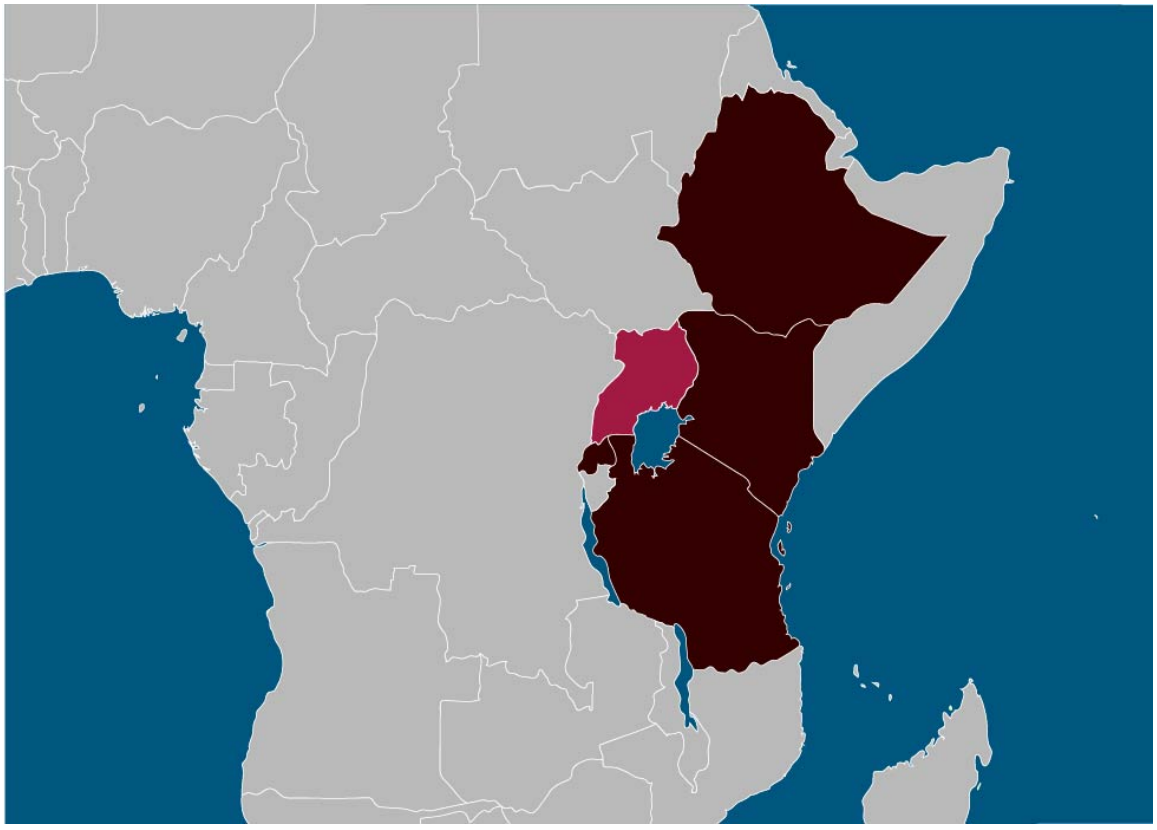

February 2023

Inclusive Green Economy Policy Review for Uganda

EfD | UGANDA

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PREFACE

In order to achieve Agenda 2030, we need to get the economic incentives right and make sure to leave no one behind. In other words, we need a transformation towards an inclusive green economy. Such transformation requires increased knowledge of, and capacity applies, policy instruments such as bans, taxes, fees, subsidies, permits, and refund-systems that generate incentives for an inclusive green economy. The Inclusive Green Economy (IGE) Program aims to strengthen country, and regional capacity of green economy transformation in Ethiopia, Kenya, Rwanda, Tanzania, and Uganda. The program is financed by the Swedish International Development Cooperation Agency (Sida) and is implemented by the University of Gothenburg and the Environment for Development Initiative (EfD) in collaboration with academic centers in the five East African countries. This Inclusive Green Economy Policy Review is a learning material co-created by the academic partners in the program and the program participants at governmental ministries and agencies.

The review aims to facilitate learning on priorities, challenges, and opportunities related to national green economy visions, strategies, and policy instruments in three important policy areas in the country and the region. The policy areas of fossil fuels, plastic pollution, and forest loss are chosen as they are of importance for an inclusive green economy in all five participating countries.

In short, the Inclusive Green Economy Policy Review:

- Gives an overview of the visions, strategies, and programs connected to IGE transformation and the organizational structure for their implementation.
- Describes the current use of policy instruments to reduce plastic pollution, forest loss, and the use of fossil fuels.
- Identifies the acceptance of policy instruments among the general public and different stakeholders, including public and private sector actors, as well as civil society organizations in the three policy areas.

The review provides a basis for critical analysis and dialogue on the current use of policy instruments and gaps in a transition to greener and more inclusive economies. Besides being a key component in the educational material used in the training program, the review also contributes to national and regional dialogues. The national dialogues facilitate in-country peer learning between the academic partners in the program and the program participants as well as with their colleagues.

The review is also used for cross-country learning where one country's group of program participants conduct an analytical review of a neighboring country's National Policy Review to facilitate cross-country peer learning. These cross-country peer learning reviews workshops aim to strengthen networks on IGE in East Africa.

Hence, this report should be read as a learning material, co-created between the academic partners and civil servants enrolled in the program. This means that this should not be referred to as a complete review of all IGE policies for these policy areas in this region and, has not been

through a quality review process. This is a document that gives a first overview with the aim of facilitating interesting discussions and learning between countries struggling with similar challenges in their work towards an inclusive green economy.

This policy review has been written by John Sseruyange (PhD), Edward Bbaale (PhD), Nicholas Kilimani (PhD) and Peter Babyenda from the EfD-Mak Centre, Uganda in collaboration with the following enrolled civil servants: Andrew Masaba from Ministry of Finance, Planning and Economic Development, Nathan Mununuzi from Ministry of Water and Environment, Fred Onyai from National Environment Management Authority, Daphne Babirye and Aaron Werikhe from Uganda National Planning Authority, Robert Lawrence Kyukyu and Ezra Ssebuwufu from Kampala Capital City Authority.

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List of Abbreviations

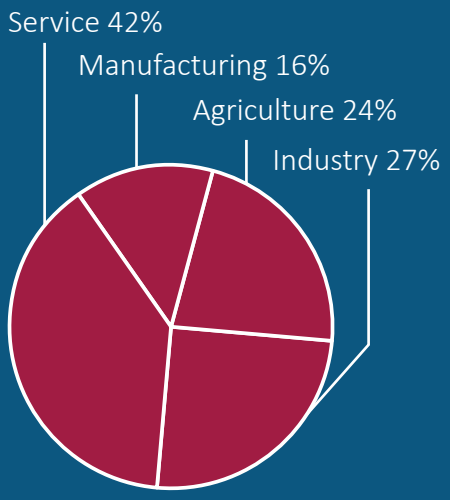
CRTT	Center for Research in Transportation Technologies
CSOs	Civil Society Organizations.
DFID	Department for International Development
EU	European Union
GIZ	Gesellschaft für Internationale Zusammenarbeit
GoU	Government of Uganda
KCCA	Kampala Capital City Authority
KMA	Kampala Metropolitan Area
LGs	Local Governments
MEMD	Ministry of Energy and Mineral Development
MOSTI	Ministry of Science, Technology and Innovation
MoFPED	Ministry of Finance, Planning and Economic Development
MoLHUD	Ministry of Lands, Housing and Urban Development
MSTI	Ministry of Science, Technology and Innovations
MWE	Ministry of Water and Environment
MoWT	Ministry of Works and Transport
NAPE	National Association of Professional Environmentalists
NDP	National Development Plan
NEMA	National Environment Management Authority
NFA	National Forestry Authority
NGOs	Non-Governmental Organizations
NPA	National Planning Authority
NTSCs	National Tree Seed Centers
PAs	Protected Areas
PSFU	Private Sector Foundation Uganda
UBLB	Uganda Business Licensing Bureau
UGGDS	Uganda Green Growth Development Strategy
UNCDF	United Nations Capital Development Fund
URA	Uganda Revenue Authority
USAID	United States Agency for International Development

Country Profile: Uganda

Size / Population density

241 038km2
221people/km2

Key sectors in the economy



Population / Growth

41,5M
3.2%

Life expectancy

F **65.0**
M **60.5**

Poverty rate

37%

Populations access to power

42%

GDP per capita

884USD

Rainfed / Irrigated agricultural land

R **99.9%**
I **0.1%**

Land area coverd in forest

29%

- SDG achievement
- Challenges remain
- Significant challenges remain
- Major challenges remain
- On track
- Moderatly increasing
- Stagnating
- Decreasing
- Data not available

CHAPTER 1: OVERVIEW OF IGE VISIONS STRATEGIES AND PROGRAMS

Uganda's journey to middle-income status is envisaged under Vision 2040 which takes into account all the 17 Sustainable Development Goals and other regional and global development agendas. The goal is to drive the country from a "predominantly peasant society to a modern prosperous country within 30 years". To deliver this Vision, Uganda plans to implement 6 National Development Plans (NDPs). So far, three NDPs have been implemented and the country has registered an annual average growth rate of about 6.5 percent over the decade preceding 2016 (World Bank, 2016).

Currently, the country is implementing its third five-year National Development Plan (NDP III, 2020/21 – 2024/25)[1]. This current development plan is aimed at achieving sustainable industrialization for inclusive growth, employment, and sustainable wealth creation. The country has also developed the Uganda Green Growth Development Strategy (2017/18 – 2030/31) to guide the country's progress toward inclusive green growth and sustainable development. It is hoped that pursuing a green growth path will help reverse the extent of tree cover loss, prevent the depletion of wildlife species and guide agricultural activities in a way that can lead to sustainable development. The strategy should ensure that the goals of the Vision 2040 and the National Development Plans are realized in a sustainable manner.

In Uganda's context, green growth is observed as an inclusive economic growth process that can lead to low emissions while ensuring effective and efficient use of the country's natural, human, and physical capital in a manner that benefits both the present and future generations. Precisely, the green growth strategy provides a guidance on priorities, strategies and governance structures that can help in implementing the green growth principles within the existing development frameworks that target sustainable development of the country. Specifically, the green growth strategy seeks to: 1) accelerate economic growth and raise per capita income through targeted investments in priority sectors; 2) achieve inclusive economic growth along with poverty reduction, improved human welfare, and employment creation; and 3) ensure that the social and economic transition is achieved through a low carbon development pathway that safeguards the integrity of the environment and natural resources.

In order to achieve the aforementioned objectives, the green growth strategy is focused on five key areas including 1) sustainable agriculture production with upgraded value chain, irrigation and integrated soil fertility management; 2) natural capital management and development with a focus on tourism development, sustainable forestry, wetlands, and optimal water resources management; 3) planned urbanization and development of green cities; 4) sustainable transport with a concentration on multi-modal transport systems; and 5) energy for green growth with increased emphasis on renewable energy investment.

The attainment of the Inclusive Green Economy (IGE) aspirations is guided by a number of strategies, programs, plans, and policy instruments which are implemented by a number of

[1] The NDPIII Plan is to be delivered through eighteen (18) development programmes. Summary is presented in Appendix 2.

institutions and stakeholders. In more specificity, Ministry of Finance, Planning and Economic Development is at the apex of financing all IGE interventions[2]. The actual implementation is mainly done by line ministries and agencies who are responsible for developing implementation guidelines that are passed to local governments or private sector players for executing of the planned intervention.

Over the years, a number of IGE interventions have been implemented in the country and some progress has been registered. For instance, poverty levels reduced from 19.7 percent in Financial Year 2015/2016 to 20.3 percent in 2020/2021 (UBOS, 2021) and there have been some improvements in human health evidenced by reduced infant mortality rate which currently stands at 43 deaths per 1000 live births (UBOS, 2020). Moreover, there is increased investment in the energy sector through solar power installation, subsidizing firms that produce energy saving stoves by the government and expanded electricity capacity of 550MW[3] to reduce on carbon emission in the country.

However, even in presence of all aforementioned actions for driving the country towards inclusive and green economic development, a number of challenges still befall Uganda's aspirations. Some of these include increased abuse of common property resources such as wetlands[4] and forest resources[5,] continued depletion of the natural resource base and the entire environment.

To counteract such challenges, a number of policy instruments have been implemented across the country to ensure that all economic development programmes take an inclusive and green path. In chapter 2, we present some policy instruments that have been implemented to affect this desired development path.

[2] Even, most donor funds are mainly passed through this ministry.

[3] See: Uganda Energy Situation Uganda Energy Situation - energypedia.info

[4] The cover of wetlands as a percentage of the total land area declined from 15.6 percent in 1994 to 8 percent in 2014 (UGGDS, 2017/18 –2030/31).

[5] Forest cover has reduced from 24% of the total land area registered in 1990 to 9% in 2015 (MWE, 2015).

CHAPTER 2: POLICY INSTRUMENTS IN SELECTED POLICY AREAS

In this chapter we review policy instruments to address challenges related to three critical policy areas for an inclusive green economy: fossil fuel use, plastic pollution, and forest loss. Important lessons can be learned from studying the implementation of different policy instruments to address these challenges in the East African countries. For each policy area, we first identify challenges to an inclusive green economy and then review the key policy instruments used to address these challenges.

2.1 Fossil Fuels

Although, the use of petroleum products seems to be on a declining trend, Uganda is still heavily relying on fossil fuels especially in its industry and transport sector (OECD, 2019)[6]. According to information obtained from Uganda Bureau of Statistics, the total imports of petroleum products stood at 2,198,739 cubic meters in year 2019 and 2,047,237 cubic meters in 2020. Looking at imports per product, the import volume of petrol reduced by 6.7 percent, diesel by 3.7 percent, Kerosene went down by 14.2 percent and Jet fuel reduced by 35.8 percent[7]. While the aforementioned statistics indicate declining trends in the importation of petroleum products, the country's reliance on it is likely to remain high. This is evidenced by the significant progress in exploration, development and production of the country's oil products. According to information obtained from Ministry of Energy and Mineral Development Annual Performance Report, (2020) the country's oil refinery has been developed to a tune of 20 percent while development of the oil export pipe line had reached 40 percent by closure of Financial Year 2019/20[8]. The implication for this is a possible increase in the future use of fossil fuels.

