotes a more balanced ecosystem and healthier crops.

Community engagement is at the heart of BCI's efforts. The initiative works closely with local communities, understanding that the successful adaptation to climate change and the shift towards sustainable practices require the involvement and commitment of those directly affected by these changes.

By providing training and resources, BCI empowers farmers and communities to respond effectively to the challenges posed by climate change.

The economic and environmental benefits of these practices are significant. By adopting more sustainable methods, farmers can reduce their operational costs and increase their crop yields. This boosts their income and livelihoods and contributes to food security in the region. Environmentally, such practices lead to a reduction in water usage, decreased pesticide use, and better soil health, contributing to the overall sustainability of the cotton farming sector in Madagascar.

In summary, the Better Cotton Initiative in Madagascar represents a proactive and holistic approach to building climate resilience in cotton farming. Through its focus on sustainable agricultural practices, community engagement, and a commitment to both economic and environmental sustainability, BCI is making a meaningful impact in transforming the cotton sector in Madagascar.

Collaborative Efforts and Future Directions

Collaborative efforts and future directions in enhancing climate resilience in agriculture, especially in contexts like Madagascar, hinge significantly on multi-stakeholder engagement and forward-thinking strategies.

Key to these efforts is the involvement of local governments and non-governmental organizations (NGOs). Government collaboration is crucial in ensuring that initiatives like the Better Cotton Initiative (BCI) align with the nation's environmental and agricultural policies. This alignment helps streamline resources and efforts, ensuring that actions at the grassroots level are supported and amplified by governmental policies and frameworks. NGOs are vital in bridging gaps between government bodies, local communities, and international support networks. They often bring expertise, additional resources, and an understanding of local contexts, making interventions more effective and culturally sensitive.

A central pillar of these collaborative efforts is the focus on education and awareness. Educating farmers about the realities of climate change, its immediate and long-term impacts, and effective adaptation measures is imperative. This education involves formal training and workshops and encompasses ongoing support and knowledge sharing, empowering farmers to make informed decisions about their practices. This approach helps build a community of farmers who are not just aware of sustainable practices but also advocate for environmental stewardship in their communities.

Another crucial aspect is the commitment to research and innovation. As the impacts of climate change evolve, so must the strategies to combat them. This means continuously researching climate-resilient crop varieties that can withstand changing weather patterns and environmental stresses. Additionally, innovative sustainable farming practices that are both environmentally sound and economically viable need to be developed and disseminated. This research often requires collaboration among agricultural scientists, universities, and farming communities to ensure that the solutions designed are practical and applicable in real-world settings.

Building climate resilience in agriculture, particularly in regions like Madagascar, necessitates a collaborative and multi-faceted approach. This involves partnerships between governments, NGOs, and local communities, a strong emphasis on education and awareness, and a commitment to ongoing research and innovation. Such comprehensive strategies are essential to prepare for and adapt to climate change's current and future challenges.

Conclusion

A comprehensive strategy, including cooperation between the government and non-governmental organizations, education and awareness campaigns, ongoing research, and innovation, is needed to build climate resilience in Madagascar. Programmes such as the Better Cotton Initiative play a critical role in providing farmers with sustainable farming techniques that increase crop yields, lessen their effect on the environment, and improve the general well-being of communities. To alleviate the consequences of global warming and ensure Madagascar's cultivation has a sustainable future, these regions need ongoing work.

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