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Inclusive Green Economy Policy Review for Tanzania

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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 on, and capacities to apply, 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 centres 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 and strategies and policy instruments in three important policy areas in the country and the region. The policy areas 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 to facilitate interesting discussions and learning between countries struggling with the similar challenges in their work towards an inclusive green economy.

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List of Abbreviations

BRT	Introduction of Bus Rapid Transit
CBFM	Community Based Forest Management
DART	Dar es salaam Bus Rapid Transit
EIA	Environmental Impact Assessment
EWURA	Energy and Water Regulatory Authority
FYDP	Five Years Development Plan
GDP	Gross Domestic Product
LGA	Local Government Authorities
NEAC	National Environmental Advisory Committee
NEMC	National Environmental Management Council
NEP	National Environmental Policy
NSGPR	National Strategy for Growth and Poverty Reduction
PO-RLGA	President's Office -Regional and Local Government Administration
SDGs	Sustainable Development Goals
TDV	Tanzania Development Vision
TPDC	Tanzania Petroleum Development Cooperation
TRA	Tanzania Revenue Authority
TZS	Tanzania Shillings
URT	United Republic of Tanzania
VPO	Vice President's office
WB	World Bank

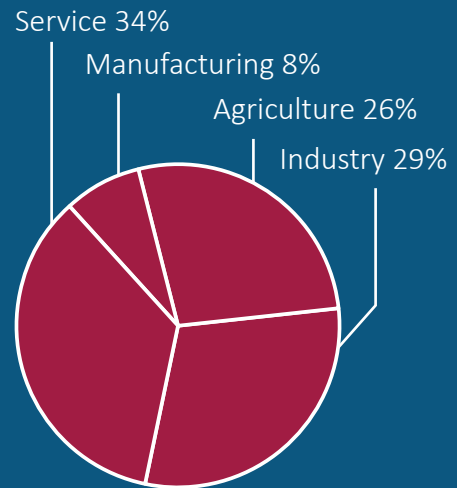
Country Profile: Tanzania

Size / Population density



947 300km²
70people/km²

Key sectors in the economy



Population / Growth



59,7M
3%

Life expectancy



F 67
M 63

Poverty rate



39.6%

Populations access to power



40%

GDP per capita



1099USD

Rainfed / Irrigated agricultural land



R 99%
I 1%

Land area cover in forest



26%



- SDG achievement
- Challenges remain
- Significant challenges remain
- Major challenges remain
- ↑ On track
- ↗ Moderately increasing
- Stagnating
- ↘ Decreasing
- — Data not available

Chapter 1: OVERVIEW OF IGE VISIONS STRATEGIES AND PROGRAMS

In this chapter, we are mapping the IGE visions, strategies, and programs that are national and cross-sectorial. In Tanzania, IGE visions, strategies, and programs that are national and cross-sectorial include Tanzania Development Vision (TDV) 2025, National strategies for Growth and poverty reduction (NSGPR I and II), Five Years Development plans which have been revised thrice (FYDP- I, II and III) and a number of strategies and programs established by the Vice president office responsible for environmental issues.

Tanzania Development Vision (TDV) 2025

Recently, Tanzania's development is driven by Tanzania Development Vision 2025 (TDV -2025). The TDV-2025 emphasizes an Inclusive Green economy by adhering to reduction of deforestation, land degradation, environmental pollution, and environmental resilience. For example, the Vision states that *"fast growth will be pursued while effectively reversing current adverse trends in the loss and degradation of environmental resources (such as forests, fisheries, fresh water, climate, soils, biodiversity) and in the accumulation of hazardous substances"* (TDV 2025, Pp. 12).

To operationalize TVD 2025, there are a number of other policy documents were established to complement each other. These policy documents include two (2) National strategies for Growth and poverty reduction (NSGPR I and II). NSGPR I operationalized between 2005 - 2010 and succeeded with NSGPR 2 from 2011 -2015. These strategies are supplemented with Five Years Development plans which have been revised thrice (FYDP- I, II and III).

The First Five years development Plan I (FYDP I) was formulated in 2011 and operationalized from 2011/2012 -2015/2016. The second Five years Development Plan II – (FYDP II) was inaugurated in 2016 and operated from 2016/2017 – 2020/2021 and the third plan is the recent one 'The Five years development plan III (FYDP III)' launched in 2021 to be implemented from 2021/2021 - 2025/2026. All of the above-mentioned development strategies and Development Plans are aimed at enabling Tanzania Vision 2025 to be operational.

The first Five Years Development Plan I (FYDP I) operationalized from 2011 - 2016 prioritized the preservation of the ecological base of Tanzania and mitigating and adapting to the impact of climate change. The plan highly emphasized on the formulation of environmental law and adoption of environmental conservations.

For example, the plan emphasized on enforcement of the Environmental Management Act of 2005, The National Environmental Policy (NEP), The National Conservation Strategy, the National Biodiversity Strategy and Action Plan (1999), and a National Action Plan to Combat Desertification (NAP) (FYDPI, 2011, Pp. 50). The plan also emphasized on evaluating the relevance of existing environmental law and institutional framework (Ibid. Pp 50).

The second Five years Development Plan - FYDP II operationalized from 2016/2017 – 2020/2021 with the theme of *"Nurturing Industrialization for Economic Transformation and Human Development"*. Under this plan, clearly stipulated that sustainable development to be obtained by prioritizing on having an inclusive green economy among other issues.

For example, the plan unveils that, sustainable development in Tanzania *"will only be achieved through, among others, fostering economic growth, reducing economic vulnerability, enhancing*

forward and backward linkages between and within sectors, ensuring positive spill-over effects of skills development and technology innovation, creation of decent jobs and ensuring environmental sustainability” (URT, 2016, Pp.6).

The FYDP II targeted improving natural resources management and mitigating climate change in Tanzania. For example, the Key target settled under the plan was to increase share of GDP from sustainable utilization of forest, water, and marine resources by (10%), increase of the proportion of energy derived from renewable green energy by (50%), increased natural forest cover by 130,000 Ha; 100 million trees planted wide countrywide by 60%, reduction in charcoal consumption in urban areas, increasing the proportion of districts with climate change and disaster risk reduction strategies to 60% before 2020 (URT. 2016, Pp ,78).

The FYDP II emphasized on interventions in three major areas. Firstly, was to strengthen natural resources management through conservation; Reverse the deterioration of aquatic systems; Conserving and sustainably use Lakes, rivers, oceans, seas, and marine resources for sustainable development. Protecting, restoring, and promoting sustainable use of terrestrial ecosystems; sustainably managing forests, combating desertification, and enhancing community-based natural resource management systems (URT, 2016, Pp. 78).

The second area of intervention emphasized under FYDP II is the prevention of environmental degradation by discouraging charcoal use and promoting of renewable green energy technologies such as biogas, liquefied petroleum gas (LPG), solar energy, as well as geothermal and wind (URT, 2016, Pp. 78).

The third area is enhancing climate change resilience through emission reduction, climate change adaptation and mitigation, developing new technologies, quality seeds, pest control, and agronomic practices (URT, 2016, Pp. 78).

The recent plan which is under operation is the Five years development plan III (FYDP III) implemented from 2021/2021 -2025/2026, more emphasis is on the protection of the environment and climate change mitigation by proper land use and management, protection of water sources, use of water harvesting technologies, afforestation programs, community-based natural resource management and enforcement of legislation against all forms of pollution (URT, 2021, PP.100).

Under this plan, areas recommended for interventions include, Promoting renewable green energy technologies (biogas, LPG, Solar Energy), resilience of deterioration of aquatic systems, promoting Biodiversity conservation, ensuring safe use and handling of modern biotechnology, Strengthen the national capacity for addressing climate change Adaptation and mitigation measures, Reduced land degradation, Minimize environmental pollution, Enforce Environmental Management Act, 2004, Develop and implement strategies to combat poaching, illegal harvesting and trade of wildlife, forest, bees, and antiquities resources, Increase the contribution of Beekeeping sub-sector and promote stakeholder’s engagement in the management of plantation forest resources for conservation (URT, 2021, PP.123).

To attain Tanzania Development Vision 2025, as far as Inclusive Green Economy is concerned, the National Strategy for Growth and Poverty Reduction (NSGRP I and II) and Five years Development Plan (NFYDP I, II and III) has been complemented by a number of Policy instruments from the Vice President Office (VPO). Such policy documents include National Determination Contribution (2021), Investment guide on waste management (2020), National Climate Change Strategy (2012) and National Environment Policy (1997).

Policy instruments formulated under the VPO, generally map policy and legal framework to protect the environment from pollution and environmental degradation caused by human activities. For Instance, the National Environmental Policy provide plans and guidelines on priority actions toward environmental conservation and sustainability in Tanzania (URT, 1997, Pp. 9- 26).

Other policy instruments under the VPO were formulated to enhance Inclusive Green Economy as per NSGPR I &II and NFYDP I,II &II so as to ensure adherence of Inclusive Green Economy towards achievement of TDV 2025. For example, the national Environmental Research Agenda for Tanzania 2017 – 2022, is very clear that it was formulated to ensure that IGE is attained as far as TDV 2025 is concerned (NEMC, 2017. Pp 8-10). Table 2 below presents several other policy, strategies or programs formulated to translate the implementation of the broader or cross-sectoral country programs.

Table 1 Overview of national and cross-sectorial IGE visions, strategies, and programs

Name of vision/strategy/program	Year of implementation
Third National Five-Year Development Plan (FYDP III)	2021/22-2025/26
Tanzania Development Vision 2025 (TDV)	1999-2025
The National Environmental Research Agenda for Tanzania 2017 -	2017
Tanzania’s Integrated Industrial Development Strategy (IIDS)	2011-2025
Tanzania National Adaptation Program of Action (NAPA)	2007-2025
National Climate Change Strategy	2013-
Blue Print for regulatory reforms to improve the business environment	2018-
National environmental policy	1997
National Strategy on Gender and Climate Change	2012-
Investment guide on waste management	2020
National Determination Contribution	2021

Despite the existence of several policy documents and programs in the country, environmental challenges remain to be fully adressed. To what extent these policies or strategies clearly adress key environmental challenges (through various instruments) facing the country remain to be an empirical question. Who are the key stakeholders affected or affecting such policy instruments (if any) and what role they play towards implementation of such instruments is another interesting question. It is against this background, this report presents the National Policy Review focusing on three major environmental challenges in the country namely fossil fuels, plastic pollution and deforestation.

Chapter 2: POLICY INSTRUMENTS IN SELECTED POLICY AREAS

While we acknowledge the existence of policy instruments across an array of environmental and natural resources, the scope of this chapter is limited to providing a detailed account of the country's policy instruments for only three earmarked areas namely; fossil fuels, plastic pollution and forest loss. The previous national policy reviews undertaken in IGE countries indicated these challenges to be not only more pronounced in the focus countries but also are likely to have a relatively larger impact to the environment and climate change in particular. In addition, this approach allows an in-depth assessment of the applicable instruments within the selected areas. Specifically, this section focuses on the description of policy instruments, implementation timeframe, whether it works or not, responsible entity for its implementation or monitoring, who are the most affected stakeholders by the given policy in the country as well as those affecting the instruments most.

The discussion also hinges on the general classification of each of the policy instruments into three main categories, namely; price-based instruments, right-based instruments, regulatory instruments and information-based instruments. Table 3 below provides a summary description and examples of what each of the instrument type would contain. While some of the instruments could be evident in one environmental problem, it is possible that other types of policy instrument to not be applicable in other types of environmental challenges.

Table 2 Categorization of policy instruments

Price-based	Right-based	Regulatory	Information-based
Taxes	Tradable permits/quotas	Bans	Voluntary agreements
Charges, fees, tariffs	Green certificates	Performance/technology standards	Information disclosure
Deposit-refund	Common property resources management	Permits	Labelling initiatives
Refunded charges		Zoning	Public participation
Subsidies			

Source: Adapted from Sterner et al. (2019)

The remainder of this chapter is organized as follows. Section 2.1. presents the applicable policy instruments for fossil fuels, Section 2.2 for the plastic pollution and section 2.3 the policy instrument applicable on forest loss.

