

BETTER POLICIES TO IMPROVE THE ENVIRONMENTAL PERFORMANCE OF THE AGRICULTURAL SECTOR IN AFRICA

Africa's agricultural sector plays a very important role in African's economy, it is a source of livelihoods for millions of people across the continent and as well contributes significantly to its GDP (Statista, 2022). Without a doubt, agriculture remains the cornerstone of most African economies, with production occurring at either subsistence or commercial levels (Alufohai and Oyoboh, 2013). Agricultural practices, such as the use of fertilizers, herbicides, and pesticides, have led to significant increases in food production and productivity (Alufohai G.O and Oyoboh, 2013), despite its contribution to the economy of the continents, its practices has caused a lot of damages to the environment and the ecosystem at large. Such damage includes deforestation, soil degradation, water pollution, air pollution, and even death to human and animals. (Alimi, 2012). This paper aims to explore the impact of African's agricultural sector on the environment as well proffer possible polices to reduce its effect.



According to USAID West Africa office's assessment on Environmental Threats and Opportunities, the condition of West Africa's environment requires urgent attention. Its ecosystems face significant risks primarily due to human activities, compounded by the impacts of climate change which are already affecting the well-being of the local populations (Abdou and Hassan, 2020)

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PROBLEMS

Farming activities have introduced both advancements and detrimental effects on the environment. Factors such as the conversion of natural areas to agricultural land, excessive resource usage, and the unintended consequences of chemical inputs contribute to environmental challenges. Additionally, initiatives to expand agricultural areas further exacerbate these issues, particularly in countries reliant on cotton cultivation. For instance, in West African nations where cotton production is prominent, government support aimed at enhancing economic revenues through

increased production has resulted in adverse environmental impacts including climate change, loss of biodiversity, and accelerated desertification (Abdou and Hassan, 2020). Moreover, critical agro-environmental challenges in West Africa, as evidenced by various indicators, include deforestation, soil degradation, desertification, water and air pollution from agricultural activities, and the depletion of agricultural biodiversity. These agricultural practices pose significant threats to Africa's ecosystems and future food security (Abdou and Hassan, 2020).

Environmental Impacts of Agricultural Sector

The environmental impact of the African agricultural sector includes the following:

CLIMATE CHANGE: Agriculture exerts considerable influence on climate change through the emission of greenhouse gases like carbon dioxide, methane, and nitrous oxide, as well as by modifying land cover. These alterations in land cover can disrupt the Earth's capacity to absorb or reflect heat and light, thereby contributing to radioactive forcing.

DEFORESTATION: Deforestation is driven by various factors, including land clearance for pasture or agricultural purposes (Hance, 2008). According to Hance, cattle ranching accounts for 5% of deforestation, over-heavy logging for 19%, palm oil plantations for 22%, and slash-and-burn farming for 54%. Moreover, the United Nations Food and Agriculture Organization (FAO) noted in 2000 that the role of population dynamics in deforestation can vary from significant to negligible in different local contexts, with deforestation often resulting from a combination of population pressure and stagnant economic, social, and technological conditions (Alain, 2000).

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IRRIGATION: According to the International Institute for Land Reclamation and Improvement (ILRI), irrigation can give rise to a range of challenges (Abdou and Hassan, 2020). These include:

- Inadequate irrigation leading to poor control of soil salinity, resulting in the accumulation of toxic salts on the soil surface, particularly in regions with high evaporation rates. Addressing this requires leaching to remove salts and implementing drainage systems to carry them away.
- Excessive irrigation, often due to uneven distribution or inadequate management, resulting in the wastage of water and chemicals and potential water pollution.
- Deep drainage from over-irrigation, leading to rising water tables and, in some cases, necessitating measures to control irrigation salinity through subsurface land drainage.
- The use of saline or high-sodium water in irrigation, which can harm soil structure by promoting the formation of alkaline soil (Abdou and Hassan, 2020).

POLLUTANTS: Extensive arrays of agricultural chemicals are utilized, with certain substances becoming pollutants due to their application, misapplication or lack of awareness (Alufohai and Oyoboh, 2013). Examples include: Drifting of pesticides leading to soil contamination, groundwater pollution, air pollution through spray drift, pesticides particularly those derived from organochlorides and residual pesticides present in food, toxicity of pesticides to bees, particularly concerning crop plants reliant on bee pollination.

