UNITED REPUBLIC OF TANZANIA

MINISTRY OF NATURAL RESOURCES AND TOURISM

FORESTRY AND BEEKEEPING DIVISION

THE NATIONAL CHARCOAL STRATEGY AND ACTION PLAN (2021-2031)

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ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune-deficiency Syndrome
AP	Action Plan
CBFM	Community Based Forest Management
CBOs	Community-based organisations
CNG	Compressed Natural Gas
CSO(s)	Civil Society Organization(s)
DFC(s)	District Forest Conservators(s)
DFO(s)	District Forest Officer(s)
DFoB	Director of Forestry and Beekeeping
EMA	Environmental Management Act
FBD	Forestry and Beekeeping Division
FBOs	Faith Based Organisations
FORVAC	Forest and Value Chains Development Programme
GDP	Gross Domestic Product
GVA	Gross Value Added
HIV	Human Immune-deficiency Virus
ICS	Improved Cook Stoves
ISCM	Integrated Sustainable Charcoal Model for Tanzania
LATRA	Land Transport Regulatory Authority
LGAs	Local Government Authorities
LPG	Liquid Petroleum Gas
MNRT	Ministry of Natural Resources and Tourism
MoA	Ministry of Agriculture
MoE	Ministry of Energy
MoFP	Ministry of Finance and Planning
MITI	Ministry of Industries, Trade and Investment
MoEST	Ministry of Education, Science and Technology
MoWT	Ministry of Works and Transport

NBS	National Bureau of Statistics
NCBFMAP	National CBFM Action Plan
NCS	National Charcoal Strategy
NCSAP	National Charcoal Strategy and Action Plan
NLUPC	National Land Use Planning Commission
NGOs	Non-Governmental Organisations
PCCB	Prevention and Combating of Corruption Bureau
PFM	Participatory Forest Management
PORALG	President's Office Regional Administration and Local Government Authorities
SMEs	Small and Medium Enterprises
SUA	Sokoine University of Agriculture
TaFF	Tanzania Forest Fund
TAFORI	Tanzania Forestry Research Institute
TaTEDO	Sustainable Energy Services Organisation
TBS	Tanzania Bureau of Standards
TFCG	Tanzania Forest Conservation Group
TFS	Tanzania Forestry Services Agency
TRA	Tanzania Revenue Authority
TTCS	Transforming Tanzania's Charcoal Sub-Sector Project
URT	United Republic of Tanzania
USD	United State Dollar
VLA	Village Land Act
VLFRs	Village Land Forest Reserves
VPO	Vice President's Office
WMA	Weight and Measures Agency

PREFACE

The importance of the charcoal sub-sector to the national economy and community livelihoods in Tanzania and beyond cannot be overemphasized. Charcoal is the largest source of household energy in urban areas for cooking and heating in Tanzania. In 2014 it was estimated that charcoal generated at least 1 billion US$ per annum in revenues. In 2021, the Ministry of Natural Resources and Tourism (MNRT) estimated the contribution of charcoal to forest sector Gross Domestic Product (GDP) to be 44.2%, standing out as one of the most important forest products contributing to the national economy.

Despite the unrefuted significance of charcoal for the country, it has been established that inefficient production, pricing and use of charcoal is among the factors that contribute to forest degradation and deforestation in Tanzania, where the annual deforestation rate is estimated to stand at 469,420 ha. In 2009, it was established that both central and local governments in Tanzania were losing about 100 million US$ per year due to a failure to effectively regulate the charcoal sub-sector and collect associated tax and non-tax revenues.

The aforementioned reasons among others prompted the government to take actions aimed to provide strategic direction and guidance to the charcoal sub-sector in order to improve efficiency along the charcoal value chains and enhance the contribution of the sub-sector to the national economy and community livelihoods. The MNRT formed a special task force in 2018/19 comprising of representatives from all the key charcoal sub-sector stakeholders (NGOs, Private sector, LGAs, Academia and Central Government representatives) to conduct nationwide situational analysis and advice the Ministry on the best courses of action to improve performance of the charcoal sub-sector. Recommendations from the task force and other actors in the country led to the formulation of national charcoal strategy and action plan based on existing National Policies. The national charcoal strategy and action plan provides strategic direction and national level targets in relation to sustainable charcoal production and utilization, inclusive policy, legislation and institutional frameworks, supportive functions along the charcoal value chains, adoption of alternative energy and

inter-sectoral coordination for improved efficiency. The Strategy also defines the roles and responsibilities of various stakeholders in the implementation process.

I call upon all stakeholders to actively participate in implementing this important strategic document for the charcoal sub-sector and wish to emphasize on the need for sharing experiences and best practices. The Ministry will ensure that this Strategy is available to all relevant stakeholders and will institute effective coordination of the charcoal sub-sector in the country.

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ACKNOWLEDGEMENTS

The national charcoal strategy and action plan supports functional policies, legal frameworks, sectoral as well as cross-sectoral actions and directs the same towards sustainable production and utilization of charcoal in the country. The process of developing this Strategy involved an extensive exploration of existing potentials and opportunities within the charcoal sub-sector as well as operational challenges that hinder optimal utilization of existing potentials. This was achieved through a nationwide consultative and analytical process.

The analytical process for preparation of this document was facilitated by an inter-disciplinary National Charcoal Strategy Task Force (TF) which was established by the Ministry of Natural Resources and Tourism (MNRT) in 2021. The TF members consisted of Prof. John F. Kessy from Sokoine University of Agriculture (SUA), (Chairperson); Dr. Riziki M. Nyello (Secretary); Mr. James S. Nshare and Ms. Emma G. Nzunda (from MNRT); Prof. Jumanne M. Abdallah (SUA); Dr. Chelestino P. Balama (TAFORI); Eng. Estomih N. Sawe (TaTEDO); Mr. Charles K. Meshack (TFCG); Mr. Emilian Nyanda (MoE) and Mr. Ali D. Maggid (TFS). I am indebted to the Task Force.

I am grateful to the former Director of Forestry and Beekeeping Division Dr. Ezekiel E. Mwakalukwa for initiating and supervising this process. Regional Administrative Secretaries, Regional Natural Resource Officers, District Executive Secretaries, TFS Zonal and District Forest Conservators, and District Forest Officers (DFOs) are acknowledged for their assistance during the consultative process for the preparation of this Strategy. Others include NGOs, private sector, faith-based organizations and all other actors along the charcoal value chains. Their valuable knowledge and experience that informed the process and logistical support are highly acknowledged.

I also express my gratitude to the Government of the United Republic of Tanzania (URT) through the MNRT; Government of Finland through the Forest and Value Chains Development Programme (FORVAC) and the Swiss Development Cooperation through Tanzania Forest Conservation Group (TFCG) for their generous financial support at various stages of developing this Strategy.

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KEY DEFINITIONS

Agroforestry: Type of farming system where trees are grown in combination with agricultural crops or pastures, or animals or aquatic life-forms or insects (bees, butterfly caterpillars, grasshoppers) in the same land management unit.

Agro-industries: Industries processing agricultural crops.

Alternative charcoal: Industrially processed charcoal produced from carbonised feedstock, compressed with or without binding materials. The feedstock can be agro-based residuals, forest-based residuals, and coal-based or charcoal dusts.

Alternative cooking energies: Cooking energies apart from charcoal including: electricity, liquefied petroleum gas (LPG), compressed natural gas (CNG), bio-ethanol liquid gel, and biogas.

Appliance: Any technology, equipment or products used to convert the provided energy supply into the energy service required by the user. For example, light bulbs, stoves or water pumps.

Biomass briquettes: Carbonized or Un-carbonized briquettes, are compacted combustible material that are produced from biomass residue or charcoal dust, usually using a binder such as clay, starch (cassava flour, sweet potato paste, etc.), molasses and/or gum arabic.

Biomass energy: Energy consisting of biological materials derived from wood, bio-residues from industries**,** agriculture, animals and forests, could be in the form of solid, liquid and gaseous. Include Charcoal and firewood, but also briquettes, pellets and similar solid biomass.

Carbonized briquettes: Made from biomass sources that have been processed through partial pyrolysis (which drives off volatile compounds and moisture leaving a higher concentration of carbon per unit).

Capacity building: Capacity building and capacity development for charcoal interventions refer to the development or strengthening of personnel skills, expertise, and relevant institutions and organisations to reduce charcoal production and use wastage.

