ambition for biodiversity
BIODEV 2030

France
AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT
EXPERTISE FRANCE GROUPE AFD

FUNDING COORDINATION

IUCN
WWF

IMPLEMENTATION

THE REPUBLIC OF UGANDA

MINISTRY OF AGRICULTURE, ANIMAL INDUSTRY AND FISHERIES (MAAIF)

POLICY REFORMS FOR BIODIVERSITY-FRIENDLY AGRICULTURAL PRODUCTION PRACTICES IN UGANDA

May 2026

FOREWORD

Agriculture is the backbone of livelihoods and food security, yet its expansion and intensification increasingly pose serious threats to biodiversity and ecosystem health. This policy brief highlights critical concerns arising from current production practices, particularly the **expansion of farming into natural habitats** and the **misuse and overuse of agricultural chemicals**, which require urgent attention and coordinated action.

The conversion of forests, wetlands, grasslands, and other natural ecosystems into farmland continues to accelerate. While aimed at meeting growing food demands, this expansion often leads to **habitat destruction, fragmentation, and loss of critical ecosystems**, placing immense pressure on wildlife populations and reducing ecological resilience. Biodiversity loss not only threatens species survival but also undermines essential ecosystem services such as pollination, soil fertility, pest regulation, and water purification—services upon which agriculture itself depends.

In parallel, the widespread and often unregulated use of pesticides, herbicides, and fertilizers has resulted in **soil degradation, water contamination, and harm to non-target organisms**, including beneficial insects, birds, and aquatic life. Overuse and misuse of these chemicals disrupt natural ecological balances, contribute to resistance in pests and pathogens, and pose risks to human health and food safety. These practices weaken the long-term sustainability of agricultural systems and increase vulnerability to climate and environmental shocks.

This policy brief serves as a call to action for strengthened enforcement, awareness, and adoption of sustainable agricultural practices. It underscores the need for **integrated land-use planning, promotion of agroecological approaches, responsible chemical management, and compliance with environmental regulations**. Addressing these challenges requires collaboration among government agencies, farmers, researchers, and law enforcement bodies to ensure that agricultural productivity is achieved without compromising biodiversity and ecosystem integrity.

Through informed policy, effective monitoring, and collective responsibility, it is possible to transition toward agricultural systems that are both productive and environmentally sustainable. Protecting biodiversity is not just an environmental priority—it is fundamental to securing the future of agriculture and human well-being.

Paul Mwambu, PhD

COMMISSIONER CROP INSPECTION AND CERTIFICATION, MINISTRY OF AGRICULTURE, ANIMAL INDUSTRY AND FISHERIES.

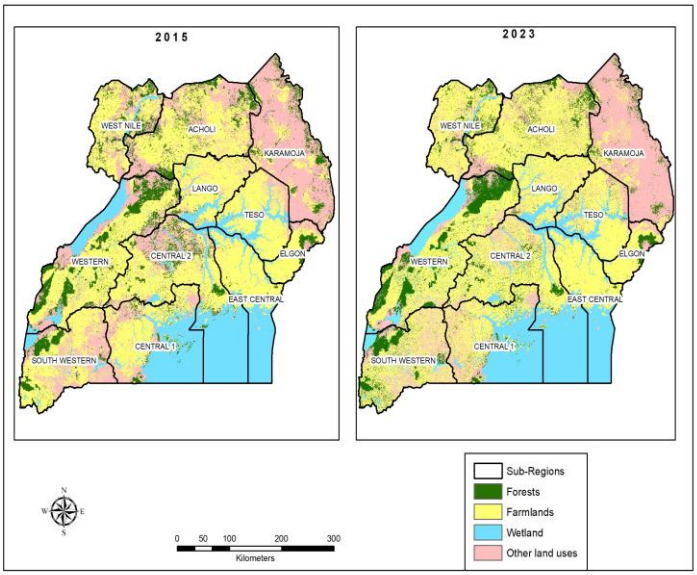
POLICY REFORMS FOR BIODIVERSITY-FRIENDLY AGRICULTURAL PRODUCTION PRACTICES IN UGANDA

EXECUTIVE SUMMARY

Harmful agricultural practices (HAPs), i.e., unregulated expansion of agricultural activities into natural ecosystems and excessive agricultural chemical use have greatly contributed to the decline of Uganda's biodiversity. The effects of these harmful practices are further exacerbated by climate change and the ever-increasing demand for agricultural products driven by the high human population growth rate. These HAPs are shaped by policies that prioritise productivity without strong environmental safeguards. Analysis of the relevant Sectoral Public Policy Instruments (SPPIs) reveals gaps in design, enforcement, and inter-agency coordination, necessitating targeted reforms. Based on the literature review and stakeholder consultations, the priority reforms identified include: fast-tracking the completion of the National Land Use Policy; phasing out High Risk Pesticides (HRPs); enforcing mandatory Environmental and Social Impact Assessments (ESIAs) for large-scale agriculture; mainstreaming biodiversity targets/objectives into the agriculture sector; and retooling agricultural extension workers to integrate sustainable land management (SLM) with productivity objectives. Together, these reforms aim to align Uganda's agricultural sector with its commitments under the Kunming-Montreal Global Biodiversity Framework and NBSAP III, thus leading to the halting of biodiversity loss by 2030 and restoring ecosystems by 2050.

BACKGROUND

Uganda's biodiversity faces severe pressure from unregulated agricultural expansion and excessive agrochemical uses (Oréade-Brèche, 2021). Over the years, farmland have expanded at the expense of forest land (Figure 1). Between 1990 and 2017, subsistence farmland increased by 25% and commercial farmland by 166%, while tropical forest, low-stock forest, and woodland cover declined by 29%, 55%, and 65% respectively (Oréade-Brèche, 2021).



This habitat loss is fragmenting ecosystems, displacing wildlife, and undermining ecosystem services vital for food production (NSOER, 2024). At the same time, poorly regulated fertiliser and pesticide use is polluting soils and water, harming pollinators, human health and threatening long-term productivity. Without intervention, these trends will continue to erode rural livelihoods and jeopardise Uganda's biodiversity commitments.

Figure 1 : Land use change map showing change in forest cover and agriculture land cover between 2015 and 2023.