SOIL DEGRADATION: This is a consequence of various factors, particularly agricultural practices and it refers to the deterioration in soil quality. Soils harbor a significant portion of the world's biodiversity, maintaining healthy soils is crucial for sustaining food production and ensuring an adequate water supply (Soil Degradation, 2015). Common manifestations of soil degradation include salinization, waterlogging, compaction, pesticide contamination, degradation of soil structure, loss of fertility, salinity, erosion and alterations in soil pH levels, salinity, and erosion. Soil erosion, caused by water, wind, or agricultural activities, involves the gradual removal of topsoil (Ministry of Agriculture, Food and Rural Affairs, 2018). Topsoil, being highly fertile, is immensely valuable to farmers for cultivating crops (Ministry of Agriculture, Food and



Rural Affair, 2018). Additionally, soil degradation profoundly impacts biological processes, affecting the microbial community within the soil and disrupting nutrient cycling, as well as pest and disease control mechanisms, and chemical transformation properties of the soil (Agricultural Land Use Issues, 2015).

RECOMMENDATIONS

1. Promoting Sustainable Farming Practices

According to (Pretty *et al.*, 2020), agro-ecological practices have proven to increase yields while reducing the use of synthetic inputs, thereby reducing pollution and preserving natural resources. Encouraging the adoption of sustainable farming practices is essential for mitigating environmental degradation. Policies should prioritize agro-ecological approaches that promote biodiversity, soil health, and water conservation.

2. Investing in Research and Innovation

Recent studies emphasize the pivotal role of research and innovation in enhancing environmental performance within agricultural systems. According to Smith *et al.* (2021), targeted research initiatives enable the development of sustainable farming practices tailored to local ecological conditions, thereby reducing the sector's environmental footprint. In research and innovation is crucial for developing technologies and practices that enhance environmental sustainability in agriculture. Governments and international organizations should allocate funding

towards research institutions and farmer education programs focused on sustainable agricultural techniques. Recent advancements in precision agriculture, drought-resistant crops, and efficient irrigation systems offer promising solutions to reduce resource use and environmental footprint in agriculture (FAO, 2021). By harnessing innovation, Africa can address environmental challenges while improving productivity and resilience in the agricultural sector.

3. Strengthening Land Use and Conservation Policies

Recent advancements in agricultural research and policy formulation have underscored the importance of integrating environmental considerations into land use and conservative policies. By adopting a holistic approach that balances the needs of agriculture with environmental conservation, policymakers can create frameworks that promote sustainable land management practices while enhancing productivity and resilience in the face of climate change. One key aspect of strengthening land use and conservation policies is the implementation of land tenure systems that promote secure

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land rights for smallholder farmers and indigenous communities. Secure land tenure not only incentivizes sustainable land management practices but also encourages investment in soil conservation and agro-forestry initiatives. Furthermore, policymakers can incentivize the adoption of sustainable agricultural practices through the provision of financial incentives, technical assistance, and capacity-building programs. By supporting initiatives such as agro-ecology, organic farming, and agro-forestry, governments can enhance the environmental performance of the agricultural sector while improving livelihoods and resilience among smallholder farmers. Integrating climate-smart agricultural practices into land use and conservation policies is another critical step towards promoting environmental sustainability in the African agricultural sector. By investing in drought-resistant crops, precision agriculture technologies, and efficient irrigation systems, policymakers can help farmers adapt to changing climatic conditions while minimizing resource use and environmental footprint.

4. Enhancing Market Incentives

Market-based incentives can play a crucial role in driving sustainable practices among farmers. Governments should introduce

policies that reward environmentally friendly farming practices, such as certification schemes for organic produce, carbon trading mechanisms, and subsidies for eco-friendly inputs. For example, the European Union's Common Agricultural Policy includes measures to incentivize environmentally friendly farming practices through direct payments and agro-environmental schemes (European Commission, 2020). Adopting similar incentive mechanisms tailored to Africa's context can encourage farmers to adopt sustainable practices while promoting market access and competitiveness.

Conclusion

Addressing environmental challenges in Africa's agricultural sector requires a multifaceted approach that combines policy interventions, technological innovations, and stakeholder engagement. By promoting sustainable farming practices, investing in research and innovation, strengthening land use policies, and enhancing market incentives, African countries can improve the environmental performance of agriculture while ensuring long-term food security and resilience in the face of climate change.

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