Charcoal: A porous black solid, consisting of an amorphous form of carbon, processed through partial pyrolysis (which drives off volatile compounds and moisture leaving a higher concentration of carbon per unit) of wood or other organic matter.

Clean cooking solutions: Performance measurements of VPT Tier 2 or Tier 3, following ISO/TR 19867-3:2018 Fuel-stove combinations that achieve emissions performance measurements of VPT Tier 4 or higher, following ISO/TR 19867-3:2018

Climate change: A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.

Community: Refers to a group of individuals who come together to address common life and livelihood needs that can be met by provision of energy services.

Cooking energy access: Population having a reliable access to modern cooking, communication, lighting facilities and/or living within 600 meters from a distribution transformer. It also includes access to productive energy such as mechanical power which supports value adding activities and/or possibilities for income generation.

Cooking solutions: Cooking solutions are referred to as the combination of a cooking appliances and a type of cooking fuel taken together.

eCooking: Efficient Electric Cooking.

Emissions: Means the release of greenhouse gases and/or their precursors into theatmosphere over a specified area and period of time.

End users: are the receivers and beneficiaries of the energy service.

Energy service: The energy delivered to a user in a useful form such as heating or lighting that can therefore be directly consumed providing measurable and quantifiable benefits.

Energy services: Refers to the end use applications of an energy delivery system that meet tangible life and livelihoods needs and social services (e.g. recreation, lighting, cooking, communications, transportation, heating from).

Energy supply: A useable form of energy that can be inputted into an appliance to provide the required energy service. For example, the burning of solid fuels (e.g. wood or charcoal), electricity or mechanical power (e.g. the rotation of flour mill).

Grassroots local communities: Politically and economically marginalized indigenous people in the community with common interest, problems and culture.

Feedstock: Biomass materials used for production of alternative charcoal. These include forest based wastes, agricultural wastes, bamboo, charcoal dusts, invasive plants, and grasses.

Improved cook stoves (ICS): Fuel-stove combinations based on biomass energy that achieve emissions.

Local benefits: Life and livelihoods benefits, tangible and intangible, accrued by local communities in the area where a project is implemented.

Socio-cultural context: means the norms and behaviours, social structures and social organization of the end-user communities.

Sustainable development: Is development which meets the needs of current generations, without compromising the ability of the future generations to meet theirs.

Sustainable energy sources: Renewable Energy sources which are regenerated during the annual solar cycle which is reliable, flexible and are efficiently applied.

Sustainable charcoal: Is the charcoal that is produced while maintaining ecological, social and economic functions of the ecosystem.

Technology transfer: A broad set of processes covering the flows of know-how, experience andequipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, non-governmental organisations and research/education institutions.

Un-carbonized briquette: Briquette processed directly from biomass sources through various casting and pressing processes, which is also known as solidification.

CHAPTER ONE

INTRODUCTION

1.1 Background

Forestry is one of key economic sectors in driving the national industrialization agenda and livelihood improvement. The sector has relatively great potentials on promoting both rural and urban development. In addition, it has significant contribution to employment creation, Gross Domestic Product (GDP) and fiscal revenues. The sector has rich value chains with the potential to reduce the balance of trade deficit.

Charcoal consumption was estimated to be 2.3 million tonnes per year in 2012, and could double by 2030 if appropriate interventions are not implemented (URT, 2014). In 2020, charcoal production in Tanzania was estimated at 1.9 million tonnes per year with a Gross Value Added (GVA) of TZS 2.1 trillion contributing about 44% of the forest sector GDP (MNRT, 2021). According to 2012 estimates, charcoal generates at least USD 1 billion per annum in revenues, supporting the livelihoods of hundreds of thousands of suppliers, transporters and traders. Charcoal is the largest source of domestic cooking and heating energy in urban areas, as it is considered affordable, available, easy to transport, distribute and store (NBS, 2013; URT, 2014).

Notwithstanding such economic and social benefits, the central and local governments were estimated to lose about USD 100 million per year due to ineffective enforcement of revenue collection and taxation regulations in the charcoal sub-sector (World Bank, 2009). Assessment of the charcoal sub-sector that was conducted by the World Bank in 2009 and situation analysis conducted by the Ministry (MNRT, 2019) reiterated the strategic gaps inherent of the charcoal value chains which include: inefficient charcoal production and utilisation; inadequate fiscal incentives to encourage investments in sustainable forest

management and tree planting for charcoal production and unclear structures and systems for charcoal production and trade.

Other gaps include overdependence on natural forests while there is an opportunity to establish and intensively manage forest plantations and woodlots for charcoal production and inadequate coordination of charcoal sub-sector. Inadequate district retention and re-investment of the revenues for sustainable charcoal production; illegal exportation of charcoal, and limited energy mix and use of alternative cooking energy are additional challenges facing charcoal sub-sector. As a result of the aforementioned gaps, there is limited management capacity on charcoal supply and demand. It was further noted that there is inadequate governance, limited law enforcement capabilities and other regulatory capacity constraints which characterize the charcoal sub-sector due to absence of the overall long-term blueprint. It is hence the interest of the government and stakeholders to improve sectoral and cross-sectoral coordination, increase sustainable charcoal production, and enhance its contribution to the national economy by developing and implementing the National Charcoal Strategy and its Action Plan.

1.2 Justification for the National Charcoal Strategy and Action Plan

1.2.1 Gaps in existing documents at MNRT

Despite the significant contribution of charcoal to the forest sector GDP and cooking energy, existing documentation at the Ministry runs short of a specific strategic document that provides the long-term vision for the charcoal sub-sector. In the simplest language, a strategy is a general plan to achieve one or more long-term objectives for a product or sub-sector while an action plan provides a sequence of steps that must be taken, and activities that must be performed well, for a strategy to succeed. Neither of these documents exist for promoting sustainable charcoal production and utilization. Analysis of key documents that guide management of forest products within the MNRT shows that none of the existing documents provide adequate strategy and action plan for charcoal as demonstrated in this section.

Both the National Forest Policy of 1998 and the Forest Act of 2002 recognize charcoal as one of the forest products that require special attention because of the threat posed by the product to the environment. That means, the Ministry needs to take strategic actions to ensure that the product is produced sustainably and continues to contribute to the national economy. Unfortunately, the two most important strategic documents at the Ministry namely the Strategic Plan (2021/22 – 2025/26) and the National Forest Policy Implementation Strategy (NFPIS) (2021 – 2031) do not sufficiently serve as strategic documents for the charcoal sub-sector in the country.

The Ministry Strategic Plan rightly points out overdependence on charcoal and firewood as sources of energy, inefficient technologies in processing of forest resources, poor management of forest wastes and limited market of forest products including charcoal as some of the major challenges facing the natural resources sector in Tanzania. To that effect, the strategic plan puts in place strategies for promoting sustainable and efficient utilization and diversification of forest products, strengthening development, management and efficient utilization of plantation forest and woodlot resources. The Strategy emphasizes that strategies to utilize and reduce forest wastes including sustainable charcoal production need to be developed and operationalized by June, 2026. It points out further that the National Charcoal Development Strategy needs to be developed and operationalized by June, 2026 implying that the Ministry Strategic Plan does not suffice to serve as a Charcoal Strategy for the country.

The MNRT is the custodian of the National Forest Policy (NFP) of 1998; Forest Act of 2002, National Forest Policy Implementation Strategy (NFPIS) (2021 – 2031), Forest Regulations of 2004, and regulations for development of alternative charcoal of 2021. These instruments provide guidance on forest products production, trade and utilization. As part of initiatives to reduce over utilization of traditional charcoal through promotion of alternative charcoal, the NFPIS has set targets of increasing both the consumption of alternative charcoal in urban areas from 100 to 200,000 tonnes and sustainable charcoal production to 50% by June 2031. It also focuses on reducing logging waste in charcoal production from 80% to 30% by June 2031. However, given the fact that the charcoal sub-sector has multiple stakeholders' interests and different approaches, a responsive and

well-elaborated coordination mechanism is required to address the impeding sub-sector development factors. Thus, considering the challenges facing entire charcoal value chains in the country, specific National Charcoal Strategy and Action Plan is imperative.

