

Natural Capital Accounting In Uganda



Growth without land degradation - using natural capital accounts to sustain livelihoods

Policy Recommendations

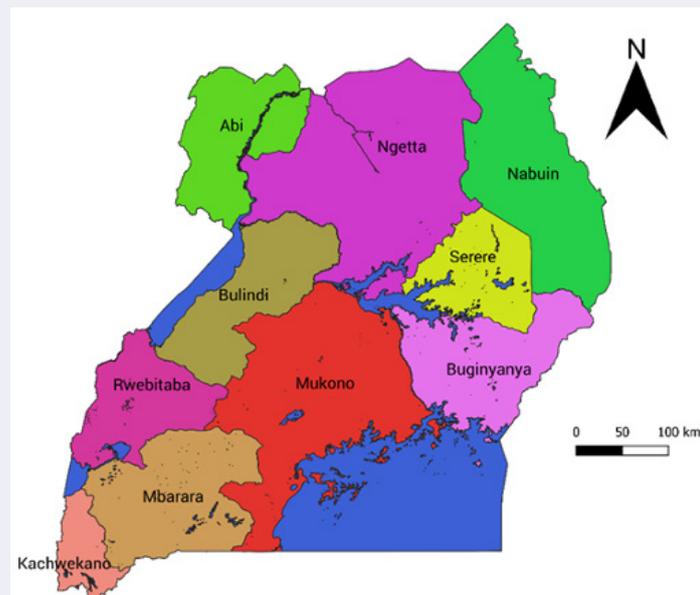
- Communities, farmers, agricultural extension officers and planners should practise integrated land-use planning at local scale to optimise land use and implement soil fertility improvement actions. This would deliver better outcomes for biodiversity and the supply of other ecosystem services.
- A comprehensive soil and land management (SLM) package comprising soil fertilizer application and smart agriculture practices (e.g. agroforestry, minimum tillage, terracing, mulching and cover crops) needs to be fast-tracked and implemented. This will also reduce pressure to convert natural ecosystems.
- A useful development from these accounts would be a composite macroeconomic indicator for agricultural resources in Uganda. This would inform on progress towards sustainable land management in the sector.

Introduction

Most of Uganda's population is rural and relies on subsistence agriculture to earn a living. Soil quality and land degradation, therefore, directly affect livelihoods and wellbeing. Managing soil fertility, land use and productivity is vital for food security, wealth creation and biodiversity conservation – key aims of Uganda's Green Growth Development Strategy. Also, as land is converted to agricultural production, natural ecosystems are being compromised and land degraded.

The Land and Soil Improvement Accounts are a valuable source of data to inform responses that not only support the aspirations of the Uganda Third National Development Plan (NDP III) and Green growth Development Strategy but also make sure that critical natural resources are nurtured and sustained. The accounts have been compiled for the 10 Zonal Agricultural Research and Development Institute (ZARDIs) areas for which the Ugandan Bureau of Statistics (UBoS) produces agricultural production statistics.

Figure 1: Uganda's Zonal Agricultural Research and Development Institutes (ZARDIs)



Source: NEMA (2021) Land and Soil Improvement Accounts for Uganda



Mixed cropping of bananas, maize, cassava, beans and surrounding forests in the Kiboga district in Central Uganda

Credit: Bioversity International/B. Ekesa via Flickr, CC BY-NC-ND 2.0

Changing land use involves trade-offs

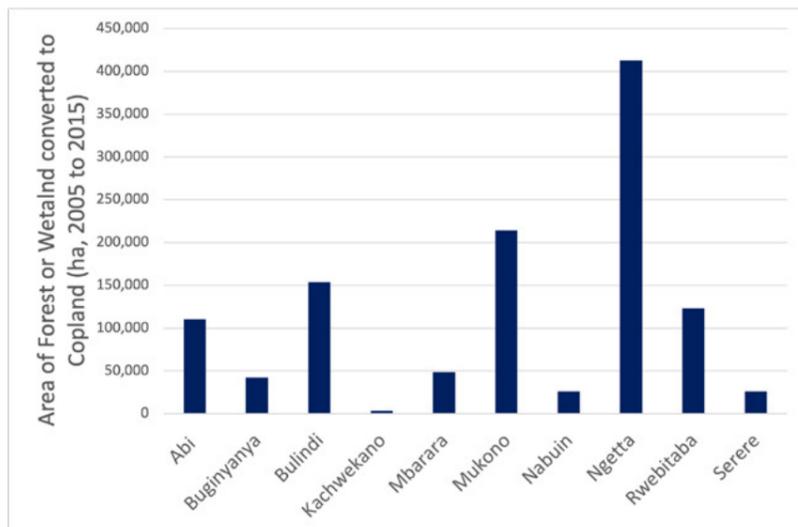
The Uganda Green Growth Development Strategy identifies forest and wetlands as key ecosystems for supporting sustainable livelihoods, yet these ecosystems are under threat. Over ten years from 2005 to 2015, small-scale farmers and others converted nearly 1.2 million hectares of forests and wetlands to create cropland for farming. This is approximately 5% of Uganda's total land area. In contrast, 240,000 hectares of cropland returned to forests or wetland over this period.