Uganda has several biodiversity policies, but gaps exist in land governance, agricultural chemical regulation, and policy harmonisation. Addressing these gaps is vital to meet the Kunming-Montreal Global Biodiversity Framework (KMGBF) and National Biodiversity Strategic Action Plan III (NBSAP III) targets, which commit the country to halt biodiversity loss by 2030 and restore ecosystems by 2050. Upon this premise, the Ministry of Agriculture, Animal Industry and Fisheries, in collaboration with IUCN, through BIODEV2030 project, conducted an assessment to evaluate Uganda's policy instruments in relation to harmful agricultural practices with the intention of proposing policy reforms to stop or curb the practices.

The assessment examined gaps in agricultural related public policy instruments that facilitate harmful agricultural practices (HAPs) identified under BIODEV2030 Phase I, i,e., agricultural land expansion into natural ecosystems and excessive use of agrochemicals. **This policy brief makes use of triangulated data from literature review and consultations with relevant stakeholders in the agriculture sector to identify policy gap and propose feasible reforms to curb and/or eliminate the HAPs.**

FINDINGS

Gap analysis-Policy instruments

Uganda lacks an operational and enforcible land-use policy that would provide clear guidelines for regulating land allocation, mitigating conflicts, and safeguarding ecologically sensitive areas. As such, issues of tenure security, land use conflicts and the protection of natural resources from degradation are facilitated by this gap. Consequently, extension of agricultural activities into marginal lands, such as steep slopes in Mt. Elgon, wetlands around Lake Victoria, and savannah woodlands continues unabated. **Farmers clear wetlands, riverbanks, and forest reserves for cultivation because there are no binding rules that restrict settlement or farming in ecologically sensitive zones.**

The overarching National Agriculture Policy (NAP, 2013) and voluntary policy frameworks like Parish Development Model, Operation Wealth Creation, Agriculture Cluster Development Project and the Ten Fold Growth Strategy mainly emphasise commercialization, value addition, and infrastructure for agriculture with **little regard on environmental safeguards**. **These policy instruments indirectly facilitate agricultural extensification at the expense of fragile ecosystems**.

Weak enforcement of the relevant legal frameworks (e.g., Land Act Cap. 236, Physical Planning Act Cap. 142, and National Environment Act Cap. 181) and policy incoherence have enabled land titling in protected areas and fragile ecosystems, worsened by poor coordination between land and environment institutions (NFA, NEMA).

Moreover, the **overaching policies regulating use of agricultural chemicals,** i.e., the National Fertilizer Policy (2016) and the Agrochemicals Control Act Cap. 35, aim to boost productivity but **fail to regulate environmental risks**, allowing persistence of harmful practices like excessive fertilizer and High Risk Pesticides (HRPs) uses.

In contrast, the National Agricultural Organic Policy (NAOP, 2009) offers a clear pathway for more biodiversity-friendly agriculture by promoting organic farming systems and integrated pest and disease management that build on Uganda's relatively low baseline use of synthetic agricultural chemicals. It encourages sustainable land management technologies, reduced use of synthetic inputs, organic certification, and improved market access for organic produce. **However, the policy remains under-implemented, with limited incentives and weak integration into mainstream agricultural programmes.**

The National Environment Act (2019) offers a stronger biodiversity protection framework, requiring Environmental and Social Impact Assessments (ESIAs) for large-scale agricultural projects and empowering the National Environment Management Authority (NEMA) to regulate pollution and enforce conservation measures**. If fully enforced, this Act could substantially reduce the biodiversity impacts of agricultural expansion and agrochemical u se. However, enforcement is inconsistent, especially in rural production landscapes where most agricultural expansion occurs.**

Several other instruments indirectly influence agriculture and agricultural chemicals. The Uganda Strategic Investment Framework for Sustainable Land Management (U-SIF SLM) promotes land-use planning and watershed management, but it is outdated and only partially implemented.

Overall, despite the extensive policy framework governing agriculture, agricultural chemicals, and the environment, **gaps in design, weak enforcement, and poor coordination** have allowed these harmful practices (agricultural expansion into natural habitats and excessive use of agricultural chemicals) to persist and, in some cases, worsen.

Following Sectoral Public Policy Instrument diagnosis, targeted reforms (presented below) have been proposed to eliminate or better regulate High Risk Pesticides.

Proposed Sectoral Public Policy Instrument reforms to curb expansion of agricultural land into natural habitats

Gap	Proposed Reform	Justification for feasibility	Key Actors
Lack of an operational and enforcible land-use policy	Support the Ministry of Lands, Planning and Urban Development to complete the development of the National Land Use Policy to strengthen spatial planning. Develop SOPs to guide spatial planning Harmonize the National Land Policy with the Land Use Policy 2013 to prioritize Biodiversity Conservation. Make provisions for protection of Key Biodiversity Areas and Special	The National Land Use Policy is already under review.	**MLHUD, NPA, MWE,** MAAIF, MoFPED

	Conservation Areas recognized in the National Environment Act, Cap 181.		
Overarching National Agriculture Policy (NAP, 2013) and voluntary policy frameworks like PDM, OC, ACDP and Ten Fold Growth Strategy focus on increasing agricultural production and productivity with little regard for the environment.	Strengthen the enforcement of environmental laws through capacitation (personnel, tools, equipment and finances) of environmental protection units under MWE.	Environmental protection structures are already existent in MWE.	**MLHUD, NPA, MWE,** MAAIF, MoFPED
	Promote climate smart agriculture to reduce the environmental footprint of agricultural activities. Popularise improved crop varieties, livestock breeds, make them affordable, accessible as well as marketable. Provide policy incentives (financial, subsidies, tax holidays) for private land owners to engage in biodiversity conservation friendly agriculture	Climate Smart Programme is underway in MAAIF. Several improved crop varieties have been generated by NARO. Government is already putting efforts to encourage farmers to adopt biodiversity friendly agriculture.	**MAAIF,** MoFPED, UNFFE
	Institutionalize the No Net Loss or Net Positive Impact principle for all development projects	This principle has to be realistic and requires a lot of sensitisation.	**NPA,** OPM, MoFPED
	Extend EU Deforestation Regulation (EUDR)-style due diligence to select export value chains from fragile agricultural landscapes with high potential for impact on biodiversity loss.	This policy is already being implemented for coffee farming, however, it still requires mass sensitization to ease adoption. Nonetheless, this can be implemented under the Climate Smart Programme.	**MAAIF,** OPM, **MWE,** NPA, CCU
	Train extension workers to integrate, climate smart, agroecological and SLM practises with productivity goals.	Scalable under PDM, UCSATP & NAEP	**MAAIF**
Weak enforcement of the relevant legal frameworks (e.g., Land Act Cap. 236, Physical Planning Act Cap. 142, and National Environment Act Cap. 181) and policy incoherence have	Establish a cross-ministerial land titling approval system with Geographic Information System (GIS) verification.	Digital system for land titling already exists in MLHUD. They only need to harmonise with MWE. This is supported by the "universal land registration" promoted under the Ten-Fold Growth Strategy.	**MLHUD, NPA, MWE, NEMA,** MoFPED