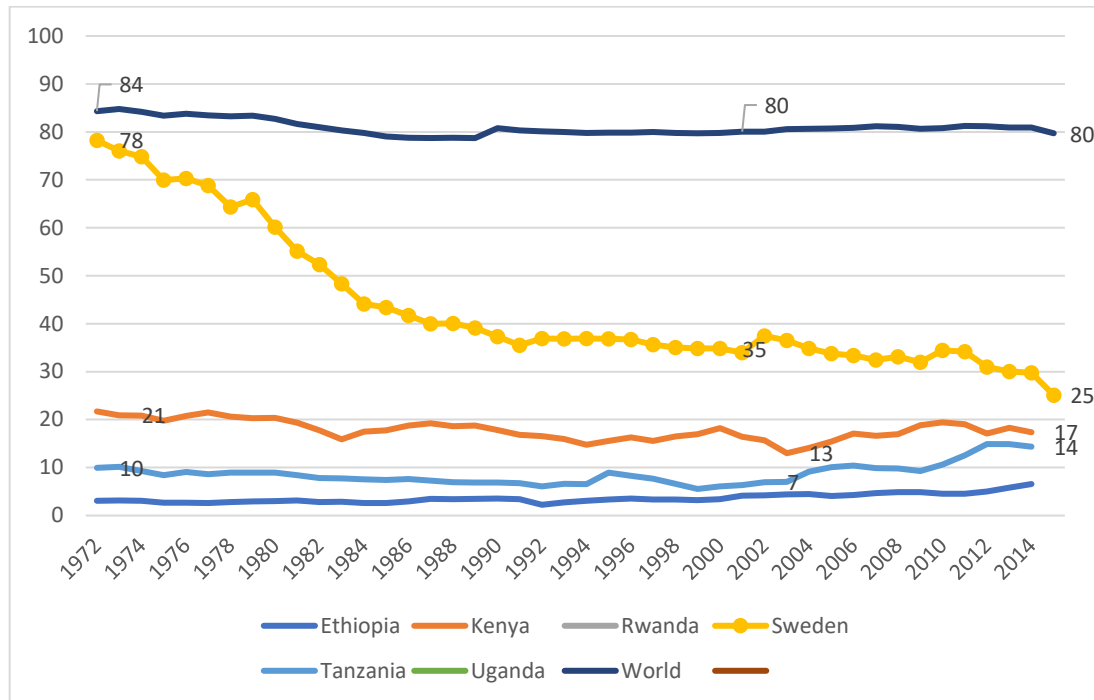
2.1. Fossil Fuels

Fossil fuels account for one of the major energy sources in Tanzania. Generally, fossil fuels comprise of coal, oil, petroleum, and natural gas products. Tanzania's fossil fuel resources comprise of only natural gas and coal, largely extracted for electric power generation in the country. For example, by July 2020, of the country's installed grid generation capacity of 1,601.84

megawatts; 55% of which (i.e. 893 MW) is generated from the natural gas and 5.5% (i.e. 89 MW) comes from heavy fuel oil.

Tanzania fossil fuel consumption for 2014 alone was constituted of app. 14% of the total energy consumption, an increase from only 10% in 1972 and 13% in early 2000 (see Figure 1 below). Despite the share being significantly below the world average, the increasing trend is contrary to other developing countries in the region such as Kenya (with a decline from 21% to only 17% between 1972 and 2014) but also developed countries in the world such as Sweden (recording a remarkable decline from 78% to just 25% between the same period).

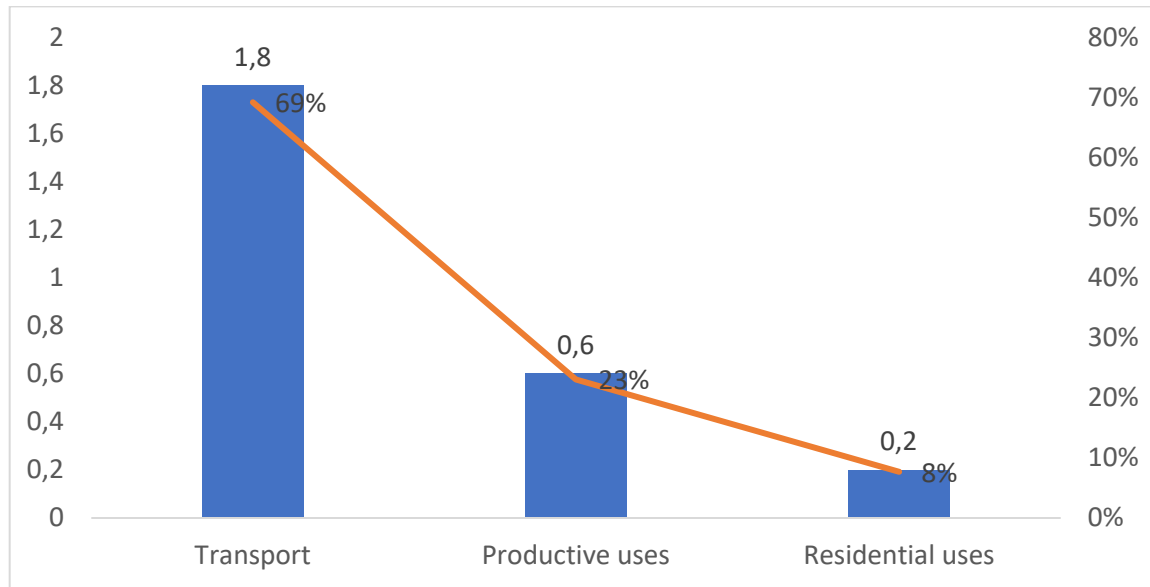
Figure 1: Trends on Fossil fuel energy consumption as % of total energy use, by selected countries



Source: Authors' construction based on World Bank's World Development Indicators (2022), accessed at <https://data.worldbank.org/indicator/EG.USE.COMM.FO.ZS>

Assessing the fossil fuel consumption by source, the most recent data indicate that the transport sector accounts for the significant proportion of the energy consumption in the country, accounting for about 1.8 Mtoe, equivalent to 69% of total fossil fuel used in the country; followed by productive usage (23%) and lastly residential uses (8%) (see Figure 2 below).

Figure 2: Fossil fuel final energy consumption in Tanzania by usage (Amount in metric tons of oil equivalent-Mtoe. Percentage represents share of total fossil fuel consumption).



Source: Authors' construction based on International Energy Agency (IEA) data accessed at <https://www.iea.org/data-and-statistics/charts/fossil-fuel-final-energy-consumption-in-tanzania-by-scenario-2018-2040>

These trends suggest not only the need for policy instruments to control the increasing usage of fossil fuels in the country but more importantly is where would such policies have the largest impact, i.e. the transport sector. This section describes a selection of policy instruments currently in place in the country to control fossil fuel usage, by type.

The overall policy direction in the country is guided by the main objectives of the national energy policy. According to Tanzania energy policy (2015) national energy goals include: creating a conducive environment for private capital investment in the Energy Sector, accelerating access to modern energy services through development and expansion of energy infrastructure, developing energy resources to adequately meet domestic energy demand and facilitation of energy trading, promoting energy alternatives including renewable energies to enhance diversification of energy mix, and enhancing energy efficiency and conservation in all sectors. Other goals include; optimizing benefits to the Government and the people of Tanzania through strategic participation, interventions and equitable benefit sharing, ensuring prudent management of petroleum resources and accrued revenue for the lasting benefits to the society, promoting usage of locally produced goods and services in the petroleum industry and promoting compliance with environmental, health and safety standards in the Energy Sector ([National Energy Policy, 2015](#))

2.1.1. Policy Instruments to reduce fossil fuels

Tanzania uses a mix of policy instruments to regulate fossil fuels in the country. The exact type of applicable policy instruments ranges from price-based policy instruments, such as fuel taxes to the right-based policy instruments, such as various types of permits and licenses. Other types of applicable policy instruments include those which are regulatory in nature as well as the information-based policy instruments. A notable feature for most of the applicable policy instruments in Tanzania on fossil fuels is the double roles they often play, namely, enhancing of

both environmental protections and revenue collection. Below we provide a detailed account of various policy instruments on fossil fuels in the country (also summarized in table 4 below).

Table 4: Summary of Policy instruments to reduce fossil fuels in Tanzania by type.

Price-based	Right-based	Regulatory-based	Information-based
i. Environmental Management Fees from fossil fuels ii. Various Taxes on Imported Used cars iii. Various Taxes on fossil fuels		i. Petroleum Act (2015) ii. Petroleum Rules (2018) iii. Introduction of Bus Rapid Transit (BRT) iv. Compulsory Environmental Impact Assessment (EIA)	Various Licenses to establish and operate businesses in the fossil fuel industry

Source: Authors' construction based from various sources as presented in the discussion below

Regulatory - based policy instruments:

This type of policy instruments is frequently used in fossil fuels sector to regulate and reduce the amount of pollution produced from burning of fossil fuels. While the Government of Tanzania has put in place a number of such policies, targeting both the suppliers and consumers, in this report we are discussing a selection of them below.

- i. *The Petroleum Act (2015) and Petroleum (Wholesale, storage, retail and Consumer Installation Operations) Rules (2018)*¹

The Petroleum Act (2018) is the parent law from which the Petroleum Rules (2018) are derived. These regulations are designed to regulate the activities related to petroleum wholesale business, petroleum storage business, petroleum retail operations business, petroleum consumer installation operations and related matters in Tanzania. They constitute of various rules necessary to control the establishment and operations of fossil fuel businesses and consumption in the country.

The main objective of the particular rules is to regulate increased establishment of the fossil fuel businesses in the country (and hence regulated supply and consumption of the fuel, which in turn has an implication on carbon footprint in the country). Among others, the regulations articulate required procedures and rules for licensing the petroleum businesses; general obligations of the wholesalers and environmental protection requirement. Since their establishment, the regulations have been successfully implemented in the country.

¹ See <https://tpdc.co.tz/wp-content/uploads/2022/06/Petroleum-Act-2015.pdf>; and <https://www.ewura.go.tz/wp-content/uploads/2018/08/The-Petroleum-Wholesale-Storage-Retail-and-Customer-Installation-Operations-Rules-2018-GN-380.pdf>

The responsible authorities to ensuring the implementation of these regulations and rules are the Energy and Water Regulatory Authority (EWURA) and Tanzania Petroleum Development Cooperation (TPDC).

ii. Introduction of Bus Rapid Transit (BRT)

The government established Dar es salaam Bus Rapid Transit (DART)² aimed at reducing trafficking in Dar es salaam city by reducing the number of commuter buses, so called “Daladala”, and also reducing CO₂ pollutions caused by existence of large number of old commuting buses in the city. The Dar Rapid Transit (DART) agency is responsible for enforcing the regulations and program in general and the agency operates under the guidance of the President’s Office, Regional Administration and Local Government (PO-RALG)³.

1. For example, by 2014, Dar es salaam city had approximately 6,820 registered “Daladalas”, serving a population of around 4.5 million people ([African Development Bank Group 2015](#)). Therefore, the policy aimed at reducing these by introducing environmentally friendly and modern urban bus rapid transit in the city which is not only fuel efficient but also moving fast.
2. This is regulatory based policy instrument which directs the government to construct special lanes for Bus Rapid Transit in selected areas, purchasing buses and removing commuter buses on those selected routes. The constructions of additional lanes of the Bus Rapid Transit project is ongoing in Dar es Salaam and has so far documented significant positive impact reducing the number of private commuters cars as well as volumes other smaller public transport mini-buses in the city .
3. This program is implemented into three phases. The implementation of DART project phase one started in 2007 and completed in 2015. The Phase one of DART corridor mainly involved construction of 20.9 km of roads which includes Morogoro Road from Kimara to Kivukoni (15.8km), Kawawa Road from Magomeni to Morocco (3.4km) and Msimbazi Street from Fire to Kariakoo (1.7km). Other facilities include 27 Bus Stations, five Terminals, three Pedestrian bridges at Kimara, Ubungo and Morocco, 1 Depot at Jangwani; 4 Feeder Bus Stations and widening of Msimbazi Bridge and two box culverts at Jangwani valley. Phase 2 and three are in the progress (DART, 2022).
4. This project is implemented by the President's Office - regional administration and local government in collaboration with development partners. There is limited literature on the evaluation of the implementation of this program.
5. The President's Office - regional administration and local government is the central actor which influence this policy instruments while commuter bus drivers and attendants are negatively affected by this policy instruments as they lose jobs while general public are affected positively

² Executive Agencies Act No. 30 of 1997 -Introduction of Bus Rapid Transit (BRT) in Dar es salaam city; through the GN No. 120 of 25th May 2007 under the Executive Agencies Act No. 30 of 1997 ([DART,2022](#))

³ See <https://www.dart.go.tz/>

by acquiring better and faster transport while discouraged to buy individual cars and hence reduction of emission of pollutant gases.

iii. Compulsory Environmental Impact Assessment (EIA) for fossil fuels dealers

The compulsory Environmental Impact Assessment (EIA) for fossil fuels dealer is a policy that do not only aim to ensure that there are enough fossil fuels to run the national economy but also to explore more possible domestic sources of fossil fuels.