Energy related CO_2 emissions increased by 2.9% per year between 2007-2017, (OECD, 2019). That is equal to a decrease of 0.5 percent/capita. Diesel, the main fossil fuel used in the country, accounted for 2.6 percent in 2017, up from 2.3 percent in 2007. However, biofuels accounted for 95 percent of CO_2 emissions from energy use in 2017 (down from 96% in 2007). Non-combustible energy sources, mainly hydropower in Uganda, accounted for 1.4 percent of primary energy use in 2017, up from 0.8 percent in 2007 and by year 2020, only 42.1 percent of Uganda's population had access to electricity (World Bank, 2020)[9].

The use of fossil fuels also contributes to poor air quality in larger cities (NEMA, 2019), with Kampala city ranking 5th of the most polluted cities in the world (see IQAir, 2020). Ministry of Energy and Mineral Development (MEMD) is committed to replacing fossil fuel with a goal of reducing carbon emissions and also, protect the environment with alternative energy sources

6 https://www.oecd.org/tax/tax-policy/taxing-energy-use-uganda.pdf
7 See Statistical Abstracts, 2021, pg 82. UBOS Statistical Abstract 2021 | Ministry of Health Knowledge Management Portal
8 See: https://energyandminerals.go.ug/wp-content/uploads/2020/07/sector_performance_report_2020.pdf
9 Information obtained from World Bank Global Electrification Database, Access to electricity (% of population) - Uganda | Data (worldbank.org)

most especially the renewable energies[10]. This is aimed at reducing air pollution as well as protecting of the environment.

2.1.1 Policy Instruments to reduce fossil fuel

In this section we review policy instruments for reducing fossil fuel. Although our interest was to review all instruments, evidence on right-based instruments was largely lacking. As such, we reviewed the implemented price-based, regulatory and information-based instruments. A summary of such instruments is presented in table 1 and detailed information on the same is presented in appendix 2.

Table 1: Policy instruments to reduce the use of fossil fuel

Price-based	Right-based	Regulatory	Information-based
Subsidising the manufacturing of electric vehicles Environmental levy on vehicles and machinery Parking fees in city centres Subsidising solar Energy Subsidizing electricity grid connection Excise duty on petrol and diesel fuels A subsidy of Liquefied Petroleum Gas		A ban on the import of old vehicles Restricting automobile pathways in Kampala	Information Encouraging people to use public transport

Source: Adapted from Sterner et al. (2019)

[10] For example, over a period 2015 to 2030, Uganda is focused on increasing the capacity of renewable energy through generating of 756.8 MW of hydro, 25 MW of Baggase power (SCOUL Bagasse Plant), 20 MW of Solar power (Xsabo Nkoge Solar), and 20 MW of Wind power at Rupa Wind Power (MWE, 2022).

A ban on the import of old vehicles

Between, 2012 and 2018, the vehicle fleet in the country nearly doubled from 739,036 to 1,355,090. In a similar way, the number of motorcycles also increased sharply from 354,000 in 2010 to over a million by 2018 (Anna et al., 2021). Of the motorcycles, close to forty percent are 8 years+ old while close to eighty percent of the imported vehicles are 8 years and above (MoWT, 2019; URA, 2018). The old automobiles that characterize the Uganda's road transport sector have considerably contributed to air pollution (NEMA, 2019). As a response to this environmental challenge, the government implemented a ban on the import of vehicles aged 15 years and above. The ban is intended to protect the environment and safeguard the population against the dangers resulting from air pollution. Introduced in 2018, the ban is still in its implementation stages and is spearheaded by the country's tax body, the URA, and monitored by the Ministry of Works and Transport.

This instrument is regulatory in nature and defines a given category of the motor vehicles that cannot be imported into the country. While the instrument targets vehicle importers, it affects sellers/distributors of such old vehicles, internal dealers and those who were importing and exporting them to neighboring countries like South Sudan through Uganda. The ban also affects local buyers of such cars i.e. buyers who cannot afford the price of newer vehicles. Further, vehicle mechanics (repairers) potentially lose some jobs due to the ban, given that, the probability of vehicle breakdown and repair is higher with older vehicles than new ones. Besides, the ban on import of old vehicles there is also a high tax on brand new vehicles[11]. This has two implications: (1) people already owning old vehicles have continued driving them beyond their residual value[12] and (2) increased reselling of old vehicles amongst the low- income sections of the population.
Some environmental activists argue that the ban on the import of old vehicles was mainly aimed at boosting revenue collections through the high tax on new vehicles rather than an environmental protection tool. Presently, there is no evaluation that has been conducted to check how the ban has impacted on carbon emissions in the country.

Excise duty on petrol and diesel fuels

Although this excise duty is levied mainly to raise tax revenue, it has an impact on reducing carbon emissions through altering the price. Data obtained from the UBOS (Statistical Abstract for year 2021) shows a 7.0 percent decrease in purchase of petroleum products in Calendar Year (CY) 2020 when compared to CY 2019. Specifically, a total of 2.068 billion liters of selected petroleum products were sold in CY2020 compared to 2.224 billion liters of sales in CY2019. This tax is implemented by Uganda Revenue Authority (URA) but affects automobile owners, petroleum dealers, and industrialists who rely on petroleum products for energy, and transporters.

Subsidizing the manufacturing of electric vehicles

The Ugandan government has subsidized the manufacturing of electric vehicles (cars and buses) at the Kiira Motor Corporation. The manufacturing plant received financial assistance through the Presidential Initiative Fund for Science and Technology Innovations in 2010 to support the

[11] 25% Import Duty, 18% VAT, 6% Withholding Tax, and 20% Environmental levy based on the Cost Insurance & Freight Tax Invoices, Year of Car Manufacture, and the Capacity of the Engine Consumption plus Infrastructure Levy, and Car Registration Fees.

[12] This is evidenced by the high number of old vehicles doing business during night hours to avoid traffic laws.

construction of Kiira Electric Vehicles (EV) in 2011. The plant also received 100 acres of land to allow for plant construction. The first Electric Hybrid Vehicle (Kiira EV SMACK) was completed and unveiled in 2014 and the first Solar bus (KAYOORA) was launched in 2016. By September 2022, Kiira Motors had produced 6 electric buses with passenger capacity of 90[13].

Restricting automobile pathways in Kampala

Kampala is heavily congested with a daytime population of about 3.5 million people and about 1.5 million during the night. With traffic congestion, absence of a proper traffic management strategy, and limited parking space in the city, it forces some motorists to park by the roadside. In 2018, a Non-Motorized Transport (NMT) corridor was constructed in Kampala as a way to decrease emissions and noises from motor vehicles and to ensure a safe space for pedestrians in the Central Business District (KCCA, 2021)[14]. The establishment of the walkways and their monitoring is done by the Kampala Capital City Authority (KCCA). According to the City Authority, the NMT corridor has improved mobility of the low-income earners, improved access to services and also reduced pollution in the area (KCCA, 2021). However, the MNT corridor has not operated as intended as it is still congested with many road side sellers, vehicles and motorbike riders[15]. The Possible explanation for such conflicting use of the NMT is the poor coordination of the user rights on the NMT corridor between the City Authority and different government agencies. For instance, the traffic police has not sufficiently enforced the traffic laws to protect the corridor from motor vehicles.

Environmental levy on vehicles and machinery

There is a 35 percent environmental levy on the custom value of used cars and machines aged 5 – 10 years of the importing date. The levy extends to 50 percent if the cars and machines are 10 years+ old. This levy was introduced in FY 2015/2016 with the aim of protecting the county from harmful products that can increase on the level of carbon emissions and environmental destruction. This tax is levied on items at custom posts. It is calculated basing on the sum of the cost of the item, insurance and freight[16]. The environmental levy generated over Uganda Shillings 62 billion in FY 2021/2022. The revenue goes into the general budget, which has been contested by the National Environment Management Authority which claims that the levy should be earmarked for environmental purposes[17]. Additionally, vehicle importers and factory owners using old machinery are opposed to the levy. There is no evidence on the effect of the levy on air-pollution.

Information encouraging people to use public transport

To decrease congestion, air-pollution and noise in Kampala, many government agencies including KCCA, NEMA and Ministry of Works and Transport (MOWT), have via information

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[13] According to information obtained from Kayoola Ev Boasts Of Increasing Passenger Numbers » Business Focus

[14] The corridor stretches from Namirembe road through to Luwum Street to Entebbe Road. IMPLEMENTING THE NMT - KAMPALA.pdf (kcca.go.ug)

[15] See *see Pictorial: Pedestrians, Motorists Compete for Space on Non-Motorised Transport Corridor: Uganda Radionetwork*

[16] See Taxation Handbook 4th Edition 2022_10.02.2022.pdf (ura.go.ug)

[17] See Remittance of Environmental levy to Consolidated Fund unconstitutional - MPs | Parliament of Uganda)

encouraged people to use public transport especially buses and taxi. To emphasise the need for reducing congestion and carbon emissions from cars, a number of bus companies like Pioneer Easy Bus, and Awakuula Enuume have been licenced to operate in the Kampala Metropolitan Area (KMA)[18]. Moreover, parking fees were also introduced in the city centre as a way of raising revenue and discouraging people to move with their private cars to the city center. This tool mainly affects private car owners and with licencing of buses, taxis operators are also affected. Evidence on the effectiveness of this this tool is still lacking.

Parking fees in city centres

Uganda's cities are also the epi-centers of the country business activities. As results, those cities Experience heavy congested especially during business hours. As a counteracting measure to congestion, a number of local authorities introduced parking fees along the streets. The fees are mostly charged per hour forcing some potential private drivers to leave their vehicles outside the city. By, implication, this indirectly contributes to carbon emission reduction.

Subsidising solar energy

By year 2020, only 42 percent of Uganda's population had access to electricity, with 33 percent of the rural population enjoying its benefits (World BANK, 2020). This means over 24 million people lack access to power. As such, households that cannot access power mostly rely on kerosene lamps, torches and off-grid solar power.

The government of Uganda, in the 10-year Rural Electrification Strategy and Plan (RESP) 2013-2022, targeted to increase access to electricity in rural areas to 26% by 2022, a target that seem to be realized. The expansion of rural electrification is driven by on-grid connections and off-grid solar connections. These interventions have been heavily supported by the Government of Uganda (GoU) and its development partners[19].

With the desire to expand the use of renewable energy, the GoU implemented a 45 percent subsidy on solar panels purposely to extend the use of solar energy in rural areas as another avenue for supporting the rural electrification programs. This subsidy was implemented in 2007 as a price-based policy instrument to support solar energy uptake. For purposes of speeding up the uptake of solar power, different models of solar purchase have been adopted. These include:

- Direct sale/purchase of solar panels from private dealers,
- Sale of solar panels through banks and microfinance institutions following credit schemes
- Some buyers have accessed solar panels through on-line purchases where they pay for their solar charges on say daily/weekly/monthly basis till the total cost of the solar panel is met.

This instrument is supported by a number of players including the GoU, foreign donors, private sector players e.g. banking and microfinance institutions. The main beneficiaries are households

[18] The use of buses by the public in the KMA has not been successful due to absence of bus lanes in cities. Precisely, there is no incentive for using buses in relation to traffic congestion.

[19] E.g. European Union (EU), Department for International Development (DFID), World Bank, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), UNCDF and United States Agency for International Development (USAID).

with no access to on-grid connections especially in rural areas, while the sellers of kerosene are facing decreased demand for their products. The subsidy on solar panels has contributed caused an increase in the number of households having access to solar panels across the country and more importantly in the rural areas. By year 2018, a total of 30,000 households had received solar PV and by year 2021, 62MW had been installed by the government through its programme of establishing solar generation stations especially in rural areas[20].

A subsidy of Liquefied Petroleum Gas

This instrument was implemented in 2022 with an aim of increasing the uptake of clean cooking technology (LPGs). The beneficiary is required to pay UGX. 100,000 for a 25kg LPG full of gas cylinder. This instrument is implemented by Ministry of Energy and Mineral Development. Although, the instrument targets all Ugandans, the LPGs are mainly supplied on the principle of first come first serve.

Subsidizing electricity grid connection

With the desire to expand electricity transmission especially in rural areas, UMEME Limited reduced the cost of inspection for connection to the grid from UGX 650,000 to UGX 20,000[21]. The extra cost was to be met by the GoU. This price-based instrument was intended to reduce the costs faced by households especially in rural areas to access electricity. The tool was first implemented in 2018 to run through 2020 but, it was recently extended by parliament to run through 2025. This tool is implemented by UMEME and monitored by UETCL and REA. However, the tool seems to be affecting the sellers of solar panels and kerosene dealers. In 2020, over 700,000 households connected to the grid through this program[22].

2.2 Plastic Pollution

One of the key challenges facing Uganda in its endeavour to have proper environmental management is plastic pollution mainly resulting from plastic disposal. Plastics have multiple uses. They are used by manufacturers as packaging containers while households mainly use them as carrier containers, building material or even materials for providing better drying places especially among farm households. However, it has been observed by various scholars that plastics are one of the key drivers of environmental ruin in the country (see Komakech et al., 2014; Mukama et al., 2016). This is especially so due to the increase in the use of single-use plastic bags. Plastics block drainage systems[23] and also cause water percolation resulting into floods and reduced agricultural production since they block the penetration of roots into the ground. Plastics are also toxic pollutants that damage the environment and cause land, water, and water pollution.

Although immense effort has been invested into collection of plastics for recycling in the country, efforts from the government in support of recycling is largely lacking. Recycling of plastics is mainly done by private firms. The dynamics of plastic recycling range from

[20] See Installed_Electricity_Capacity_in_MW_2014_2021.xls (live.com)
[21] Implying a connection subsidy of 96.9 percent to increase the rate of grid connection.
[22] REA Performance - RURAL ELECTRIFICATION AGENCY
[23] Appendix 4 shows the image of a blocked drainage systems by plastics.

waste pickers loading the plastics into separate bags and selling them to waste dealers located on the roadside en-route to the Kiteezi landfill, the only landfill serving Kampala and its suburbs. The problem of solid waste accumulation at the landfill continues to rise day by day, yet, seemingly, recycling activity in Uganda especially Kampala is still happening on a small scale. However, putting aside recycling, a number of other policy instruments have been implemented to reduce plastic pollution with the objective of reducing on environmental damage resulting from plastic disposal. The key policy instruments are discussed in the following section.