enabled land titling in protected areas and fragile ecosystem.	Support private landowners to title their land. However, there must be tangible benefits (e.g., strengthen land rights and their protection, use titled land as collaterals to access financing. Government needs to provide free technical support to develop land use plans)	Secure land tenure is a prerequisite for sustainable land management and long-term investments in forestry, agroforestry, and restoration. Titled land is used in a coordinated and environmentally sound manner. This prevents unplanned land conversion, reduces land degradation, and supports alignment with national land-use priorities	**MoHLUD,**
Weak enforcement National Environment Act Cap 181 and National Environmental and Social Assessment Regulations, 2020	Conduct Strategic Environment Assessment for each sector or landscape for large-scale agriculture.	Guidelines already exist and the indicators can be tracked in NBSAP III	**MWE, NEMA,** MAAIF
	Strengthen and finance District Environment Offices to restrict encroachment on fragile ecosystems.	Supported by decentralisation, however, the functions of NEMA enforcement unit are not decentralised.	**MWE,** MoLG, MoFPED
	Strengthen the District Local Governments to develop and Implement Environmental Action Plans (EAP) for the districts as well as develop strong enforcement mechanisms, monitoring and auditing. Increase DLG environmental budgets to finance the implementation of the EAP.	DLGs are the frontline for environmental governance. Most districts lack updated or operational Environmental Action Plans (EAPs). Strengthening enforcement mechanisms requires both human resources and operational funding.	**MWE, MoLG,** MoFPED

🟢 **High,** 🟡 **Moderate,** 🔴 **Low**

NB: The lead MDAs are boldened.

Ranking for feasibility of the reform is based on how quickly or easily that reform can be actualized. For example, reforms that already fit in on-going activities such as a policy under review, are ranked "high" because there is no need of a special budget to implement such a reform.

Proposed reforms to curb the effect of excessive use of agrochemicals on biodiversity

Gaps	Proposed Reform	Feasibility	Responsible Actors
Weak enforcement of the Agricultural chemicals CAP35 and the National Organic Agriculture Policy (NOAP, 2009).	Strengthen enforcement of the Agricultural chemicals control Act 2024 CAP35 and The National Environment Regulation 2024. Sensitisation of stakeholders e.g. Farmers, extension staff, agrodealers on proper use of agricultural chemicals Strengthening post registration monitoring of agrodealers Phase out High Risk Pesticides (HRPs) & revise registration. Promote low risk pesticides as well as biopesticide and biofertilizers. Promote use of organic pesticides and feritilisers Operationalise zonal offices of MAAIF.	The process has been already initiated by MAAIF. About 18 pesticides have been earmarked for phasing out. Some biopesticides and biofertilisers are already on the market, such as those produced by Kinyara Sugar Works	**MAAIF,** DLGs, NARO, NEMA
	Introduce tiered taxes on HRPs & harmful inputs.	Politically sensitive but it is aligned with NOAP	MoFPED, **URA, MAAIF**
	Incorporate agricultural chemical audits in ESIAs	Requires coordination between MAAIF and NEMA	MAAIF, NEMA, DEOs
Weak implementation of the National Organic Agriculture Policy (NOAP)	Support operationalisation of the National Organic Agriculture Policy (NOAP, 2009).	Requires consultations and a budget	**MAAIF,** MoFPED, NOGAMU
	Develop an act on organic certification	Requires consultations and a budget	**MAAIF, MoFPED**
	Strengthen organic certification & eco-labelling.	Public-private partnerships possible. Provided for in the NOAP and Agrochemical Control Act.	**MAAIF, DLGs**, URA
	Implement residue tracking system for monitoring agricultural chemicals in the	Technical capacity exists	**NEMA, MAAIF**, UNBS

	environment as provided for in The National Environment Regulation 2024		
Blanket recommendations for fertiliser application	Scale out and popularise technologies for sustainable soil fertility management such as the mobile soil testing, soil testing kits and Land Potential Knowledge System (LandPKS) tool. Promote crop and soil specific fertilisers.	Localised soil maps exist, soil testing kits and mobile soil testing services exist. The LandPKS app is freely available on play store. However, scaling these tools out requires massive sensitisation and followup by MAAIF extension staff.	**MAAIF, NARO,** MoFPED, DLGs, private sector actors (YARA, ETG)
Agricultural chemicals are administered by non-professionals	Enforce the reviewed Agriculture Chemicals regulations 2025, which recommend that the minimum qualification for an agricultural chemical dealer shall be a certificate in Agriculture	The Agrochemicals Control Division is an enabling environment to oversee this reform. However, resistance from agricultural chemical dealers will be there.	**MAAIF,** UNBS, URA, MoFPED.
	Digitise the agrochemicals platform to enable real-time registration, tracking, and monitoring of agricultural chemical imports, distribution, sales, and usage across the country.	This will ease tracking and monitoring of the agricultural chemicals value-chains. However, it requires coordination from all UNBS, URA and MAAIF to build the initial data base and is currently ongoing	**MAAIF,** UNBS, URA, MoFPED.
	Develop and integrate an interactive digital platform—accessible via mobile application, SMS, and web portal	This will promote real-time communication, transparency, and accountability. It is an ongoing process and requires funding.	**MAAIF**
	Build the capacity of the agriculutral input distribution network		**MAAIF**
The promotion of agro-input intensification under agro-industrialisation programme in NDP is inadequate	Incorporate Integrated Pest Management (IPM) in National Agricultural Extension Strategy.	Aligned with policy reforms	**MAAIF**, MWE, NPA
	Reorient subsidies to support IPM, organics, green finance.	Needs financial institutions' collaboration	**MAAIF,** MTIC, URA