6. However, to protect the environment, the government has formulated a regulatory policy instruments which requires every fossil fuel dealers in Tanzania to conduct Environmental impact Assessment and obtain a certificate before starting its operations ([EWURA, 2018](#)).
7. The policy instrument is implemented and evaluated by Energy and Water Utility Regulatory Agency (EWURA) and the National Environmental Management Council -NEMC. The policy is working as it is one of the critical requirements for fossil fuels dealers to get operational permits.
8. National Environmental Management Council (NEMC) and EWURA have more influence on this policy while fossil fuels dealers are influenced by the policy as they have to pay for environmental Impact Assessment of their projects.

Price-based Policy Instruments:

This type of policy instrument is also used to regulate fossil fuels consumption in Tanzania with the aim of safeguarding the environment but also revenue generation. Below are some examples of this kind of policy instruments implemented in Tanzania and how they are used:

i. Environmental Management Fees from fossil fuels

9. In 2021, the government introduces environmental management fees for fossil fuel dealers aiming at enhancing environmental resilience ([NEMC,2021](#)).
10. Through this price-based policy instrument, different amount of fees was introduced as environmental management fees. For instance, fossil fuels dealers have to pay environmental management fees for oil and gas separation, processing, handling and storage worth TZS 10, 500,000. Oil refineries TZS 10,500,000 and TZS 3,000,000 for facility for production and distribution of gas, steam and geothermal energy and TZS 10,500,000 for oil and gas field development etc. (Ibid,2021)⁴
11. This price-based policy instrument is implemented and monitored by NEMC and it is working, the extent of compliance by established entities is high and it ensures that any entity venturing into fossil fuel business has a clear environmental protection plan prior to its establishment. However, there is limited literature to describe if the fees collected is used for environmental purposes as intended.

⁴ United States Dollar (USD) against Tanzanian Shillings exchange rate is approximately 1USD=2,300TZS.

12. NEMC is the main actor who is likely to influence this policy instrument while fossil fuels dealers are influenced by the policy negatively as the cost of production increases.

ii. Imposing higher taxes for importation of used cars

Almost 100 percentage of all cars used in Tanzania is imported from other countries. As there is no legal ban of importations of used car, Tanzania is among of good consumer of used cars mostly from Japan.

However, to regulate the inflow of used cars a high import tax has been introduced on used cars. The tax increases with the age of the used car. For example, in addition to excise duty on motor vehicle charged based on cylinder capacity, imported used motor vehicles are charged extra excise duty.

- Used vehicles (excluding agricultural tractors) aged 8 years but not more than 10 years are charged at the rate of 15%.
- Used motor vehicles aged more than 10 years from the year of manufactures charged at the rate of 30%.
- Used buses aged more than 5 years from the year of manufactures charged at the rate of 10%.
- Used spare parts for motor vehicles and motor cycles are charges at the rate of 25% ([TRA, 2015](#)).

This policy instrument is price-based and it is implemented and monitored by Tanzania Revenue Authority (TRA) and the Ministry of Finance as well. The policy instrument is working as all imported used motor vehicles are charged extra, and taxes are settled while entering Dar es salaam port. However, there is limited literature unveils the extent and degrees by which such taxes have discouraged the importation of used cars in the country.

Actors who are more likely to influence this policy instrument is The Ministry of Finance and Tanzania Revenue Authority while car dealers and consumers are more likely to be influenced by the instrument in a negative way as the price of used cars increases.

iii. Various fees and charges related to the construction and operation of fossil fuel depots/stations

The government of Tanzania through its Energy and water utilities regulatory authority act (cap. 414) the petroleum act, 'subsidiary legislation' (2018) has put in place a number of fees and charges in an effort to making the consumption of fossil fuel relatively more expensive in the country. Some of these charges/fees include the followings: Construction of Petroleum Retail storage Facilities fees (TZS 500,000); Construction of Kerosene Retail facilities fees (TZS 200,000); Petroleum Storage Depots fees (TZS 2,000,000); LPG Filling Plant Fees (TZS 2,000,000); Lubricant Blending Plant fees (TZS 2,000,000); Waste Oil Recycling Plant fees (TZS 2,000,000) and Marine Loading & Off-Loading Facilities fees (TZS 20,000,000).

iv. Various taxes and levies imposed on Imported fossil fuels products

Carbon pricing, including fossil fuel taxes reform, is a powerful tool to encourage low-carbon development choices and contribute to domestic resource mobilisation. Fuel taxes have been

instrumental to reducing fossil fuel consumption and ultimately lower the atmospheric content of carbon. In an effort to lower fossil fuels consumption in Tanzania (complemented with the revenue motive), petroleum products are among the heavily taxed products in Tanzania.

Tanzania Revenue Authority (TRA) is responsible government body with administering the taxes and ensuring compliance of each responsible economic agent. While some of the taxes are charged to the business entities (eg. Import duty, etc) the eventual tax burden is transferred to the consumers through increased retail prices of the fuels.

Some of the taxes that specifically target the petroleum products imported in Tanzania include excise duty (charged at TZS 379 per liter of regular gasoline and TZS 255 per liter of diesel); Petroleum levy charged on diesel, petrol and kerosene all at TZS 100 per liter; and fuel levy charged on petroleum and diesel at TZS 413 per liter⁵. This is not to mention all other kind of indirect and direct taxes applicable to most of goods consumed in Tanzania such as Value added tax (VAT) charged at 18% of the value added, and Railway development levy charged at 1.5% of the CIF value of the imports.

Right-based Policy Instruments

In addition to the price-based and regulatory policy instruments, the fossil fuel sector is regulated by provision of the right-based policy instruments. This is done through the provision of business licenses to establish and operate the fossil fuel business in Tanzania. Below is the list of some of the licenses designed to control the fossil fuel usage in the country.

- i. License for selling petroleum in retail for 5 years
- ii. License for selling Kerosene for 5 years
- iii. License for Lubricants distributions for 5 years
- iv. License for LPG Distributions for 5 years
- v. LPG Wholesale business license for 7 years
- vi. License for Waste Oil dealers license for 5 years

⁵ See <https://taxsummaries.pwc.com/tanzania/corporate/other-taxes>, accessed on 21st October 2022.

2.2. Plastic Pollution

In Tanzania, most of the plastic pollution originates from land-based activities with Polyethylene Terephthalate (PET), High-Density Polyethylene (HDPE), Polypropylene (PP), Polystyrene (PS), Poly Vinyl Chloride (PVC), Polyester, and Synthetic Rubber as the main pollution hotspots originated mainly from large cities. Plastic pollution in the country is attributable to the mismanagement of plastic waste, especially in unplanned urban settlements (UNEP, 2009). According to official reports, 84% of all plastics were mismanaged and disposed of informally in various ways, such as by burning and roadside dumping (NBS, 2017) in the country. This rate increased to 95% in 2021 (IUCN 2021). Per capita plastic waste generation in the country for the same year was around 5.6 kg/year (lower than the world average of 29 kg/year) while only 4% of the plastic waste was collected for recycling (*Ibid.*). The mismanaged waste can potentially leak into the oceans, rivers, and lakes and cause irreversible effects on the environment.

The legal and regulatory framework guiding the management of plastic pollution in Tanzania is incorporated in the National Environmental Policy (NEP) 1997 which is legally formalized in the Environmental Management Act, of 2004. The Act is the principal law on the environment which establishes a clear institutional framework to manage the environment. This includes the National Environmental Advisory Committee (NEAC) with an advisory role to the Ministry responsible for the environment, the National Environmental Management Council (NEMC) to enforce laws related to environmental management, Sectoral Environmental Sections to oversee environmental management to respective sectors, and Environmental Committees at the Local Government Authorities (LGAs) levels to oversee the implementation of the Act at their jurisdictions. The Act further confers the role of enforcement to the National Environmental Council (NEMC) and empower LGAs to appoint Environmental Management Officers as implementers at their respective levels. Part IX of the Act describes the management of different types of wastes including solid waste. Although it doesn't mention a specific waste management strategy, it emphasizes the need to sort waste according to its source for its proper management (URT, 2018). The strategy specific to solid waste management was adopted in 2018 under the National Solid Waste Management Strategy, 2018 with the main objective of guiding sustainable solid waste management in the country. It aspires to achieve approximately 80% waste recovery and 20% landfill in a sanitary landfill (inert material) by 2030. Moreover, the strategy targets 50% waste recovery and 50% semi-land filling by 2025 in the medium term and 30% waste recovery and 70% controlled dumping in the short term (URT,2021). One of the Government initiatives identified under the Strategy is the involvement of the private sector to minimize non-degradable materials such as plastics and issuing of a Public Notice to ban the manufacturing, importation, buying, and use of plastic bags which was formally implemented in 2019 following the adoption of the Environmental Management (Prohibition of plastic Carrier Bags) Regulations, 2019.

2.2.1. Policy instruments to reduce plastic pollution

Alpizar et al., (2020), classifies policy instruments towards the reduction of plastic pollution into price-based, regulatory-based, rights-based and behavioural-based instruments and argues for a mix of these policy instruments to tackle the problem of plastic pollutions. Price-based instruments depend heavily on the markets with adequately defined property rights and observable transactions. These instruments aim at raising the price of a good or an input, relative to less damaging alternatives, in order to discourage its use. Rights-based instruments allow for

the trade in pollution rights to minimize pollution reduction costs. Regulatory-based instruments determine allowable pollution levels. While behavioral-based instruments (mainly information) use people’s social preferences and/or cognitive limitations to influence behavior in favor of lower plastic pollution.

Tanzania uses a mix of policy instruments to reduce plastic pollution by reducing the production and leakages of plastic materials, enhancing proper management and collection of plastic wastes, and enhancing the re-use of plastic materials while discouraging single-use plastics and enhancing the recycling of plastics. This review focuses mainly on regulatory-based, right-based and information-based instruments. The reviewed instruments are summarised in Table 5.

Table 3 Summary of the reviewed policy instruments for the reduction of Plastic pollution in Tanzania

Right-based	Regulatory-based	Information-based
-Extended Producer Responsibility (EPR) -Provision of waste collection that promotes separation of waste for recycling	-Bans on single-use plastics and light plastics -Installations of waste collection gears	-Education and information campaigns

Source: Authors’ construction based on various sources as presented in the discussion below

Regulatory-based Policy Instruments

i. Ban on the production and consumption of plastic carrier bags

The ban on the production and consumption of plastic carrier bags has been officially implemented in Tanzania since 2019 and is guided by the Environmental Management (Prohibition of Carrier Plastic Bags) Regulations, 2019 (URT, 2019). This policy instrument is implemented by the Vice President’s office (VPO) – Environment with collaboration from the President’s Office -Regional and Local Government Administration (PO-RLGA), National Environmental Management Council (NEMC), and all relevant stakeholders and aims at prohibiting the importation, production, sale and use of carrier plastic bags regardless of their thickness.

In enforcing this instrument, the government issued a Public Notice (2015) to ban the manufacturing, importation, selling, buying, and use of plastic bags under 30 microns (or 0.03 mm) thickness and those with 65 microns (or 0.065 mm) thickness used for water and juice packaging (URT, 2018). The official deadline for the production and use of plastic bags regardless of their thickness was 1st June 2019 which was immediately followed by the cessation of all licenses for plastic bag production. Plastic bags which were still in the market were surrendered. For instance, a total of 253.7 tons of plastic carrier bags were surrendered to the designated collection point (URT, 2021). Alternatively, plastic bag producers were encouraged to invest in environmentally friendlier carrier bags like cotton and paper bags. Failure to comply may result

in the imposition of heavy penalties such as a fine of up to over 1 billion TZS but not less than 20 million or imprisonment of up to 2 years (regulation 8 (a)). Other measures include the confiscation, disposal, or recycling of the carrier plastic bags at the cost of the offender (regulations 17 and 18). Moreover, more penalties such as the closure of production units and license cancellation can be imposed by the Courts upon conviction. This prohibition exempts plastics or plastic packaging for medical services or industrial products, or construction industry or agricultural sector or food processing, or sanitary and waste management. However, it is the responsibility of the person who imports the exempted plastics to ensure that the associated waste is managed and disposed of in accordance with the Environmental Management (Solid Waste Management) Regulations and the Environmental Management (Hazardous Waste Control and Management) Regulations.

