



UGANDA 2020
**GREEN
GROWTH
REPORT**

Stimulating resource use efficiency in manufacturing
and waste management for sustainable development

POLICY BRIEF

SUMMARY OF FINDINGS

1. The theme for Uganda’s inaugural and 2020 Uganda Green Growth Report is “stimulating resource use efficiency in manufacturing and waste management for sustainable development”. The theme aligns with the third National Development Plan theme of “Sustainable Industrialization for inclusive growth, employment and wealth creation” and the resource use efficiency and waste management strategies of the Uganda Green Growth Development Strategy (UGGDS)

2. The most successful innovations are market-driven innovations that extend agro-processing value chains, and mainstream resource use efficiency for energy, and water. Social enterprises with strong community participation also showed success and potential for revenue growth.

3. The accumulation of solid waste, poor disposal of wastewater, and the small and poorly capitalised interventions are one of the most important challenges for cities in the country. The green cities strategy priority of a circular economy for waste is needed for industry, households, markets, and all stakeholders.

4. The leading opportunities for policy and industry are:

- (a) fast tracking market mechanism for greenhouse gas (GHG) trading and waste trading as part of economic instruments in the country;
- (b) scaling up niche processing of agricultural produce of floors, vegetable oils, cakes, and biscuits to enhance utilisation of food, and minimise waste;
- (c) upgrade the quality of products from the extended value chain for waste, including plastic waste to enhance competitiveness among small scale enterprises;
- (d) mentorship and financing for small sized enterprises engaged in resource use efficiency, and waste cycle innovations, a designated fund for this may be needed;
- (e) gradually phasing in resource use efficiency standards for process line waste, water and electrical energy efficiency through compliance monitoring and audits and economic and financial incentives.

BACKGROUND

The Uganda Green Growth Report (UGGR 2020), under the theme “stimulating resource use efficiency in manufacturing and waste management for sustainable development” is the second, in what is expected to be a series of, monitoring report(s) on the progress the country is making towards the attainment of the targets set in the UGGDS. The purpose of the Green Growth Report is to track the progress of implementation of the Uganda Green Growth Development Strategy and its Implementation Road Map with a focus on the Green Growth Principles of Resource Use Efficiency in line with the NDP III theme of “Sustainable industrialization for Inclusive Growth, Employment and Wealth Creation”.

The 2020 UGGR provided empirical evidence on whether the country was making progress in the implementation of the UGGDS, and how the country’s economic development goals were being achieved while also transitioning from depletive and polluting production and consumption into restorative, resource-efficient sustainable supply, production, and consumption, green economy. The report is based the collation and analysis of multiple case studies of the efforts of small, medium and large scale enterprises to integrate aspects of sustainable consumption and production, resource use efficiency, and the circular economy of material flows in the manufacturing process, and waste management. The case studies were based on six core cities – Greater Kampala Metropolitan Area, the Jinja City Industrial Area, Mbarara City, Hoima City, Gulu City, and Mbale City. The 2020 UGGR was undertaken with financial support from the German Federal Ministry for Economic Cooperation (BMZ), the European Union, and the UK Department for International Development (DFID) through the Natural Resources Stewardship Programme (NatuReS), and with technical support from the National Planning Authority (NPA), the Ministry of Water and Environment and the City Authorities from the listed cities.



Top row: L-R Cleaning underway at the Coca Cola factory in Mbarara; Collected plastic bottles for recycling; A waste water treatment unit at EnviroServ’s Nyamasoga Waste Treatment and Disposal Facility. **Middle row:** L-R Weighing in of a truck carrying waste at EnviroServ; Drying for sweet potatoes for milling into flour at Byeffe Foods in Mbale; A decanter machine at EcoBrix in Masaka. **Bottom row:** L-R Shredded plastic waste ready for conversion to environmentally friendly pavers; Use of reusable hardened plastic crates at the Busoga Forest Company tree nursery operations; Waste processing worker at Eco-Brix in Masaka City.

PROGRESS TOWARDS A GREEN ECONOMY

There are many cases of positive progress towards a green economy based on a profile of 16 firms from five categories of manufacturing; food processing, drinks manufacturing, textiles processing, paper processing, brick manufacturing, and steel processing. The results show a strong focus to ensure green innovations are profitable, and the nascent nature of many of the innovations. However, institutionalization of green innovations is limited, and the innovators lead with only a small group of followers.