	Revise incentives to favour smallholder farmers (SHFs) who are in fragile agricultural landscapes	Requires stakeholder buy-in, especially the suppliers.	**MAAIF**, UNFFE, MoFPED
	Strengthen inter-agency coordination with clear mandates.	Requires sensitisation and behavioural change to break the silo syndrome.	**MAAIF, MWE**
	Invest in biopesticides and biofertilisers, & IPM R&D.	Active research institutions with the necessary facilities exist. However, this needs special funding.	**NARO, NAGRIC, UVRI, UNCHE**
	Retool extension officers in agroecology, climate smart & IPM practices and safe use and handling of agricultural chemicals.	Scalable under the current climate smart programme, PDM & NAEP	**MAAIF, DLGs, UNA**

High, Moderate, Low

Ranking for feasibility of the reform is based on how quickly or easily that reform can be actualized. For example, reforms that already fit in on-going activities such as a policy under review, are ranked "high" because there is no need of a special budget to implement such a reform.

CONCLUSION AND RECOMMENDATIONS

Uganda's biodiversity continues to decline due to unchecked agricultural expansion into natural ecosystems and soil and water pollution due to excessive agrochemical use, both enabled by weak enforcement and coordination, fragmented policy implementation, and insufficient integration of biodiversity safeguards across key sectors. It is also important to note that crosscutting issues such as invasive species present a veritable threat to biodiversity and if not addressed will drive significant biodiversity loss. Addressing these challenges requires prioritised reforms that build on existing institutional frameworks, ongoing initiatives, and already available technical capacity. Fed by science, stakeholders have been consulted several times under BIODEV2030 project. They have discussed and proposed the above reforms. Implementing these reforms will accelerate Uganda's alignment with the Kunming-Montreal Global Biodiversity Framework and NBSAP III targets while ensuring sustainable agricultural productivity. To achieve immediate impact, the following six actionable reforms are recommended:

1. Fast-track completion and operationalisation of the National Land Use Policy to establish enforceable spatial planning rules that prevent agricultural encroachment into wetlands, forests, and other biodiversity hotspots.
2. Strengthen enforcement of environmental laws by adequately resourcing environmental protection units such as the Wildlife Crime Unit and decentralised structures (NEMA, MWE, DEOs) to stop illegal land titling and regulate agricultural expansion in fragile ecosystems.

3. Phase out High-Risk Pesticides (HRPs) and promote low risk pesticides through strengthening implementation of the Agricultural chemicals Control Act specifically updating regulations, standards and guidelines, building capacity in risk/residues monitoring and management, and establishing a robust Information management system

4. Strengthen enforcement of ESIAs for large-scale agricultural projects, including compulsory agrochemical audits and biodiversity safeguards, with strict penalties for non-compliance.

5. Mainstream biodiversity indicators across sector plans (MAAIF, MWE, MLHUD, NEMA, MTWA) to ensure accountability and harmonised reporting under NDP IV and NBSAP III using the already established monitoring frameworks.

6. Retool and upscale agricultural extension services to integrate climate-smart agriculture, IPM, agroecology, and sustainable land management practices, and use of technology, innovation and AI—ensuring farmers adopt productivity-enhancing methods that minimise biodiversity loss.

REFERENCES

National Environment Management Authority (NEMA). (2024). *National Environment (Management of Hazardous Chemicals and Products Containing Hazardous Chemicals) Regulations, 2024*. Kampala: NEMA.

National Environment Act (2019). Government of Uganda.

Agrochemical Control Act Cap. 35 (2023). Government of Uganda

National Organic Agricultural Policy (2019). Government of Uganda

National Agriculture Policy (2013). Government of Uganda

National Environment Act Cap. 181 (2019). Government of Uganda

Land Act Cap. 236 (2013). Government of Uganda.

Physical Planning Act Cap. 142 (2010). Government of Uganda

Uganda Land Policy (2013). Government of Uganda.

Constitution of Uganda (1995 as amended).

Altai Consulting. *Country Analysis-Uganda-BIODEV2030 Sectoral Public Policies & Pressures on Biodiversity*. 11 (2024).

Oréade-Brèche. (2021). *Agricultural expansion and biodiversity loss in Uganda*. 70. Paris.

Oréade-Brèche. (2022). *Analysis of the agriculture and energy sectors towards commitments for biodiversity conservation in Uganda*. 94

UBoS and NEMA (2024). *National State of the Environment Report*. Kampala: GoU.

MWE (2016). *Forest Landscape Restoration Opportunity Assessment Report for Uganda*. 42. Kampala, Uganda.

Government of Uganda. (2013–2024). *National Agriculture Policy and related sectoral strategies*. Kampala : GoU.

List of stakeholders consulted

Sector	Institution	Title & Position Held
Agriculture	MAAIF/Department of Crop Inspection and Certification	Commissioner Crop Inspection and Certification
Agriculture	MAAIF/Department of Animal Health and Production.	Assistant Commissioner nutrition and Rangelands
Agriculture	MAAIF/	Ag. Ass. Commissioner Soil & Water Conservation
Agriculture	MAAIF/Department of Crop Inspection and Certification	Principal Agricultural Inspector (Phytosanitary and Quarantine)
Agriculture	MAAIF/Department of Crop Inspection and Certification	Senior Agricultural Inspectors – Agrochemicals (2)
Agriculture	MAAIF/Department of Agricultural Infrastructure, Mechanization and Water for Agricultural Production (DAIMWAP)	Ag. Ass. Commissioner Soil & Water Conservation
Agriculture	MAAIF/Department of Crop Inspection and Certification	Senior Agricultural Inspectors – Quarantine
Agriculture	MAAIF/Department of Crop Inspection and Certification	Agricultural Inspector – Quarantine
Agriculture	MAAIF/Department of Planning	Ass Commissioner, Policy Analysis
Agriculture	MAAIF/Department of Planning	Principal Policy Analyst
Agriculture	MAAIF/Department of Administration	Human Resource Officer (HRO)
Agriculture	MAAIF/Department of Agricultural Investments and Enterprise Development	Senior Agricultural Officer
Agriculture	MAAIF/Department of Extension	Principal Agricultural Extension & Skills Management Officer
Agriculture	NARO	Senior Principal Research Officer/Entomologist
Agriculture	MAAIF	Crop-Value chain Officer
Agriculture	UNADA	Executive Director
Agriculture	UNEFFE	Deputy Executive Secretary
Agriculture	Bukwo DLG	District Production Officer
Agriculture	Rukungiri DLG	District Production Officer
Agriculture	Kanale DLG	District Production Officer
Agriculture	Mbale DLG	Principal Agricultural Officer
Agriculture	Kween DLG	Natural Resources Officer
Agriculture	Crop Life Uganda Ltd	Members (4)
Agriculture	MAAIF/Department of Crop	Senior Agricultural Officer