1.2.2 An opportunity to engage relevant stakeholders

Production, transportation, marketing and utilization of charcoal involve a number of sectors and ministries. For example, while the MNRT is pre-occupied with sustainable production and marketing of charcoal, the Ministry of Energy considers charcoal as one of the sources of energy and the VPO is concerned with the environmental consequences associated with charcoal production. Other ministries are also involved as demonstrated later in this section. This being the situation, challenges facing the charcoal sub-sector can only be dealt with realistically if all the relevant ministries and sectors are effectively involved. That is why, developing a national charcoal strategy and action plan through a participatory process provides an opportunity for all actors to participate in generating solutions to existing challenges.

Analysis of sectoral and cross-sectoral policies and legislations reveals existence of provisions that have a bearing to the charcoal sub-sector. On environmental aspect, the National Environmental Policy of 2021, Environmental Management Act (EMA) of 2004 and several National Environmental Action Plans recognize land degradation and habitat destruction/deforestation as one of the major environmental threats in the country. Unsustainable utilization of forest products including charcoal is one of the major causes of land degradation. All the instruments emphasize the need to reduce over-dependency on biomass energy sources by providing sustainable and modern alternatives. Therefore, implementation of the Environmental Policy of 2021 and EMA of 2004 require support from an elaborate charcoal strategy with long term perspectives.

The National Investment Policy (1996) encourages adoption of energy efficient production systems which are not detrimental to the environment. On the other hand, the Small and Medium Enterprise (SME) Development Policy 2003 places emphasis on environmental considerations in all SME development interventions and one of the strategies relevant to charcoal is facilitation of production of

technologies which apply renewable energy. The Export Control (Prohibition) order No. 663 of 1986 prohibits exportation of charcoal. However, charcoal is exported illegally and Government revenues from the exported charcoal are not collected. On the other hand, the Minister for Industry and Trade has a mandate to prohibit export of any product including charcoal and is also mandated to waive the prohibition as deemed suitable.

The Agricultural Marketing Policy of 2008 acknowledges unsustainable farming practices as one of the major factors contributing to deforestation. In a bid to address the challenges of deforestation emanating from unsustainable agricultural practices, the policy statements (i) and (ii) aim to address the challenge of deforestation. The policy statements are relevant to sustainable charcoal and value chain development. The Weights and Measures Act of 1982: eleventh schedule lists quantities in which certain goods including charcoal shall be pre-packed. The Act requires charcoal to be packed in 30 kg per bag. However, Government Notice (GN) No. 627 of August 2020, recognises 50 kg per bag. On the contrary, charcoal traders prefer to be measured in 90 kg per bag. This conflict of interests requires harmonization. Integrated Industrial Development Strategy postulates that energy demand in Tanzania is increasing at 8 to 13% annually. Therefore, a stable and less costly supply would apparently strengthen industrial competitiveness. However, the Strategy is skewed towards natural gas as a key energy source for industrial development in Tanzania.

The National Energy Policy of 2015 desires to achieve provision of adequate, reliable and affordable modern energy services to the country in a sustainable and environmental friendly manner to contribute towards transformation of the national economy. The Policy acknowledges the dominance (for about 85%) of biomass use in the form of charcoal and firewood in the national energy consumption pattern. One of the Policy Objectives is to promote energy efficiency and conservation in all sectors of the economy including cooking energy. Sustainable charcoal production is indirectly reflected in this statement.

National Road Safety Policy of 2009 and Roads Act of 2007 guide road safety transportation and recognise the need for road safety rules, regulations and other guidelines. Currently, most charcoal is transported using motorcycles violating

transportation regulations and guidelines. The bags transported by most motorcycles are overweight (more than 50 kg) with huge luggage upsetting road safety. In addition, National Agriculture Policy of 2013 emphasises on conservation and environmental friendly farming practices relevant to sustainable charcoal.

This analysis of policies and regulatory frameworks show that charcoal production and trade cuts across sectors. The sectors have interests and divergences on how charcoal value chain is treated. Therefore, it is important to have a national tool (National Charcoal Strategy and Action Plan) that will accommodate perspectives of the responsible Ministries and their frameworks.

1.2.3 Contributing to national goals and objectives

The National Charcoal Strategy and Action Plan will facilitate the implementation of the national goals and objectives as provided by the Tanzania Development Vision, 2025; Five Year Development Plan (2021/22 – 2025/26); National Forest Policy of 1998; CCM Manifesto of 2020-2025; and National Economic Empowerment Policy of 2004. The Strategy continues to promote the holistic and well-coordinated implementation of the National Environmental Policy of 2021; Environmental Management Act, 2004; the Small and Medium Enterprise Development Policy 2003; the National Energy Policy of 2015; National Forest Implementation Strategy (2021–2031); Forest Act of 2002; Forest Regulations 2004 in relation to the transformation of the charcoal subsector.

Absence of strategy and action plan for charcoal to support functional policies and legal frameworks and sectoral and cross-sectoral implementation strategies is a major factor contributing to unsustainable production and utilisation of charcoal in the country. It is also directly contributing to the inadequate coordination of the sub-sector. The National Charcoal Strategy and Action Plan fill in the gaps.

1.3 Issues for Implementation, linkages with NFPIS and NCBFMAP

Implementation of the National Charcoal Strategy (NCS) and Action Plan (AP) will focus at addressing issues that requires attention in the charcoal sub-sector. The issues include: sustainability of charcoal value chains, sectoral and cross-

sectoral coordination, marketing and transportation, revenue collection and re-investment, alternatives cooking energy, legal and institutional framework. Relevant targets and actions are elaborated in this strategy.

The national charcoal strategy and action plan (NCSAP) has close linkages with the National Forest Policy Implementation Strategy (NFPIS) and the national CBFM action plan (NCBFMAP). Both the NCSAP and the NCBFMAP serve as implementation tools for the NFPIS. Whereas, the NFPIS recognize charcoal as one of the important forest products that needs to be produced and utilized sustainably, the national CBFM action plan puts in place activities aimed towards sustainable charcoal production and trade under community based forest management arrangements.

Expected results from effective and efficient implementation of the NFPIS include (i) sustainable supply of forest products and services (ii) increased employment opportunities and foreign exchange earnings (iii) enhanced ecosystem stability iv) enhanced national capacity to manage and develop the forest sector. In this context, charcoal is one of the forest products that contribute significantly to the forest sector GDP and require special attention. In order to reduce over utilization of traditional charcoal through promotion of alternative charcoal, the NFPIS has set targets to increase consumption of alternative charcoal and sustainable charcoal production as well as reducing waste during charcoal production.

The NFPIS targets to increase area under CBFM from 2.7 million ha to 16 million ha in June, 2031 with the aim of enhancing sustainable forest management practices in the country and improving community earnings from forest products including sustainable charcoal. The national CBFM action plan confirmed that at least 4.3 million hectares of village forest land will be available for scaling up CBFM in Tanzania. The NFPIS also targets that sustainable forest harvesting plans under different tenures be developed by June, 2028. These forests include CBFM forests where sustainable charcoal is produced.

The national CBFM action plan has three (out of five) Strategic Results (SRs) with direct bearing to sustainable charcoal production and utilization in the country. These include SR1: Forest area under effective CBFM in the country

increased; SR2: Contribution of CBFM to the national economy through forest based industries, improved quality of forest products and services enhanced; SR3: Ecosystem stability in CBFM areas enhanced through conservation of forest biodiversity, water catchments and soil fertility. Under these strategic results areas, a number of activities aimed to improve charcoal production, consumption and the contribution of the charcoal sub sector to the national economy/local livelihoods are included. Examples include:

- Supporting development of forest based industries in CBFM areas;
- Removal of the legal and institutional barriers to village level decision making on CBFM matters;
- Promoting certification of forests and forest products;
- Supporting and promoting the use of modern technology and skills in management to sustainable utilization of forest resources;
- Promoting profitable options of utilizing forest wastes in CBFM villages; and
- Conducting baseline study on community livelihood status in CBFM villages.

Additionally, one of the key performance indicators for the national CBFM action plan is to realize percentage increase in earnings from forest products (including sustainable charcoal) and services at village level. These facts demonstrate the linkages that exist among these important documents providing guidance at national level.