The ban on carrier plastic bag production (plastic industries) and consumption is generally working since there is no legal production and distribution of carrier plastic bags in Tanzania. Local producers have been actively engaged in the production of alternative bags which are now widely used throughout the country. However, it is not clear how long it will take for a complete phasing out of single-use plastics.

ii. Installations of waste collection gears

Legal waste disposals are fundamental in the proper management of plastic waste. These include the installation of enough waste collection gear. To implement this policy instrument, the Government of Tanzania has adopted several regulations that give the mandate of waste management to Local Government Authorities (LGAs) and District Authorities, among others, in the areas of their jurisdictions. For instance, the Environmental Management Act, 2004 (Section 114-138) assigns LGAs with the responsibility of waste management and minimization at the source. The Act sets basic standards for the collection of waste including source separation and the use of appropriate waste containers. The LGAs are required to carry out regular studies into the management of wastes including waste quantity and composition for appropriate methods for sorting, storage, and disposal. It is also the responsibility of LGAs to manage waste collection in both urban and peri-urban areas and establish waste transfer and final disposal facilities and must oversee and ensure that industries appropriately manage all waste generated from their activities. The Local government Act No. 8 of 1982 (section 55) gives the urban LGAs responsibility to manage waste including public latrines, septic tanks, waste receptacles, sewage, and solid waste. The Water supply and sanitation Act 2018 (section 20) gives the Urban Water Supply and Sanitation Authorities the responsibility for the development, provision, and maintenance of water and sanitation works. The environment management (Hazardous waste control and management) Regulations of 2009 assign the Ministry responsible for the environment the responsibility to oversee the management of hazardous waste including licensing and transboundary movement.

However, the success of this policy instrument has been challenged by the lack of information and properly developed infrastructures for solid waste collection and management in almost all local authorities in the country (URT, 2020). For instance, the LGAs were found not to have data on the amount of plastic waste generated, collected, and recycled in their areas due to a lack of research on waste quantification and baseline data on waste types and generation trends (URT, 2021). This has, among others, resulted in limited waste sorting and prediction of the number of

plastics being produced. The lack of adequate waste disposal infrastructures has led to the spread of plastic pollution which is carried out to water sources during rainy seasons.

Right-based instruments

i. Extended Producers' Responsibility (EPR)

Extended Producers Responsibility (EPR) addresses the lack of market challenges for used plastic materials by making producers responsible for the collection and recycling of the plastics they have produced (Alpizar et al., 2020). The Tanzania government adopted this instrument in 2014 (URT, 2014). EPR is guided by section 19 of the Prohibition of Plastic Carrier Bags, 2019 whereby any manufacturer or supplier of products contained in plastic bottles has to set up, operate or participate in a take-back system for collecting their respective waste plastic bottles for recycling. However, this policy instrument has been challenged by inadequate coordination among the key actors i.e. producers/manufacturers, Local Government Authorities (LGAs), and the National Environmental Management Council (NEMC) which affects the flow of information. The evaluation conducted in 2021 by the Tanzania National Audit Office, found that both NEMC and nine (09) LGAs failed to enforce Extended Producers' Responsibility at all. Evaluators observed the presence of uncollected plastic bottles, and plastic packaging materials in Dar es Salaam, Tanga, and Mtwara coastal areas particularly in public beaches and river inlets (URT, 2021). The lack of economic motivation for producers to produce recycled plastics and the high cost involved in recycling plastic products, especially colored products were cited as one of the reasons limiting EPRs. Therefore, this calls for strict controls on plastic and packaging designs to ensure that all produced plastics meet the minimum recycling requirement and the application of strong sanctions against non-compliance.

ii. Provision of waste collection that promotes separation of waste for recycling

It is clearly provided in the Environmental Movement Act, of 2004 that the LGAs should promote the separation of wastes at the sources so as to minimize solid wastes in their jurisdictions and enhance the recycling of wastes. To achieve this, the LGAs should prescribe, among others, for mechanisms to be put in place to involve the private sector and Non-Governmental Organizations on planning, raising awareness among producers, vendors, transporters, manufacturers and others on the need to have appropriate containers and enhance separation of waste at source. This instrument complements installations of waste gears instrument and is a key input in the successful implementation of the Extended Producer Responsibility instrument. However, lack of research for waste quantification and characterization to establish baseline data for waste types, quantities, and generation trends has been cited as one of the major constraints for the success of this instrument (URT, 2021).

Information-based policy instruments

i. Provision of education and information campaigns

The Government of Tanzania (GoT) through Local Government Authorities (LGAs) in collaboration with private stakeholders such as NGOs and media has been actively involved provision of education and awareness campaigns against plastic pollution. For instance, creation of public awareness programs through sharing of information were introduced in 2019 requiring the public to sort plastic wastes from other wastes (URT, 2019). This policy instrument is implemented by the Vice President's Office (VPO) and President's Office - Regional and Local Government Administration (PO-RLGA) in collaborations with other stakeholders who are providing education to the public. However, this instrument is not effective due to couple of reasons. Firstly, local government authorities have not yet installed sufficient waste collection gears which supports waste sorting and secondly there is no adequate public awareness campaigns to change the public understanding and attitude.

The 2021 National Audit Office evaluation report indicates that neither Vice President's Office (VPO) nor President's Office -Regional and Local Government Administration (PO-RLGA) did adequately conduct education campaigns to the citizens on waste sorting, waste management or the implementation of Reduce, Reuse and Recycle (3Rs) model (URT, 2021). In the report, it is further explained that Local Government Authorities (LGAs) did not have a well-designed community awareness program since the planned awareness programs were not clear on how often the program should be carried out – weekly, monthly, bi-annually, or annually. It was not clear also who are the targeted audience, and in which form it will take (advertisement or notice on TV or radio, consultation, training, pamphlets, internet, etc.). The observed faults affected LGAs' ability to conduct performance assessments to check whether the program was effective and if it contributed to improving plastic waste management.

2.3. Forest Loss

In Tanzania, forests are abundant and include, miombo woodlands, mangrove forests, tropical forests and thickets. Tropical forests and woodlands occupy 55% (48 million hectares) of Tanzania. 97% consists of natural trees and 3% is planted trees. About 50% of forest cover is in protected areas such as reserved forests, National parks or game reserves which accounts for 28% of total land in the country whereby harvesting forest resources in these areas is strictly prohibited in national parks or game reserves and is done under specified way of harvesting in reserved forests.

Existing Policy instruments consistently require that harvesting be based on sustainable harvesting plans. The Forest Act provides the legal basis for sustainable forest products production and grants communities legal control over all forests on village land. The Forest Act also grants villages the exclusive right to charge royalties for produce from village land forest reserves. The National Forest Policy 1998 address forest issues. The main objectives of the Forest Policy include sustainable supply of forest products and services by maintaining sufficient forest area under effective management; increased employment and foreign exchange earnings, ecosystem sustainability through forest conservation; and enhanced national capacity to manage forest sector (URT, 1998).

In Tanzania's forest sector, Community Based Forest Management (CBFM) became the most important program and implementation guided by policies, acts and guidelines since 1998. The

National Forest Policy approved in 1998, followed by the enactment of Forest Act 2002 and Community Based Forest Management guidelines (URT, 2015). CBFM has become increasingly used as an approach to conserving local forests while contributing social and economic benefits to local communities. However, for CBFM to be sustainable over the long term, it must meet environmental, social, and economic objectives. Tanzania is still facing high deforestation and forest degradation. The rate of deforestation in the country is estimated to be 469,000 ha per year (URT, 2017). A study by Nike et al (2020) on drivers of deforestation in Tanzania indicates that crop cultivation was the most commonly observed driver occurring in 89% of plots, compared to livestock grazing (69%) and charcoal (35%). The main driver is the rapidly growing population, which is largely dependent on wood fuel to meet the daily energy needs. Biomass energy constitutes about 92% of the energy consumed in Tanzania. Charcoal is one of the largest industries in Tanzania, employing tens of thousands of rural people and supplying energy to millions of both urban and semi-urban households. Overdependence on biomass energy providing 92% of energy needs is greatly contributing to degradation of forest resource. Generally, wood fuel demand for a growing population is presented as the main driver of deforestation and forest degradation. Considering the high dependence on fuel wood in Tanzania, the environmental costs due to inefficient charcoal production and use are enormous (URT, 2019).

According to National Forest Policy (1998) policy objectives and directions focuses on supply of forest products and services by maintaining sufficient forest area under effective management and ensuring ecosystem sustainability through forest conservation and enhanced national capacity to manage forest sector (URT, 1998). In Tanzania, evidence on revenue generation is clear to many CBFM villages where the sustainable harvesting model is practiced (Zahabu, E. & L. Madadi 2020) (Villagers have managed to implement many development projects through own funds coming from forest-based enterprises).

2.3.1. Policy instruments to reduce forest loss

As we have explained above, approximately 28% of land in Tanzania which contain about 50% of forest cover are reserved land and are strictly prohibited to harvest forest resources; other policy instruments are limited in this area. Therefore, we focus our analysis here on policy instruments which are affecting existing forest either by increasing or decreasing forest loss on privately owned land, with specific focus on price-based instruments. We are categorizing policy instruments into three (3) categories which are timber harvesting related, harvesting of non-timber forest products related and agriculture land expansion related.

Timber harvesting related policy instruments

According to forest regulation (2019) (URT, 2019) it specifies charges/fees related to harvesting of forest resources in Tanzania. These activities include felling trees or extraction of timber for commercial use or for exploration of minerals; construction of roads, paths, railways, waterways. It specifies the amount of fees to be paid for each type of product to be extracted from trees cuts.

The regulation also established royalties of cutting trees for timber. This policy instrument aims at increasing government revenues on one hand and discouraging tree cutting on the other hand.

Also, the policy instrument aims at consolidations of fund for reforestation. Royalty of cutting trees is charged differently based on class and per cubic metre (standing tree volume).

In 2019, government instituted the 2019 Forest Regulation (URT, 2019) for which licensed charcoal traders are required to pay royalty of TZS 250 per kilo charcoal or 12,500 for a 50kg-bag of charcoal.

Fees are set by central government and is aimed to discourage production of charcoal by making it less profitable for producers and traders. At the same time, the fees collected is used for development projects in villages where the respective charcoal is produced from. The effectiveness of fees is higher in the CBFM villages where sustainable charcoal production model is practiced. Due to nonexistence of sustainable harvesting model in some parts (non-CBFM villages), producers and traders of charcoal moves to non-CBFM villages where the possibility of not complying with standard weight of 50kg per bag is high. The fee set by central government amounting to TZS 12,500 per bag of charcoal, has made most CBFM village less attractive to buyers of charcoal (Hepelwa & Mrema, 2022). This might be due to availability of cheaper charcoal from other sources likely from unsustainable harvested forests competing with charcoal produced from CBFM. Often, cheaper charcoal is likely to come from forests which are not managed sustainably.

Economic policy instruments guiding the implementation of forest policy as stipulated in the Forest Regulations (in different amendments). The recent amendments resulted in the establishment of the Forest Regulations, 2019. The regulations emphasize the sustainable utilization of logs, timber, withies, poles, or charcoal.

The regulations specify the requirement of permits and respective charges/fees issued to permit the activities to be carried out in national or local Authority based forest reserves. These activities include felling trees or extraction of timber commercial use or for exploration of minerals; construction of roads, paths, railways, waterways. It specifies the amount of fees to be paid for each type of product to be extracted from trees cut (fee for charcoal, timber, poles etc. Producers and traders of forest products are paying fees/charges based on permits. Controls exists in various road points to ensure fees are paid.

The sustainable utilization of logs, timber, withies, poles or charcoal provide lee way for forest loss. It requires a person to apply for harvesting logs, timber or charcoal. It also emphasizes on payment of appropriate fees and the person will be permitted to harvest. The regulation provides two levels of applications based on the status of the forest reserve where harvesting takes place. That, district forest officer receives applications for the national forest reserve or forests in general land or local government authority forest reserve area. In cases where application is for harvesting in village forest reserve, the village executive officer is responsible to grant the application.

