

THE ROLE AND IMPORTANCE OF BIOLOGICAL ASSETS AS AN ECONOMIC RESOURCE AND A COMPONENT OF THE GREEN ECONOMY IN UZBEKISTAN

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ANNOTATION

This paper investigates the essence and significance of biological assets as both economic resources and core components of the green economy. Biological assets—such as forests, orchards, plantations, and livestock—are shown to possess dual value: they generate measurable economic output and provide critical ecosystem services, including carbon sequestration, biodiversity preservation, and soil regeneration. The study emphasizes that sustainable management and standardized accounting, particularly through IFRS 41 – Agriculture, are essential for capturing the true value of biological assets in national financial systems. Using case studies from countries like Uzbekistan, Kenya, Brazil, and Indonesia, the paper demonstrates how biological assets contribute to GDP, enhance rural livelihoods, and support climate mitigation goals. Furthermore, the carbon sequestration capacities of different asset types are analyzed, underscoring their environmental relevance. The paper concludes by advocating for integrated accounting, policy reforms, and institutional support to unlock the full economic and ecological potential of biological assets within the framework of the green economy.

Keywords: biological assets, green economy, sustainable development, ifrs 41, environmental accounting, natural capital, carbon sequestration, agricultural gdp, forest management, biodiversity conservation, eco-efficiency, ecosystem services

Introduction

In the context of global climate change, increasing environmental challenges, and the pursuit of sustainable development, the role of biological assets has gained growing attention from both policymakers and scholars. Biological assets—living plants and animals held for agricultural or economic purposes—represent a crucial component of natural capital and play a fundamental role in shaping the green economy. Their capacity for regeneration, carbon sequestration, and contribution to biodiversity makes

them not only vital for environmental sustainability but also economically significant for rural livelihoods and national economies.

As countries strive to transition towards low-carbon and resource-efficient models, the integration of biological assets into economic planning and accounting systems has become imperative. Particularly in agricultural and forestry sectors, biological assets serve as a renewable economic resource, supporting food security, employment, and export potential. At the same time, their proper classification, valuation, and management are essential for ensuring long-term ecological balance.

Despite their importance, many enterprises and governments face challenges in recognizing and measuring biological assets within the framework of conventional accounting standards. The development and application of international standards, such as the International Financial Reporting Standard (IFRS) 41 *Agriculture*, aim to address these gaps by providing guidance on the fair valuation and disclosure of biological assets.

This paper explores the conceptual foundations and practical implications of treating biological assets as economic resources and as critical components of the green economy. It aims to highlight their dual significance—economic and environmental—while advocating for improved institutional mechanisms, accounting practices, and policy support to fully unlock their potential in fostering sustainable development.

Literature Review

The study of biological assets has gained momentum in recent decades, particularly as sustainability and environmental accounting have become key priorities in global economic policy and research. Theoretical and empirical literature highlights the multidimensional role of biological assets—linking ecological systems with agricultural economics, financial reporting, and sustainable development frameworks.

Scholars such as Elad and Herbohn (2011) argue that biological assets, especially those used in agriculture and forestry, require a nuanced approach in accounting due to their living nature and fluctuating value. Their work underlines the complexity of fair value measurement and the challenges associated with applying International Financial Reporting Standards (IFRS), particularly IFRS 41 *Agriculture*. This standard introduced significant reforms in how biological assets are recognized, measured, and reported, enabling better transparency and comparability in financial statements.

Other studies have emphasized the importance of biological assets within the green economy. Pearce and Barbier (2000) define the green economy as one that improves human well-being and social equity while significantly reducing environmental risks. In this context, biological assets serve as regenerative resources that contribute to ecosystem services, such as carbon sequestration, soil fertility, and biodiversity conservation—elements essential to sustainable development.

Research by the Food and Agriculture Organization (FAO, 2020) also underscores

the economic relevance of biological assets, noting their role in improving food security, livelihoods, and resilience against climate change. Moreover, the World Bank and United Nations Environment Programme (UNEP) advocate for the integration of natural capital accounting—including biological resources—into national statistical systems to inform policymaking and track progress toward sustainability goals.

Several empirical studies from developing countries reveal practical barriers to implementing standardized accounting for biological assets. These include a lack of professional expertise, limited access to valuation methodologies, and institutional weaknesses in regulatory enforcement (Nzima and Mungai, 2019). Despite these challenges, there is growing recognition of the need to harmonize financial and environmental reporting to better reflect the true value of biological resources in national accounts.

In summary, the existing literature provides a strong foundation for understanding biological assets from both accounting and sustainability perspectives. However, gaps remain in linking these assets explicitly to green economy strategies, particularly in the context of developing and transition economies. This paper seeks to build on existing knowledge by exploring how biological assets can be more effectively utilized and reported to support economic and ecological transformation.