1.4 Roles and Responsibilities of Key Stakeholders

The main stakeholders of the Charcoal sub-sector include the Government, private sector, academia/researcher, media, non-governmental organisations (NGOs), local communities and community-based organisations (CBOs). The Central Government oversees implementation of policies, strategies, laws and regulations governing charcoal value chains. Additionally, the Government develops frameworks to effectively and efficiently manage the value chains.

Likewise, the private sector and local communities participate in the charcoal value chains as producers, traders, consumers, and required to comply with laws and regulations governing the chain. Academic and research institutions

on the other hand produce skilled human resources and provide evidence-based interventions and knowledge for the sustainable development of charcoal value chains. In addition, media, NGOs, CBOs and Faith Based Organisations (FBOs) provide supporting functions including extensions, networking, financing, awareness raising and capacity building. Successful implementation of the NCS and its AP depend on commitment of the key stakeholders in undertaking their roles and responsibilities.

1.5 Expected Results

Implementation of the NCS and AP will result to the realization of transformational positive outcomes in charcoal value chains in Tanzania. These include: well-coordinated charcoal business, adequate formalization of the charcoal value chains, increased revenue collection, investment on alternative charcoal and forest plantations for charcoal production, sustainable charcoal production and control, improved energy mix (i.e. alternative cooking energies), efficient and affordable technologies for charcoal utilization.

1.6 Methodology

A desk work was conducted to review relevant policies and regulatory frameworks to establish gaps that justify the preparation of the NSC and AP. The policies and legal frameworks reviewed were from the Vice President Office (Division of Environment), Ministry of Natural Resources and Tourism, Ministry of Industry, Trade and Investment, Ministry of Finance and Planning, Ministry of Energy, Ministry of Works and Transportation, President's Office Regional Administration and Local Governments, Ministry of Agriculture and Ministry of Land and Settlements.

Additionally, a review of previous documents that had a bearing on addressing existing challenges in the charcoal value chains was conducted. These include reports from previous task forces, national charcoal situational analysis, and renewable energy strategies just to mention a few.

Working sessions in the form of retreats aimed to develop the content of the NCS and AP were organized and implemented by the Task Force (TF). While

drafting the strategy, focus was directed towards developing strategic objectives, strategies and targets aimed to improve charcoal business along the entire value chains The AP on the other hand identifies activities to be pursued in order to attain the targets set by NCS.

Implementation of the NCS and AP requires commitment from relevant ministries. That is why it was important to engage with representative decision makers from the relevant ministries from the very initial stages of the development process. The engagement took the form of series of meetings through which TF members shared drafts of the NCS and AP for preliminary discussion and solicit inputs. The engagement provided an opportunity for different ministries to buy-in and commit to the process. One validation workshop involving key stakeholders was organized to validate the NCS and AP and stakeholder's opinions were incorporated to the document.

1.7 Layout of the National Charcoal Strategy and Action Plan

The NCS and AP is organized into Seven Chapters. Chapter One covers introduction which summarises background information about significance of charcoal sub-sector to livelihoods and national economy, justification for the NCS and AP, issues for implementation, roles and responsibilities of key stakeholders, expected results and methodology used in preparing the NCS and AP. The Second chapter covers situational analysis providing current status of the charcoal sub-sector including its significance to the national economy, unsustainable production, capacity to regulate charcoal trade and revenue collection, transport and marketing of charcoal. The chapter also provides a review of various issues including: charcoal exportation, utilisation, pressure on natural forests, legal and institutional frameworks challenges, inter-sectoral coordination and cross-cutting issues. Chapter Three states the vision, mission and objectives of the Strategy. The chapter also summarises the key challenging issues facing charcoal value chains and corresponding strategic objectives.

Chapter Four is the Strategy; it presents the strategic objectives from challenging issues raised in the situational analysis. In this chapter, several strategies, targets and outcome indicators for improving charcoal value chains in the country are also presented against the identified challenges. Chapter Five presents the Log-frame

for implementation of the Strategy. The Log-frame consists of the objectives, strategies, targets, required resources, timeframe and responsible institution. Chapter Six demonstrates the roles and responsibilities of stakeholders including the Ministry responsible for forest sector, key sector ministries, forest sector authorities, executive agencies and local government authorities (LGAs). In addition, other government institutions, Village Governments, Local communities, NGOs, CBOs, Faith-based institutions, media, private sector and development partners are also key stakeholders in this Strategy. Chapter Seven presents a framework for monitoring and evaluation of the Strategy. Chapter Eight contains the Action Plan for implementing the NCS.

CHAPTER TWO

SITUATIONAL ANALYSIS

2.1 Significance of Charcoal to the National Economy

More than 90% of households in Tanzania rely on illegal and unsustainable sourced biomass (charcoal and firewood) for domestic cooking and heating energy. Charcoal is one of the largest forest produce in Tanzania, providing substantial employment in the rural areas and along the value chains. MNRT (2021) shows that charcoal revenue trend in the country is increasing annually, contributing about 44% to the forest sector GDP. However, various challenges have been identified by MNRT (2021), including:

- 50% of charcoal revenue is emanating from wholesalers and retailers who are not formally organized/governed and recognized. The government collects only 0.5% of this (44%) as fees and taxes;
- Inadequate record keeping at households' level and by individuals on charcoal production; and
- Lack of formal system for accessing information from private sector on charcoal production.

In addition, a significant quantity of charcoal is exported but revenue is not collected because exportation of charcoal is banned in Tanzania. Placing export 'ban' on charcoal leads to illegal charcoal production and export, therefore criminalize a significant sub-sector of the national economy. This results to loss of potential government revenue through corruption, loss of employment and worsens deforestation.

2.2 Unsustainable Charcoal Production

Most charcoal in Tanzania is produced unsustainably (MNRT, 2019). This is because it is produced haphazardly, without management plans and efficient technologies. Charcoal production is a significant threat because it targets specific preferred species found in natural forests and woodlands, most of which are

poorly managed. The result is unsustainable harvesting, especially in drier areas, where the regenerative capacity is lower, and unplanned and unmanaged charcoal production accelerates the processes that lead to deforestation. The estimated deforestation rate of 469,420 ha/year in Tanzania and its environmental cost which is contributed by unsustainable charcoal production is enormous. This deforestation in the country, among others, contributes to adverse climate change (URT, 2017).

Tanzania has about 3.4 million ha of natural forests and about 44.7 million ha of natural woodlands. The remainder of about 40 million ha consists of bush land, grassland, cultivated land, open land, water, and other areas. Open woodlands cover about 41% of the land area and account for 53% of the growing stock. Villages are the main owners of woodland in Tanzania with a share of 45.7% or approximately 21.9 million ha, followed by the central government with a share of 34.5%.

Miombo woodlands are the chief source of firewood and charcoal in Tanzania. The most important use of wood in Tanzania is for fuel, and about 95% of the country's energy supply is met by fuel wood. Woodlands trees produce a heavier and more concentrated fuel than most fast-growing softwood species and tropical rain forests. Nearly 99% of charcoal used in Tanzania is from natural forests and woodlands, and production of charcoal is done through inefficient earth kilns, and also, woodcutting for charcoal making is not controlled. It is predicted that charcoal consumption will increase in absolute and relative terms in the near and medium-term future due to three main factors: (a) increased population growth; (b) urbanization; and (c) non-availability and affordability of alternative cooking energies. These trends are likely to apply in major cities, particularly Dar es Salaam where more than 50% of all charcoal in the country is consumed. In this case, the deforestation rate is expected to increase due to the adoption of poor charcoal production practices and technologies. Other factors include inefficient production and utilization of charcoal.

Charcoal can be produced without permanently deforesting or degrading a forested area by protecting harvested areas from cultivation, intensive grazing, and fire, thus enabling natural regeneration. In many tropical countries, including

Tanzania, Woodlands will regenerate within 8–30 years of trees being cut for charcoal (Chidumayo and Gumbo, 2013). For instance, Woollen *et al.* (2016) found that areas of Mopane woodland in Mozambique, under long-term charcoal production, continued to provide most ecosystem services so long as the woodland species continued to dominate the area. However, the situation is not the same in Tanzania due to the number of challenges in the charcoal subsector.