The regulation on sustainable utilization of logs, timber or forest provides conditions for harvesting logs, timber or charcoal for commercial purposes or for household consumption purposes. That a person harvesting for commercial purposes from private land is obliged to have permit and payment of royalties stipulated. In case of household consumption, the person requires to have the permit alone. Entrepreneurs are allowed to sustainably harvest forest products and pay royalties to village government. The use of royalties is both on development

projects as well as financing forest management activities. With this model, benefit sharing is vivid whereby both communities benefit as well as forest resources are managed in sustainable manner. However, expansion and implementation of CBFM in Tanzania is hampered by erratic, unreliable and unsustainable financing mechanisms guiding sustainable financing modalities in most CBFM villages.

Agriculture land expansion related policy instruments

Agriculture expansion is one factor affecting forest loss. A study by Nike et al (2020) on drivers of deforestation in Tanzania indicates that, crop cultivation was the most commonly observed driver occurring in 89% of plots, compared to livestock grazing (69%) and charcoal (35%) It is clearly stated in the forest regulation (2019) (URT, 2019) that, any person who intends to fell trees for farm preparation and/or other land use purposes shall obtain a permit from the District Forest Manager after approval of the District Forest Produce Harvesting Committee. The regulation stipulates fines to any person who violates the provision and is liable to fine of TZS 3 million and TZS 5 million for the farm size of 1 to 50 acres and TZS 10 million and 12 million for the farm size above 50 acres. With such conditions, as long as an applicant follows or adhered with this requirement, farm expansion on the forest land continues and consequently results to increased forest loss. Beyond protected areas, there is no clear policy limiting the conversion of forests to agricultural land (Nike et al, 2020). Reducing deforestation in Tanzania requires greater inter-sectoral coordination between the agriculture, livestock, land, energy and forest sectors.

Chapter 3: PUBLIC ACCEPTANCE OF POLICY INSTRUMENTS

An important component contributing to an effective introduction and implementation of environmental policy instruments is that there is public acceptance. 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 on older vehicles from 8 to 5 years. 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. 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 if there is low public support.

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 *concern* for environmental degradation is positively linked to policy instrument support. 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 economic⁶ 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. The results are accounted for below.

3.1. Survey on Acceptance of Policy Instruments

In the following sections we will present the results for Tanzania 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. That is: 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 during March 2022. In total 5 078 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 Tanzania, the total number of respondents were 1 023. In the case of Tanzania, the total

⁶ 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).

number of respondents were 1 023. This data was a good representation of the population characteristics in Tanzania, in terms of gender, education and area of residence. However, there was relatively large number of older respondents as compared to population data. This was because during data collection more older people were willing to participate in the survey as compared to younger people⁷.

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 at workshops in each of the five countries during July and August 2022. The survey was responded to individually at the beginning of the workshop. In total 249 respondents, with a range of between 36-65 respondents in each country. In Tanzania the number of respondents were 51, representing the following kinds of stakeholder: 28% public sector, 36% academia, 22% civil society and 14% private sector.

3.1.1. Acceptance of Policy Instrument affecting Fossil Fuels

In the surveys we asked our respondents about their opinion about three proposed or already implemented policy instruments to deal with the negative consequences for the global climate and local air quality caused by the use of fossil fuels (such as petrol, diesel, gas, kerosene and coal). The following three policy instruments are:

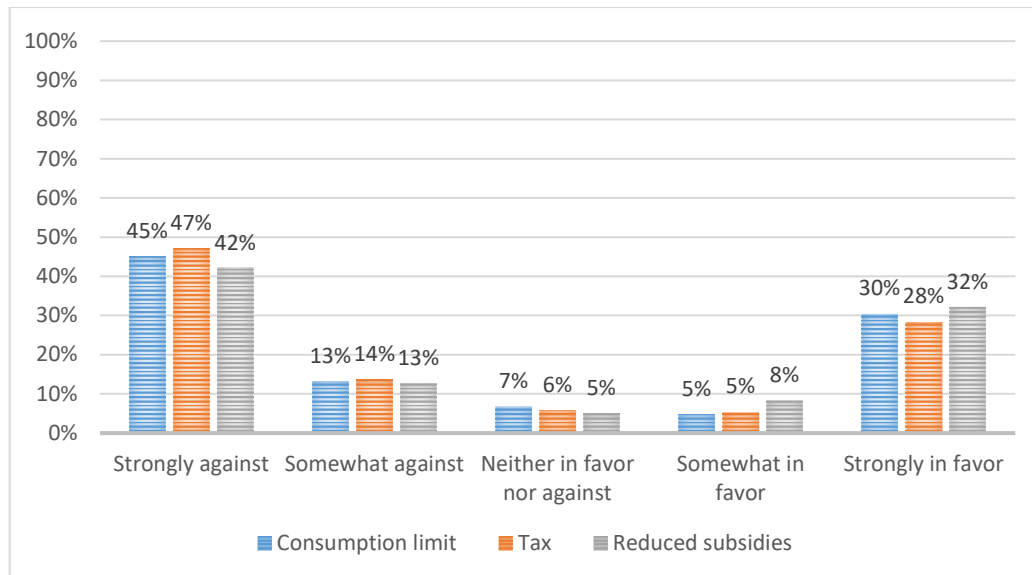
- Decreasing the quantity of fossil fuels by regulating how much households can buy
- Increasing the prices on fossil fuels by introducing a tax
- Increasing the prices on fossil fuels by reducing subsidies

Figure 3 shows the results for the general population in Tanzania. It indicates that there is a much stronger opinion against these policy instruments, rather than in favour of them. That is, 55 – 61% are strongly or somewhat against the proposed policy instruments, compared to 33-40% which are somewhat or strongly in favour. Further, there is a rather similar acceptance to the different kinds of instruments proposed. However, the reduced subsidy in fossil fuels seems to be the preferred.

However, the picture changes when respondents were informed that the revenue was going to be used for a specific purpose. Such as education, infrastructure, environment programs or social programs targeting the poorest households in society. In Tanzania, the acceptance for a tax or reduced subsidy increased from 33-40% (without specified revenue use) to 53-58% when revenue use was specified.

⁷ We have conducted statistical test on the population sample (Kruskal-Wallis) to confirm statistically significant differences between the distribution of responses per policy instrument. This has not been done for the stakeholder survey, due to the low sample size.

Figure 3 General population's acceptance of 3 different policy instruments affecting fossil fuel use (1023 respondents)

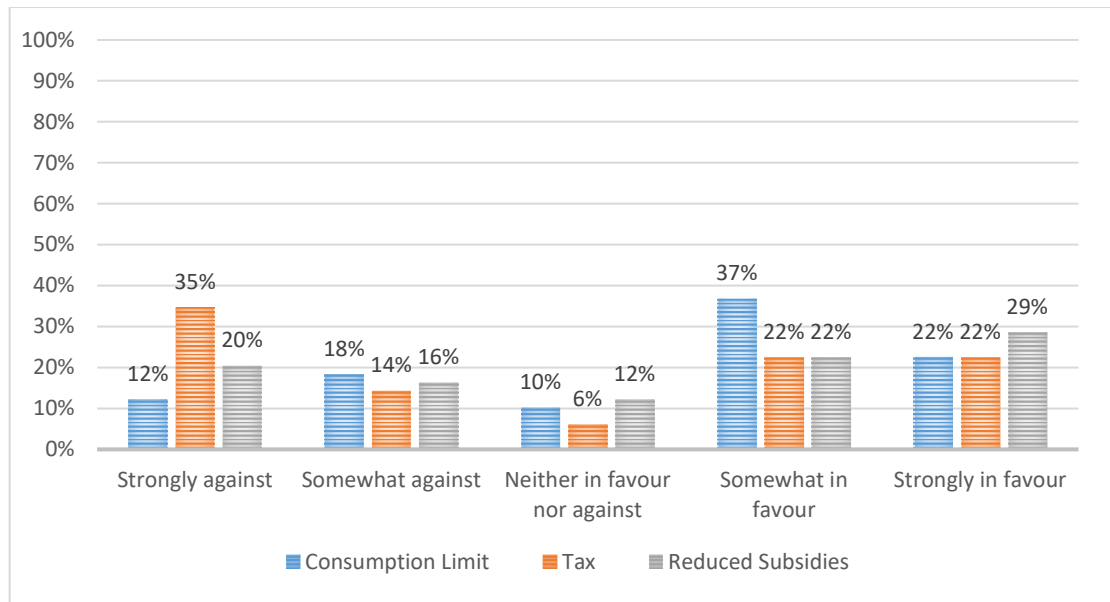


In addition to the question on general fossil fuel use, we also asked about the opinions concerning a decrease in the price on cooking gas (i.e. Liquid Petroleum Gas, LPG) by a subsidy. The acceptance of this subsidy was strong compared to the other instruments with 76% of the respondents stating they were somewhat or strongly in favor, whereof 66% stated strongly in favor. In comparison to the other countries where the survey was conducted the acceptance for this LPG subsidy was among the lowest and with the highest share strongly against (20%).

Stakeholders' perspective

When asking different stakeholders, the same questions as the general public, the responses turn out rather different as seen in Figure 4 below. Here the results indicate a higher acceptance to the three policy instruments affecting fossil fuel use. There is preference toward the consumption limit and reduced subsidy, compared to the tax. The acceptance increased a lot when the use of collected revenues were specified, a similar pattern as we saw amongst the general public. However, it is important to keep in mind the large difference in number of respondents between the two surveys, only 51 respondents in the stakeholder survey compared to 1023 respondents from the general public. In Appendix 2, the responses divided per category of stakeholders are presented (see figure 12 and 13).

Figure 4 Stakeholders' acceptance of 3 different policy instruments affecting fossil fuel use (51 respondents)



3.1.2. Acceptance of Policy Instruments affecting Plastic Pollution

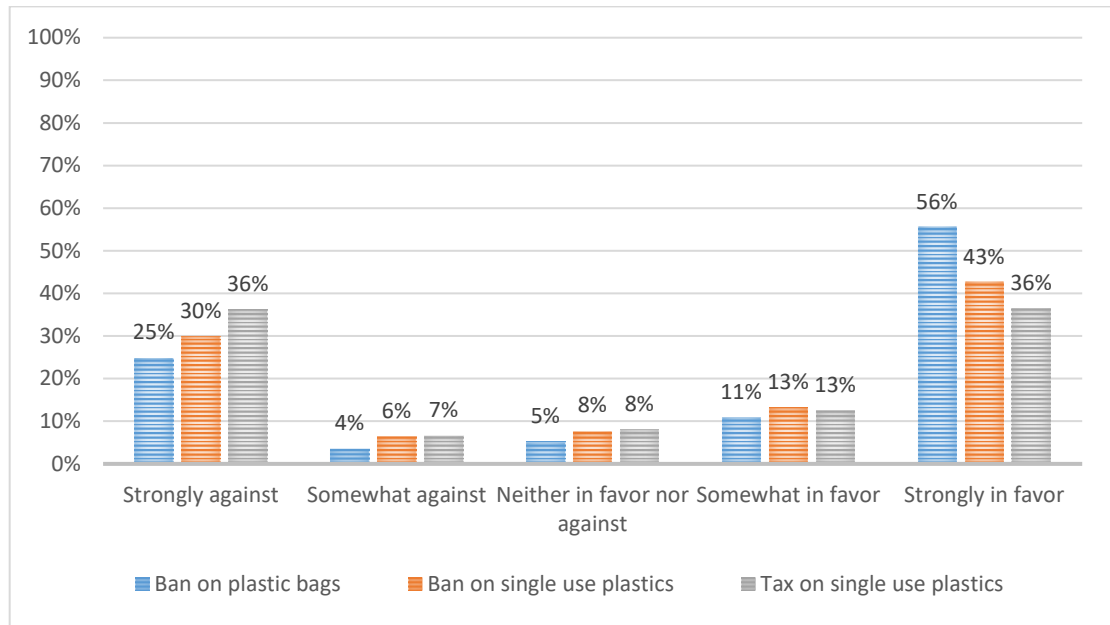
Concerning plastic pollution, we asked in the survey about the opinions on the following three proposed or already implemented policy instruments:

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

Compared to the rather low acceptance of the policy instruments on fossil fuels, apart from the LPG subsidy, it is much higher for the ones concerning plastic carrier bags and single use plastics (see Figure 5). The respondents are more in favor than against for all the proposed policy instruments to deal with plastic pollution. However, concerning the tax on single-use plastics the difference between the share of respondents against compared to the ones in favor is small. For the tax 44% is strongly or somewhat against vs 49% somewhat or strongly in favor, meanwhile for the ban on single use plastics the equivalent percentage are 36 % resp. 56%.