Performance of economic indicators of green growth

Green innovation was particularly important when the innovations led to strong profitability and/or savings in the manufacturing process. Market-led investments for gelatin, bricks, cement resulted in the highest revenues. Similarly, green investments with high savings and/or revenues due to resource efficiency and waste to wealth investments included new Kiln Technology and energy-saving and water efficiency at Uganda Clays; the new complete processing lines for tannery waste to produce gelatin for Tian Ran Biotech, and energy switching from heavy fuel oils (HFOs) to agricultural residues for Hima Cement.

Whereas generally profitable, green growth investment costs were relatively high with an average investment cost of \$1.126 million per firm per year. In return, the average savings were \$171,186 per firm per year; and the average revenue added was \$1.445 million per firm per year (Figure 1). The companies mostly reported on the savings they achieved; however, the expectations were high on potential for increased income. Tian Ran, East African Packaging, Sanatos, and GBK Milk reported on both savings and investments. At least two companies invested less than \$10,000; three companies between \$10,000 and \$40,000; and six under \$100,000. The efficiency improvements can be quite costly. Therefore, a clear demonstration of savings and increased income are requisite.

The highest value to cost ratios were reported for Sanatos Foods, Kazire, and Hima Cement. However, Kazire and Sanatos had relatively low investments. Therefore, the technology switches at Hima cement had the highest net return per investment as was the most dominant investment. The average VCR was 1.43. Resource Efficiency Investments for Uganda Clays, Steel Rolling Mills, Crown Beverages, Igara Tea, Buhweju Tea, and Mekapasi showed strong promise with VCRs above 0.5. The VCR results are constrained by incomplete information on revenues from the resource efficiency and waste to wealth value chains.

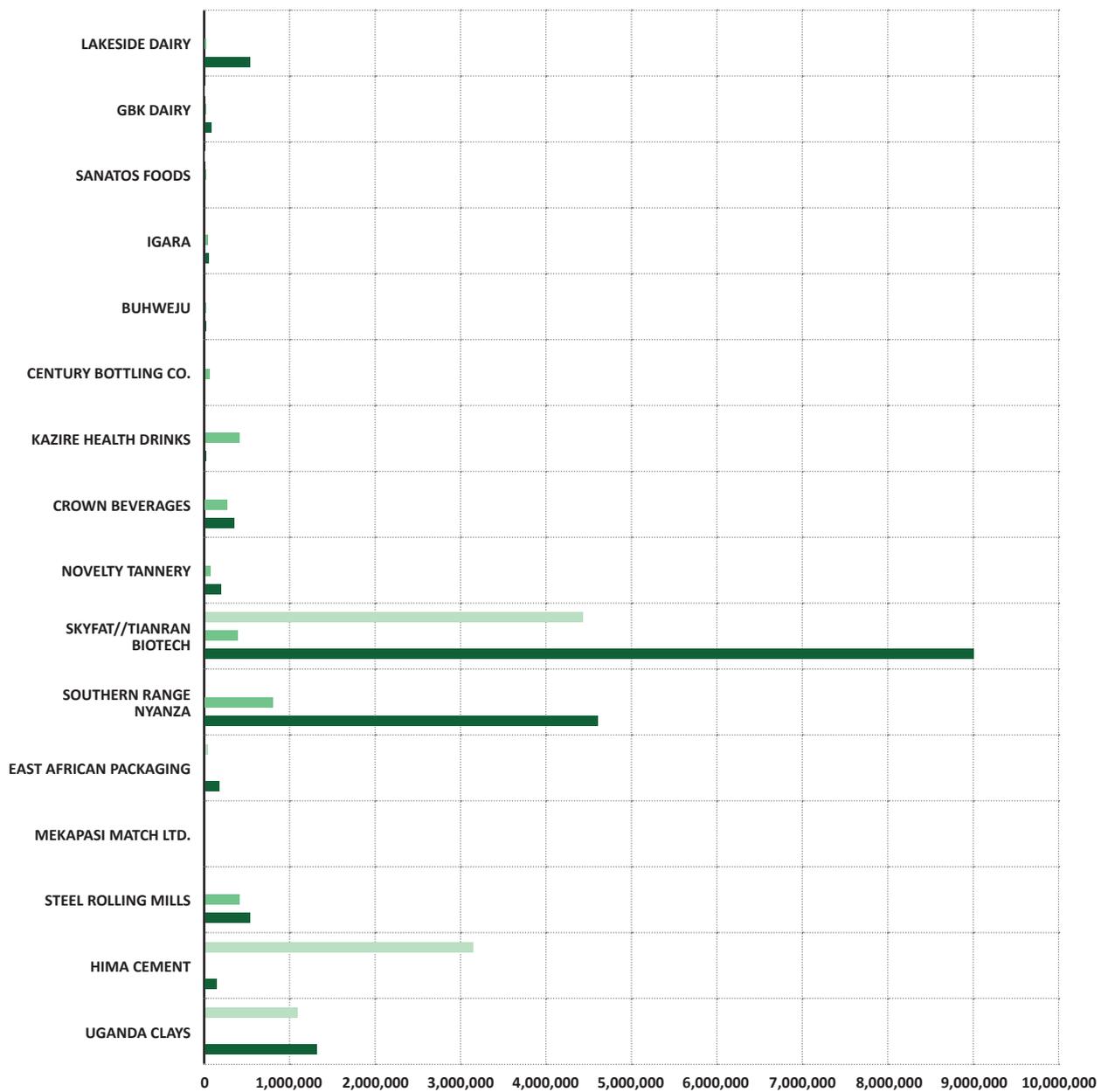
Environmental indicators of green growth