	Production and Protection	
Agriculture	CAES-Makerere University/ Crop Protection	Professor-Crop Scientist/Entomologist
Agriculture	Uganda National Farmers Federation (UNFFE)	Senior Researcher

Acronyms

AEZ – Agroecological Zone	AFD – Agence Française de Développement (French Development Agency)
BVC – Biodiversity Voluntary Commitment	CCU – Climate Change Unit
DEO – District Environment Officer	ESIA – Environmental and Social Impact Assessment
HHP – Highly Hazardous Pesticide	IPM – Integrated Pest Management
KMGBF – Kunming-Montreal Global Biodiversity Framework	MAAIF – Ministry of Agriculture, Animal Industry and Fisheries
MLHUD – Ministry of Lands, Housing and Urban Development	MoFPED – Ministry of Finance, Planning and Economic Development
MoLG – Ministry of Local Government	MTIC – Ministry of Trade, Industry and Cooperatives
MWE – Ministry of Water and Environment	NAEP – National Agricultural Extension Policy
NAOP – National Agricultural Organic Policy	NARO – National Agricultural Research Organisation
NBSAP III – National Biodiversity Strategy and Action Plan III	NDP – National Development Plan
NEMA – National Environment Management Authority	NFA – National Forestry Authority
NGO – Non-Governmental Organisation	OPM – Office of the Prime Minister
PDM – Parish Development Model	R&D – Research and Development
SHF – Smallholder Farmer	SLM – Sustainable Land Management
SPPI – Sectoral Public Policy Instrument	UNBS – Uganda National Bureau of Standards
UCSATP- Uganda Climate Smart Agricultural Transformation Project	
UNCHE – Uganda National Council for Higher Education	UNFFE – Uganda National Farmers Federation
URA – Uganda Revenue Authority	UVRI – Uganda Virus Research Institute

About the BIODEV2030 Project.

Building on the first phase of BIODEV2030 (2020-2022) and on the results already achieved, the objective of BIODEV2030 Phase 2 (2024-2026) is to contribute to the implementation of the KMGBF by promoting changes in production practices that reconcile biodiversity and economic development. The approach includes supporting multi-stakeholder platforms at national and landscape levels, identifying key policy instruments to change or introduce, helping to design nature-positive projects at landscape level and supporting resource mobilisation. BIODEV2030 project is funded by AFD (French development Agency), coordinated by Expertise France and implemented by WWF in 7 countries and by IUCN in 8 countries. To learn more, please visit BIODEV2030 website.

ambition for biodiversity BIODEV 2030

FUNDING COORDINATION IMPLEMENTATION

ambition pour la biodiversité
BIODEV 2030
France
AFD AGENCE FRANÇAISE DE DÉVELOPPEMENT
EXPERTISE FRANCE GROUPE AFD
WWF

BIOMASS ENERGY POLICY REFORMS FOR SUSTAINABILITY AND BIODIVERSITY CONSERVATION IN UGANDA

EXECUTIVE SUMMARY

Uganda's dependence on biomass energy—used by over 90% of households is the second driver of deforestation and biodiversity loss, with 60% of annual forest loss linked to charcoal and fuelwood production. Inefficient biomass energy production and utilisation technologies are wasteful and unsustainable to meet the energy demands of Uganda's growing human population. These practises therefore undermine ecosystem services, human wellbeing and jeopardise Uganda's biodiversity commitments under National Biodiversity Strategic Action Plan (NBSAP III) and the Kunming-Montreal Global Biodiversity Framework (KMGBF). Analysis of public policy instruments shows that these practices are perpetuated by governance, enforcement, and incentive gaps. Findings from the comprehensive review and the consulted stakeholders, the most indispensable reforms to implement are stronger coordination, mandatory ESIAs, and policy revisions to fiscal incentives and clean technology adoption. These offer a clear pathway to curb inefficient biomass energy use, safeguard biodiversity-rich ecosystems (such as forests), and secure sustainable energy access for Uganda's future.

including globally significant populations of mountain gorillas, endemic plants, and hundreds of threatened species. Additionally, biodiversity and ecosystems provide many services to human population (such as pollination, soil formation and fertility, water supply, wood supply, etc.). However, biodiversity is under severe anthropic pressure from habitat loss and degradation, with forests and wetlands, the most threatened ecosystems experiencing dramatic declines. Uganda's forest cover fell from 24% in the 1990s to just 9% in 2015 and is currently at 13.3% following the incentivisation of the commercial tree plantation sector (Kavuma et al., 2022).

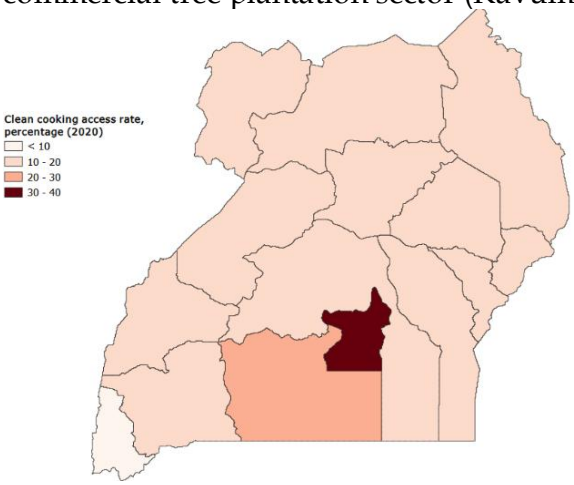


Fig.1. Clean cooking access rate in Uganda.
Source: Uganda Energy Transition Plan 2023