2.2.1 Policy Instruments to reduce plastic pollution[24]

This section presents the policy instruments for reducing plastic pollution. We primarily reviewed price-based, regulatory and information-based instruments[25]. We start by providing a summary of these instruments in table 2[26] and then provide a detailed discussion of the same instruments.

Table 2: Policy instruments to reduce plastic pollution

Price-based	Right-based	Regulatory	Information-based
Plastic tax		Ban on the use, sale, and manufacture of polythene bags < 30 Microns	Campaigns against production and use of plastics and poor dumping behaviours

Source: Adapted from Sterner et al. (2019)

Ban on the use, sale, and manufacture of polythene bags < 30 Microns[27]

This is a regulatory policy instrument that was implemented by the GoU in 2009 in order to protect the environment and natural resources in the country. The ban came as a result of the effects of polythene bags (locally known as "Kaveera") to the environment and natural resources across the country. The decision to ban such bags was also triggered by the repetitive information the government had collected pointing to reduced water quality resulting from plastics. Evidence pointing to the dangers of polythene blocking water channels both in urban and rural towns was voluminous at the time of implementing of the ban. More so, plastic were considered as substance that hamper the smooth water filtration and its percolation into the soil and releasing of dangerous fumes into the air when burnt. It was also observed that many food vendors were wrapping food stuffs in polythene which also threatened human lives.

A ban on polythene bags targets a number of players including consumers (those who use plastic bags as carrier bags), manufacturers and sellers and also importers of plastics. Although this ban was implemented, it does not stop the use, sale or manufacture of all polythene bags, but rather the tool targets bags that are 30 microns and less. The implementation and enforcement of the ban is a responsibility of different government agencies. However, the National Environment

[24] For a summary of policy instruments aimed at reducing plastic pollution, see appendix 5.
[25] Information on right-based instruments was lacking.
[26] For extended presentation of these instruments, see appendix 5.
[27] National Environment Act, 2019.

Management Authority (NEMA) is the supreme mandated institution to ensure the execution of the ban. NEMA is supported by Uganda National Bureau of Standards (UNBS) which is mandated to inspect and certify products to ensure that standards are met especially by manufacturers. In relation to monitoring, UNBS is supported by Uganda police and Local Government Authorities.
Although, the ban was welcomed by many environmental activists across the country e.g. the National Association of Professional Environmentalists (NAPE) and the general public, the government has still failed to implement it due to conflicting interests producers and government. At times, politicians as well as manufacturers have been accused of interfering with the mandates of NEMA when implementing the ban and as such, firms are still continuing to produce the < 30-micron polythene bags. Data extracted from the Statistical Abstract, 2021 produced by UBOS indicates that production index (2002 = 100) of plastics has been on a rising trending moving from 262.7 in 2016 to 326.5 in 2019 only to reduce to 29.6.3 in 2020 possibly due Covid-19 disruptions.

Plastic tax[28]

This is an excise duty that is levied on plastics. Although levying a plastic tax can reduce the use of plastics resulting in environmental gains, a 2.5 percent or US$ 70 per ton excise duty on plastic products and plastic granules (charged on the basis of whichever is higher) is mainly levied to increase the country's revenue collection. This tax was implemented in July, 2022. The tax is levied on manufacturers, and it is hoped to affect the price of plastics. On the negative side, evidence shows there are still large volumes of plastics produced in the country. During the stakeholders' workshops[29], participants raised a concern that the tax is too low to affect demand. Besides, excessive production and overuse of plastics, large amounts are poorly dumped causing high environmental damages. This instrument is implemented by Uganda Revenue Authority (URA) and monitored by MoFPED but has received considerable objection from manufacturers as they claim plastics especially bags are key ingredients in their operations.

Campaigns against production and use of plastics and poor dumping behaviours

Although Uganda lacks a clear regulation that targets manufacturing and use of all plastics (except a ban on the use, manufacture and sale of <30-micron polythene bags) many government institutions especially NEMA and MWE have continuously campaigned against the use and dumping of plastics in the country. These have been joined by Civil Society Organisations (CSOs), Non-Governmental Organisations (NGOs), and environmental activists among others. These campaigns mostly contain information relating to the dangers of plastics use and poor plastic disposal methods. The Uganda National Urban Policy, (2017) shows that 36 percent of the Uganda's solid wastes is disposed in open dump places, 32 percent as heaps in drainage and on streets, 13 percent in gardens and 19 percent in pits[30]. Such disposal approaches have far

[28] Uganda - Corporate - Other taxes (pwc.com)

[29] Stakeholder workshops are organized to gather input from policy makers, academicians, researchers, programme participants and other stakeholders. During these workshops, a draft is presented and participates provide their input into this final document.

[30] See the Uganda National Urban Policy, 2017, National-Urban-Policy-2017-printed-copy.pdf

reaching effects to the environment and natural resources. Campaigns are commonly conducted on various media platforms[31].

2.3 Forest Loss

Although Uganda is empowered with vast forest resources characterized by different tree species and voluminous vegetation species, the country has over years experienced a decline in its stock of forests. Between the period 1990 and 2015, the country registered an average loss of forest cover amounting to 122,000 hectares/year. The greatest loss averaged 250,000 hectares between 2005 and 2010. The key causes of forest loss include the high demand for biomass energy including firewood and charcoal. The National Planning Authority showed that over 85 percent of the Uganda's population uses firewood and 13 percent use charcoal for cooking (NPA, 2020). This provides evidence of the continued depletion of trees to support household energy demands. The alternative energy sources e.g., hydro power and solar energy seem to be unattainable especially by the poor houses. There is limited accessibility to electricity in the country and even worse in rural areas and to the poor. The estimated access to electricity rural areas stood at 32.8 by year 2020 (World Bank, 2020)[32].

Even though the National Forestry Authority (NFA) has planted an average of 7,000 hectares/year for a period of 15 years preceding year 2016 (MWE, 2016), the rate of tree cover depletion seems to outweigh its regeneration potential. As such, a number of policy instruments have been implemented to reduce on the rate of forest cover loss and also revamp the country's forest cover. These policy instruments can be categorized into economic (price-based) instruments and non-economic policy instruments. We start by presenting a discussion on the economic instruments and end the discussion with non-economic instruments[33].

2.3.1 Policy Instruments to reduce forest loss

In this section, we mainly focus our discussion on price-based instruments but end with a brief look at other instruments under a header "Other policy instruments to reduce forest loss". Table 3 presents a summary of such instruments and a detailed presentation of the same in presented in appendix 5.

[31] For example, while speaking to The Independent — one of the newspapers in the country, the Executive Director, National Environment Management Authority Dr. Barirega Akankwasah pointed it out that NEMA embarked on sensitization campaigns against single use plastics (see Plastic pollution worries NEMA (independent.co.ug)

[32] Access to electricity, rural (% of rural population) - Uganda | Data (worldbank.org)

[33] For a summary of policy instruments for reducing forest loss, refer to appendix 5.

Table 3: Policy instruments to reduce forest loss

Price-based	Right-based	Regulatory	Information-based
Subsiding firms that produce clean and energy saving stoves License and license fee for harvesting forest products Payment for eco-system services Subsidizing agricultural inputs through an E-voucher payment system Subsidizing micro scale irrigation		Evicting of encroachers from public forest reserves Travel permits for forest products Re-surveying and demarcating of government forest reserves	Campaigns against tree cutting

Subsiding firms that produce clean and energy saving stoves

Demand for biomass energy has been cited as one of the leading causes of forest cover loss in Uganda. Evidence shows that over 85 percent of the Uganda's population uses firewood while 13 percent relies on charcoal for cooking (NPA, 2020). This has resulted into increased forest clearance as well as increased Household Air Pollution (HAP) which is estimated to significantly impact on health of over 20 million people with over 13,000 deaths every year. Health complications (especially cough and fever) are mostly common among children (see Buyinza et al., 2021).

For purposes of counteracting the effects associated with the use of biomass fuels, the government implemented a Uganda Clean Cooking Supply Chain Expansion Project which (from 2016 extending to 2020) was funded by a World Bank grant to a tune of 2.2 million USD. The project aimed to reduce both i) the economic burden on households and ii) the negative impacts on the environment resulting from the inefficient use of solid biomass fuels for cooking. This intervention involved subsidizing energy saving stove producing firms so as to foster sales and

adoption of cleaner and more efficient cooking technologies[34]. By description, this intervention is a price-based instrument.

This intervention was implemented by Private Sector Foundation Uganda (PSFU) in collaboration with the Ministry of Energy and Mineral Development (MEMD). Ministry of Finance, Planning and Economic Development (MoFPED) was responsible for monitoring. The instrument affected energy saving stoves producers, but seem to have affected wood fuel dealers e.g. charcoal and firewood sellers and households that use wood fuels for cooking.

License and license fee for harvesting forest products

Anchored in the National Forestry and Tree Planting Act, (2003), NFA requires all tree harvesters to obtain a license. The forest harvest licence is aimed at achieving a sustainable forest management regime with zero tolerance to illegal tree cutting. According to information obtained from the Uganda Business Licensing Burial (UBLB) website[35], the validity of the licence is defined basing on the volume of the harvest. To ensure sustainability of the harvest licence, UBLB introduced a licence fee which is charged basing on the bidding process. The licence is renewable with a renewal fee similarly determined as the licence fee. This instrument is supported by environmental activist and the Ministry of Water and Environment, NEMA but strongly opposed by forest harvest dealers whose arguments point to delays in acquiring of those licenses.

Payment for eco-system services

This policy instrument was introduced in 2001 to improve the degree the transparency in forest management and also, increase the real values of forest resources. Users of the eco-system services are required to pay a specified fee to make use of the services. This payment is implemented by ministry of Water and Environment and is supported by a number of environmental activists. The payment is focused on the use of forest reserves, wetlands and the atmosphere.

Subsidizing agricultural inputs through an E-voucher payment system

Introduced in 2017 by the government, the E-voucher payment system invites farmers to pay a given amount to top-up the voucher value provided by the government. The voucher allows the bearer to access farm inputs that equal the voucher value from selected input suppliers for specific agricultural commodities. This subsidy is aimed at supporting farmers to access better quality farm inputs and also lower their production costs. It is one of the packages for transiting farmers from subsistence to commercial production. The E-voucher payment is implemented through the Ministry of Agriculture, Animal Industry and Fisheries and mainly benefits farmers.

Subsidizing micro scale irrigation[36]

Just like the E-voucher system discussed above, subsidizing of micro irrigation pauses a direct effect on agriculture. However, due to composition this instrument, it is bound to cause an effect of the stock of forests. First, the subsidy is capped at supporting farmers operation to a maximum

[34] According to the project Implementation Completion Report obtained from the Private Sector Foundation Uganda, 2020 showed a total of 72,535 stoves had been sold by the subsidized firms.

[35] eRegistry:Licenses (businesslicences.go.ug)

[36] See Micro Scale Irrigation Program | UgIFT (finance.go.ug)

size of 2.5 acres (1 hectare). The implication for this is that the subsidy mainly benefits smallholder farmers to transit from subsistence to commercial agriculture. However, many smallholder farmers cannot pump water for long distance. As such, farmers seem to increasingly extend to forested areas especially situated near wetlands.

Second, the subsidy depends on the nature of the farm (closeness to a water source, the terrain of the land, soil suitability, acreage to be irrigated, etc.) and the varying prices of irrigation equipment. The government provides a top-up ranging between 25% and 75% of the total cost of the irrigation equipment, but with a maximum contribution of UGX. 7.2 million/acre. This instrument is benefiting smallholder farmers but has created some dissatisfaction from medium and large-scale farmers. During the stakeholder workshops, participants argued that the subsidy is discriminatory in nature and is likely to yield less effect from farm production given that farmers need other forms of farm technologies like agro-chemicals that support production.

Other policy instruments to reduce forest loss

Besides, the price-based instruments discussed in the preceding section, the government through NFA introduced travel permits on forest products. The travel permits are intended to reduce on the unlawful forest encroachers. Further, NFA embarked on re-surveying and demarcating of government forest reserves. For years, there has been increasing rates of encroachment to forest reserves by farmers claiming that forested areas are quite fertile. As such, protecting of the forest cover aims to conserve biodiversity and various ecological services (MWE, 2013). Further, the government has also implemented eviction programs through NFA with the help of Ministry of Lands, Housing and Urban Development (MoLHUD), MWE and other government security agencies. This eviction program covers forest reserves and wetlands — all summed up as Protected Areas (PAs)[37]. In 2020 alone, over 200 land titles which had been allocated in PAs were cancelled in the districts of Mukono and Wakiso. Evictions have also been implemented in the districts of Kibale and Mubende. The key victims of eviction are the evictees who lose property in form of crops or even sale their animals (due to lack of grazing space) after eviction (NFA, 2011). Evidence also shows that some victims have been faced with double eviction (evicted and settled in another place and after some time evicted again indicating poor eviction plans). It has also been observed that many evictees tend to return to PAs after a period of time. This is attributed to poor monitoring systems.[38] Lastly, many government agencies like NFA and MWE, civil society, and NGOs have continuously campaigned against tree cutting. Many of these campaigns target government officials and the government itself.

[37] See Enchroachers Evicted from Protected Areas: A Mere Fuss or The Real Deal? | Greenwatch

[38] The National Forestry and Tree Planting Act, 2003 also provides that forests are only cut or removed after securing a harvest license (see 2003_Act 8 (nfa.go.ug). Moreover, dealers in forest products like firewood and charcoal are required to acquire a travel permit from Local Governments (LGs). These permits are aimed at checking on the illegal dealers and also to raise revenues to LGs.

CHAPTER 3: PUBLIC ACCEPTANCE OF POLICY INSTRUMENTS

An important component contributing to an effective introduction and implementation of environmental policy instruments is the extent of public acceptance to such instruments. From a normative democratic perspective, it is desirable that policies are in line with people's preferences. But there are also practical reasons for why public acceptance is important.