Water use efficiency and water productivity were the most common green growth indicators in manufacturing. Lakeside Dairies increased water productivity by 2.5-times from 5 Litres of product /Litre of water (L/L) to 2L/L of milk. Sanatos Cheese company declined. Tea processing introduced RWH technology, and push taps. Drinks efficiency improved even Century Bottling which is already most efficient still had room for improvement. The minimum water productivity target for beverages is therefore at 1.349L/L.

Electrical energy efficiency was highly practiced among the industrial innovators profiled. Light Emitting Diode (LED) bulbs were the commonest technology replacing fluorescent and ordinary bulbs. Sanatos Foods adopted the use of biomass (papyrus) for heating purposes which resulted in energy savings of 750kWh of thermal energy. Similarly, Uganda clays reduced electrical power consumption through experimenting with substitutes such as biomass energy. The Tea factories adopted insulation for lagged steam pipes and LED bulbs. Similarly, the drinks companies also adopted LED, crown beverages increased its utilization capacity for power up to 99% from 78%. The paper industry also reported increased electrical energy efficiency.

All companies made efforts to reduce the waste generated. Even if a few companies did not report the change in volume of waste. Kazire Beverages reported annual emissions reductions of 93.6 tCO₂e, from recovery and treatment of wastewater, and reduction in paper packaging materials. Crown Beverages recovers glass, which is recycled and used for glass production by another facility. Both drinks companies recycle and reuse wastewater for washing and cleaning. The disposed of waste is used in the gardens to improve the green spaces. For tea companies, the reduction in solid waste improved the volume of product for Igara tea and directly increased revenue.

Figure 1: Resource efficiency and waste cycle investment, savings, and revenue 2017/18-2019/20



	LAKESIDE DAIRY	GBK DAIRY	SANATOS FOODS	IGARA	BUHWEJU	CENTURY BOTTLING CO.	KAZIRE HEALTH DRINKS	CROWN BEVERAGES
INCREASED REVENUE (\$/YEAR)		3,721	1,975					
REDUCED COST/SAVINGS (\$/YEAR)	12,857	9,300	4,567	27,444	6,000	46,035	398,740	259,514
INVESTMENT COST/REDUCED REVENUE (\$)	525,128	71,794	111	38,646	10,000		10,270	337,342
	NOVELTY TANNERY	SKYFAT//TIANRAN BIOTECH	SOUTHERN RANGE NYANZA	EAST AFRICAN PACKAGING	MEKAPASI MATCH LTD.	STEEL ROLLING MILLS	HIMA CEMENT	UGANDA CLAYS
INCREASED REVENUE (\$/YEAR)		4,420,000		30,000			3,132,000	1,079,767
REDUCED COST/SAVINGS (\$/YEAR)	60,243	380,000	794,290	1,200	410	396,000		
INVESTMENT COST/REDUCED REVENUE (\$)	180,248	9,000,000	4,606,095	161,950	659	522,240	137,670	1,300,000

