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“Reconcile land system changes
with planetary health”

A review of agriculture and technology policies for sustainable production and food security in Ghana

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Abstract

Agriculture remains a key driver of growth in emerging economies, yet its transformative impact depends significantly on access to modern technologies. In Ghana, despite the existence of agricultural and technological policies, access to such technologies remains limited, mirroring challenges faced by many low-income countries. This study assesses the impact of agricultural and technological policies on sustainable production and food security by analysing national-level data and policy documents from institutions such as the Ministry of Food and Agriculture, Ministry of Environment, Science, Technology and Innovation, Ghana Statistical Service, FAO, and Global Forest Watch. Using content analysis and descriptive statistics, the study examines trends in public investment, GDP growth, food insecurity, agricultural growth, and deforestation from 2000 to 2021. The findings reveal a significant increase in public expenditure on agricultural production but limited investment in environmental protection, despite their interdependence. Key policies such as the Science, Technology and Innovation Policy, the Seed and Fertiliser Policy, and the Plant Variety Protection (PVP) Act are well-formulated to support technology access. However, poor implementation, underinvestment in research and development (R&D), and inefficient resource allocation undermine their effectiveness. Despite these challenges, Ghana has made notable progress in reducing food insecurity—from 14.2 % in 2000 to 4.2 % in 2021. However, environmental degradation has worsened, with annual forest loss increasing from 1,700 hectares in 2001 to 14,300 hectares in 2021. While recent legislative efforts, including the Plant Variety Protection (PVP) Act, have potential to attract corporate investment and incentivize innovation, there is a critical need for safeguards to protect smallholder farmers. The study highlights a lack of policy coordination, leading to duplicated efforts despite limited resources. The surge in food prices during the COVID-19 pandemic illustrates a reactive rather than proactive policy environment. We advocate for stronger political commitment, increased R&D funding, environmentally responsible technological advancement, and enforcement of environmental laws to ensure sustainable agricultural transformation.

Keywords: Ghana, land degradation, policy, research and development, sustainability

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