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TRANSNATIONAL PARTNERSHIPS IN THE ENABLEMENT OF SUSTAINABLE WATER ACCESSIBILITY IN SUB-SAHARAN AFRICA

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Introduction

Climate change has necessitated a reconsideration of how sustainable human development is to be achieved in Africa. Issues that affect agricultural productivity and incomes of rural farmers, which have implications for the quality of their livelihoods, have made the subject of climate change central to human development discourse across the continent. Within resource-dependent contexts, redefining the approach to food security involves embracing change and transformation, including adopting "climate-smart" practices and applying emerging technologies to reclaim drought-stricken agricultural land (African Agriculture Status Report, 2013). This is the specific focus of the Gansu-modelled experimental project in Kano, Nigeria.

Key Points

- The crises of climate change, increasing desertification and an unabated drop in water level have made China's intervention with the Gansu-modelled water conservation scheme in Northern Nigeria a desirable option.
- The common ecological interface shared by China and Nigeria has facilitated the transfer of relevant technology to the desert-prone Guinea/Sahel region in Northern Nigeria.
- China's involvement in the Nigerian water/agricultural sector has provided a positive outlook for the sustainable mitigation of rural poverty because it has resulted in improved indigenous farmers' skills, yields and incomes within the study locations.
- The success of the adaptation of the Gansu-modelled water conservation scheme within the Guinea/Sahel region of Northern Nigeria has facilitated its replication in other countries with similar desertification challenges in sub-Saharan Africa (e.g. Egypt, Ethiopia and the Niger Republic).

Climate Change and Agricultural Water Shortage

The impact of climate change, which has aggravated challenges of accessing water for agricultural usage in the entire Guinea and Sudan Savannah zones of Northern Nigeria, has made China's intervention with the Gansu-modeled water conservation project timely. This intervention (occupying a 10 hectare research base) is underwritten by the Government of China through the Ganzu Desert Control Research Institute (GDCRI) and the Xinjiang Institute of Ecology and Geography of the Chinese Academy of Sciences in partnership with the United Nations (UN). It focuses on sharing best practices in water management by means of inferring from a similar anti-desertification project already executed in Gansu, North-West China. The current project in Nigeria involves the entire Guinea and Sudan Savannah zones of Kano State—an area that had hitherto been ravaged by climate change, excessive grazing, drought, poverty, and violence resulting from the relative activeness of 'Boko Haram' Islamic insurgents within the region. The intervention is laudable because it has been able to transfer important skills to the indigenous farming populace within the experimental zone. Water conservation in this regard has entailed the application of less water for agricultural activities.

Understanding the Shared Ecological Interface between Nigeria and China

With both Nigeria and China sharing a pre-existing ecological interface between an encroaching desert zone (in the Guinea/Sahel and Gansu/Kubuqi zones respectively) and wetter zones that are more prone to sedentary agriculture (in the Southern and South-Eastern

regions respectively), the realism of a shared transnational ecological interface has been recognisable. This has facilitated a form of skills and technology transfer based on the similar ecology profiles and hence a translatability in the politics of a particular kind of ecological management.

The Gansu-modelled Water Conservation Case Study in Kano, Nigeria

The Gansu model (as adopted in Kano, Nigeria) involved the use of underground tanks to harvest water. The tanks are usually bottle-shaped with an average diameter of about three to four meters and a depth of five to six meters; the tanks usually have a capacity of 30 to 50 cubic meters. A concrete, dome-shaped top, 10 to 12 centimetres thick helps to sustain the soil weight and the load on the surface. A hole in the centre acts as both a water outlet and a manhole. The bottom of the tank is made of 10 centimetres thick concrete. The underground tank, which contains water from rainfall, has the advantage of preventing evaporation loss and maintaining a low temperature, both of which help to maintain water quality. The limited amount of rainwater available for irrigation is applied sparingly to crops, using the principle of limited irrigation. This means that water, which is sourced via drip irrigation, is applied in limited amounts during a few critical periods of crop growth. Besides desertification control capacity, the Gansu-modelled intervention has also provided training on harnessing solar and wind power, as well as saving and utilizing rainwater for selected beneficiaries within the study locations.

Poverty Mitigation Outcomes of the Gansu-modelled Intervention

The Gansu-modelled intervention in Kano has raised the profile of family farming and smallholder farming, as it focuses on indigenous farmers. Alleviation of poverty and hunger, provision of food security and nutrition, adequate management of natural resources, and sustainable human development have all been enabled by the enhancement of the participating farmers' income. Small-scale farmers are now benefitting from the application of improved farming techniques as offered by the experimental project. The project's innovations in the areas of agricultural and water conservation have served the indigenous farmers appropriately.

Participating indigenous farmers are now able to erect pillars, construct nylon nets, and then combine both to serve as a wall against sliding sand. As such, a direct correlating link exists not only between the project and improved agricultural outputs, but also between the project and poverty alleviation. Significantly, this project has been multi-faceted in terms of skill building, employment stimulation, poverty alleviation, and even peacebuilding, because it has been able to absorb indigenes (especially restive youths) who were hitherto unengaged.

Trans-Saharan Replicability of the Intervention in Northern Nigeria

The success of the intervention in Nigeria has notably spurred the design and execution of similar interventions in several other desert-prone countries across Africa – for instance, Kenya, Egypt, Algeria, and the Niger Republic. As observed by Liu (2011), the feasibility of the Gansu-modelled experimental project in Kano, Nigeria, has enabled a replication of the project in several other desert-prone countries in Africa. This affirmation is also supported by the findings of both the United Nations Environment Programme (UNEP) (2006) and Walter, Esilaba, Rao and Sridhar (2014), which emphasize the replicability of the Gansu success story in other similar contexts.

Conclusion

To guide policy replicability stemming from the case study, it is imperative to infer lessons regarding the transmutation of Nigeria (and other African countries) from a "repository" positioning to a state of self-reliance and sustainable development. Domestication of acquired skills by indigenous project beneficiaries is crucial. This affirmation is in line with the submissions of both the political-ecology approach and self-reliance theory, which counter unsustainability of any form of trans-border dependence in a bid to drive inclusive societal transformation.

About the Author

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