Our results also indicate that there is a higher acceptance of a ban (56-67%) on both single-use plastic and carrier bags compared to a tax (49%) on single-use plastics amongst the general population.

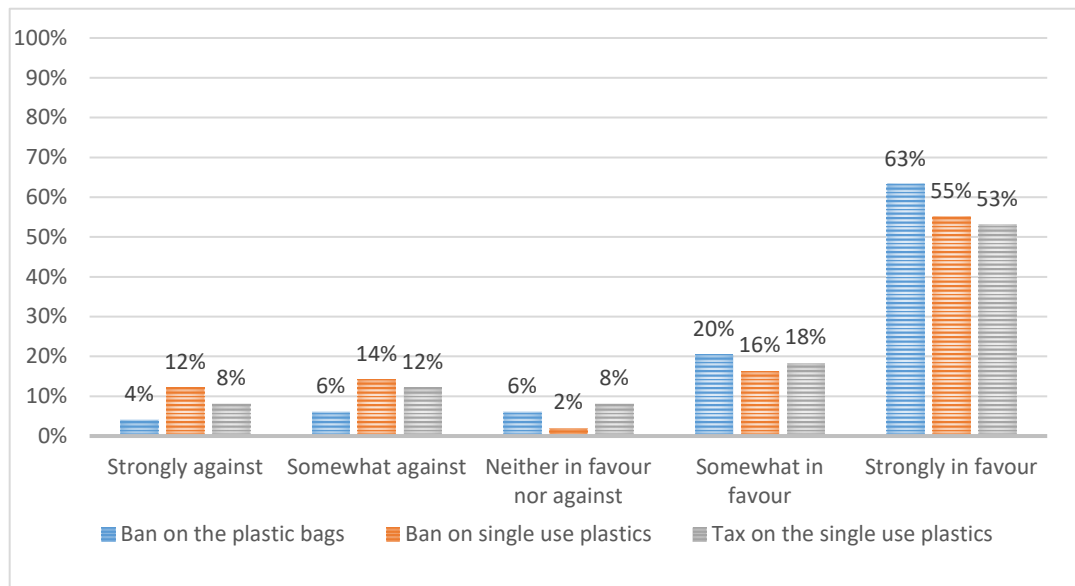
Figure 5 General population's acceptance of 3 different policy instruments affecting plastic pollution (1023 respondents)



Stakeholders' perspective

For policy instruments affecting plastic pollution, the results from the stakeholder survey turned out to be rather similar to the general public (see Figure 6), compared to the differences seen for fossil fuel. However, the acceptance among the stakeholders is even higher. Our results indicate that there is a strong acceptance for the three proposed policy instruments both among the general public and stakeholders in Tanzania. The strongest acceptance is found for the ban on plastic carrier bags, which is an already implemented policy instrument in Tanzania today. When looking at a single use plastic, we see no clear preference between the ban and the tax. The responses per stakeholder category is shown in Figures 7 and 8 in Appendix 2. Note the low number of respondents per category compared to the general public survey.

Figure 6 Stakeholders' acceptance of 3 different policy instruments affecting plastic pollution (51 respondents)



3.1.3. Acceptance of Policy Instruments affecting Forest Loss

To address the issue of forest loss we asked questions on the opinions on a regulatory-based (ban) and a price-based (tax or fee) policy instrument for (1) cutting trees in public and community forests and (2) producing, selling and usage of charcoal. The results are presented in Figure 7 and 8 below.

The respondents are more in favor (somewhat or strongly) of regulating tree cutting in community forest via both a ban and tax (60-62%), compared to against (32-35%). For charcoal, we see a similar pattern, although, the difference between the ones against and in favor is smaller. For a ban 42% are strongly or somewhat against and 50% are somewhat or strongly in favor, the equivalent percentage for a tax or fee is 41% resp. 51%.

Figure 7 General population's acceptance of 2 different policy instruments affecting forest loss by cutting trees (1023 respondents)

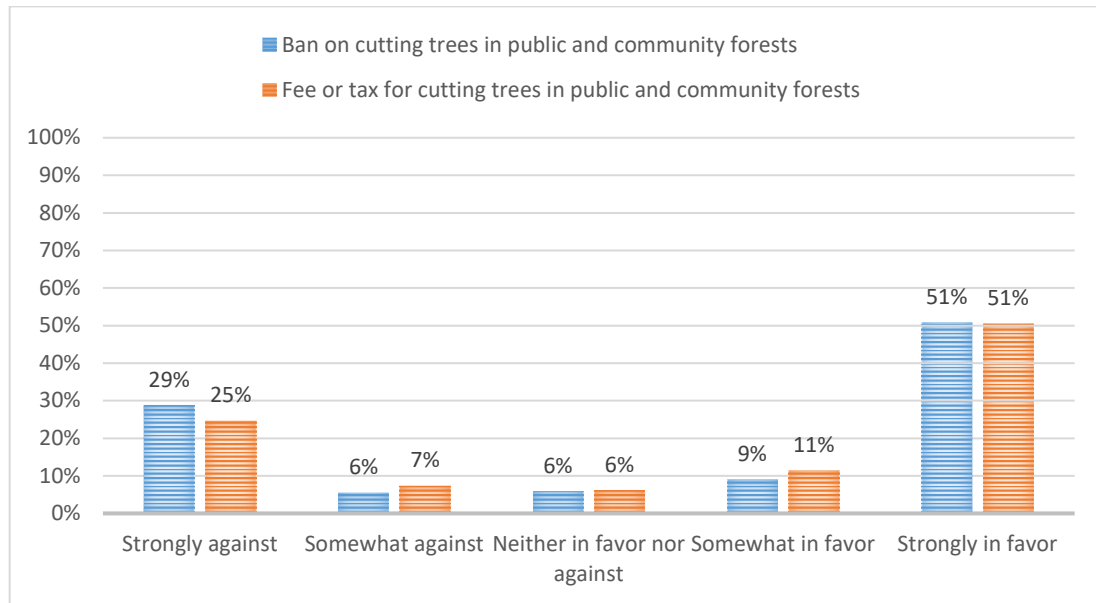
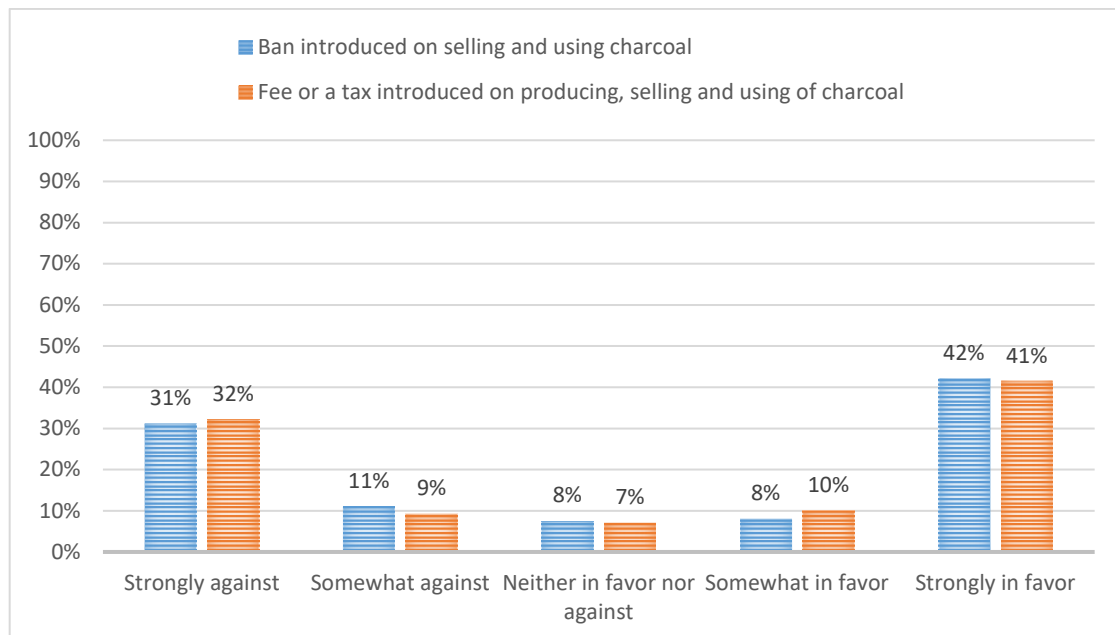


Figure 8 General population's acceptance of 2 different policy instruments affecting forest loss due to charcoal (1023 respondents)



Stakeholders' perspective

The stakeholders' perspective indicates that most respondents are strongly or somewhat in favor of the proposed policy instruments to tackle forest loss, as can be seen in Figure 9 and 10 below. Compared to the the general public, the stakeholder has responded to be in favor to a much larger extend. However, it is important to keep in mind the large difference in sample size.

Concerning a ban or tax/fee on charcoal production and usage, the stakeholders has stated that they are strongly or somewhat in favor especially towards the fee or tax. Hence, the results indicate that

there is a stronger preference toward this price-based instrument compared to the regulatory ban when it comes to charcoal. The breakdown of responses per stakeholder category is presented in Appendix 2, Figures 10 and 11.

Figure 10 Stakeholders' acceptance of 2 different policy instruments affecting forest loss by cutting trees (51 respondents)

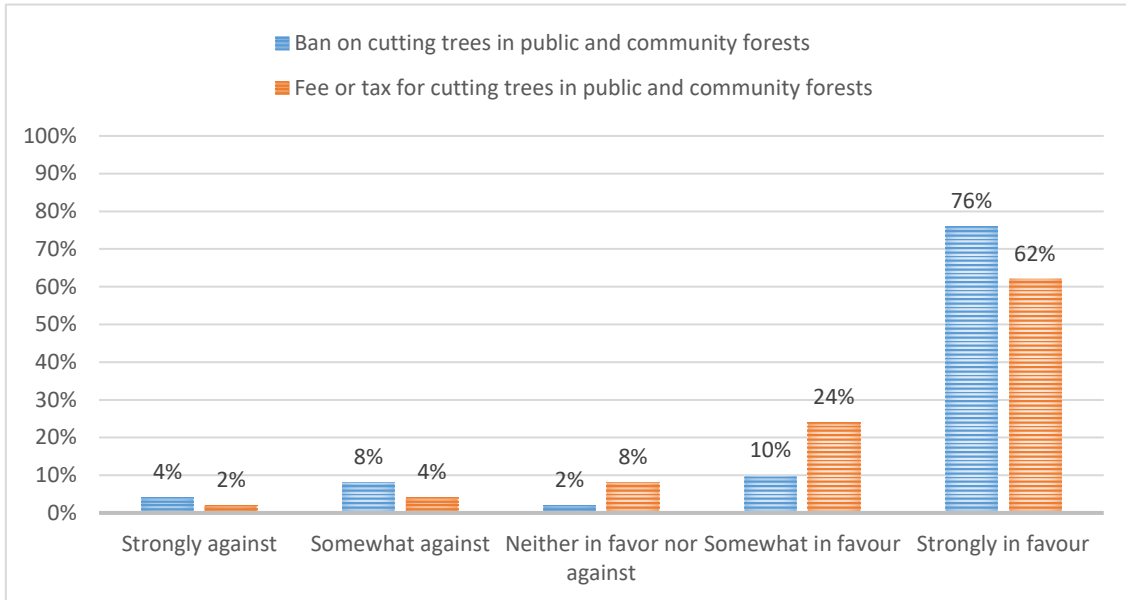
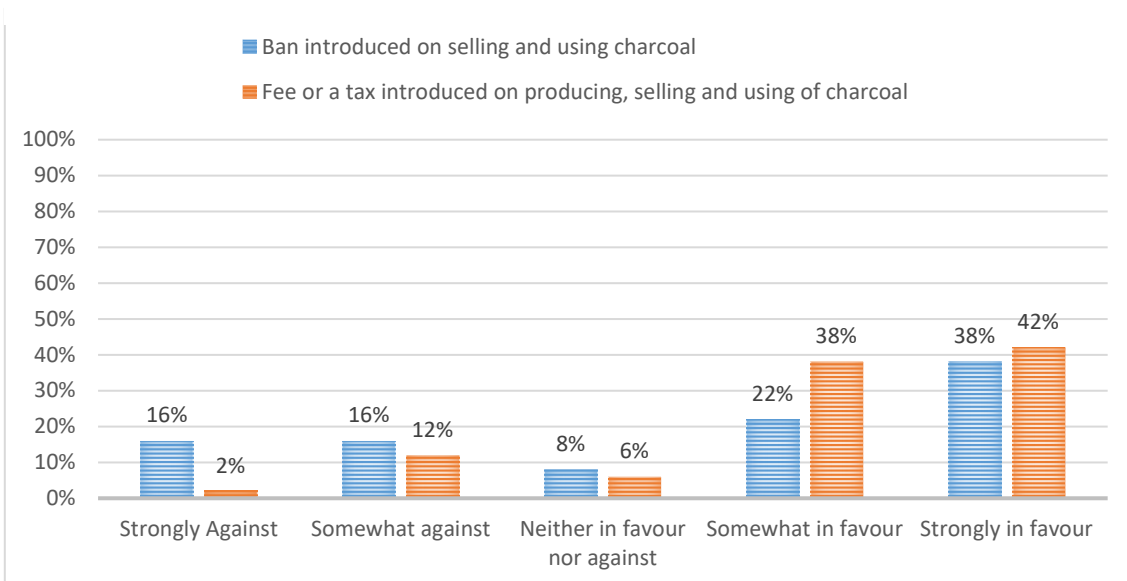


Figure 9 Stakeholders' acceptance of 2 different policy instruments affecting forest loss due to charcoal (51 respondents)



Chapter 4: DISCUSSION AND CONCLUSION

4.1. Discussion on Policy Instruments

4.1.1. Fossil fuels

Tanzania has formulated a number of policy instruments to regulate the energy sector, and fossil fuels in particular. Most policy instruments are price-based like taxes and fees or right-based like licenses. However, most of these policy instruments do neither directly intend to discourage the use of fossil fuels nor for enhancing environmental resilience.

