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Uganda

Elimination of Policy Bottlenecks will Boost Utilization of Bioproducts for Better Incomes and Cleaner Environment

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Summary

- Uganda has a potential to tap into economic and environmental benefits through enhanced production and marketing of biobased products.
- Some of the products that the Bio4Africa project is promoting in Uganda include high quality processed cattle, fish poultry and pig feeds from grass and crop residues.
- The key issues that have been identified for prioritization to boost the development of the biobased sector in Uganda include delays in the finalization of the National Bioeconomy Policy and its associated regulations, low awareness of the biobased products and disincentives for the private sector to invest in the sector.
- This brief recommends policy options to address these challenges to boost the development and commercialization of biobased products

The potential for the Bioeconomy in Uganda

Uganda will need to feed 55.9 Million people by 2029 while coping with unprecedented demographic, socioeconomic, environmental, climatic and health transitions [1]. Undernourishment is still on the rise, considering that currently about 3 in every 10 children in Uganda suffer from under nutrition [2]. The bioeconomy can play a critical role in dealing with food security and environmental sustainability challenges. The development of the bioeconomy is increasingly becoming important as Countries across the world apply biological principles and processes in all sectors of the economy. The utilization of biological resources and crop residues that would otherwise be waste to produce livestock feeds, fuel and soil fertility management products can play a critical role in boosting farmer incomes and create cleaner environments. Given the good climatic condition ion Uganda with rainfall almost throughout the year, Uganda has a high production of biomass. Further, Uganda has a huge production of bi-products from agriculture and the food industry. Wastes from *Matooke* alone are estimates at 60 Kg/ Person/year [3]. The plant based biomass and wastes can be turned into useful products and earn farmers extra income. These benefits can be achieved through the development of Uganda's Bioeconomy. The Bio4Africa project is one of the initiatives that aim at working towards optimizing the benefits that farmers generate from the Bioeconomy. This brief highlights the Bio4Africa approach and technologies that the project is promoting in the country. Further, some of the challenges that stakeholders working in the bioeconomy face in the country as well as policy options to deal wit these challenges are highlighted.

Biobased technologies promoted in Uganda

The Bio4Africa project supports the deployment of the bioeconomy in rural Africa through the development of bio-based solutions and value chains with a circular approach to drive the use of local resources and diversify the income of farmers. The focus of the project is on transferring simple, small-scale, and robust bio-based techs adapted to local biomass. In Uganda, the project is promoting the installation of a Green Biorefinery, the production of fish pellets from crop residues and the production of Biochar from crop residues.

A green bio-refinery was installed in Fort Portal at the Kabarole Research & Resource Centre (KRC). The facility which features technology and equipment from Grasso, a Dutch biotech company is used to refine green matter, mainly elephant grass, which is then processed into three products: protein concentrate (for pig and poultry feed), the press cake (for dairy cow feed) and whey juice (for piglet feed). The plant can also utilize Gamba grass, the wild-growing leucaena tree and crop residues from local legumes, vegetables, cereals and tuber crops. This technology leads to reduced cost of livestock feeds, higher incomes for farmers from the sale of crop waste and access to low cost livestock feeds. A Green Biorefinery has the advantage of being a multi-productive system that produces low-price feedstock that is available in large quantities [4].

Palletizing is a technique that utilizes a machine, called an extruder palletization mill, for the production of livestock feeds pellets. This machine can be fed with crop residues from local legumes, vegetables, cereals and tuber crops. Waste products like cassava peels can be processed into High quality cassava peels (HQCP) which then are used to produce pellets for fish and poultry feeds. These products help to reduce cost of livestock feeds and also to higher incomes for farmers from the sale of crop waste and access to low cost livestock feeds.

Pyrolysis is a technique where green matter is subjected to combustion without oxygen at very high temperatures (approx. 450- 600 °C) leading to the formation of charcoal like product called biochar. This process utilizes crop-based feedstock such as peanut shells, cashew shells or millet and maize stalks. The finished product is used for soil conditioning. When added to farms, this helps to enhanced soil fertility, reduced acidity and ability of soil to catch and store carbon. Because of better management of crop wastes, this also leads to cleaner environment and environmental sustainability.



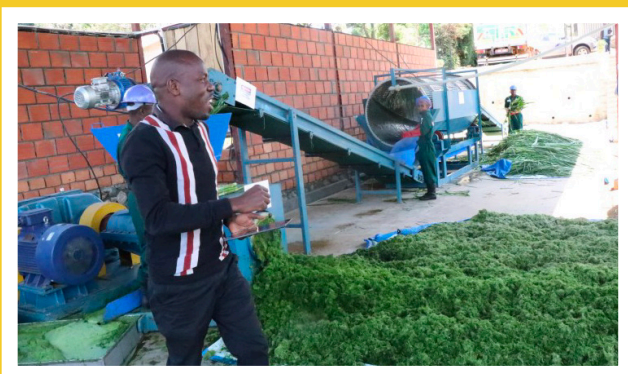
Biobased technologies deployed in Uganda



Fish Pellets from Crop residues: High Quality Cassava Peels



Biochar from crop residues to be used as soil amendment product



The Green Biorefinery in Fort Portal, Uganda, turning elephant grass into refined Livestock feeds

Sound Bite

“It’s time to stop burning our planet, and start investing in the abundant renewable energy all around us.”