Firstly, few natural forests and woodlands have management plans in Tanzania, except for protected areas such as national parks and game reserves, where charcoal production is prohibited. Second, national policies have focused on reducing demand and regulating the trade of charcoal rather than promoting sustainable charcoal production (Doggart and Meshack, 2017). As a result, there has been little investment in planning and implementing sustainable charcoal production in natural woodlands. Additionally, charcoal value chains are primarily informal with production proceeding in the absence of sustainable harvesting plans. The informality of production, particularly the lack of formalized and sustainable harvesting, has contributed to widespread forest degradation and, to a lesser extent, deforestation, particularly in the vicinity of concentrated markets, such as large urban areas.

Major practice of harvesting trees for charcoal production is clear-felling and less selective harvesting in most of the natural forests. In most cases, harvesting is done without forest management plans and or harvesting plans. Trees are harvested without following harvesting techniques; and harvesting height does not favour regeneration. In view of the aforementioned challenges, the Community-Based Forest Management (CBFM) and Village Land Forest Reserves (VLFR) are established to enhance forest land management. In the implementation of CBFM and VLFR, the use of harvesting plans and introduction of coppicing technologies for regeneration (e.g. in Kilosa, Bahi and Mpwapwa) were promoted. In Kilosa in TFCG/TTCS project areas, land use plans, forest management plans, harvesting plans and bylaws are used to regulate harvesting. In Bahi and Mpwapwa districts about 25% of the villages have land use plans and this has tremendously reduced illegal production of charcoal. In line with land use plans, there are programmes to train villagers on how to stimulate stump sprouting (*visiki hai*) in those villages.

Likewise, deforestation is attributed by the adoption of poor technologies which lead to low productivity and overdependence on single source of raw materials. Most of charcoal producers use traditional kilns which are inefficient. Programs to introduce improved charcoal production technologies in Tanzania were started in early 1970s but with little success. A pilot programme was implemented by the Ministry of Energy with funding from the World Bank (1988 to 1992). The efforts were continued by TaTEDO which have implemented a number of programmes with support from different development partners including, EU, Hivos (Netherlands), NORAD and UNDP and now working in collaboration with TFCG and MJUMITA supported by the Swiss Development Agency.

Various improved charcoal production technologies exist in the country and are being pioneered by the Government and various stakeholders in the country. Examples of the technologies are Improved Basic Earth Mound Kilns, Half Orange Kiln, Pit Kiln, Metal Kiln - Mark 5, Modified Metal Channel Earth Kiln, Casamance Earth Kiln and Simple Retort. Most of the technologies have recovery rate of more than 25%, however, the challenges are: low availability, affordability and appropriateness of the technology to majority of the charcoal producers; and low awareness and adoption of the technologies especially the Improved Basic Earth Mound Kilns which is considered to be technology of choice to different environment.

Currently, charcoal earth kilns with average recovery of 15% on weight basis are commonly used in Tanzania. This means that around 10 kg of wood is used to produce 1.5 kg of charcoal. Field experience has shown that the efficiency of the earth kiln could be increased to 25% through introduction of a chimney that facilitates carbonization process of the charcoal. Improved Basic earth mound kiln with around 25% efficiency is the most popular improved earth kiln used in East Africa. With 10 kg of wood, a producer can get 2.5 kg of charcoal by using the improved basic earth mound kilns. By using traditional earth kilns with 15% efficiency, the average annual consumption of charcoal of 2,333,743 tonnes were produced by using 15,558,287 tonnes of wood equivalent to 22,226,124 m^3 (at 70% density - one tonne of wood is about 700 kg) which was obtained by clearing an equivalent of 444,522 ha of natural forests with a standing wood volume of 50m^3 per ha.

By using improved basic earth mound kilns with 25% efficiency, the average annual consumption of charcoal of 2,333,743 tonnes could be produced by using of 9,334,972 tonnes of wood equivalent to 13,335,674 m^3 (at 70% density). This could be obtained from clearing an equivalent of 266,713 ha of natural forests with a standing wood volume of 50m^3 per ha. Use of improved charcoal kilns with 25% efficiency could reduce annual deforestation by 177,809 ha. Concerted efforts are therefore required to intensify charcoal producers' awareness on the economic and environmental value of using the improved basic earth mound kilns**.** Furthermore, the existing legal frameworks do not require charcoal producers to use the efficient technologies. Hence, adoption of unsustainable charcoal production practices and inefficient production technologies are some of the main challenges facing charcoal sub-sector.

2.3 Alternative Charcoal Production and Consumption

Alternative charcoal has the potential to reduce charcoal production and consumption and therefore reduce degradation and deforestation of the natural forests. Production of alternative charcoal in Tanzania goes way back to 1980s when CAMARTEC in Arusha tested several technologies and some have developed over time. There are several enterprises emerged in the past thirty years without sufficient understanding of the markets, the costs, access to raw materials, the proper technologies and without commercial aspects. Production and use of alternative charcoal in Tanzania is currently at a low scale. Available literature suggests several factors limiting large scale production and use of alternative charcoal including:

(i) Technological challenges: Overdependence on importation of equipment and spare parts due to weak or absent technological capacity to fabricate densification equipment in the country;

(ii) High start-up costs for alternative charcoal for most entrepreneurs especially for women who traditionally have less access to and control over key resources such as finance;

(iii) Production bottlenecks e.g. seasonal availability of feedstock and space for drying in all weather; and

(iv) Low market penetration due to inadequate awareness and limited volume of production.

This Strategy puts forward several options for enhancing the production and utilisation of alternative charcoal as a way of contributing to sustainability of the charcoal subsector in Tanzania.

2.4. Capacity to Regulate Charcoal Trade and Revenue Collection

Revenue collections from charcoal production and trade have increased (MNRT, 2019). The system for collecting the revenues has been continuously improved. The Government Electronic Payment System for collection of revenue is in place. However, there are various challenges in relation to revenue collection in the country. Only about 25% of charcoal revenue is collected partly because most charcoal is transported using motorcycles and bicycles by-pass checkpoints and do not pay the required permits and fees. Other contributing factors include limited human resource capacity for revenue collection, illegal routes, governance challenges, political interference and vested private interests. Additionally, the following factors which contribute to inefficient revenue collection include:

(i) Licensing and supervision body (Local Government Authorities) is not answerable to FBD;
(ii) Lack of a clear mechanism for sharing of accrued revenue to the districts from the royalty they collect from central government forest reserves on behalf of FBD;
(iii) Some districts charge cess amounting to 100% of royalty. This is a burden to the customers;
(iv) Licensing officers being too far from charcoal business areas;
(v) Charcoal dealers scattered in a wide geographical area makes inspection expensive;
(vi) Inadequate monitoring and evaluation system; and
(vii) Charcoal taxes and fees are reported to be numerous eroding charcoal dealers' profits.

2.5 Transportation and Marketing of Charcoal

The Government directive is that; all charcoal should be sold in charcoal selling centres. However, charcoal is sold haphazardly limiting monitoring of the charcoal

business countrywide. Value addition activities which take place at transportation node include packaging and marketing. Traders use bags made of sisal fibre and woven polypropylene bags (*viroba/sandarusi*) of various sizes.

Although, identification of sustainable charcoal by using specified packaging material could improve marketing, this has not been done in the charcoal value chain in the country. Transportation of charcoal involves trucks/vehicles, motorcycles, railway, bicycles, drought animals, head-loads, boats and dhows. The main means of transportation observed by various studies show that the use of motorcycles and bicycles (in some regions in central, eastern and western Tanzania) have increased significantly. Motorcycles are the main violators of regulations (e.g. Land Transport Regulatory Authority (LATRA), Forest Act 2002 and Road Traffic Act 2017). Most of them transport charcoal at odd hours, and majority of the transporters are not registered and motorcycles and bicycles evade check points. Mode of transport and distance to be covered to the market determines value of charcoal. In 2019, TFS proposed to ban charcoal transportation using motorcycles. However, the proposal does not conform with existing Policy and laws. Therefore, identification, registration and formalization of motorcycles are important. In addition, during transportation, special charcoal bags should be used. The amount of bags carried by motorcycles is often beyond the carrying capacity impairing safety standards.

Value addition at this node is about transportation of charcoal to towns, municipalities, cities (e.g. Dar es Salaam and Mwanza), Zanzibar and beyond country boarders. In these places charcoal fetched high prices compared to when sold at on-site market. In most cases men are mostly involved in charcoal value chains as compared to women.