Table 1: Performance of green growth social indicators

RESOURCE USE EFFICIENCY	TRENDS IN EMPLOYMENT (FEMALE / MALES)	WAGES ESPECIALLY FOR WOMEN (UGX/YEAR)	TRENDS IN WORST FORMS OF CHILD LABOUR (WFCL)	TRENDS IN GENDER-BASED AND SEXUAL VIOLENCE (GBSV)
FOOD PROCESSING –MILK				
LAKESIDE DAIRY	N/A	N/A	corporate rules on labour	Standards on safe working conditions
GBK DAIRY	N/A	N/A	corporate rules on labour	Standards on safe working conditions
SANATOS FOODS	N/A	N/A	N/A	N/A
DRINKS – NON-ALCOHOLIC				
CENTURY BOTTLING CO.	20% employees are female, 25% women in the management.	50% women	Global corporate rules	Corporate rules on safe working conditions
CROWN BEVERAGES	6 jobs	50% women	corporate rules on labour	corporate rules: safe working conditions
TEXTILES AND GARMENTS				
NOVELTY TANNERY	51 staff	N/A	N/A	N/A
SKYFAT//TIANRAN BIOTECH	150 new staff	N/A	N/A	N/A
SOUTHERN RANGE NYANZA	N/A	N/A	Standards on corporate rules	Corporate rules: safe working conditions
SAWMILLING & PAPER				
EAST AFRICAN PACKAGING	20 jobs	30% women	N/A	N/A
MEKAPASI MATCH LTD.	30 jobs	30% women	N/A	N/A
METAL PROCESSING				
STEEL ROLLING MILLS	40 jobs	1,728 \$/year- 60% women employed	Corporate rules on labour	Standards on corporate rules on safe working conditions
CEMENT PROCESSING				
HIMA CEMENT	60,000 green jobs, 70% are women	Modal income \$500/year	Corporate rules on labour	Corporate rules: safe working conditions
BRICKS MANUFACTURING				
UGANDA CLAYS	5,000 coffee farmers	30% women	Corporate rules on labour	Corporate rules: safe working conditions

Performance of social indicators of green growth

The contribution to green growth to jobs is reported by 60% of the assessed companies. The companies that reported had fair women employment, with a target of 35% at the management level for Century bottling. New technologies provided opportunities for employment the largest employment was the 60,000 coffee farmers supplying Hima Cement, and 5,000 farmers expected to supply Uganda Clays. There is still a need for support to ensure that farmers make sustainable investments in the green economy and that their investments are viable.

All companies showed a commitment to national and/or international standards on child labour and gender-based and sexual violence. A review of independent reports or separate surveys of workers would provide further additional support on the social findings.

LESSONS LEARNED

1. There is a small but strong commitment to among private manufacturers to promote green growth and innovations as long as they led to increased savings, increased revenue at a reasonable investment cost. The initiatives generally included elements of water use and/or productivity improvements, energy improvement, reductions in emissions of greenhouse gases, and/or improved waste management as environmental sustainability interventions. However, the incentives of green jobs are not adequately documented, as well as the contributions to gender equity, and labour rights for children.
2. The most successful interventions were market-driven enterprises and involve innovations to solve problems in the current supply chain such as the cost of waste management, the accumulation of waste, the low value obtained from the value chain even when others can increase the value through vertical or horizontal integration, among others. The investors showed a willingness to experiment and invest to capture a high-value market. There are opportunities for industrial researchers and companies to look at other available product lines, and the trade-offs of investing in these product lines.
3. The largest proportion of green initiatives are likely to be start-ups and micro to small enterprises. However, these companies are largely experimental and do not complete product processes with limitations in producing quality finished products for the market. The learning required is associated with incubators based on partnerships with more accomplished processors, in other fields, with a stronger ethical approach to customers likely based on international experience. These incubators require external and flexible support either through the Uganda Investment Authority (UIA), Uganda Manufacturers Association (UMA), Private Sector Foundation Uganda (PSFU), and the MoTIC, among others.
4. The green economy in industry is ready for gradual scaling with specialized financial support, and mentoring, and regulatory support through compliance auditing, and financing and economic incentives. Standards on water efficiency, electrical energy efficiency, and process waste minimization can be established quickly. The next steps would consist of reducing carbon intensity through market mechanisms, and market mechanisms for waste management.



THE REPUBLIC OF UGANDA

CONTACT INFORMATION

National Planning Authority
Planning House
Plot 17A, Clement Hill Road
P. O. Box 21434
Kampala, Uganda

Ministry of Water & Environment
Plot 3 - 7 Kabalega Crescent Road, Luzira
P.O. Box 20026
Kampala, Uganda



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MINISTRY OF WATER
AND ENVIRONMENT



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