There are several examples from all over the world, when we have seen protests in connection to the introduction of new reforms or policy instruments. This can be from certain interest groups (e.g., plastic bag producers opposing a ban on plastic bags) or from the general public protesting against increased fuel prices (due to for example reduced subsidies or increased carbon taxes). Some recent examples from East Africa are the introduction of a 16% tax on fuel products in Kenya prompted strikes and protest across the country and stakeholders from the private sector protested against changing the ban on import of older vehicles from 8 to 5 years[39]. In July 2022, police in Uganda fired teargas and arrested more than 40 people who participated in large protest over increased fuel prices and refusal by government to cut taxes on cooking oil and fuel[40]. These examples illustrate the need to enact policies that have wide public acceptance and support, since politicians will be reluctant to introducing policies and people are less likely to comply.

While carbon pricing is often recommended by economist as a way to reduce the use of fossil fuels, such policies often receive low support from the general public, compared to other policy instruments (Davidovic & Harring, 2020). Higher prices on fossil fuels imply higher costs for most households. People are likely to dislike policies that affect them or their group negatively and perceive such policies to be unfair. However, research has shown that there are also other individual level factors or qualities that influence people's attitudes to climate and environmental policy instruments (Harring, 2021). For example, factors linked to people's beliefs or values, such as a *concern* for environmental degradation is positively linked to policy instrument support[41]. Another factor is *trust* or confidence in public agencies. People are simply less likely to support the introduction of policy instruments if they believe that the responsible public institutions are not competent, motivated or have sufficient resources to do their job. Previous studies have shown that *trust* in public institutions is particularly important for accepting or supporting economic[42] instruments (e.g., taxes and fees) (Harring 2014; Davidovic & Harring 2020).

There are few studies of public acceptance of climate or environmental policy instruments from the Global South in general and from Africa in particular (Bergquist et al., 2022). In a unique survey we have investigated the general acceptance for several policy instruments in Uganda. The results are accounted for below.

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[39] See Kenya Used Car Importation Age Changes Leading to Limitations of Car Imports into Kenya (auto-kenya.com), Facebook; Kenya's used vehicle dealers protest - The Citizen

[40] In September, 2022, there were cases of protects against a 40 percent increment of tax on imported polymer bags like polythene and sacks (see Plastic collectors protest Museveni tax increment on imported kaveera (independent.co.ug)

[41] In September, 2019 over 1000 youths protected across the country over land, forest and wetland degradation.

[42] Acceptance is a passive evaluative response to a policy, and public support is an active evaluation of a policy, for example linked to behavior (e.g., voting in favor of a policy) (Kyselá et al., 2019).

3.1 Survey on Acceptance of Policy Instruments

In the following sections we present the survey results for Uganda from two surveys on acceptance towards the use of price-based and regulatory-based policy instruments within the three thematic areas we have presented earlier i.e., fossil fuels, plastic pollution and forest loss.

The first survey was conducted via telephone to the general public in Ethiopia, Kenya, Uganda, Rwanda and Tanzania in March, 2022. In total, 5078 adults responded to the survey across the five countries, with approximately 1000 respondents in both urban and rural areas in each country. In the case of Uganda, the total number of respondents was1 010. This data is a good representation of the population characteristics in Uganda, in terms of gender and area of residence. However, data indicates relatively large number of older respondents with tertiary education as compared to population data. This is so because during data collection older people with relatively high education had a higher willingness to participate in the survey[43].

The second survey targeted stakeholders within public sector, civil society, academia, and private sector. The stakeholders were selected for their knowledge within the three thematic areas, and the survey was carried out during workshops (organized to deliberate on the thematic areas) in each of the five countries[44]. The survey was responded to individually at the beginning of each workshop. In total, 249 respondents ranging between 36-65 respondents in each country participated in the survey. In Uganda the number of respondents in stakeholders' category was 65 (52% from public sector, 28% from academia, 11% from civil society and 9% from private sector).

3.1.1. Acceptance of Policy Instrument affecting Fossil Fuels

In the surveys we asked our respondents about their opinion on the a potential policy instrument and the already implemented policy instruments to deal with the negative consequences (destruction of the environment and air quality) of fossil fuel usage in Uganda (focus was put on petrol, diesel, gas, kerosene and coal). The respondents' opinions were tested on the following three policy instruments:

- Decreasing the quantity of fossil fuels by regulating the amount households can buy
- Increasing the prices of fossil fuels by introducing a tax
- Increasing the prices of fossil fuels by reducing subsidies

The responses are presented in figure 1. The results in the figure show a stronger opinion against the policy instruments. In more specificity, 44-52% are strongly or somewhat against the policy instruments. These results seem not strange because they have a direct impact on fuel consumption yet the country's transport and industrial sector greatly relies on fuel for energy (see taxing-energy-use-uganda.pdf (oecd.org). Additionally, the results in figure 1 also show 40-

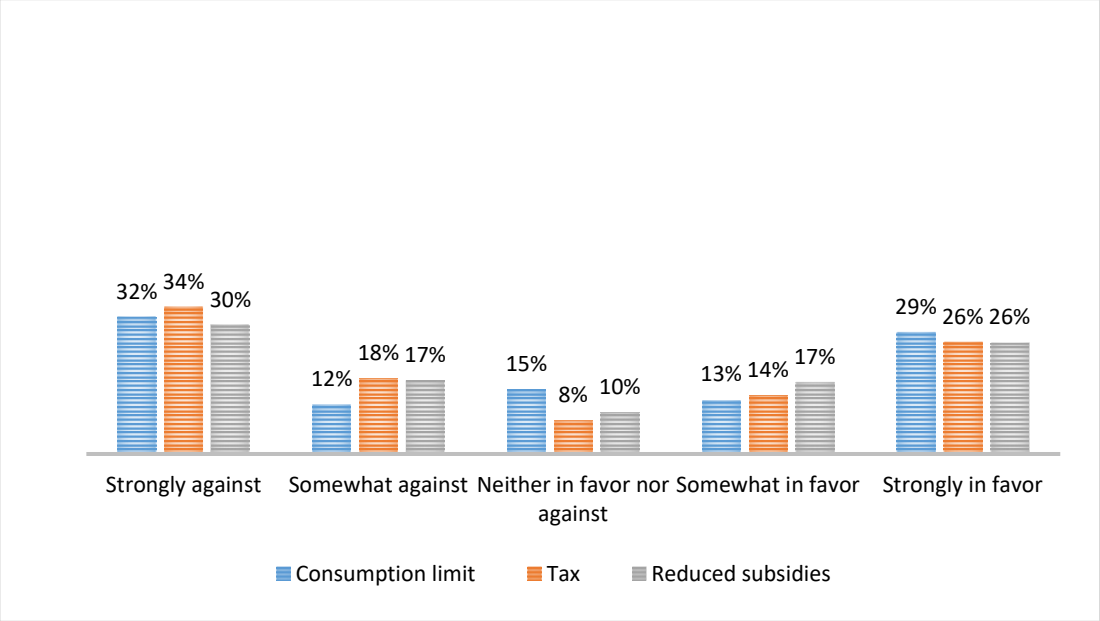
[43] We have conducted statistical test on the population sample (Kruskal-Wallis) to confirm statistically significant differences between the distributions of responses per policy instrument. This has not been done for the stakeholder survey, due to the low sample size.

[44] Workshops were organized in July and August, 2022.

43% of the respondents are somewhat or strongly in favor of the policy instruments. Further, there is no clear preference between the three instruments, though, taxes seems to be slightly less preferred.

In trying to understand whether people's perceptions change when fossil fuel taxes are imposed or subsidies on fossil fuels are reduced with proceeds invested in service provision (e.g. education, infrastructure, environment programs or social programs targeting the poorest households in society). The results show a change the respondents' opinions. The acceptance for a tax or reduced subsidy increased from 40-43% (without specified revenue use) to 83-86% when the proceeds from either of the instrument are specified[45]. This result supports Akpo, (2009), who argues that citizens are more likely to be reluctant to meeting their tax obligation if there is unequal provision of public amenities.

Figure 1 General population's acceptance of the 3 policy instruments for reducing fossil fuel



Notes: (1) The figure is constructed from survey data collected from the general population. It excludes data on stakeholders. (2) The +/-1 in percentage totals for some instruments is a result of approximation. (3) Observations = 1010.

In addition to the question on general fossil fuel use, we also asked about the opinions concerning a decrease in the price on cooking gas (i.e. Liquid Petroleum Gas—LPG) through introduction of a subsidy. The acceptance of this subsidy was strong (82% of the respondents reporting somewhat strongly in favor and 66% strongly in favor) compared to the three instruments discussed above.

Stakeholders' perceptions on limiting consumption or imposing of a tax or reducing of a subsidy on fossil fuels

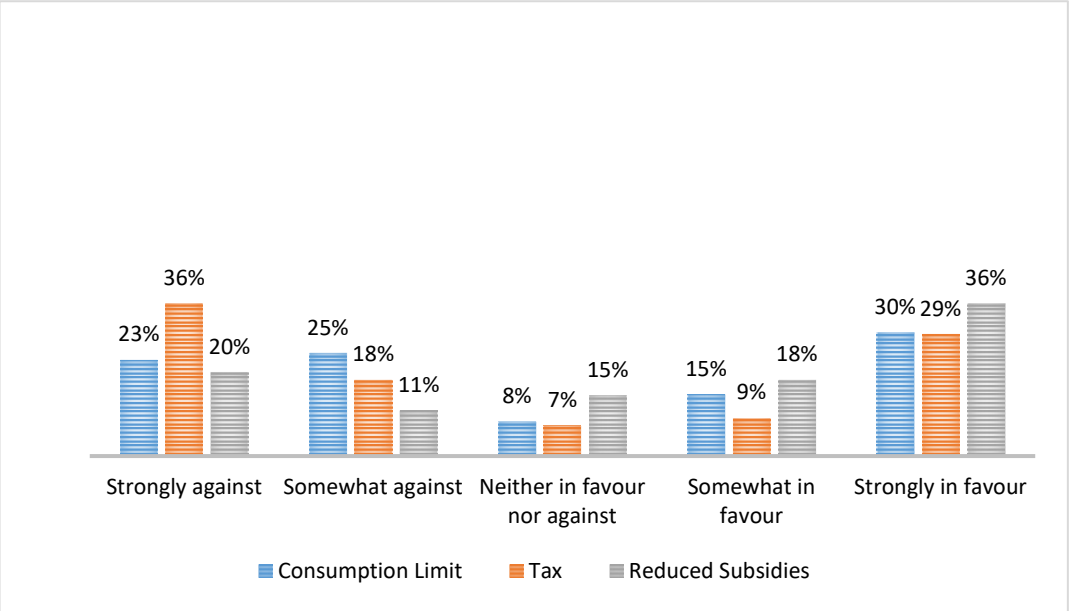
Stakeholders explained above were also subjected to similar questions as the general public on fossil fuels. The results (Figure 2) show a low acceptance for a tax (54%[46]), followed by consumption limiting (at 48% —23% strongly against and 25 somewhat against). Still, we observe

[45] Results are available upon request.

[46] Constructed as a sum of somewhat or strongly against the instrument

more preference for reducing subsidies on fossil fuels (54%) compared to limiting consumption or imposing of taxes. In a similar way, acceptance for fossil fuel tax increases when the use of collected revenue is meant for service provision. A similar pattern that was observed from the general public[47].

Figure 2 Stakeholders' acceptance of the 3 policy instruments for reducing fossil fuel



Notes: (1) The figure is constructed from survey data collected from stakeholders. It excludes data collected from the general population. (2) The +/-1 in percentage totals for some instruments is a result of approximation. (3) Observations = 65.

3.1.2. Acceptance of Policy Instruments affecting Plastic Pollution

Putting the fossil fuels and their associated policy instruments aside, in the following section, we present the people's perceptions regarding the proposed or already implemented policy instruments for controlling plastic pollution. The peoples' perceptions on reducing plastic pollution were tested on the following three policy instruments:

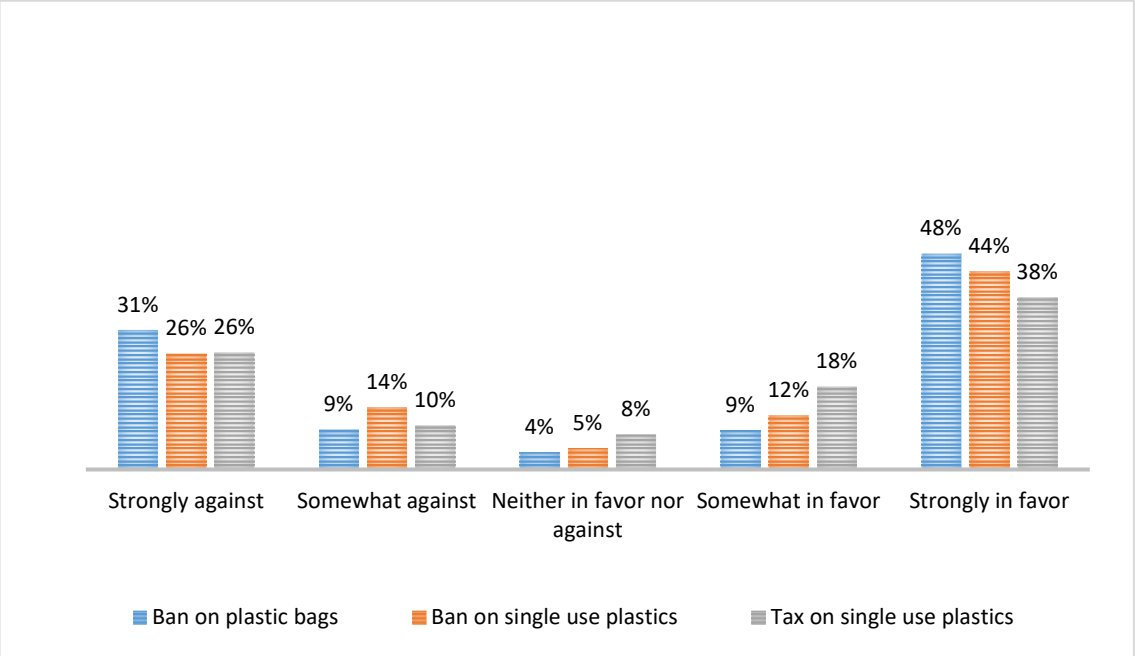
- A ban on the use of plastic carrier bags
- A ban on the use of single use plastics
- A tax on single use plastics

The results in Figure 3 indicate that people are in support of imposing a ban on the use of plastic carrier bags and on the use of single use plastics. Quite similar support is demonstrated on the

[47] As a word of caution when referring to the results in figure 2, it is important to keep in mind the difference in number of respondents between the two surveys i.e. only 65 respondents participated in the stakeholders' survey compared to 1010 respondents from the general public. Appendix 6 presents the categorization of stakeholders by perception on limiting consumption of fossil fuel while appendix 7 presents the categorization of stakeholders by perception on imposing of a tax or reducing of subsidies on fossil fuel.

imposition of a tax on single use plastics. In more Specificity, a summation of those who somewhat favor and those that strongly favor the instruments yield a range of 56-57%. A ban or a tax on single use plastics is supported by 56% of the respondents with a slightly higher acceptance for a ban on plastic carrier bags (57%). The use of instruments such as a ban or a tax on single use plastics has been demonstrated in literature. Sicotte & Seamon, (2021) while looking at how to solve the plastics problem in USA, they noted that the use of a ban or a tax can be effective strategies for reducing the plastic problem. The study further indicates that the use of a tax on single use plastics has in some places resulted into a switch to reusable plastics by the public. However, the study also highlights that the effectiveness of a ban or a tax on plastics depends on the implementation of other instruments e.g. information disclosure on the danger of plastics. A look at those who are against the instruments, their perceptions yield a range of 36-40% (calculated as a sum of strongly against and somewhat against).