Whole-selling of charcoal is practiced by stockists who sell charcoal in bags. However, some wholesalers are selling in small quantities to increase market niches. Value addition activities at this node involve stocking of charcoal in large quantities. This increases availability of charcoal even during wet season which is a low production season. Stocking improves prices and consequently value of charcoal. Whole-selling is mainly encountered in towns, municipalities and cities and is done by both men and women and in unorganized manner. The main

challenges of the whole-sellers include motorcycles and bicycles that are making home delivery. Most of the transporters use motorcycles and bicycles to evade taxes and are selling at lower prices.

Retailing is mainly observed in town, municipalities and cities. Value addition activities are mainly through repackaging into small quantities (*tin-kopo*, plastic buckets, and small bags) for purpose of attracting customers of various income brackets. This activity is dominated by women.

2.6 Exportation of Charcoal

The Export Control (Prohibition) order No. 663 of 1986 prohibits export of charcoal. However, charcoal is produced and transported illegally across boarders using trucks and motorbikes, and informal harbours using canoe and other vessels. For example, charcoal is exported to Democratic Republic of Congo, Burundi, Kenya, Oman and Comoro. Uniquely charcoal is imported from Zambia and Malawi through Tunduma border as a result of banning tree felling in Songwe Region (MNRT, 2019). It is important to note that many countries in Africa (e.g. South Africa and Namibia) are exporting charcoal and this contributes to their national economies. The Minister for Industry, Trade and Investment can waive the prohibition as deemed suitable. Therefore, drafting and enacting charcoal regulations that provide mechanisms for charcoal licensing, transportation and export trade is important.

2.7 Charcoal Utilization

End users constitute the final node where charcoal as product is consumed. For example, about 70% of the households in Dar es Salaam use charcoal as the first-choice cooking fuel. Value addition supposed to contain efficient utilization of charcoal. More than 40% of Dar es Salaam City households use efficient charcoal stoves. Cooking and vending of food is mostly done by women. However, the quality and performance of some improved stoves is questionable raising issues of standardization.

Improved Cook Stoves (ICS) have been developed, studied, promoted and commercialized in Tanzania since the 1980s to address environmental challenges.

Specifically forest degradation and deforestation resulting from increasing charcoal use as a source of energy. In spite of those efforts, still inefficient charcoal stoves are widely used in Tanzania. Most households use the low quality charcoal stoves with combustion efficiency of less than 15%. Adoption of improved cook stoves (with efficiency level of more than 30%) could reduce charcoal consumption by more than 50%. However, the key challenges of the improved cooking stoves are: low coordination, standardization, accreditation of the stove, low awareness of the existing improved cooking technologies, low affordability, limited investment and working capital.

2.8 Overdependence on Charcoal for Cooking

Tanzania population is increasing which creates high demand of energy especially for cooking. Although, household connectivity to electricity and availability of alternative cooking energy is increasing, majority of households continue to depend on charcoal for cooking. Therefore, sustainable production and efficient utilisation of charcoal is of paramount importance. Moreover, improved affordability and availability of alternative cooking energy is equally important to reduce overdependence on charcoal. The government has developed GN No. 623 of 2021 which governs production, transportation and selling of forest-based briquettes.

There are potentials to produce briquettes from agro-based residues and urban bio-solid wastes which is yet to be fully utilised. All these are required to be promoted to reduce overdependence on forest based resources for charcoal production.

2.9 Legal and Institutional Frameworks Challenges

2.9.1 Land legislation and sustainable forest management

The Village Land Act (VLA) of 1999 part II, outlines fundamental principles of the National Land Policy of 1995, under article "f" of section 3, states that land is to be used productively and that any such use must comply with principles of sustainable development. At the same time, the VLA, under part IV, section 14, requires any forest area, in order to be recognized, must be lawfully declared to be a forest reserve.

These statements in the National Land Policy and VLA have been interpreted by many to lower the status of forests on village lands that are not in village forest reserves. It is perceived by many that forests on village lands, outside reserves, are deemed to be unproductive lands and can lead to appropriation of that land including forests. As a result, villagers feel encouraged to clear these forested lands and to cultivate them as a way of assigning values. Without legislation that specifically recognizes sustainable forest management as a productive land use, villagers will prefer to clear forests and cultivate or construct buildings on the land as a way of claiming their rights of occupancy over these lands.

There are incoherent areas creating ambiguity in tenure and ownership between the Forest Act of 2002 and within the Village Land Act of 1999. For example, the "unused land" as provided for in the Land Act 1999 where such land under the forest related laws has been translated to public land or general land. According to the Forest Act of 2002, forests in general or public land are managed by TFS and issue harvesting licenses. Nevertheless, unused land/future land within the villages is under jurisdiction of the village councils. The unreserved forest lands in villages is perceived to have relatively low value (*Mashamba pori*) when compared to other land uses.

2.9.2 Weak provisions for enforcing land use planning laws

Under section 57, sub-sections 1 and 2, of the Land Use Planning Act of 2007, the National Land Use Planning Commission (NLUPC), in consultation with relevant land use planning authorities, is identified as having responsibility to monitor and evaluate all land use and environmental phenomena with a view to making assessment of any possible change in the environment and the possible impacts.

The legislation provides for the NLUPC and District Councils, as land use planning authorities, to monitor adherence to land use plans. However, the law does not specify what penalties can be taken by the NLUPC and District Councils against a village, or villages that do not comply with a village land use plan.

The weak monitoring and enforcement of land use plans by a national authority are seen by many as a major reason why forests on village lands cannot be

protected effectively. Although, Village Land Use Plans are supported by bylaws that are enforceable in a court of law, without additional and regular monitoring of adherence by a national body, they are deemed to be largely insufficient.

2.9.3 Re-investment of forests revenues in forest management and extension

The Local Government Finances Act of 1982, under part II, which refers to the sources of revenue of District Councils, under section 7, sub-section 1 article "r", revenues, funds and resources of a District Council are defined to consist of moneys derived from fees for forest produce and licences accruing to the District Councils. The Councils are allowed to utilise all moneys derived from any cess payable on any agricultural or other produce produced in the area of their jurisdiction. According to sub-section 3 and 4 of the same, requires all revenues of a District Council, unless otherwise stated, be paid into the General Fund of the District Council. However, the Councils can only charge cess on forest produce but cannot receive funds directly from forestry royalties. As such, there is no provision for royalties to be re-invested in village land forests. According to Section 54 sub-section 2, article "b", of the Forest Act of 2002, any fees, royalties or other imposts is owed to the Government of Tanzania. This provision means that all royalties are Central Government revenues and cannot be paid to district or village governments directly. To that effect, there are no legal mechanism to ensure that forest generated revenues at district level are re-invested for forest management and extension undertakings.

2.9.4 Deficiencies in policies and legal frameworks

The MNRT is the main supplier of the raw materials for charcoal production and is a regulator of charcoal value chains. There are a number of regulations and guidelines pertaining to charcoal production, packing, transportation and marketing that are conflicting with other sectorial policies and legal frameworks, including:

(i) Felling of trees for farm preparations: GN No. 417 of 24th May, 2019

Section 15. (1) of GN No. 417 stipulates 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 Conservator after approval of the District Forest

Produce Harvesting Committee. However, agriculture in particular shifting cultivation is the main contributor to deforestation and so far there are no policy directives from agriculture to control clearing of forests for agriculture activities.

(ii) Charcoal Production: GN No. 417 of 24th May, 2019

Provides directives on the methods for charcoal production. According to Section 10. (1) of the GN No. 417, the Chief Executive shall provide guidelines for methods of charcoal production, which are efficient, significantly offsets carbon dioxide, reduces deforestation and ensures ecosystem resilient to climate change. However, there is no guideline developed to specify or recommend the type and appropriate technology to use.

(iii) Transportation of Charcoal

According to GN 417 of 2019 Section 16 (1), any person evacuating, hauling or transporting forest products including charcoal on transit shall ensure that the forest produce transported are lawfully obtained. Section (2) requires that any person evacuating, hauling or transporting forest products including charcoal for domestic consumption shall pass through the roads or routes and checkpoints stipulated on the Transit Pass for inspection purposes. The regulation did not specify how much charcoal for domestic consumption should not be allowed to pass through check points. However, the GN does not specify the amount excepted for domestic use.