But a few policy instruments are directly intended to protect the environment. Such as the environment management fees and Bus Rapid Transit (BRT). At the moment there is no evaluation conducted of the first to measure if these fees are fulfilling the intended goals and for the BRT the implementation is very slow and the scope is small as it covers only few routes in Dar es salaam city. The program should be extended to all large cities in Tanzania.

Further, despite the large potential Tanzania has in exploiting renewable energy, such as solar and wind power, there is no policy instruments which provide incentives for these alternative sources of energy. It is the right time for the government to remove import taxes for importation of solar and wind energy equipment's and provide subsidies as incentives for these renewable energy sources. Another viable options, as seen in some of the neighbouring countries, is that the government could remove taxes for the importation of electric vehicles.

4.1.2. Plastic pollution

In recognizing the irreversible impact of plastic pollutions on environment, human health and wildlife, Tanzania is among the many countries that has embarked a historic conservation move of banning the production and the use of plastics. This movement is guided by the Environmental Management (Prohibition of Plastic Carrier Bags) Regulations, 2019 which aims at imposing a total ban on the import, export, manufacturing, sale, and use of plastic carrier bags regardless of their thickness by imposing different policy instruments. Regulatory-based, right-based and information-based instruments are popular policy instruments used to curb plastic pollution in the country. Generally, regulatory-based instruments targeting the ban of plastic bags production and consumption have proved to be more effective relative to other instruments. However, the same conclusion cannot be said in dealing with the disposal of plastics. Similarly, the implementation of right-based instruments such as Extended Producers' Responsibility in banning of plastic production has also been a challenge. Moreover, even though information-based instruments such as education and information sharing have great potentials in shaping human behaviour towards environmental conservation, these instruments have not been properly executed in the country.

Therefore, coordinated efforts among the key policy actors, developed waste disposal infrastructures across the country, and well-coordinated and frequent public awareness creation programs, among others, are fundamental for a successful implementation of the policy instruments on plastic pollution. Importantly, frequent evaluation of adopted policy instruments

is fundamental in providing information on their effectiveness, inform ways for their improvement and possibility of adoption of new instruments. For instance, price-based instruments could be useful in the phasing out of single use plastics.

4.1.3. Forest loss

From the reviewed policy instruments the continued existence and the trend of establishment of new activities, which have forest cover reducing effects, in the forest reserves imply that there is continuing forest loss in the country. As much as fees and royalties are paid to the government, the redistribution of these revenues into forest reserve management has not been established. Also, there is an absence of alternative sources of energy which makes the majority to continue using firewood and charcoal as main source. Thus, while these price-based policy instruments are implemented, they do not curb forest loss since communities have to harvest charcoal/firewood due to lack of affordable and available alternatives.

The price-based economic instruments varies depending on forest products such as timber, charcoal, pole and firewood. For each type of forest product, however, the instrument is used to discourage the harvesting of the forest product and used as a revenue generation sources. The amount charged differ across products by size or volume of the product harvested. On the other hand, economic instruments are applied as punishment to individuals who do not comply with the environmental regulations. In the recent forest regulations specific economic instruments have been specified and are clearer on how they are applied. However, evaluation to ascertain their effectiveness is something to be explored.

4.2. Discussion on Acceptance of Policy Instruments

The findings from our surveys presented above, indicates overall that stakeholders seem to be more accepting of the proposed policy instruments compared to the general public. Part of the explanation for the difference between could be that the stakeholders were selected based on their knowledge within the thematic areas, and hence might be aware of the reasons for why these regulations are being proposed. In the literature people's values and concern for environmental degradation is one factor positively linked to policy instrument support (Harring, 2021).

If we look at the different sectors, the acceptance is higher for regulating plastic pollution from bags and single use plastic and forest loss from cutting trees and selling or using charcoal. The lowest acceptance is seen for fossil fuels, apart from the subsidy on LPG.

There is no strong tendency on preference between regulatory-based or price-based policy instrument across the different thematic areas. For plastic pollution a ban seems preferred over a tax amongst the general public, meanwhile for fossil fuels a reduced subsidy has stronger share of acceptance than the consumption limit and the tax, and for forest loss the acceptance rate is rather similar between the ban and tax/fee. For stakeholders the preferences also varies, and for example we see a tendency to prefer a ban over a tax/fee for cutting trees, but the opposite when it comes to charcoal.

From the literature we learn that price-based policy instruments are often received lower support from the general public, such as the tax on fossil fuel which increase cost for many households, compared to other policy instruments (Davidovic & Haring, 2020). When it comes to taxes on fossil fuels, our results showed that the acceptance increased when respondents were informed that the revenue was going to be used for a specific purpose: such as education, infrastructure, environment programs or social programs targeting the poorest households in society. For the case of Tanzania, acceptance raised but rather modest compared to the survey results from Kenya, Uganda and Rwanda. Here the question on perceived fairness and trust is relevant, if you trust that other will pay tax and that the revenues the government receives are spent in good governance (Solvinger, 2022; Haring 2014; Davidovic & Haring 2020). In general, the trust to others as well as institutions are rather low in Tanzania.

An observation of the responses from the general public shows a pattern of strong opinions (less so for the case of forest loss), that is being mainly strongly against or strongly in favor of the presented options and relatively few that responds somewhat or neither in favor nor against.

However, to draw general conclusions based on the presented data is precarious and needs to be interpreted with care, since the sample from both the public and stakeholders are not fully representative.

4.3. Concluding reflections

To achieve effective transition to inclusive green economy, providing alternative source for charcoal production is key. Current effort on finding alternative energy source to charcoal to reduce deforestation by establishing two forest plantations in Morogoro and Kilimanjaro to produce charcoal and reduce deforestation is commendable. There is a need to strengthen forest trading permits for selling, cutting and transportation of timber and ensure the fee or revenue collected through this type of policy instrument is dedicated for financing forest conservation. Effort for agricultural intensification practices as way of limiting expansion of agricultural land into forestland is still needed. In terms of plastic pollution, there are large needs to improve the systems for waste collection, disposal and recycling investments in the country.

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APPENDIX

Appendix 1: Stakeholder survey – responses per category

Fossil Fuels

Figure 11 Stakeholders' acceptance of a tax or reduced subsidies on fossil fuel (51 respondents)

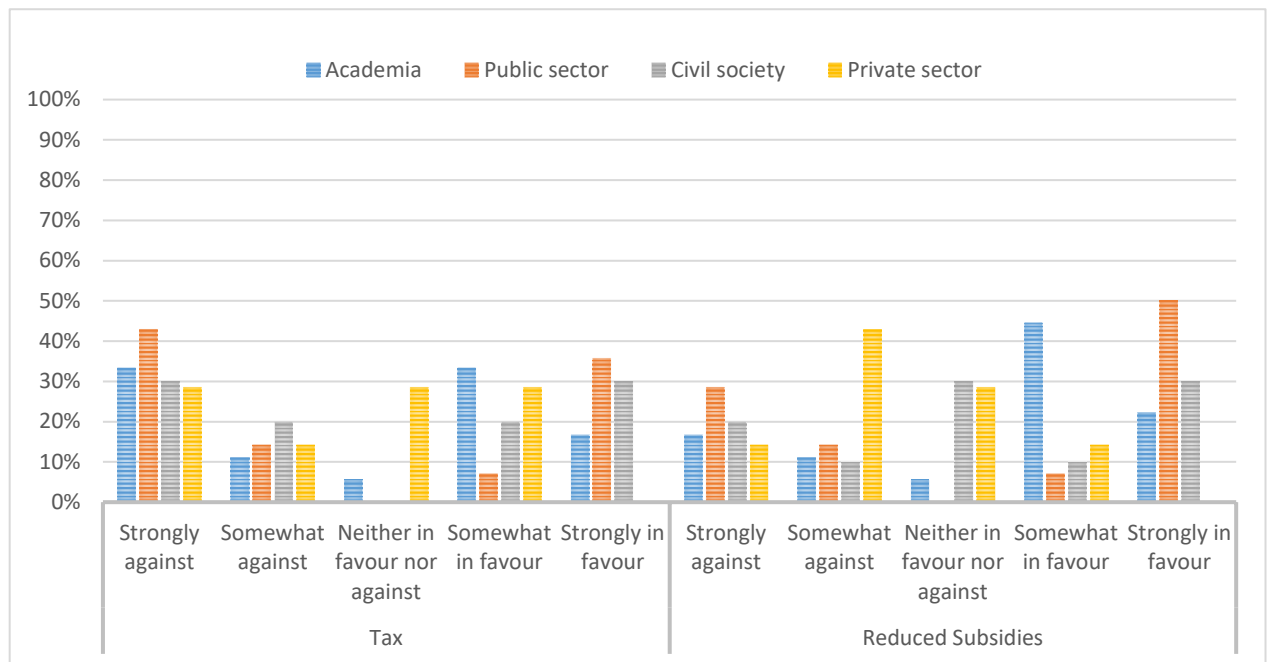
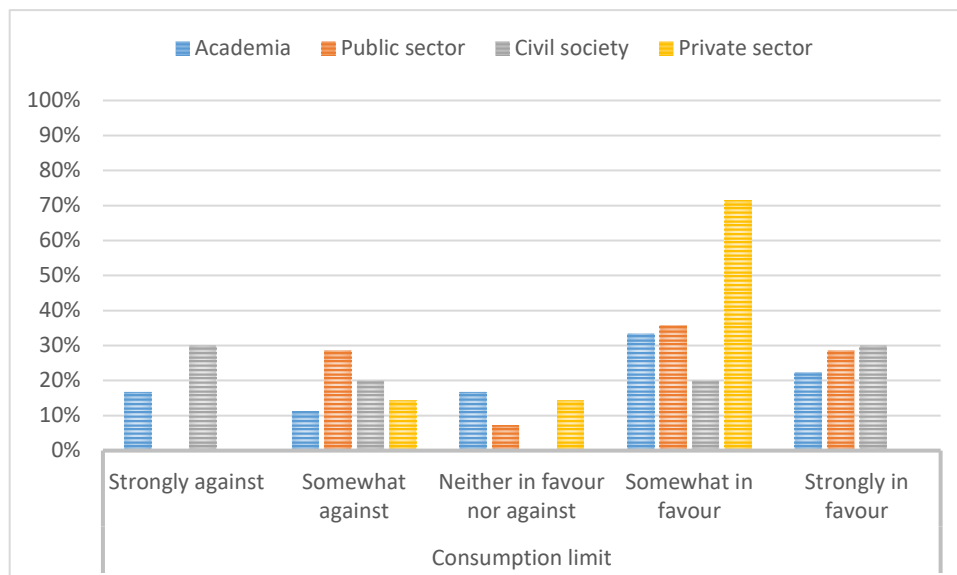