Annually, Uganda losses about 120,000 ha of forest, 60% of annual deforestation is caused by fuelwood and charcoal production. This is attributed to the fact that biomass energy remains the dominant cooking fuel, relied upon by over 90% of Ugandans. Biomass energy production and utilisation is characterised by inefficient practises mainly: unsustainable harvesting, inefficient production and utilisation

technologies. These activities lead to accelerated deforestation, degradation of woodland habitats and eventually threaten biodiversity-rich ecosystems. Even with a few efforts to avail efficient cookstoves, the access remains poor in most parts of Uganda with the exception of Central Uganda (Fig. 1). Moreover, the solution to curb the persistence of inefficient biomass energy technologies is not just fuel-switching because it is proven that most Ugandans cannot afford the alternative clean cooking technologies such as electricity, LPG, or solar. As such the inefficient biomass energy (especially charcoal) production and utilisation technologies, also referred to as harmful practices, have persisted and continue to **threaten and erode biodiversity partly due inadequate relevant policy instruments, fragmented and overlapping mandates and weak enforcement of the existing policies.**

Therefore, the need to address the inefficiencies and weaknesses within the policy instruments relevant to biomass energy is crucial to stop the persistence of these harmful practices. Upon this premise, a study was conducted as part of BIODEV2030 initiative to evaluate Uganda's policy instruments in relation to biomass energy with the intention of proposing policy reforms to stop or curb the harmful practices.

This policy brief makes use of triangulated data from literature review and consultations with relevant stakeholders in the biomass energy sector to identify policy gap and propose feasible reforms to curb and/or eliminate the biodiversity harmful practices. The findings of the policy analysis and the proposed reforms are presented below.

FINDINGS

Gap analysis of the Sectoral Public Policy Instruments

The current policy gaps discussed below are categorised as supply, demand or cross cutting issues of inputs regarding biomass energy production.

Cross-cutting

Biomass energy value chain is not clearly anchored within the Energy Policy or the focal energy Ministry, i.e., Ministry of Energy and Mineral Development. For instance, production of biomass energy raw materials lies under Ministry of Water and Environment. This fragmentation of responsibilities facilitates management leakages and confusion and weakens law enforcement to curb illegalities along the entire charcoal and fuelwood value chain.

Relatedly, the overaching Energy Policy or even the Biomass Energy Strategy do not provide a strategic plan for biomass energy production and utilisation.

Uganda lacks a comprehensive biomass resource inventory, a system for real-time tracking of wood fuel flows and monitoring of improved technology adoption and usage behaviour. This data is necessary to inform management interventions for the supply and demand sides as well as appreciate the contribution of woody-biomass to energy production.

Often, the technologies used along the entire biomass energy production value chain, i.e., starting from harvesting the trees to charcoal production and utilisation are very poor. This is mainly attributed to inadequate human capacity and infrastructure for production, generation and maintenance of efficient and affordable biomass energy technologies and this has incentivised the prevalence of inefficient biomass energy technologies.

Supply-side

Uganda currently lacks a dedicated policy framework or management plan for the sustainable production of raw materials used in biomass energy, such as fuelwood and charcoal feedstock. While existing laws, including the National Forestry and Tree Planting Act 2003, provide an enabling environment for tree planting and forest management, they do not specifically address the long-term sustainability of biomass energy supply chains. Similarly, sectoral policies such as the Energy Policy and

Renewable Energy Policy recognise the role of biomass in the national energy mix but offer limited guidance on coordinated, sustainable raw material production.

Although the NEMA Act mandate ESIAs for charcoal production, this is hardly or never enforced (Ojok, 2023). Relatedly, fines and penalties are inconsistently applied and levying and licensing disparities have also been reported across the nation (Ayugi & Openytho, 2022; Kiva, 2011). Therefore, weak enforcement and inconsistencies in implementation of the relevant policy instruments to curb illegalities in charcoal production incentivise inefficient charcoal production practices.

Although significant amount of revenue is generated from woody-fuels in terms of sales, licences and fines, it is hardly ploughed back to support the raw material base or the supply systems. This disincentivises the regulators (hence facilitating corruption), and investors that may be willing to invest in production and promotion of clean biomass energy technologies.

Demand side

The Energy Efficiency Bill (2024) provides for efficiency standards, certification and labelling. However, it does not specify and mandate binding regulations or minimum performance standards for biomass energy technologies such as cook stoves, briquettes and pellets.

Prices for LPG and Electricity are standardised throughout the country but this is not the case for charcoal and fuelwood. As such, the lower price of woody-biomass fuels dincentivises the adoption of clean-cooking technologies like electricity.

Unlike electricity and Liquified Petroleum Gas (LPG), the financial incentives or subsidies (e.g., VAT breaks, Result Based Finance incentives) such as pre-investment grants, taxation and revenue incentives for biomass energy technologies are limited.

Relatedly, most incentives for biomass energy technologies, such as VAT exemptions on LPG and ethanol stoves, carbon financing, and tree-growing schemes mainly benefit wealthier urban households that can afford the upfront costs and meet eligibility.

There are no robust subsidy or financing framework for rural households or small-scale producers to adopt efficient technologies. Lack of dedicated financing for biomass energy has curtailed the generation, promotion and adoption of biomass energy efficient technologies.

Additionally, a good number of pro-biomass policies are in place such as the charcoal standards, and these are supposed to incentivise generation of efficient charcoal production generation and adoption technologies. Yet, these policies are not exactly known to most charcoal producers. Eventually, such policies only benefit a few elites and are inefficient because they are not adopted by the target stakeholders.

Proposed Policy reforms for curbing or eliminating HPs accrued from inefficient biomass energy technologies

The gap analysis reveals deep-seated weaknesses in Uganda's biomass energy policy and management framework, spanning cross-cutting, supply, and demand-side issues. These weaknesses not only perpetuate inefficiency and economic losses but also accelerate deforestation, habitat loss and

degradation, and biodiversity decline, given the heavy reliance on unsustainably sourced wood fuel. These weaknesses also widen inequalities among Ugandans.

Closing these gaps is essential for ensuring sustainable biomass energy while safeguarding ecosystems and biodiversity. The table below outlines priority reforms needed to strengthen coordination, improve enforcement, promote sustainable production, and incentivise cleaner energy adoption as pathways to balance Uganda's energy needs with its biodiversity conservation commitments.