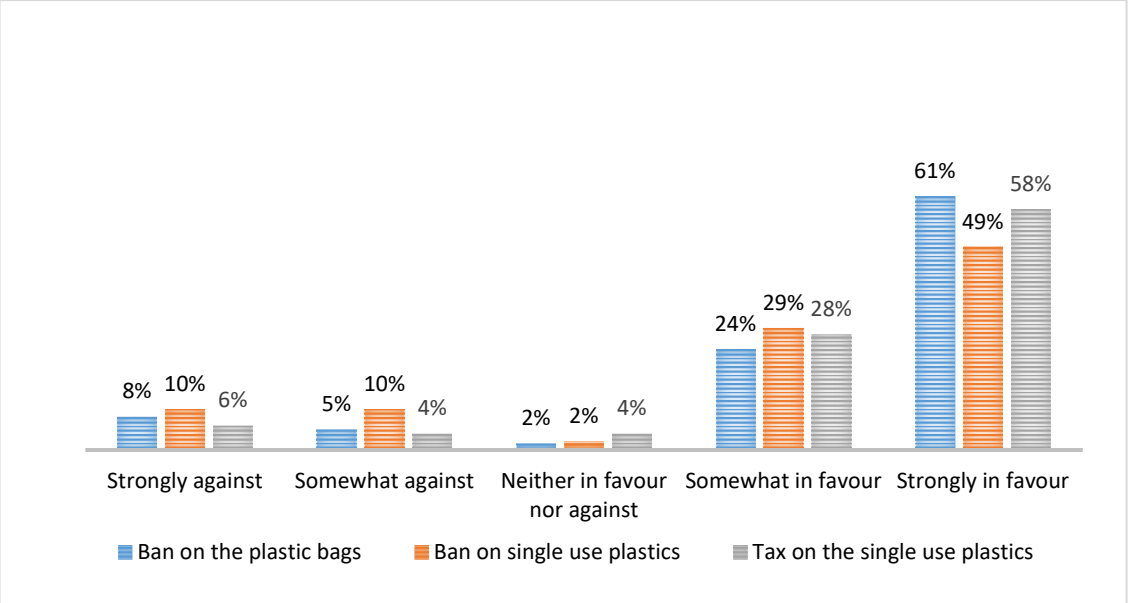
Figure 3 General population's acceptance of the 3 policy instruments for reducing plastic pollution



Notes: (1) The figure is constructed from survey data collected from the general population. It excludes data on stakeholders. (2) The +/-1 in percentage totals for some instruments is a result of approximation. (3) Observations = 1010.

Turning to stakeholders' perceptions, we observe a high acceptance level for all instruments. The highest acceptance is demonstrated on the imposition of a tax on single use plastics (86%), followed by a ban on plastic carrier bags (85%) (see figure 4). Precisely, we can conclude that stakeholders are greatly in support of reduced use of plastics (i.e. when a tax is imposed) or are in total support for closure of plastic production or even importation into the country. These results are not strange given the nature of the considered stakeholders. Academicians, public and private sector actors and civil society organizations can be considered as informed groups on the danger of plastic pollution. In fact, Obeng-Odoom, (2013) documents that plastic waste has considerably receive the attention of academicians, policy makers and civil society organizations.

Figure 4 Stakeholders' acceptance of the 3 policy instruments for reducing plastic pollution[48]



Notes: The figure is constructed from survey data collected from stakeholders. It excludes data collected from the general population. (3) Observations = 65.

3.1.3. Acceptance of Policy Instruments affecting Forest Loss

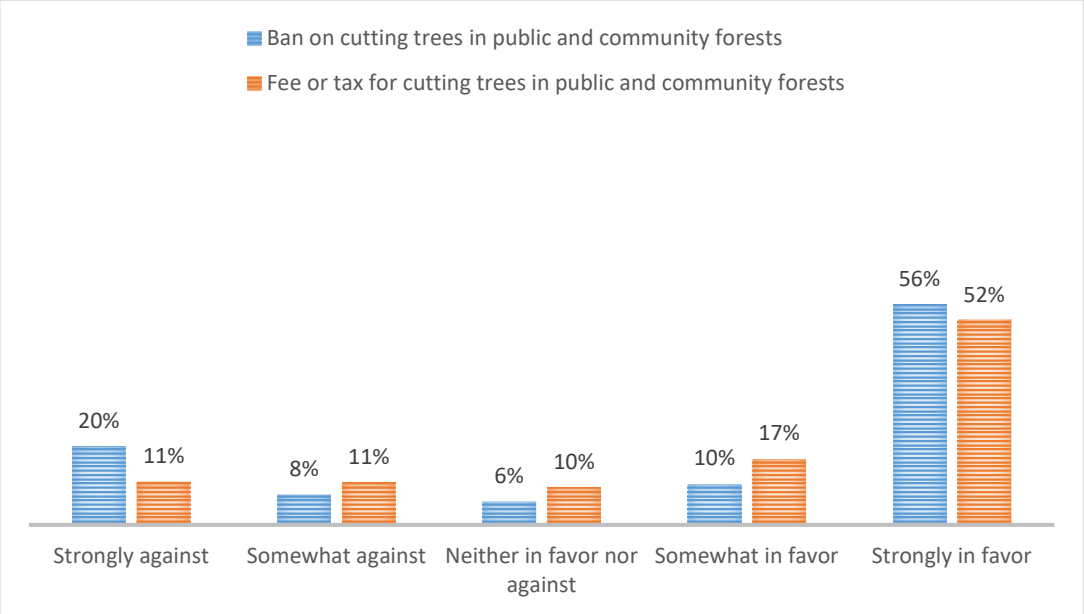
As noted in section 2.3, Uganda has for long experienced a considerable loss in its stock of forests with evidence showing an average loss of 122,000 hectares/year of the forest cover between 1990 and 2015. As such, during the survey, we also tried to test the people's perceptions toward the imposition of a regulatory policy instrument for stopping tree cutting (i.e. a ban on cutting trees in public and community forests) or a price based policy instrument (i.e. a fee or a tax for cutting trees in public and community forests). The results are presented in figures 5 and 6 below.

The results in figure 5 indicate more support in favor (somewhat favor + strongly favor) of a tax or a fee imposition on cutting of trees in public and community forests (69%). These results support Lorenzo et al., (2000) which finds people with higher Willingness to Pay (WTP) taxes for protecting trees in USA. The study further contends that the higher WTP for tree protection and preservation is driven by the people's perceptions on the benefits associated with trees. Turning to regulating of tree cutting from public and community forests through the imposition of a ban, 66%[49] of the general survey participants cast their support. A ban on tree cutting or even felling can be an important tool for protecting trees but, its effectiveness largely depends on the provision of other income generating activities and energy sources to the people (Tang et al., 2005).

[48] The categorization of stakeholders by perception on the policy instruments for reducing plastic pollution is presented in Appendices 9 and 10.

[49] Calculated as a sum of respondents who somewhat favor + those who strongly favor.

Figure 5 General population's acceptance of the 2 policy instruments for reducing tree cutting



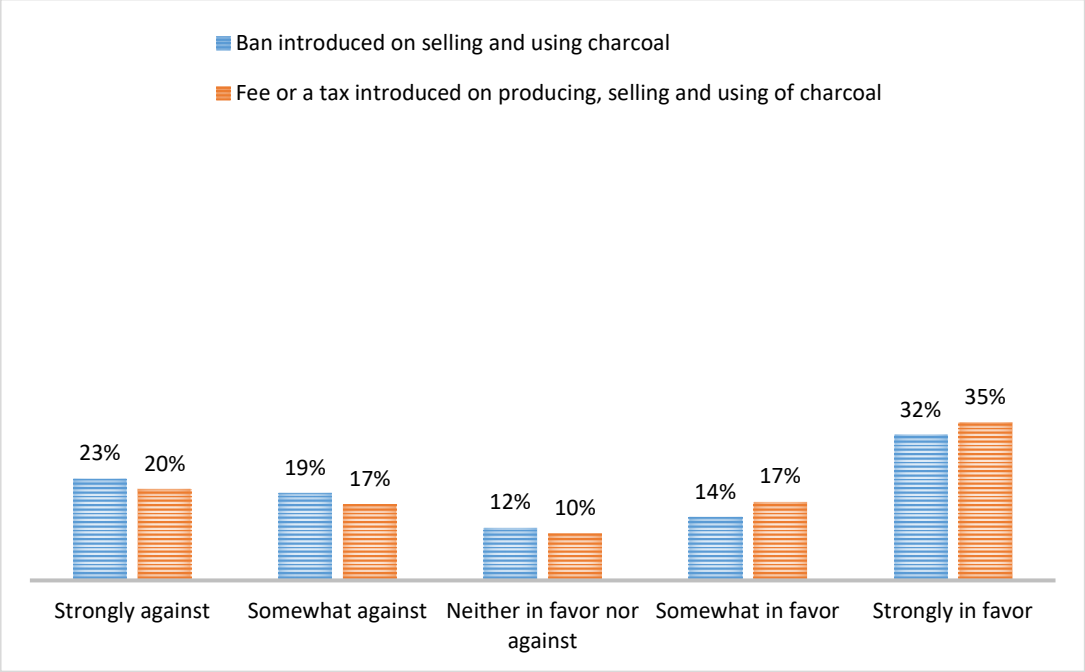
Notes: (1) The figure is constructed from survey data collected from the general population. It excludes data on stakeholders. (2) The +/-1 in percentage totals for some instruments is a result of approximation. (3) Observations = 1010.

What can happen if a ban or a tax is imposed on charcoal burning?

Although results in figure 6 remain weakly robustly similar to those in figure 5 i.e. more people supporting for imposition of a tax of a fee on producing, selling and using of charcoal (52%), followed by supporting of a ban on the same (46%), the proportion of those against both instruments seems to increase with charcoal. Specifically, people who are against a tax or a fee on charcoal constitute 37%[50] of the total surveyed subjects compared to 22% against tree cutting. In a similar way, people who are against a ban on charcoal are 42% compared to only 28% who seem in disfavor of a ban on tree cutting. These results are not strange but directly speak to over reliance of the Uganda's population on biomass for energy. In fact, over 90 percent of the Uganda's population uses firewood or charcoal for fuel (Bamwesigye et al., 2020; NPA, 2020). Moreover, some households rely on charcoal production or selling for income generation (Khundi et al., 2011). This means a mire talk about imposing a ban, a tax or a fee on charcoal means disrupted energy supply to the population.

[50] Constructed as a sum of somewhat against + strongly against

Figure 6 General population's acceptance of the 2 policy instruments for reducing charcoal production, selling and using

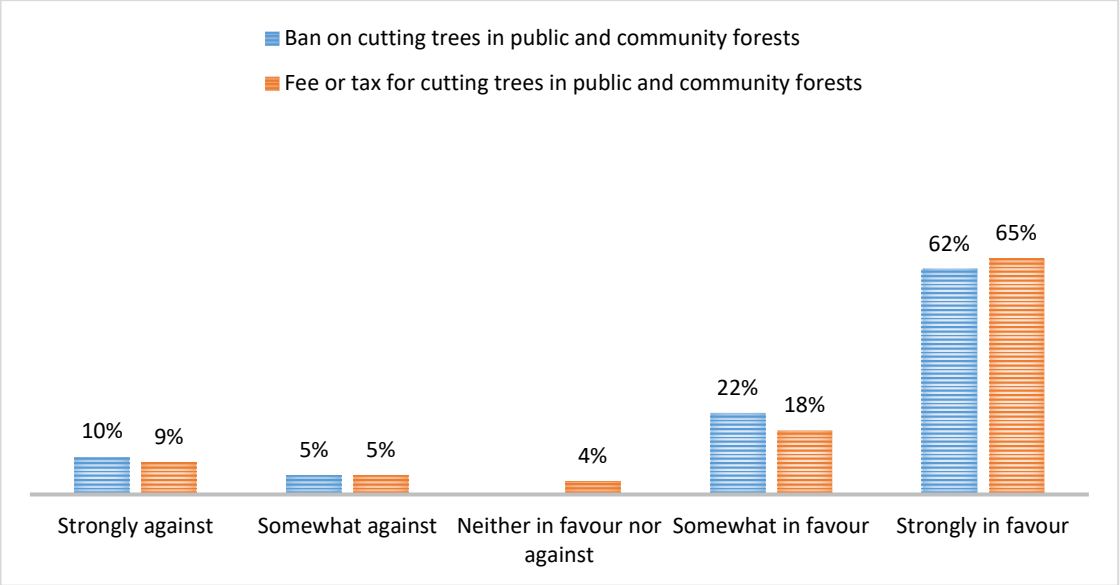


Notes: (1) The figure is constructed from survey data collected from the general population. It excludes data on stakeholders. (2) The +/-1 in percentage totals for some instruments is a result of approximation. (3) Observations =1010.