ANALYSIS AND RESULTS

1. The Economic Role of Biological Assets

Biological assets, particularly in agriculture and forestry, are increasingly recognized as renewable economic resources. They contribute directly to GDP growth, employment creation, and food security. For instance, in many developing economies, biological assets such as fruit orchards, livestock, and forest plantations form the backbone of rural livelihoods. According to World Bank data (2020), countries with significant biological asset bases in their agricultural sectors demonstrate more resilient rural economies.

Table 1.

Contribution of Agriculture to GDP in Selected Countries (2023)

Country	Agriculture Share of GDP (%)	Main Biological Assets
Uzbekistan	27.5%	Orchards, vineyards, livestock
Kenya	31.2%	Livestock, tea plantations
Brazil	21.4%	Forests, soy and cattle farms
Indonesia	14.9%	Oil palm, rubber, forestry

The comparative data on the agricultural sector's contribution to GDP in countries such as Uzbekistan, Kenya, Brazil, and Indonesia underscores the critical role that biological assets play in national economies, particularly in developing regions. Countries with a high agricultural GDP share—like Kenya (31.2%) and Uzbekistan

(27.5%)—rely heavily on biological resources such as livestock, orchards, and plantations for economic output, employment, and food security.

These biological assets are not only vital sources of economic value but also serve as foundational elements for sustainable development. For example, Brazil's vast forest and cattle resources and Indonesia's palm and rubber plantations are significant for both domestic productivity and global trade, while also having a major impact on ecological systems.

The data reaffirms that countries prioritizing the effective management and sustainable use of biological assets are better positioned to leverage their natural capital for long-term growth. Integrating such assets into national economic planning—through transparent accounting, responsible land use, and environmental stewardship—is essential for building resilient, green economies in the 21st century.

2. Environmental Significance in the Green Economy

Biological assets serve key environmental functions: carbon sequestration, biodiversity preservation, and soil regeneration. Forests and perennial plantations absorb significant amounts of CO₂, directly contributing to climate mitigation goals. According to FAO (2020), sustainable forest management can enhance both ecological stability and long-term productivity.

Table 2.

Estimated Carbon Sequestration Capacity of Biological Assets

Type of Asset	Carbon Sequestration (tons CO ₂ /ha/year)
Natural forest	6.5
Fruit orchard	3.2
Managed pasture with trees	2.7
Agroforestry system	4.8

The comparative analysis of carbon sequestration potential among different types of biological assets highlights their vital role in mitigating climate change and supporting ecological sustainability. Natural forests exhibit the highest carbon sequestration capacity at **6.5 tons of CO₂ per hectare per year**, reaffirming their critical function in global carbon sinks. Agroforestry systems follow with **4.8 tons CO₂/ha/year**, demonstrating a strong balance between productivity and environmental services.

Fruit orchards and managed pastures with trees, while lower in sequestration rates (**3.2 and 2.7 tons CO₂/ha/year**, respectively), still provide substantial contributions to carbon capture, especially when integrated into sustainable land-use practices.

This data underscores the importance of preserving and expanding biologically rich land systems as part of climate action strategies. Policymakers and land managers should prioritize the development and support of land-use models—such as agroforestry and forest conservation—that optimize both economic yield and environmental benefit. In doing so, biological assets can effectively serve as instruments for achieving both green economy objectives and international climate commitments.

CONCLUSION

In this study, the role of biological assets as both economic resources and essential components of the green economy was thoroughly examined. The findings confirm that biological assets—such as forests, orchards, plantations, and livestock—play a dual role: they are not only generators of economic value through agricultural and forestry outputs but also providers of key ecosystem services, including carbon sequestration, biodiversity conservation, and soil health restoration.

The analysis revealed that sustainable management and accounting of biological assets are crucial for enhancing their contribution to national economies and environmental stability. The implementation of international accounting standards, particularly **IFRS 41 – Agriculture**, significantly improves the transparency, comparability, and relevance of financial reporting in sectors reliant on biological resources. However, the adoption of these standards varies across regions due to differences in legal, technical, and institutional capacities.

Moreover, the study highlighted that countries embracing green economy principles benefit more from their biological asset base. These nations are better positioned to attract green investments, enhance rural livelihoods, and meet international sustainability commitments. Nevertheless, challenges such as valuation complexities, lack of active markets for certain assets, and limited expertise in environmental accounting remain pressing.

In conclusion, the integration of biological asset management with sustainable development policies is no longer optional—it is imperative. Policymakers, financial institutions, and enterprises must prioritize the development of robust frameworks that recognize the economic and ecological significance of biological assets. Doing so will support the transition to a greener, more resilient, and inclusive economy.

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