Biomass energy reforms

Gaps	Proposed Reforms	Justification for feasibility	Actor
Persistance of inefficient biomass energy production and utilisation technologies.	Fast-track the completion of the National Intergrated Clean Cooking Strategy, which promotes efficient cookstoves, alternative fuels (LPG, ethanol, biogas, electricity), and sustainable biomass supply chains, thereby reducing the volume of wood needed per household.	The development of the strategy is already underway.	***MEMD, UECCC***
	Fast track completion of the Energy Efficiency & Conservation Bill to regulate the biomass energy resource production and utilization.	The draft is already in place.	***MEMD***
	Support traditional Biomass energy substitution and ensure access, affordability, and availability of both the equipment/infrastructure and the materials for use in these alternative energy sources.	Several interventions for biomass energy subsititution are in place.	***MEMD***
	Create awareness and incentivise the scale out of clean cooking technologies.	Government-Led Clean Cooking Campaigns are ongoing in various regions of Uganda, organized by the Ministry of Energy and partners partners including NREP and UECCC. Focused on promoting LPG, EPCs, and other clean technologies.	***MEMD***
	Popularise existing biomass policies (charcoal, briquettes, pellets and improved cook-stove standards) to bridge the	Uganda National Bureau of Standards with collaboration with MEMD is actively developing and promoting national standards for clean cooking fuels and appliances. It	***MEMD***

	policy awareness gap that fuels illegal and destructive practices. Lobby for mandatory enforcement of the existing standards and fast track completion of non-existent standards such as for Ethanol stoves, Institutional e cooking appliances (Institutional EPCS and e boilers) etc.	also conducting awareness clean cooking standards. Some of the clean cooking standards being developed include: - Standard for e-cooking appliances (EPCs, Infrared and induction hobs) - Standard for household biomass and stoves - Standard for institutional biomass stoves and institutional biogas - Standard for un carbonized briquettes and pellets Uganda is also introducing a national labelling scheme for clean cooking appliances to inform consumers about efficiency, safety, and emissions and build trust in quality product.	
	Create awareness of the existent waivers on stoves. It is noted that waivers apply to some parts of the stove and not the entire stove, however, this is not known. And most of the existent waivers are not known to the masses.	Mass sensation is needed to popularize the existing waivers. Uganda has introduced **a** range of fiscal waivers and incentives to promote clean cooking technologies. These are mainly implemented through VAT exemptions, import duty waivers, and targeted tax incentives - Liquefied Petroleum Gas (LPG) – VAT exempt - Ethanol for cooking – VAT exempt. - Ethanol cookstoves (assembled in Uganda)– VAT exempt up to June 2028 - Biomass pellets – VAT exempt (to promote clean fuels) - Some solar and energy-related products (used in clean cooking ecosystems) also receive VAT relief - Zero import duty on stove components for local assembly - Reduced import duty on finished stoves (e.g., reduced from ~25% to ~10%) - Special (lifeline) electricity tariffs for cooking - Subsidies for electric cooking appliances (e.g., EPCs).	***MEMD, URA, UNBS***
	Coordinate with relevent institutions and MDAs which are high consumers of traditional biomass energy to regulate their dependency on woody biomass for cooking and	Requires subsidies, financing, and behavioural change. However, some institutions have already adopted improved cook stoves. MEMD is in the process of establishing a clean cooking unit which will be a hub for	***MEMD***

	adopt clean cooking technologies.	coordinating clean cooking players in Uganda.	
	Formalise and incentivise energy efficient kilns for charcoal production. Regulate activities of the charcoal producers through their formalised groups.	Technically feasible but needs cultural/behavioural shift and an enabling environment for the adopters. This means incentives like training and free start-up materials will be necessary to catalyse adoption of energy efficient kilns.	***MEMD, MWE***
	Establish a technology development centre which focusses on clean cooking technologies. This will be a hub for research and development.	Although there have been efforts to invest in development of clean cooking technologies research, most clean cooking technologies are of poor quality and fall way below international standards. Hence, the need to invest in a centre that focusses solely on clean cooking technologies. This requires facilitation in terms of funds and human resources.	***MEMD, NaFORRI, Academia, Nyabyeya***
Fragmentation of responsibilities along the biomass energy value chain facilitate leakages and confusion and weakens law enforcement to curb illegalities.	Constitute inter-ministerial biomass energy committee comprised of the key Ministries, Departments and Agencies along the biomass energy value chain to oversee the plans and implementation.	A clean-cooking interministerial committee already exists and can be improved. This inter-ministerial committee can be operationalised is provided for under the Energy Efficiency Bill.	***MEMD, MWE***
	Strengthen the capacity of Local governments through trainings, infrastructure and financial support to monitor and plan for the biomass energy resource.	The personnel in the District Natural Resources unit especially, DFOs and forest rangers need retooling as well as equipment and financial support to curb illegalities in the primary processes of traditional biomass production.	***MEMD MWE LG***
ESIAs for charcoal production are hardly implemented.	Undertake Environmental studies of the national charcoal value chain to guide policy, licensing, and regulatory reforms aimed at formalizing and reducing the destructive impacts of charcoal production.	Baseline information exists which can quicken these studies and support evidence-based regulations. However, enforcement of these regulations requires financial and political support.	***MEMD, MWE NEMA***
The Energy Policy (2023) highlights the need for clean energy transition but	The midterm review of the Energy Policy, 2023 provides an opportunity to include a strategy for biomass production and utilization.	Formulation of the strategy requires consultations with the key relevant stakeholders.	**MEMD.**

does not provide detailed mechanisms for sustainable biomass production, efficient conversion, or regulated utilization.	Incentivise sustainable energy woodlot management in LGs with specifications on the right tree species and managment practises. Incentivise tree planting at household level through incentives such as PES, Carbon credits, Training.	Requires mindset change, incentives, and massive sensitization.	***MEMD, MWE,*** *UTGA, MAAIF*
	Monitor and enforce sustainable firewood and charcoal harvesting and production.	Requires availability of the appropriate tools and infrastructure. Also requires finances to retool and equip the forest supervisors, District Forest Officers with digital monitoring skills and capital to enforce the law.	***MEMD, MWE, LG, URA.***
	Allow LGs to retain charcoal revenue for restoration. This would be a great incentive for charcoal producing areas to invest in energy woodlots both at individual and communal level.	Requires enforcement of the fiscal decentralisation reform.	***MoLG, MEMD, MWE***
Fines and penalties for charcoal trade are inconsistently applied and levying and licensing disparities have also been reported across the nation.	Formalise charcoal trade, permits & pricing regulation to avoid unregulated activities and leakages along the charcoal value-chain.	Technically possible but politically sensitive.	***MEMD, URA***
Uganda lacks a comprehensive biomass resource inventory, a system for real-time tracking of wood fuel	Institute a digital system to monitor the biomass energy resources and movement. Strengthen and integrate already existing MRV systems such as those on climate change and REDD+.	Baseline data is already available for instance the national charcoal survey. Build on the MRV system. However the informality of the biomass energy poses a great challenge in getting realistic data.	***MEMD***