Stakeholders' perspective on how to control forest loss

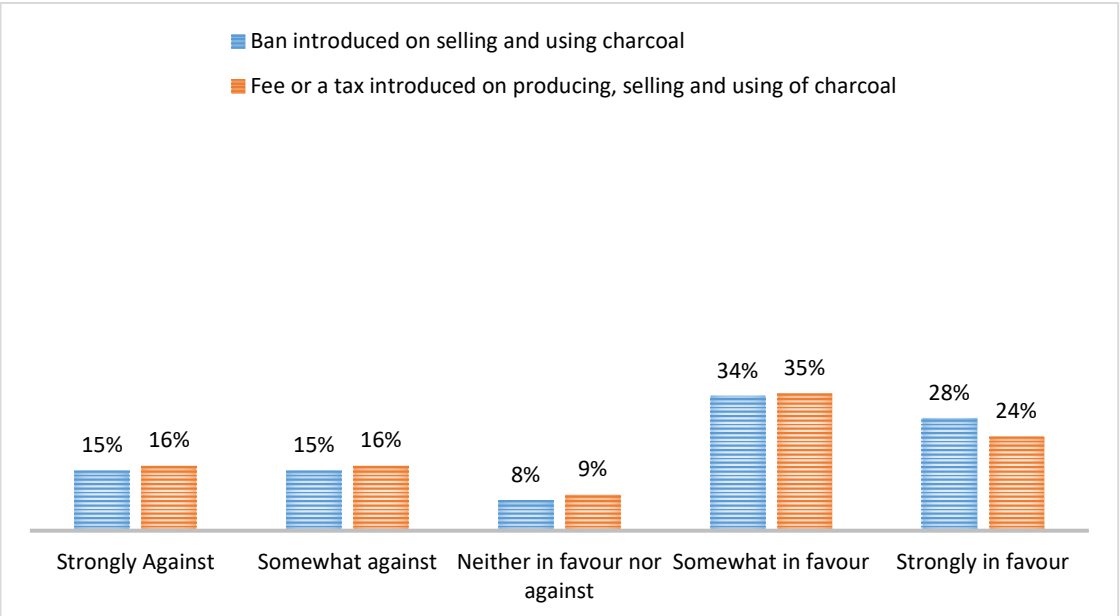
The stakeholders' perceptions indicate that most of them are strongly or somewhat in favor of the proposed policy instruments for checking on tree cutting (see figure 7). Asked if they would support for a ban or a tax or a fee on tree cutting from public and community forests, the stakeholders' heavily cast their support for the proposed instruments. In fact, 84%; 83% of the stakeholders support for imposing of a ban; a tax/a fee respectively on controlling tree cutting. Turning to imposing of a ban or a tax/ a fee on charcoal production, selling and its use, the stakeholders' perceptions for support of the instruments seem to be weakened. The results (figure 8) show only 62%; 59% of the stakeholders are in favor of a ban; a tax/a fee on charcoal production, selling and use respectively. Appendices 12 and 13 present the categorization of stakeholders by perception on policy instruments aimed at controlling forest loss.

Figure 7 Stakeholders' acceptance of the 2 policy instruments for reducing tree cutting (65 respondents)[51]



Notes: (1) The figure is constructed from survey data collected from stakeholders. It excludes data collected from the general population. (2) The +/-1 in percentage totals for some instruments is a result of approximation.

Figure 8 Stakeholders' acceptance of the 2 policy instruments for reducing charcoal production, selling and using



Notes: (1) The figure is constructed from survey data collected from stakeholders. It excludes data collected from the general population. (2) Observations = 65.

[51] See appendix 10 for the ***Categorization of stakeholders by perception on the acceptance of a ban or tax /fee on tree cutting*** *while the* ***Categorization of stakeholders by perception on the acceptance of a ban or tax /fee on charcoal*** *is presented in appendix 11.*

Chapter 4: DISCUSSION AND CONCLUSIONS

4.1. Discussion on Policy Instruments

Uganda's development agenda is still challenged by a number of factors but most importantly, in relation to Natural Resource and Environmental management is fossil fuel which affects air quality especially in urban centres which are congested, plastic pollution resulting from poor disposal means and the persistent forest losses across the country.

With such high rates of resource and environmental destruction, the government (with support from the private sector, CSOs and NGOs among others) has tried to implement a number of policy instruments to reverse the environmental damage caused by fossil fuels, plastic pollution and forest losses. Specifically, the use of fossil fuels is checked through the imposition of a ban on the importation of old vehicles. Although this instrument has been successful in a sense, vehicle outside the legal age have been stopped from being imported, it was noted during the stakeholder workshops that this instrument in somehow forcing people to continue driving their old car and also resale of such old vehicles which further contribute to environmental damage. Participants in the stakeholders' workshop also observed that taxes on brand new vehicles was also high which limits some people from purchasing them.

Further, the government also subsidised the manufacturing of electric vehicles. This instrument has received considerable outputs ever since it was implemented. Presently, a number of electric buses and car are on the road. It was however observed during the stakeholder workshops that the electric vehicles especially buses have been heavily contested by operators of passage vehicles. The introduction of buses (electric and non-electric) though recognised as important interventions for reducing congestion and carbon emissions, it was highlighted during the workshops that Uganda's cities still missing bus lanes which implies likely delays that can push passengers back to their private cars or use of hired motorbikes.

Turning to subsidising of solar energy, remarkable developments have been registered in the country more especially in rural areas where grid lines had not reached. Solar power distribution has been boosted by the private sector involvement with banks and microfinance institutions offering loan schemes to the public. Subsidizing of solar energy for affordable solar panels is also supported by the government programme that involves establishing of solar generation plants in various parts of the country.

Still, the government implemented a Non-Motorized Transport (NMT) Corridor. This is supported by the imposition of a ban fixed to stop motorists from using of the corridor. Although, the NMT corridor was established to reduce on congestion and carbon emission in the city centre, it was pointed out during the stakeholders' workshops that the corridor is still completed four by motorists especially taxi commuters and motorbike riders. The participants attributed this weak enforcement especially from traffic police department. Other instruments that have been implemented to reduce on fossil fuel include encouraging people to use public transport and reduced cost of inspection for electricity connection — which has greatly appreciated to the extent that even parliament recommended for extra years of its implementation.

In relation to plastic pollution, a ban on the use, sale, and manufacture of polythene bags < 30 Microns was passed by Parliament but ever since its enactment, the government through the National Environment Management Authority has failed to implement it. It was highlighted during the workshops that the manufacturers of polythene bags supported by some politicians strongly objected the ban. The producers of the polythene bags raised concerns over their invested capital while politicians raised the concern of possible loss in employment and revenue.

Putting aside the ban on the < 30 Microns polythene bags, the government imposed an excise duty of 2.5 percent or US$ 70 per ton of plastic products and plastic granules. This duty is charged following a model of whichever is higher. The plastic tax has not been contested by manufacturers possibly because it is relatively low compared to many other locally manufactured products soft drinks, cigarettes, alcohol and spirits[52]. The other instrument that has implemented to reduce plastic pollution are the popular campaigns against the use and poor dumping of plastics.

Turning to reversing of forestry losses in the country, the government launched a programme for subsidizing firms that produce clean and energy saving stoves. This programme was launched in 2016. The subsidy was aimed at allowing firms producing energy saving stove to expand their production scale and distribution but also, cause a price fall for those stoves. Since the implementation of the subsidy, subsidized firms have sold over 72,000 stoves. This intervention received remarkable support during the stakeholders' workshops.
Still, in trying to reduce tree cutting across the country, the government introduced harvest license which is anchored in in the National Forestry and Tree Planting Act, (2003). The license allows the holder to harvest trees under defined conditions. This instrument is complemented with license fee which is charged basing on the bidding process. On a negative note, during the stakeholders' workshops, participants pointed out, this intervention is heavily abused. They sighted corruption in issuing of the licenses and unequal fees charged by some forestry officials.

[52] Uganda - Corporate - Other taxes (pwc.com)

4.2. Discussion on Acceptance of Policy Instruments

To redress the environmental problems resulting from fossil fuel, plastic pollution and [53]control forest losses, a number of policy instruments ranging from extreme regulatory instruments like bans to voluntary instruments like requests for behavioral change have been implemented by different stakeholders including government. However, even with such instruments in place, acts of environmental abuse have persisted in the country. This raises a number of questions e.g. (1) is the public not aware of the existence of such instruments? (2) Is the implementation of such instruments weak or weakened? (3) Is the enforcement of such instruments at a weak front? (4) Is the public against such instruments such that they receive low acceptance?

In this National Policy Review report, we try to answer question (4). We conducted 2 field surveys (one with the general public and the other with stakeholders) in Uganda[54]to study the extent of social acceptance for different policy instruments that can be imposed to check on fossil fuel usage, reduce plastic pollution and also control forest loss in the country. In a more specificity, we hypothesize the imposition of bans, taxes, subsidies or fees as instruments to address the aforementioned problems (fossil fuels, plastic pollution and forest loss). Our main results indicate support for imposing of a tax or a fee in controlling the use of fossil fuel, plastic pollution and forest loss in the country, followed by imposing of bans. Taxes and bans can be effective tools for reducing environmental destruction e.g. through controlled plastic pollution (Sicotte & Seamon, 2021).

The survey results are not odd because even during the stakeholders' workshops that were organized, participants emphasized the need for a ban on single use plastics. On contrary, during the workshops, participates generally objected the imposition of a tax on fossil fuel especially, petrol and diesel but, rather seemed to support a subsidy to drive the prices downwards. They argued that, imposing of a high tax on fuel would result into high production costs which could translate into higher commodity prices that can exclude masses from consumption.

4.3. Concluding reflection

For years, Uganda has tried to take an Inclusive Green development path. But, its endeavors have been limited by a number of factors among others is poor health systems characterized by low quality water supply and sanitation, high carbon emissions and persistent destruction of the environment and natural resources. The country has persistently experienced high environment and natural resource damages resulting from fossil fuel, plastic pollution and forest loss.

In this document, we review various policy instruments that have been implemented to reduce fossil fuels, plastic pollution and forest loss which are common across the country. We also present results from 2 field surveys indicating the extent of social acceptance for potential policy instruments that can be imposed to reducing on fossil fuel, plastic pollution and also reduce on forest loss.

From the review, we learn that Uganda mainly relies on price-based instruments (subsidies, taxes and fees). There also some bans that have been imposed e.g. a ban on the imports of vehicles older than 15 years but, a ban on polythene bags of < 30 microns has still failed to be implemented. This remains a case on restricted automobile pathways and evictions from forest reserves (evictees have persistently gone back to forests which speaks to speaks to the weakened

[54] Similar surveys were also conducted in Ethiopia, Kenya, Rwanda and Tanzania to allow for cross country comparisons.

enforcements mechanisms. Still, the review indicated neglected use of right-based instruments and limited attention paid toward evaluating of the implemented instruments.

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APPENDIX

Appendix 1: **Key development programs stipulated in NDP III**

No.	Programme	Description	Key Indicators
1	Agro-industrialisation	Aims to increase commercialisation and competitiveness of agricultural production and agro processing.	Increased export value, agricultural sector growth, increased labour productivity in the agro-industrial value chain, job creation in agro-industry and food security.
2	Mineral Development	Aims to increase mineral exploitation and value addition in selected resources for quality and gainful jobs in industrialization.	Reduced volume and value of imported iron and steel and inorganic fertilizers, increased exports of refined minerals, increased exploration and processing of selected minerals and job creation.
3	Sustainable Development of Petroleum Resources	Aims to attain equitable value from the petroleum resources and spur economic development in a timely and sustainable manner.	Reduced volume and value of imported petroleum and petroleum products, increased revenue from oil and gas, job creation along the petroleum value chain.
4	Tourism Development	Aims to increase Uganda's attractiveness as a preferred tourist destination.	Increased tourist arrivals and tourism revenues, job creation.
5	Natural Resources, Environment, Climate Change, Land and Water Management	Aims to stop and reverse the degradation of Water Resources, Environment, Natural Resources as well as the effects of Climate Change on economic growth and livelihood security.	Increased land area covered under forests and wetlands, increased compliance with water permits, enhancing the accuracy of meteorological information.
6	Private Sector Development	Aims to increase competitiveness of the private sector to drive sustainable inclusive growth.	Reduction of informal sector, strong and competitive SMEs, increased awarding of public contracts and sub-contracts to local firm and increased volume of private sector investment.
7	Manufacturing	Aims to increase the product range and scale for import replacement and improved terms of trade.	Increased share of manufactured exports to total exports, growth in the industrial sector contribution to GDP and job creation.
8	Integrated Transport Infrastructure and Services	Aims to have a seamless, safe, inclusive and sustainable multi-modal transport system.	Reduced average travel time and costs, increased stock of transport infrastructure, increasing life span of transport infrastructure and reduced fatalities and causalities from transport accidents.
9	Energy Development	Aims to increase access and consumption of clean energy.	Increased primary energy consumption, increased population accessing electricity, reduced share of biomass energy used for cooking, increased

No.	Programme	Description	Key Indicators
			power transmission capacity; and enhanced grid reliability.
10	Digital Transformation	Aims to increase ICT penetration and use of ICT services for social and economic development.	Increased ICT penetration, reduced cost of ICT devices and services; creating more direct jobs in the sector; and increasing government services online.
11	Sustainable Urbanization and Housing	Aims to attain inclusive, productive and livable urban areas for socioeconomic transformation.	Decreasing urban unemployment, reduced housing deficit, enhanced economic infrastructure in urban areas, increased efficient in solid waste collection and more coverage of urban green spaces.
12	Human Capital Development	Aims to increase productivity of the population for increased competitiveness and better quality of life for all.	Increased proportion of labour force into gainful employment, increased years of schooling, improved child and maternal outcomes, increased life expectancy, access to safe and clean water and sanitation and increased access to social protection.
13	Innovation, technology development and Transfer	Aims to increase development, adoption, transfer and commercialization of Technologies & Innovations through the development of a well-coordinated STI eco-system.	Increased spending on R&D.
14	Community Mobilization and Mind-set	Aims to empower families, communities and citizens to embrace national values and actively participate in sustainable development.	Increased participation of families, communities and citizens in development initiatives, enhanced media coverage of national programmes and better uptake and/or utilization of public services.
15	Governance and Security	Aims to improve adherence to the rule of law and capacity to contain prevailing and emerging security threats.	Improved perception on corruption and democratic indices, increased case disposal rate and increased percentage of districts with one stop frontline JLOS service point.
16	Public Sector Transformation	Aims to improve public sector response to the needs of the citizens and the private sector.	Improved government effectiveness, public service productivity, global competitiveness and increased proportion of the population satisfied with public services.
17	Regional Development	Aims to accelerate equitable regional economic growth and development.	Increased regional corporation
18	Development Plan Implementation	Aims to increase the efficiency and effectiveness in the implementation of the Plan.	Increased GDP growth, increased revenue, and improvements in alignment of plans and budgets.