Section 18 (1) stipulates that a person transporting forest products including charcoal for domestic consumption on any road shall be required to show proof of a receipt indicating that forest products including charcoal were purchased from a registered and licensed dealer. The National Transportation Policy of 2003 control all aspects related to transportation of various products including charcoal. The National Road Safety Policy of 2009 and Roads Act of 2007 guides road safety transportation and recognise the need for road safety rules, regulations and other guidelines. Currently, most charcoal is transported using motorcycles violating transportation regulations and guidelines.

(iv) The National Energy Policy of 2015

At consumption level, the National Energy Policy of 2015 considers charcoal as biomass energy which is guided by National Energy Policy while as a product, charcoal is one of the forest produce in the MNRT guided by the National Forest Policy of 1998. Therefore, two policies guide the same product. This sometimes provides conflicting directives about the same product. This requires harmonization for purpose of working together.

2.10 Inter-sectoral Coordination

There are several national level institutions that are dealing with charcoal. The main actors in this context include the VPO, MoE, MNRT, MITI, MWT and PO-RALG. The VPO is more concerned with environmental consequences of charcoal production and use. The MoE is more focused on demand side of charcoal as cooking energy. The MNRT is focusing on supply side and trade of charcoal. MITI deals with SMEs, mandated to develop standards, regulate exportation of charcoal and weights and measures of products including charcoal. MWT regulates transportation. PO-RALG deals with production, CESS collection, conservation and community livelihoods. Each of these key stakeholders develops and implements their policies and legal frameworks in isolation without adequate consideration of other actors. This has resulted to remarkable contradictory policies and coordination challenges. The NCS and AP represent a national level attempt to address the coordination challenges.

2.11 Integrated Sustainable Charcoal Model (ISCM)

In 2018, the Ministry of Natural Resources and Tourism formed a National Task Force to assess options that could address challenges in charcoal production, trade, and use and that support the sustainable management of forest resources in Tanzania. Specifically, the task force was tasked to: (i) Evaluate the sustainability of existing charcoal production and use models within Tanzania, and beyond, and their potential application along the value chain in the Country; (ii) Identify barriers and gaps that hinder the sustainability of the charcoal sub-sector in Tanzania; (iii) Identify and engage relevant stakeholders and draw lessons for the improved development of the charcoal sub-sector in the country; and (iv) Recommend policy applications towards improving the

sustainability of the charcoal sub- sector in Tanzania. The Task Force collected and analysed data from all the 7 zones that have been established by the Tanzania Forestry Services Agency (TFS) in the country for the purpose of increasing diversity in terms of charcoal business scenarios and geographical coverage. After conducting thorough analysis, the task force proposed an integrated model which can improve the conduct of charcoal business in the country and institute sustainability elements in the business. In this section the model is presented as it has provided some insights in developing strategic objectives, targets and activities contained in this national charcoal strategy.

The model advocates for an integrated approach embracing issues of policy, strategies, and regulations formalization of charcoal business, reduction in dependence on natural forests, reduction in dependence on charcoal for cooking, increased use of clean cooking solutions, increase gender inclusion, socio-economic development and render efficiencies in production, trade and utilization along charcoal value chain. Elements and key features of the ISCM model are presented in Appendix 1 and described herein.

Formalized Charcoal producers and traders with legal recognition: The model emphasizes producers and traders to be formalized and legally recognized as legal business entities. The legal recognition and formalization would enable FBD and other actors (lower level institutions at district and village levels) to enforce the exclusion principle. The legal recognition provides incentives for producers to operate with confidence and comply with the laws that govern the charcoal sub-sector. Formalization would also include transporters (e.g. trucks, motorcycles and bicycles) on carrying charcoal.

Economic viability: The charcoal production and trade should be economically viable. The government and other actors along the value chain should have to oversee the business environment to enable the trade to be profitable. Profitability element will enable producers and traders to be supportive to sustainability of the charcoal production and trade i.e. reduces illegal charcoal trade.

Stable institutional framework: Charcoal production and trade should be based and supported by stable and robust institutional arrangements. The proposed model

needs to be anchored on economically viable business institutions with in- built entrepreneur skills as one of incentive mechanism for sustainability. The institutions need to be owned by the forest resource owners, producers, transporters, whole-sellers, retailers and end-users but be regulated and controlled by the government and its agencies from national to local levels. Initially intensive regulation of these business institutions will be needed but with time market forces of demand and supply (with the right enabling environment by the state) should regulate the business.

Sustainable sources of raw materials: Current models have so far over depended on natural regeneration in community woodlots/forests/general land /farms as the main sources of raw materials with little forest management. The models have further over–depended on village level institutions and district authorities as controllers of the natural forests for sustainable supply of raw materials. This has failed in many parts of the country and deforestation has increased. It is emphasized that the charcoal from natural regeneration alone is not enough to satisfy the charcoal demand and hence unsustainable. The proposed model suggests that forest natural regeneration, sustainable harvesting techniques and protection of harvested areas against fire, grazing and agriculture should also be combined with establishment of charcoal plantations and woodlots for sustainable supply of raw materials. This requires integrated land use planning at community level involving the entire key stakeholders. It is a pre-requisite that professional foresters provide constant technical backstopping to the producers. The model, as it is shown in appendix 1, will also encourage the use of alternative materials for charcoal production including for example various types of briquettes. Finally, the proposed model shall focus on both supply and demand sides of charcoal. A good number of models in operation today have often separated these two important aspects in relation to charcoal production and trade. That means interventions to ensure charcoal is utilized efficiently by end-users is paramount.

Access to alternative cooking energy and improved technology: The proposed model should consider improved access to alternative cooking energy and improved production and utilization technologies to reduce pressure on forests. Modern clean cooking energies such as electricity from renewable sources, briquettes, LPGs and natural gas should be promoted at community level. Producers of alternative cooking energy sources should be encouraged to come up with special packages and options affordable by urban poor segments of the society where charcoal is used.

Social acceptability: The model encouraged stakeholder involvement in the form of actor's platforms which need to be designed and instituted. Gender inclusive consideration and support to marginalized members of the society shall be given due weight. Corporate social responsibility at producer level (e.g. charcoal incomes to support improvement of basic social services as incentives to sustainable production such as provision of National Health Insurance Fund, education, health infrastructures and support sustainable forest based enterprises) shall be observed by the charcoal economic entities at community level.

Efficiencies in charcoal production, trade and utilization along charcoal value chain: Charcoal kilns and stoves should be more efficient and communities should be more sensitive to wastage. Reducing wastage in production will lead to using less wood to produce charcoal. The model is emphasizing use of Improved Basic Earth Mound Kiln (IBEMK). This kiln has high yield with low time duration in production. In places that have high biomass density with very short transportation of biomass, use Half Orange Kiln. In areas with high amount of rice husks and saw dust use of Simple Retort Kilns to carbonize loose materials (rice husks and saw dust) to charcoal. Reducing wastage by using Improved Cook Stoves (ICS) and home economics will lead to using less charcoal. Recommended ICS are Metal Ceramic Charcoal Stove and newer generations of ICS with higher efficiencies and correct specifications.

Research, Monitoring and Evaluation: New information and lessons of experience need to be systematically studied, documented and used to improve integration in the charcoal sub-sector. Researchers should be supported to study the performance of the model in the field and recommend improvements. Equally, practitioners need to engage in effective monitoring and evaluation in order to perfect the model.

2.12 Cross-Cutting Issues

The development of the charcoal value chain is influenced by several other cross-sectoral factors including HIV/AIDS, gender and governance as explained below:

2.12.1 HIV/AIDS

Mainstreaming of HIV/AIDS awareness programmes enhances the sustainability and productivity along the charcoal value chains by reducing the impacts of HIV/AIDS and stigma among the workforce and the surrounding communities. Charcoal value chain activities may be associated with various social relations and urbanisation, which may contribute to the spread of HIV/AIDS among the local communities. Furthermore, it is of great importance to address all sorts of stigma to the people who are living with HIV/AIDS in the charcoal value chains and surrounding communities in order to fight against discrimination and promote inclusiveness.

2.12.2 Gender

Integration of gender issues may promote economic inclusiveness in the charcoal value chains and social welfare. However, the chains in the supply side are male-dominated and marginalised social groups mostly women have been engaging in few areas of the charcoal value chain. Production node of the charcoal value chain is dominated by men; some women are involved in whole-selling and transportation while retailing is mainly done by female. Few social groups (women, girls (youths) and disabled persons) are fully engaged in charcoal value chains like charcoal production because the process is labour intensive and often done during awkward hours hence discouraging women participation. Gender inclusive consideration and support to marginalized members of the society has not been given due weight in the charcoal value chains.