flows and monitoring of improved technology adoption and usage behaviour	Retool District Natural Resource Officers or District Forest Officers to capture data on wood fuel flows and utilisation of effecient traditional biomass energy extraction and production activities. Retool relevant personnel in Central Government up to Local Government level.	These actions are partly provided for in the Energy Transition Plan (ETP) and the Energy Effeciency Bill.	***MoLG, MEMD, MoPS.***

🟢 **High,** 🟡 **Moderate,** 🟠 **Low**

Ranking for feasibility of the reform is based on how quickly or easily that reform can be actualized. For example reforms that already fit into on-going activities such as a policy under review, are ranked "high" because there is no need of a special budget to implement such a reform. Reforms that may require special budgets and interventions are ranked low. The lead actors are in bold.

CONCLUSION

Uganda's biomass energy sector remains central to household energy supply but is also a leading driver of deforestation, biodiversity loss, and ecosystem degradation. This degradation of natural capital is harming human population. The persistence of inefficient biomass production and utilization practices is rooted in governance gaps, weak enforcement, inadequate incentives, and poor awareness of existing policies. Without urgent reforms, Uganda risks undermining its biodiversity commitments and energy security. Therefore, the identified reforms present practical entry points for transitioning towards efficient, sustainable, and biodiversity-friendly biomass energy systems that balance energy needs with conservation goals. According to stakeholders, the most urgent and priority policy reforms are summarised as recommendations below:

- Strengthen governance and coordination through creation of a clean cooking unit within MEMD and operationalising an inter-ministerial committee to harmonize ministerial mandates and enforce ministerial accountability.

- Promote sustainable production and utilization by enforcing ESIAs for commercial charcoal production, mandating sustainable woodlot management, and incentivizing efficient technologies like Casamance kilns and cookstoves.

- Incentivize clean and efficient energy adoption by introducing targeted fiscal incentives (VAT waivers, subsidies, tax reforms) to lower costs and expand access to efficient biomass technologies such as the improved cookstoves, especially for rural users.

- Popularise existing and develop new standards to facilitate adoption of clean cooking technologies.

- Enhance data, monitoring, and awareness through establishment of a biomass tracking system, standardizing district energy officers, and conducting nationwide awareness campaigns on biomass policies and standards.

Table showing the list of stakeholders consulted:

Sector	Institution	Title & Position Held
Energy	Centre for Research in Energy Conservation (CREEC)	Technician
Energy	Olta Energy	Founder
Energy	Uganda National Alliance on Clean Cooking (UNACC)	Technician
Energy	Charcoal Association	Charcoal dealer
Energy	MEMD	MEMD Personnel
Energy	National Forestry Authority	Senior Forest Officer
Energy and Agriculture	Mubende District LG	DFO Mubende
Energy	Napak District	DFO Napak

Building on the first phase of BIODEV2030 (2020-2022) and on the results already achieved, the objective of BIODEV2030 Phase 2 (2024-2026) is to contribute to the implementation of the Kunming-Montreal Global Biodiversity Framework in 15 countries (including Uganda) by promoting changes in production practices that reconcile biodiversity and economic development. The approach includes supporting multi-stakeholder platforms at national and landscape levels, identifying key policy instruments to change or introduce, helping to design nature-positive projects at landscape level (or, if relevant, NbS) and supporting resource mobilisation. BIODEV2030 project is funded by AFD (French development Agency), coordinated by Expertise France and implemented by WWF in 7 countries and by IUCN in 8 countries. To learn more, please visit BIODEV2030 website: Home - BIODEV2030"

REFERENCES

Ayugi, P., & Openytho, D. (2022). *Biomass Energy and Charcoal Trade Dynamics in Uganda.*
Kavuma, S., et al. (2022). *Forest Cover Change and Biodiversity Implications in Uganda.*
Kiva, A. (2011). *Licensing Disparities and Enforcement Challenges in Uganda's Charcoal Sector.*
Ojok, J. (2023). *Environmental Impact Assessment Practices in Uganda's Biomass Energy Sector.*
Oréade-Brèche. (2021). *Biomass Energy and Deforestation in Uganda.*
Uganda National State of the Environment Report (NSOER). (2024).
Uganda Biomass Energy Strategy (BEST). (2013).
Uganda Renewable Energyolicy. (2007).
IEA. *Uganda Energy Transition Plan*. 108 (2023).
MEMD. *National Charcoal Survey for Uganda 2015*. 166 (2016).

LIST OF ACRONYMS

Acronym	Full Meaning
AFD	French Development Agency
BIODEV2030	Biodiversity and Development 2030 Project
CREEC	Centre for Research in Energy and Energy Conservation
EOs	Energy Officers
ESIA	Environmental and Social Impact Assessment
HPs	Harmful Practices
IUCN	International Union for Conservation of Nature
KMGBF	Kunming-Montreal Global Biodiversity Framework
LGs	Local Governments
LPG	Liquefied Petroleum Gas
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MEMD	Ministry of Energy and Mineral Development
MoFPED	Ministry of Finance, Planning and Economic Development
MoLG	Ministry of Local Government
MoPS	Ministry of Public Service
MWE	Ministry of Water and Environment
NaFORRI	National Forestry Resources Research Institute
NBSAP III	Third National Biodiversity Strategy and Action Plan
NEMA	National Environment Management Authority

NSOER	National State of the Environment Report
R&D	Research and Development
SEI	Stockholm Environment Institute
URA	Uganda Revenue Authority
UTGA	Uganda Timber Growers Association
VAT	Value Added Tax
WWF	World Wide Fund for Nature