Appendix 2: Policy Instruments to reducing fossil Fuels

Title of the policy instrument	**Link to relevant document**	**Type of policy instrument**	**Goals of the policy instrument**	**Time frame** *(implementation year and if applicable end year)*	**Describe the policy instrument**	**Is it working? Why or why not?**	**Reference to evaluation studies/reports**	**Responsible for implementation**	**Responsible for monitoring**	**Stakeholders affecting the policy instrument**	**Stakeholders affected by the policy instrument**
Ban on the import of old cars	https://www.parliament.go.ug/news/1514/importation-old-cars-banned	Regulatory based	To reduce on pollution	2018 to date	Cars older than fifteen years from September 2018 are not allowed into the country	Yes. Because of strict implementation of the instrument by URA		URA, Ministry of Works and Transport (MoWT)	URA	Importers of used vehicles	Importers of used vehicles
Subsidising of the manufacturing of electric cars	https://www.electrive.com/2020/08/29/kiira-motors-electric-vehicles-made-in-uganda-by-2021/#:~:text=The%20state%2Downed%20vehicle%20manufacturer,production%20as%20it%20may%20seem.	Price based	To reduce the consumption of fossil fuels	2021, project still on going	The state-owned vehicle manufacturer Kiira Motors is producing electric vehicles	Not yet but some buses have been put on trial		Ministry of science, Technology and Innovation (MOSTI).	MoWT, Parliament. OPM	Fossil fuel dealers, Dealers in public transport with transport means using fossil fuels	Dealers in public transport with transport means using fossil fuels
Subsidising solar energy	https://www.esi-africa.com/top-stories/45-percent-solar-power-subsidy-for-uganda/	price based	To reduce over dependence on the use fossil fuels and to reduce on diseases caused by the use fossil fuels in homes	2007 to date	A 45 percent subsidy – increased from 14 percent – on all solar power equipment and 0% tax on importation of solar batteries and battery making inputs.	Yes, with many achievements	https://www.ubos.org/wp-content/uploads/publications/09_2021Uganda-National-Survey-Report-2019-2020.pdf	MEMD	MEMD, OPM	Fossil fuel dealers	Uganda Electricity Transmission Company (UETC)
A subsidy of Liquefied Petroleum Gas		Price based	Increase uptake of clean cooking technologies	2022 – Ongoing	The beneficiary pays only UGX. 100,000 for a 25kg full of gas cylinder			MEMD	MEMD	MEMD, Politicians	Charcoal and firewood dealers, dealers in kerosene

Excise duty on petrol and diesel products		Price based	Reduce the use of fossil fuel		The tax is levy on petrol and diesel per litre on imports	7.0 percent decrease in purchase of petroleum products in Calendar Year (CY) 2020 when compared to CY 2019.	UBOS Statistical Abstract 2021 | Ministry of Health Knowledge Management Portal	URA	URA	Importers of petrol and diesel	Car owners and transporters
Restricting automobile pathways	https://www.climate-chance.org/en/best-pratices/the-implementation-of-the-pilot-non-motorised-transport-corridor/	Regulatory	Reducing traffic jam, carbon emissions, safe cycling and walking	2019 to date	Establishment of walk ways and biking lanes in Kampala city centre e.g. Namirembe road and Luwum street	Partially working because some motor bike riders still use the walk ways		Kampala Capital City Authority (KCCA)	KCCA	Public transport drivers	Public transport drivers, Passengers who used the Road roads and now affected by traffic jam on other routes
Environmental levy on vehicles and machinery			Protecting the county from harmful products	2015 – Ongoing	Levied on used items at custom posts. It is calculated basing on the sum of the cost of the item, insurance and freight			URA	URA	Automobile dealers, environmental activists	Automobile dealers
Information encouraging people to use public transport		information based	To reduce on congestion in cities and carbon contents	2011 to date	Encouraging people to public means like buses to reduce on the use of personalised vehicles that are many	Partially working because many private car owner prefer using their vehicles for convenience		KCCA	MoWT, KCCA	General public	General public
Subsidizing of electricity grid connection		Price based	To increase access to hydro power	2018 to date	The UETC implemented the low inspection fee as the only cost to	Yes. It is working because the		UETC	Uganda Rural Electrification		Dealers in solar power, dealers in fossil fuels

					connect to the power grid especially in rural areas.	connection is too low to attract users			n Agenc y		

Appendix 3: Image of plastics floating on Lake Victoria

Source: *Extracted from the Independent, Uganda joins global campaign to keep plastics out of its lakes and rivers (independent.co.ug)*

Appendix 4: A summary of policy instruments for reducing plastic pollution

Title of the policy instrument	**Link to relevant document**	**Type of policy instrument**	**Goals of the policy instrument**	**Time frame** *(implementation year and if applicable end year)*	**Describe the policy instrument**	**Is it working? Why or why not?**	**Reference to evaluation studies/reports**	**Responsible for implementation**	**Responsible for monitoring**	**Stakeholders affecting the policy instrument**	**Stakeholders affected by the policy instrument**
Ban on the use, sale, and manufacture of polythene bags < 30 microns	Press release-Kavera_NEMA_UNBS enforcement_2.pdf	Regulatory based	To protect the environment and natural resources		The National Environment Act, 2019, under section 76 (1) prohibits the importation, export, local manufacture, use or re-use of categories of plastic carrier bags or plastic products made of polymers of polythene or polypropylene below thirty (30) microns.	Not Working properly because of political interference and objection from manufacturers		National Environment Management Authority (NEMA)	Uganda Revenue Authority (URA), Ugandan Parliament, NEMA, Office of the Prime Minister (OPM)	Business secto and politicians	Manufacturers
Plastic tax			To reduce the use of plastics resulting in environmental gains		A 2.5 percent or US$ 70 per ton excise duty is levied on plastic products and plastic granules (charged on the basis of whichever is higher)				Uganda Revenue Authority (URA)		
Campaigns against production and use of plastics and poor dumping behaviours		information based	To reduce improper disposal of plastic bags		Common campaigns over media platforms by state agencies, Non-Governmental Organisations (NGOs), Civil Society Organisations (CSOs).	Not working 100 percent because of constrained information flow		General public	General public	General public	General public

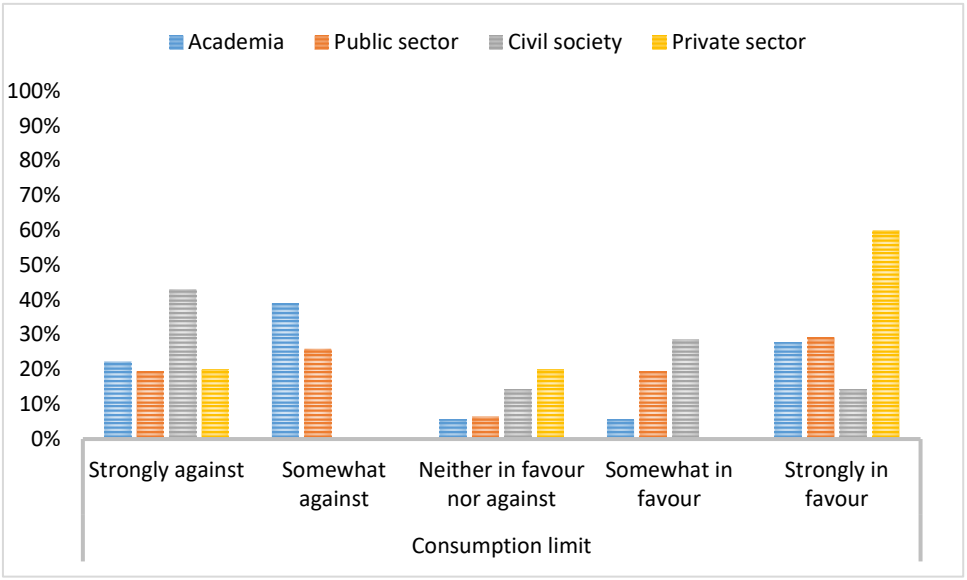
Appendix 5: A summary of policy instruments for reducing forest Loss

Title of the policy instrument	**Link to relevant document**	**Type of policy instrument**	**Goals of the policy instrument**	**Time frame** *(implementation year and if applicable end year)*	**Describe the policy instrument**	**Is it working? Why or why not?**	**Reference to evaluation studies/reports**	**Responsible for implementation**	**Responsible for monitoring**	**Stakeholders affecting the policy instrument**	**Stakeholders affected by the policy instrument**
Subsidizing firms producing clean energy saving stoves		Price based	**Reduce on the use of biomass energy**								
Licence and licence fees for harvesting forest products		Price based	Reduce on tree cutting	2003 – Ongoing	Forest harvesters and transporters are required to secure a licence from NFA		No evidence	NFA	NFA	Politicians, Land loads, forest occupants	Forest product dealers
Payment for eco-system services		Price based	To improve the degree the transparency in forest management and also, increase the real values of forest resources.	2001 – ongoing	Every user of the eco-system service is required to pay a fee for the service. This is determined by NEMA		No evidence	NEMA	NEMA	Politicians, industrialists	People mainly deriving their livelihood from ecosystems e.g. charcoals burners
Subsidizing agricultural inputs through the E-Voucher system		Price based	Increase agricultural production and food security	2017	The bearer of the E-Voucher can access inputs but tops up the voucher value and government pays the balance.			MAIIF	MAIIF	Politicians	Crop farmers

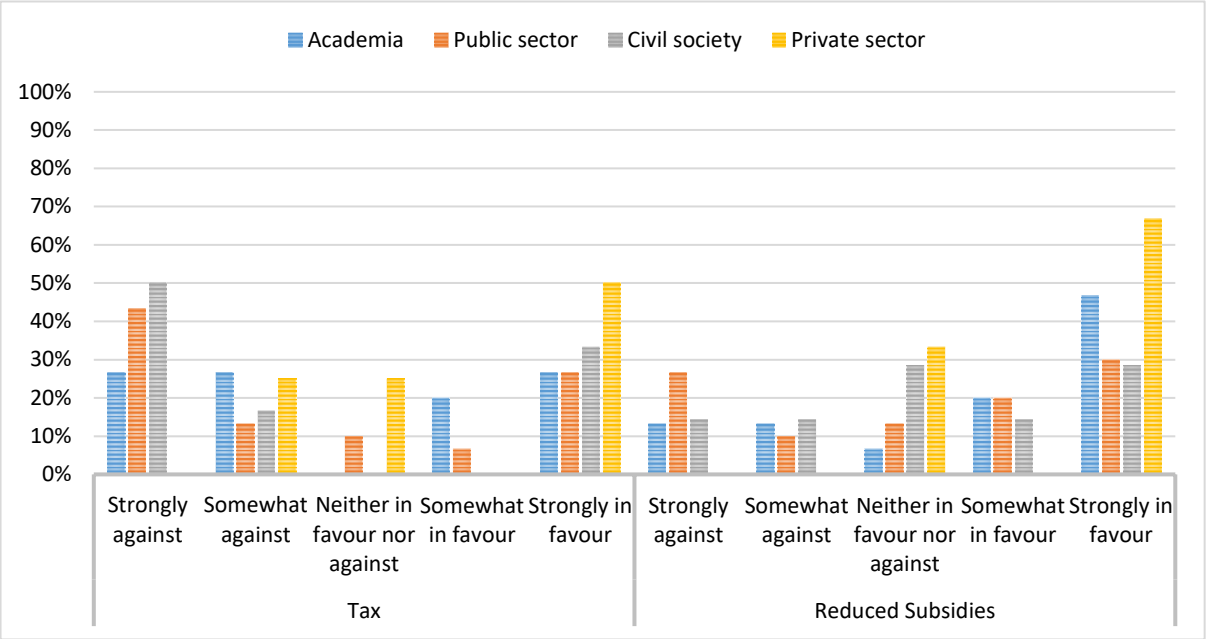
Re-surveying and demarcating all government forest reserves.		Regulatory		2013 to date	NFA is continuously surveying various forest reserves in the country to ensure that encroachers are removed	Partially working because it is facing resistance from politicians and forest occupants		NFA	MWE	politicians and forest occupants	Forest occupants
Subsidizing of micro scale irrigation		Price based	Transiting from subsistence to commercial agriculture.	2020	The government provides a top-up ranging between 25% and 75% of the total cost of the irrigation equipment			MAIIF	MAIIF	Politicians, input dealers	Small scale farmers <=2.5 acres
,Evicting of encroachers from public forest reserves		Regulatory									
Campaigns against tree cutting		Information based	To reduce on tree cutting	2013 on-going	Campaigns over the abuse of forests especially targeting reduced tree cutting for charcoal burning and agriculture and also increased campaigns for tree planting	Partially working some people are planting trees yet others are destroying elsewhere.		State agencies, NGOs, CSOs	General public	General public	General public
Travel permits for forest products travel permits		Regulatory	To control illegal cutting of trees		Dealers in forest products e.g. charcoal,	Yes. Road tolls are common on all highways checking		Local governm	NFA		Forest products dealer like charcoal dealers, users of

					timber, firewood are required to secure a licence from the local authority of the area that products are got from.	for travel permits of forestry products		ent authority			charcoal due to delayed deliveries and price hikes