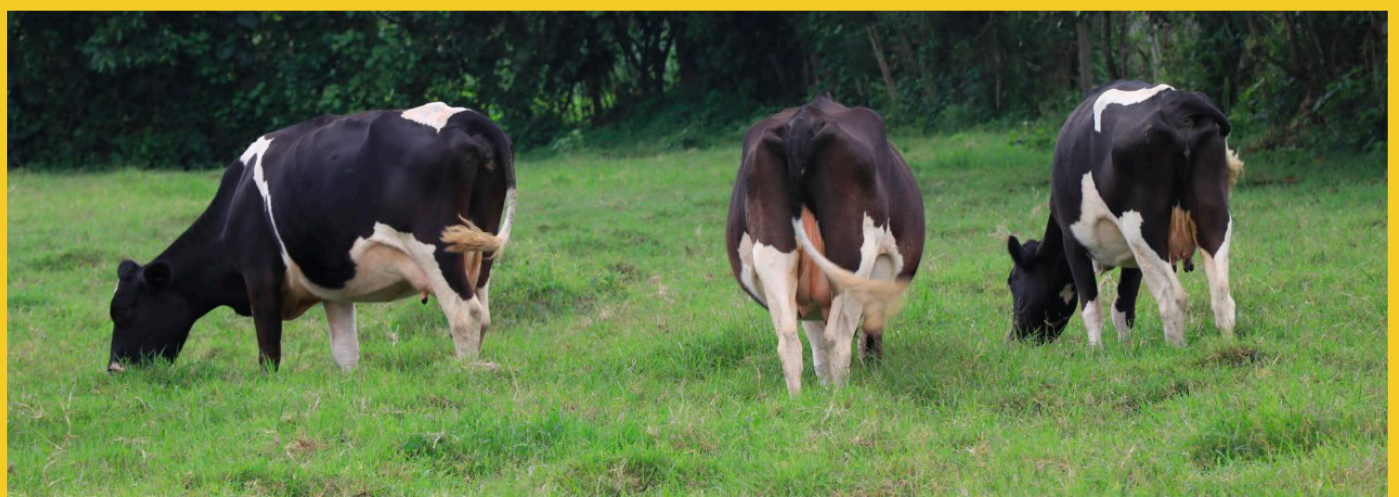
António Guterres,
Secretary-General of the
United Nations



Challenges in Uganda’s Bioeconomy

Through research and policy dialogues, bioeconomy stakeholders in Uganda have identified some issues that need to be addressed to enable communities in Uganda access full benefits from the Bioeconomy. The following are the key issues:

1. Although the import duty for machinery for production of livestock feeds are zero-rated under the EAC common tariff, some parts are taxable.
2. The private sector need sufficient incentives such as tax breaks, subsidies to invest in the renewable energy and bioeconomy related production.
3. There is generally no standards for most products from biobased technologies.
4. Owing to limited number of enforcement officers, there is insufficient capacity for quality control to enforce quality standards for bio-based products.
5. There is limited **adoption** of products generated through biobased technologies as a result of low awareness from users.
6. In cases where the quality standards have been set, there is limited dissemination leading to low awareness by traders and consumers.
7. **Limited technical advice** and external services to support acquisition and maintenance of new and advanced equipment and tools to shift to more innovative approaches.
8. Weak **linkages between actors** in the innovation ecosystem and entrepreneurs who scale the production of outputs from the bioeconomy.
9. **Limited funding** on renewable energy and Bioeconomy research.



Recommendations

Towards addressing the identified challenges, we recommend the following:

1. The relevant Government organs need to fast track the finalization of the National Bioeconomy Policy (NBP) and the supporting regulations and guidelines to create an enabling **environment** to drive research, commercialization and development of bioeconomy.
2. The Uganda Revenue Authority and other relevant ministries should introduce **tax breaks, waivers and subsidies** on bioeconomy and renewable energy to encourage private sector investments.
3. The demand for biobased products can be boosted through sensitization and awareness creation campaigns on the use of biobased products accompanied by technology transfer initiatives. This can be boosted through institutionalization of trade shows and exhibitions on biobased technologies.
4. Where applicable there is need for **Value Added Tax (VAT) exemption** for equipment used for Biobased equipment such as briquette making machines.
5. Investment in capacity building and equipping the UBS including **capacity strengthening** through hiring and training of more standards officers.
6. Policy reforms towards establishment of **waste management facilities** and promoting **waste segregation**.
7. Encourage stakeholders to **engage Uganda National Bureau of Standards (UNBS) to develop standards** for new bio-based technologies and products and **translate existing of standards** into local languages for ease of dissemination
8. **Increased mobilization** of accessible research funds for bioeconomy innovation both from government and external sources.

9. Provide **business incubation** to researchers to support them through commercialization.
10. Extension of services to hard-to-reach areas using mobile based extension tools.
11. Establishing a **lead agency** to coordinate innovation and commercialization in the bioeconomy.

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