Figure 12 Stakeholders' acceptance of a consumption limit on fossil fuel (51 respondents)



Plastic Pollution

Figure 14 Stakeholders' acceptance of a ban or tax on single use plastics (51 respondents)

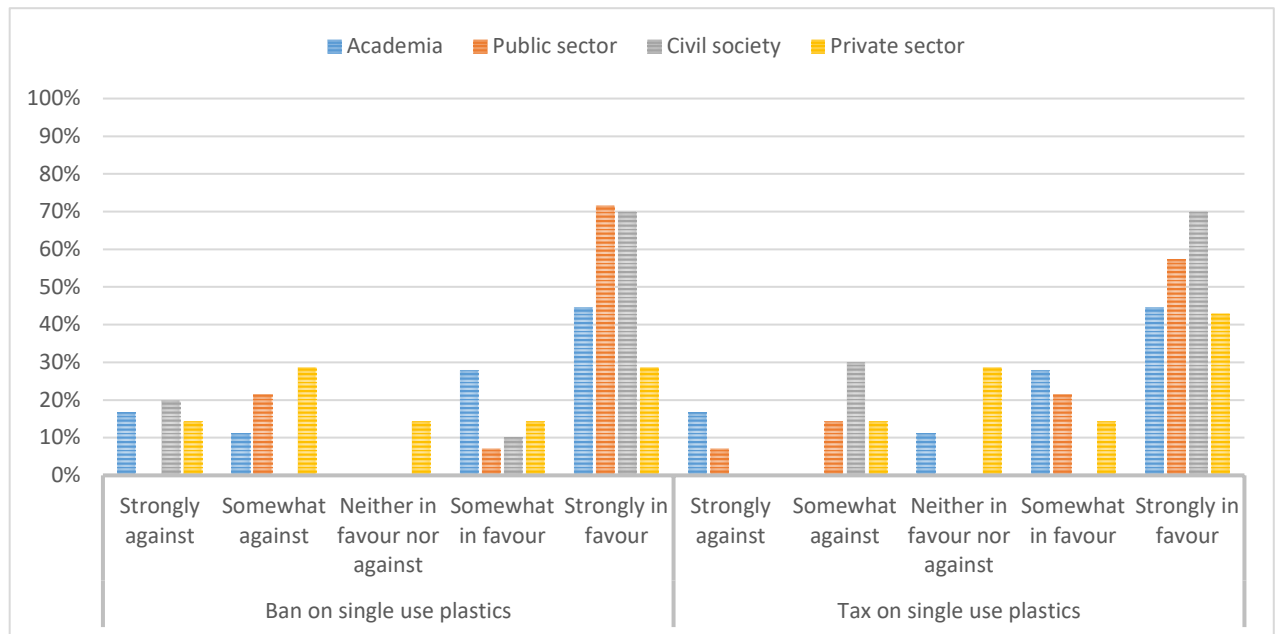
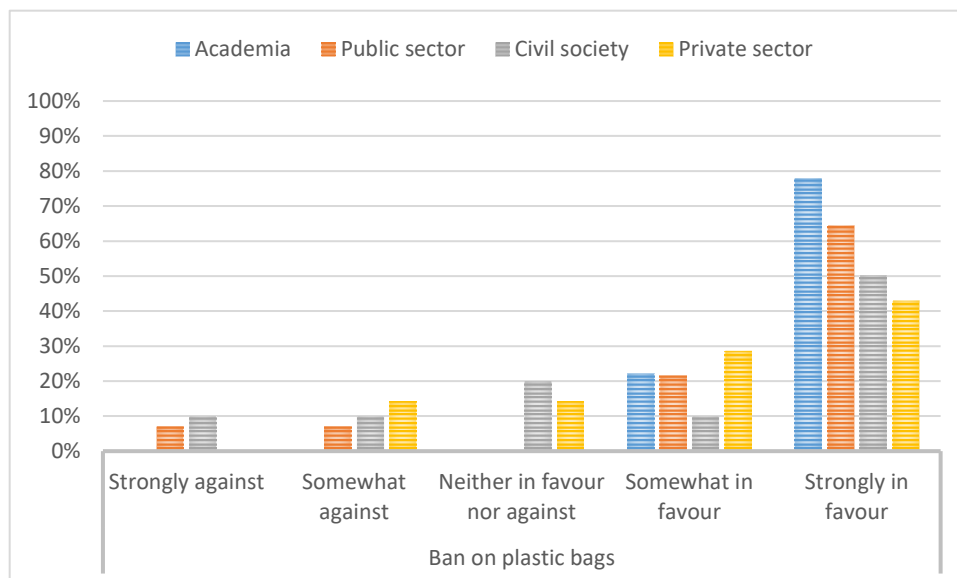


Figure 13 Stakeholders' acceptance of a ban on plastic bags (51 respondents)



Forest Loss

Figure 16 Stakeholders' acceptance of a ban or tax/fee on cutting trees (51 respondents)

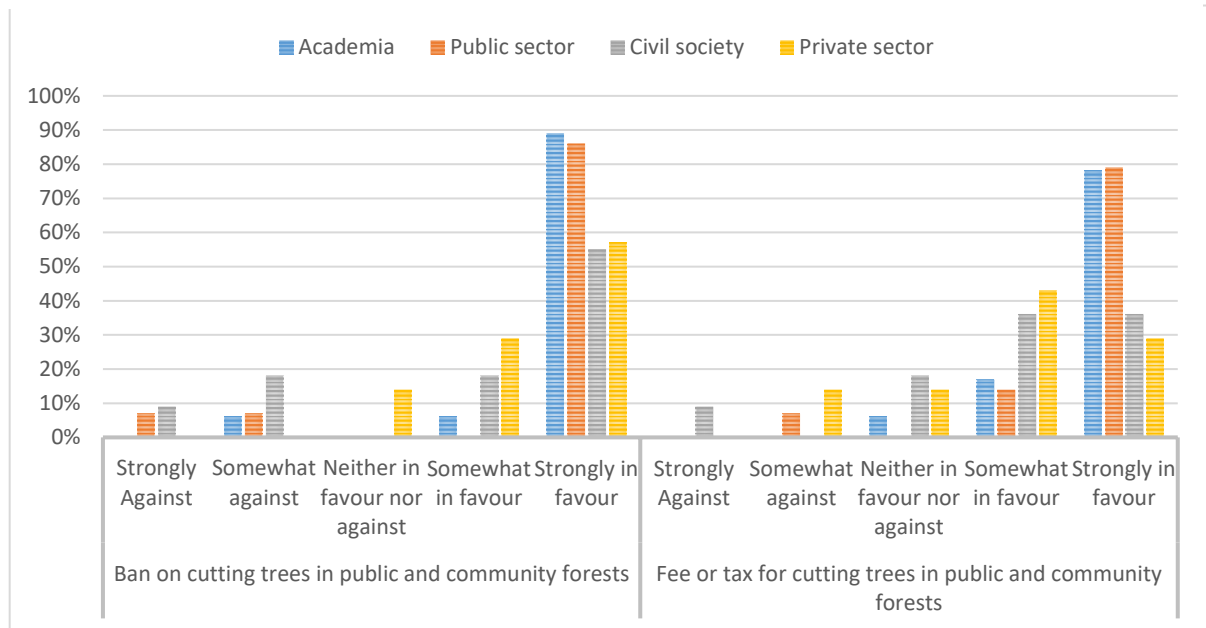
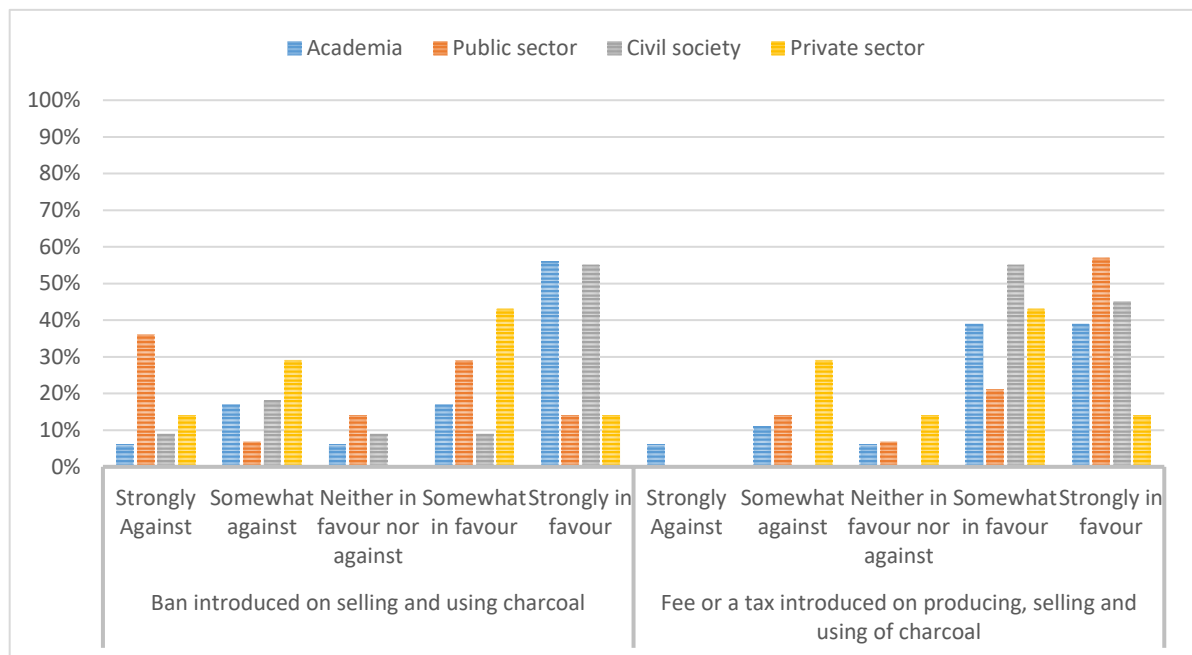


Figure 15 Stakeholders' acceptance of a ban or tax/fee on charcoal (51 respondents)



Appendix 2: References to Country Profile

Tanzania	Data	Reference
Size Population density	947 300 km2 70/km2	<i>Countries by Area - WorldAtlas</i> https://www.worldatlas.com/features/countries-by-area.html#countriesBySize Accessed: 2022-02-04 <i>World Development Indicators DataBank (worldbank.org)</i> 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:26 Indu: 29 Service: 34 Manufacturing: 8	Year 2021 value added (% of GDP) <i>World Development Indicators DataBank (worldbank.org)</i> https://databank.worldbank.org/reports.aspx?source=world-development-indicators Last Updated: 09/16/2022 Accessed: 2022-10-14
Population Growth	59,7 million 3 %	Year 2020 <i>World Development Indicators DataBank (worldbank.org)</i> https://databank.worldbank.org/reports.aspx?source=world-development-indicators Last Updated: 09/16/2022 Accessed: 2022-10-14
Life Expectancy (F/M)	67/63	Year 2020 <i>World Development Indicators DataBank (worldbank.org)</i> https://databank.worldbank.org/reports.aspx?source=world-development-indicators Last Updated: 09/16/2022 Accessed: 2022-10-14
Poverty rate	38.6%	Year 2020 <i>Africa SDG Index and Dashboards Report - Sustainable Development Report</i> https://www.sdginde.org/reports/2020-africa-sdg-index-and-dashboards-report/ Accessed: 2021-12-01
Access to electricity	40%	Year 2020 <i>World Development Indicators DataBank (worldbank.org)</i> https://databank.worldbank.org/reports.aspx?source=world-development-indicators

		<p><i>Last Updated: 09/16/2022</i></p> <p>Accessed: 2022-10-14</p>
GDP/capita	1099 USD	<p>Year 2021</p> <p><i>World Development Indicators DataBank (worldbank.org)</i></p> <p>https://databank.worldbank.org/reports.aspx?source=world-development-indicators</p> <p><i>Last Updated: 12/22/2022</i></p> <p>Accessed: 2023-02-13</p>
Rainfed/Irrigated agriculture	99/1%	<p>2020</p> <p><i>Land Use Indicators, Land area equipped for irrigation</i></p> <p>https://www.fao.org/faostat/en/#data/EL</p> <p><i>Accessed: 2022-10-13</i></p>
Land area covered in forest	26%	<p>Year 2015</p> <p><i>Forest Monitoring, Land Use & Deforestation Trends Global Forest Watch</i></p> <p>https://www.globalforestwatch.org/</p> <p>Accessed: 2022-01-12</p>