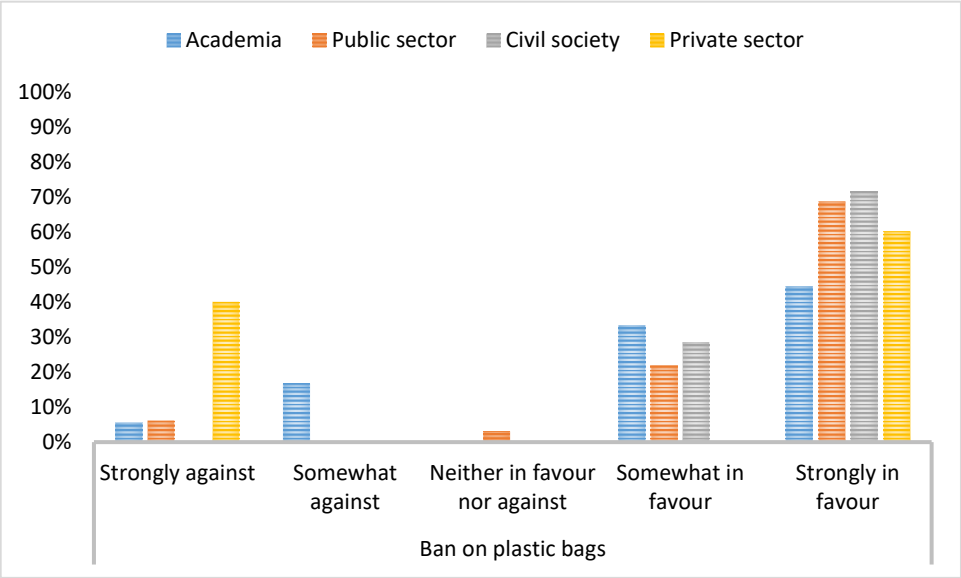
Appendix 6: Categorization of stakeholders by perception on reducing the consumption of fossil fuel



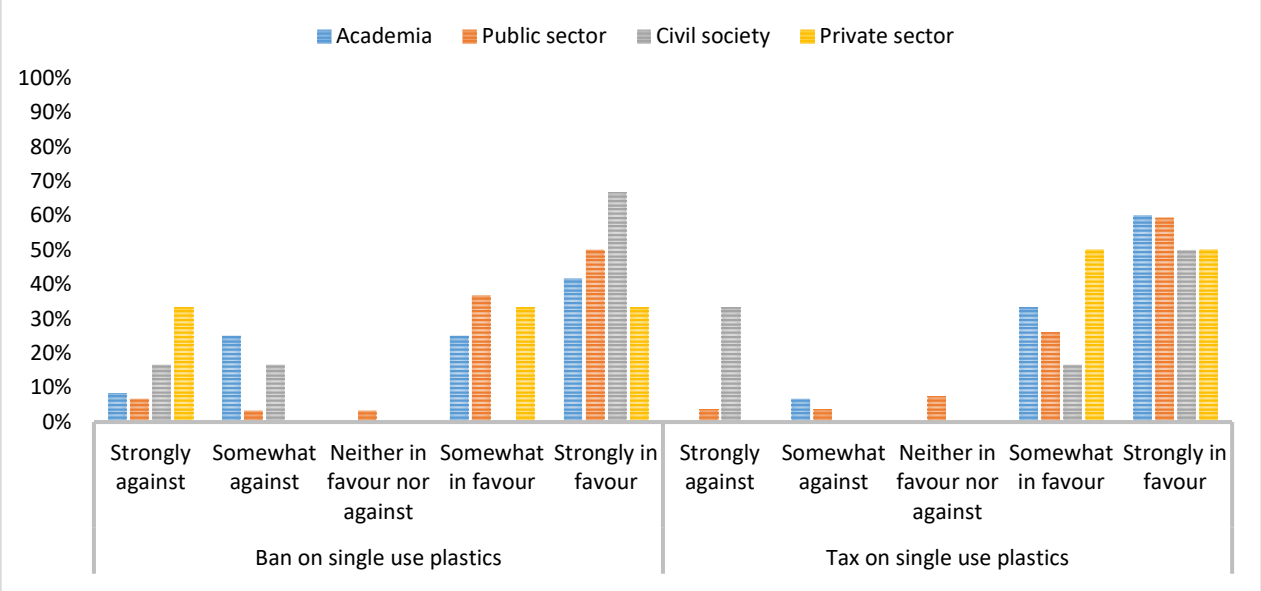
Appendix 7: Categorization of stakeholders by perception on imposing of a tax or reducing of subsidies on fossil fuel



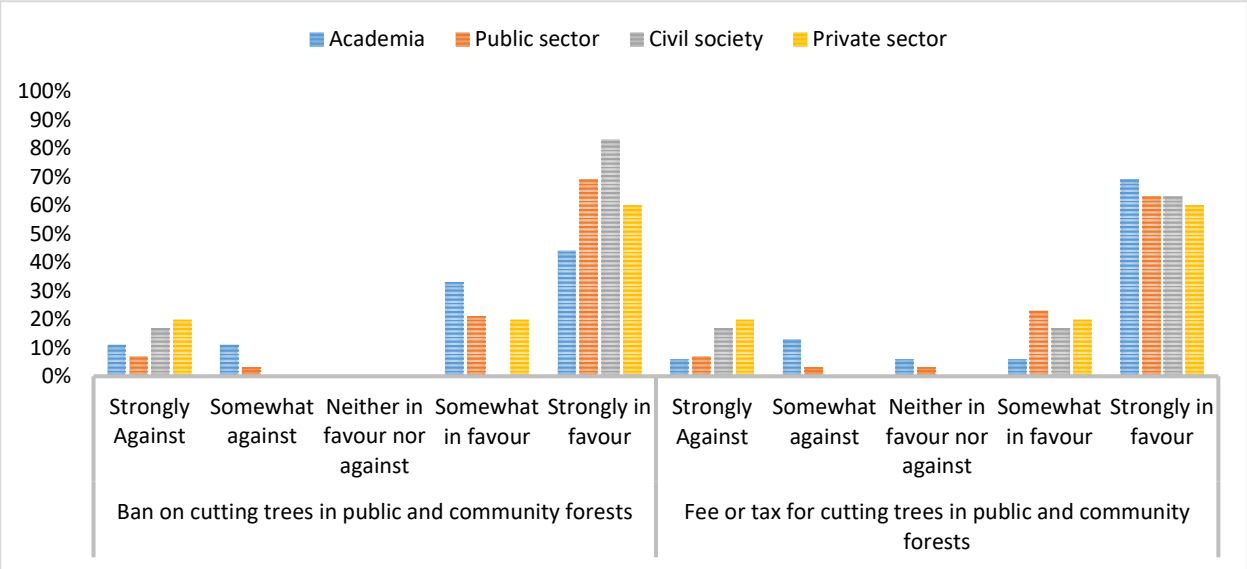
Appendix 8: Categorization of stakeholders by perception on imposing of a ban on plastic bags



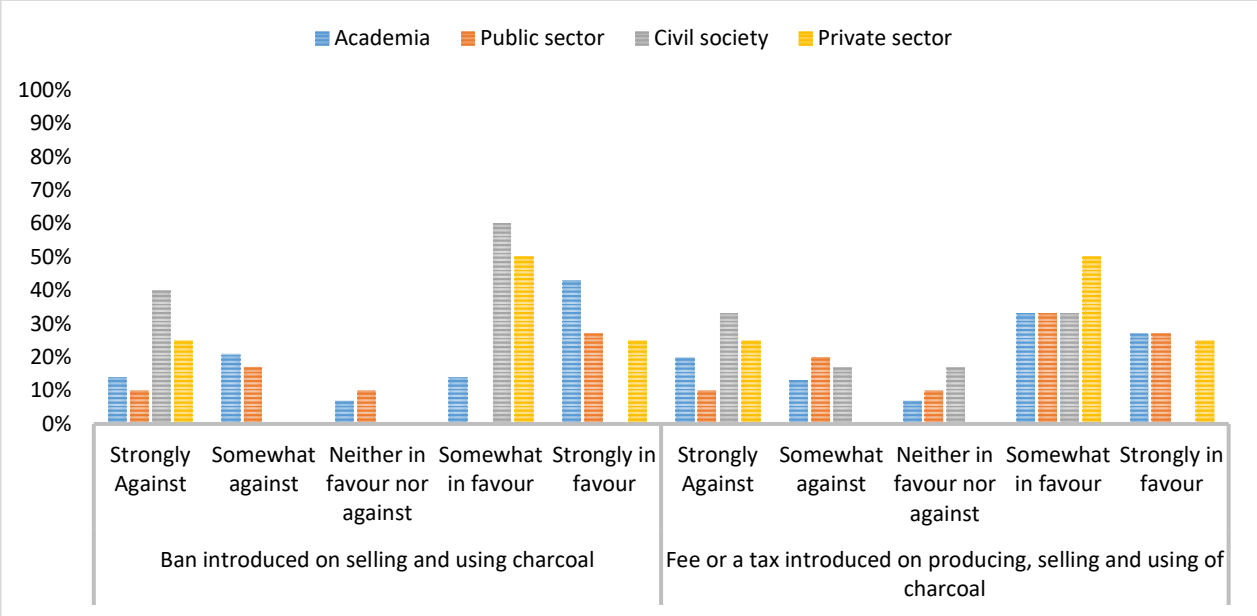
Appendix 9: Categorization of stakeholders by perception on imposing of a ban or tax on single use plastics

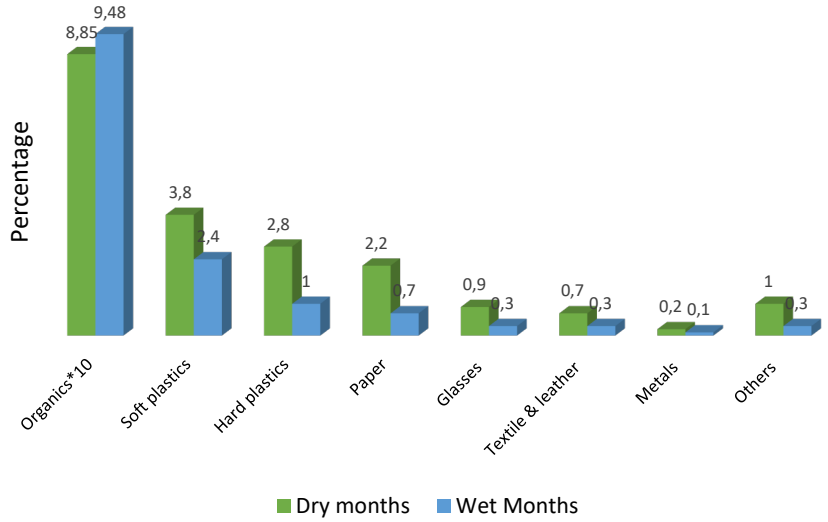


Appendix 10: Categorization of stakeholders by perception on the acceptance of a ban or tax /fee on tree cutting



Appendix 11: Categorization of stakeholders by perception on the acceptance of a ban or tax /fee on charcoal





Source: *Data was extracted from Komakech, A. J., Banadda, N. E., Kinobe, J. R., Kasisira, L., Sundberg, C., Gebresenbet, G., & Vinnerås, B. (2014). Characterization of municipal waste in Kampala, Uganda. Journal of the Air & Waste Management Association, 64(3), 340-348.*

Appendix 12: References to Country Profile

Uganda	Data	Reference
Size Population density	241 038 km2 221/km2	*Countries by Area - WorldAtlas* https://www.worldatlas.com/features/countries-by-area.html#countriesBySize Accessed: 2022-02-04 *World Development Indicators | DataBank (worldbank.org)* https://databank.worldbank.org/reports.aspx?-source=world-development-indicators *Last Updated: 12/22/2022* Accessed: 2023-02-13
Key sectors in the economy	Agri:24 Indu: 27 Service: 42 Manuf: 16	Year 2021 value added (% of GDP) *World Development Indicators | DataBank (worldbank.org)* https://databank.worldbank.org/reports.aspx?-source=world-development-indicators *Last Updated: 09/16/2022* Accessed: 2022-10-14
Population Growth	41,5 M 3.2%	Year 2020. *UBOS. 2021. Uganda National Household Survey 2020/21 Report, Uganda Bureau of Statistics, Kampala, Uganda.* Year 2020. *UBOS. 2021. Uganda National Household Survey 2020/21 Report, Uganda Bureau of Statistics, Kampala, Uganda*.
Life Expectancy (F/M)	65/60.5	Year 2020 *World Development Indicators | DataBank (worldbank.org)* https://databank.worldbank.org/reports.aspx?-source=world-development-indicators *Last Updated: 09/16/2022* Accessed: 2022-10-14
Poverty rate	37%	Year 2020 *Africa SDG Index and Dashboards Report - Sustainable Development Report* https://www.sdgindex.org/reports/2020-africa-sdg-index-and-dashboards-report/ Accessed: 2021-12-01
Access to electricity	42%	Year 2020 *World Development Indicators | DataBank (worldbank.org)* https://databank.worldbank.org/reports.aspx?-source=world-development-indicators *Last Updated: 09/16/2022* Accessed: 2022-10-14
GDP/capita	884	Year 2021 *World Development Indicators | DataBank (worldbank.org)* https://databank.worldbank.org/reports.aspx?-source=world-development-indicators *Last Updated: 12/22/2022* Accessed: 2023-02-13

Rainfed/Irrigated agriculture	99.9/0.1%	Year 2020 *Land Use Indicators, Land area equipped for irrigation* https://www.fao.org/faostat/en/#data/EL *Access: 2022-10-13*
Land area covered in forest	29%	Year 2015 *Forest Monitoring, Land Use & Deforestation Trends | Global Forest Watch* https://www.globalforestwatch.org/ Accessed: 2022-01-12