In absolute terms, forest and wetland conversion was highest in Ngetta (214,000 ha), Mukono (413,000 ha) and Bulindi (154,000 ha) ZARDIs. As a proportion of total land-cover change, these conversions were highest in the

Rwebitaba, Bulindi and Ngetta ZARDIs at 26%, 23% and 20% respectively.

These actions reduce the habitat of many of Uganda's iconic species, as well as threatening the livelihoods of those dependent on these ecosystems. They also affect the role of these ecosystems as carbon stores and sequestrators. This has implications for the capacity of Uganda's landscape to supply important non-crop provisioning and regulating ecosystem services. For example, the provision of timber, fuel wood and non-timber forest and wetland products and the storage and regulation of water flows by forests and wetlands.

Figure 2: Extent of forest or wetland converted to cropland between 2005-2015 based on IPCC land cover classification



“The national land ecosystem extent account highlights the impact of agricultural expansion on forests and wetlands. Particularly in the Ngetta, Mukono and Bulindi ZARDIs between 2005 and 2015”

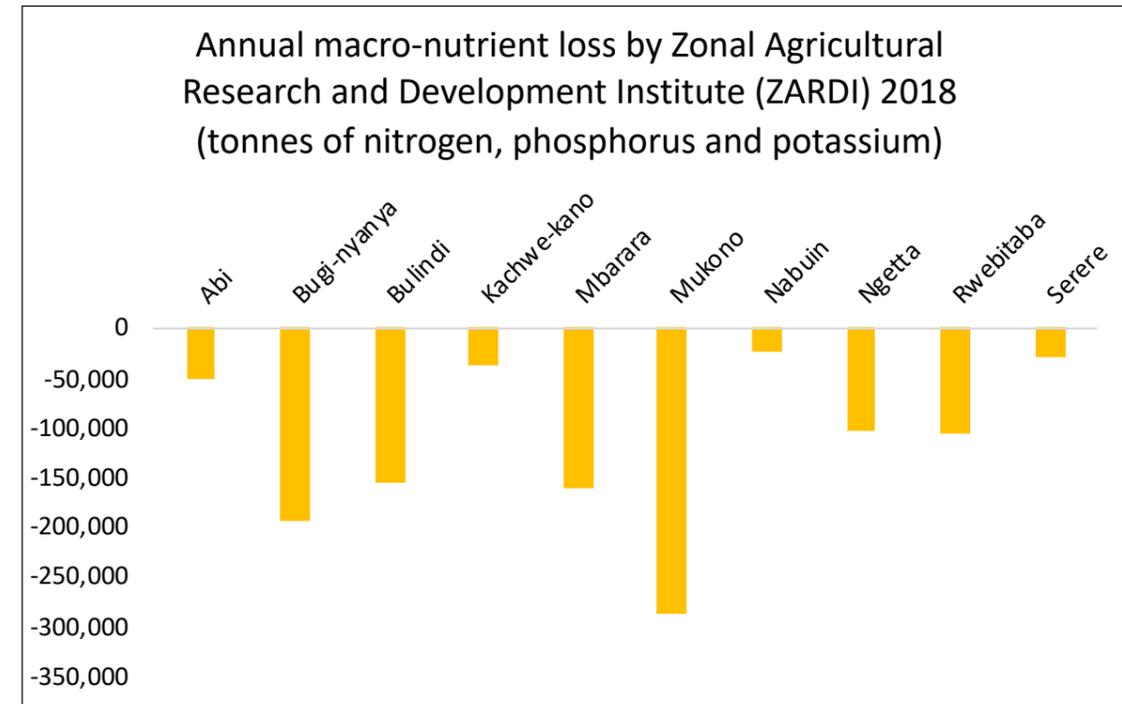
Source: NEMA (2021) Land and Soil Improvement Accounts for Uganda

Soil quality down, crop yields down, profits down

Uganda's Green Growth Development Strategy recognises the need to enhance soil fertility management. The accounts reveal the yearly depletion of soil nutrients increased by around 30% over the period 2009-2018. The high net nutrient outflow was the result of very low inflows of nutrients via application of organic and inorganic fertilisers and crop residues, compared to the outflows in crop harvest, soil erosion, and leaching.

Net nutrient loss was observed across all Uganda's ZARDIs and was highest in the Mukono zone in absolute terms.

The monetary value of this nutrient loss is estimated to have more than doubled, from UGX1.7 trillion in 2009 to UGX3.9 trillion in 2018.



Source: NEMA (2021) Land and Soil Improvement Accounts for Uganda

The Land and Soil Improvement Accounts found that crop yields in 2018 were lower than in 2009 for all but three of the crops considered. The overall increase in crop output was mainly due to an expansion in the land area planted over this period. But simply continuing to create more land for growing crops and hosting livestock is not sustainable, and improving agricultural land-use efficiency, including managing the level of soil nutrients, must be a priority. This will help to reduce pressure to convert natural ecosystems and species habitats for agricultural production.

When it is seen what the crop and livestock production is for – principally for household consumption (up to 80% of what is produced) – there is very little value addition in the industry. It is only in Mukono, which is highly urbanised, where production contributes to growing business returns.

The accounts only considered the gross revenue from crops and livestock production. If the costs were to include the economic costs of nutrient depletion, there is a high likelihood that the current production model would be unprofitable.

Fast track integrated land-use planning and monitoring to reduce poverty

What can be done to safeguard farmers' livelihoods and improve the profitability of the agricultural sector – but not at the expense of soil quality and the environment?

improve efficient use of the land, address soil nutrient depletion and allow carbon stocks to accumulate. This approach would enable stakeholders involved to make the best choices and to take action to improve soil fertility.

The Third National Development Plan and Green Growth Development Strategy highlight that individual, community and subnational land-use planning would

Yet it seems that integrated land-use planning is not happening in practice. Areas of the country with high

levels of poverty, and where poverty is associated with falling crop production – Buginyanya, for example – are missing out on potential gains.

An integrated approach to land-use planning could deliver better outcomes for biodiversity by reducing future land requirements for agriculture and conserving natural ecosystems. It could create space for forest, wetland and other ecosystems restoration to support the sustainable supply of associated ecosystem services. ZARDIs such as Ngetta, Mukono, Bulindi and Rwebitaba, where the accounts show forest and wetland conversion to cropland is relatively high, are missing out too.

Changes are needed. Given the high nutrient depletion across Uganda, farmers need to be incentivised and supported to adopt efficient technology options for seeds, soil fertility activities and agronomic practices of optimal planting spaces, timing and crop rotation. They should include increased use of soil fertiliser and take up of climate-smart agricultural practices such as agroforestry, minimum tillage, terracing, mulching and planting cover crops. A comprehensive soil and land management package needs to be fast-tracked and implemented to achieve this.

The rural population relies heavily on subsistence agriculture and would benefit from this approach, as would biodiversity, by reducing pressure to convert natural ecosystems, including forests and wetlands, to permanent or shifting agricultural production.

But how could decision-makers at national and local levels know whether this change in practice was having a positive effect? A useful development from these accounts would be a composite macroeconomic indicator including land, soil nutrient depletion and other indicators of soil quality degradation. This could support measuring sustainable wealth, in conjunction with an indicator such as green GDP. The soil and land improvement accounts provide a foundation from which to start building and compiling such indicators on a regular basis.

This would support consistent and more accurate measurement of the contribution of land and soil resources to commodity value chains, raising awareness of their importance to the agricultural sector. In turn, this would encourage sustainable market-led incentives for re-investment in land, soil resources and value chains – vital for maintaining the contribution of agriculture to the economy, long-term food security for Ugandan people and safeguarding of Uganda’s environment and wildlife.

Natural capital accounting: better data for better policy

Natural capital accounting uses consistent and comparable data to show how natural resources contribute to the economy and generate wealth – and how the economy affects natural resources. This helps integrate the benefits of biodiversity management into national/sector development planning that delivers on international commitments and national priorities for green growth, poverty alleviation and biodiversity enhancement. Natural capital accounts are consistent with existing national accounts and paint a broader picture of economic development than standard measures such as gross domestic product (GDP).

Integrating Natural Capital into Sustainable Development Decision Making in Uganda

The National Environment Management Authority (NEMA), Uganda Bureau of Statistics (UBOS) and National Planning Authority (NPA), in collaboration with the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), the Institute for International Environment and Development (IIED) and the Institute for the Development of Environmental-Economic Accounting (IDEEA) implemented a project on Integrating Natural Capital into Sustainable Development Decision Making in Uganda between 2019 and 2021. The project was funded by the UK Government through the Darwin Initiative and supported the development of three biodiversity-related natural capital accounts (NCAs): Fisheries Resources Accounts, Land and Soils Improvement Accounts, and Biodiversity and Tourism Accounts.