2.12.3 Governance

The formal governance framework of the charcoal sector is characterized by inadequate institutionalization, law enforcement, and other regulatory capacity, as well as regulatory overlaps and gaps. In addition, in some places the charcoal value chains are also characterized by corruption practices, inadequate compliances to the forest management and harvesting plans, bylaws, rules and regulations. Majority of the actors along the chain rarely benefit from the charcoal production and trade, therefore less incentive to manage charcoal value chains sustainably. There is no comprehensive and inclusive strategy, or legal framework addressing the charcoal value chain governance challenges.

CHAPTER THREE

VISION, MISSION AND OBJECTIVES

3.1 Overview

This chapter consists of the vision, mission and objectives of the charcoal value chain development in the country. The Vision and Mission statements have been formulated while strategic objectives, issues and targets have been generated based on the situational analysis.

3.2 Vision and Mission

3.2.1 Vision

The charcoal value chains in Tanzania become sustainable, economically viable, and environmentally sound while improving livelihoods.

3.2.2 Mission

To achieve sustainable charcoal value chains through provision of enabling environment and supportive services in Tanzania.

3.3 Strategic Objectives and Issues

The strategic objectives (SOs) of the strategy are:

i. Enhanced sustainable charcoal production and utilization;
ii. Enhanced production and use of alternative charcoal;
iii. Increased market niche for sustainable charcoal;
iv. Enhanced adoption of alternative cooking energy;
v. Enhanced institutional, human resource capacity and coordination;
vi. Reduced impact of HIV and AIDS infections along the charcoal value chains;
vii. Mainstreamed gender inclusion along the charcoal value chain; and
viii. Enhanced good governance in the charcoal value chain.

Table 1 itemizes challenging issues facing charcoal value chains and corresponding strategic objectives (SOs) included in the charcoal strategy to address the challenges.

Table 1: Summary of challenging issues and corresponding objectives in the Strategy

Issue	Strategic Objective
Unsustainable charcoal production and utilization	Enhanced sustainable charcoal production and utilization
Limited production and use of alternative charcoal	Enhanced production and use of alternative charcoal
Inadequate market for sustainable charcoal	Increased market niche for sustainable charcoal
Overdependence on charcoal	Enhanced adoption of alternative cooking energy
Inadequate institutional, human resource capacity and coordination	Enhanced institutional, human resource capacity and coordination
Low awareness and discrimination on HIV and AIDS on actors along charcoal value chains	Reduced impact of HIV and AIDS infections along the charcoal value chain
Inadequate gender inclusion along charcoal value chains	Mainstreamed gender inclusion along the charcoal value chain
Inadequate instruments to address governance challenges in the charcoal value chain	Enhanced good governance in the charcoal value chain

CHAPTER FOUR

THE NATIONAL CHARCOAL STRATEGY

4.1 Overview

The National Charcoal Strategy contains sub-sections that closely follow the identified strategic objectives from issues raised in the situational analysis. Under each sub-section several strategies, targets and outcome indicators for improving charcoal value chains in the country are presented.

4.2 Charcoal Production and Utilization

Issue: Unsustainable charcoal production and utilization

Unsustainable charcoal production, low adoption of improved technologies for charcoal production and utilization, inadequate benefits accrued to charcoal producers, and difficulties to trace producers are challenging the charcoal sub-sector.

Objective 1: Enhanced sustainable charcoal production and utilization.

Strategies for Forest Plantations and Woodlots

(i) Encourage tree planting and natural regeneration practices for sustainable charcoal production;

(ii) Strengthen the management of forests for sustainable charcoal production;

(iii) Enhance productivity in sustainable charcoal production and utilisation; and

(iv) Promote investment in the charcoal sub-sector.

Targets for Forest Plantations and Woodlots

(i) State-owned forest plantations for sustainable charcoal production increased from 1 to 3 by June, 2031;

(ii) Woodlots for charcoal production increased by 10% by June 2031;

(iii) Forest plantations for sustainable charcoal under public-private partnership increased by 3 by June, 2031;
(iv) Tree seeds orchards for sustainable charcoal production increased by 400 ha by June, 2031;
(v) Germplasm centres producing seeds for sustainable charcoal production increased by 3 by June, 2031;
(vi) Area under community-owned forest plantation/woodlots for sustainable charcoal production increased by 60,000 ha by June, 2031;
(vii) Area under private forest plantations for sustainable charcoal production increased by 50,000 ha by June, 2031;
(viii) Certified woodlots for sustainable charcoal production increased by 60% by June, 2031;
(ix) Sustainable charcoal production forest plantations managed according to the technical order increased by 60%
(x) Sustainable charcoal production woodlots managed according to the technical order increased by 40% by June, 2031;
(xi) Two areas designated for sustainable charcoal production from plantations/woodlots in Njombe and Mufindi districts developed by June, 2028;
(xii) Three credit windows for sustainable charcoal investments established by June, 2025; and
(xiii) Micro financing mechanisms for small-scale and medium-scale sustainable charcoal production developed by June, 2024.

Outcome Indicators for Forest Plantations and Woodlots

(i) Change in area of forest plantations for sustainable charcoal production;
(ii) Change in area of community-owned plantations/woodlots for sustainable charcoal production;
(iii) Change in area of private forest plantations for sustainable charcoal production;
(iv) Change in fiscal revenues collected from the sustainable charcoal investments in forest plantations and woodlots;
(v) Change in investment value in the sustainable charcoal subsector;
(vi) Change in the households' standard of living;

(vii) Change in the compliance level of decent work standards in the charcoal sub-sector; and

(viii) Change in the deforestation rate caused by unsustainable charcoal production.

Strategies for Natural Forests

(i) Promote stakeholders' engagement in natural forest management for sustainable charcoal production;

(ii) Promote tree planting and regeneration for sustainable charcoal production;

(iii) Encourage the utilisation of lesser-used species for sustainable charcoal production; and

(iv) Promote efficient utilisation of charcoal from natural forests.

Targets for Natural Forests

(i) Unreserved forests upgraded into CBFM increased by 30% by June, 2031;

(ii) CBFM scheme practising sustainable charcoal production from natural forest increased by 10% by June 2031;

(iii) JFM benefit sharing scheme in the charcoal subsector increased by 30% by June, 2031;

(iv) Sustainable natural forest harvesting plans for sustainable charcoal production under different tenures instituted by June, 2028;

(v) Area under natural regeneration in charcoal producing villages increased by 30% by June 2031;

(vi) Charcoal producing villages practice natural regeneration increased by 10% by June 2031;

(vii) Bamboo production increased for sustainable charcoal production increased by 35% by June, 2031;

(viii) Tree seed banks for sustainable charcoal production increased from 1 to 3 by June, 2031;

(ix) Research on natural regeneration on sustainable charcoal plots increased from 2 to 5 by 2031;

(x) Urban households using efficient cooking stoves increased by 45% by June, 2031; and

(xi) Fiscal and monetary incentives for the adoption of efficient charcoal kilns developed by June, 2024.

Outcome Indicators for Natural Forests

(i) Change in area under natural forest reserves;
(ii) Change in growing stock in natural forests;
(iii) Change in natural forest cover;
(iv) Revenues collected from natural forests; and
(v) Percentage change in incidences of illegal harvesting.

Issue: Limited production and use of alternative charcoal

Production and utilisation of alternative charcoal is challenged in terms of technological overdependence on imported equipment, high investment costs, production bottleneck including availability of feedstock and low market penetration. The latter is associated with inadequate awareness and limited volume of production.

Objective 2: Enhanced production and use of alternative charcoal.

Strategies

(i) Promote appropriate technology for production of alternative charcoal;
(ii) Support financing and investment in alternative charcoal; and
(iii) Increase awareness on production and use of alternative charcoal.

Targets

(i) Twelve technologies (carbonisation, grinding, pressing, extrusion and binding) for alternative charcoal production promoted by June, 2031;
(ii) Ten feedstock for production of alternative charcoal promoted by June, 2031;
(iii) Five credit windows for financing alternative charcoal production established and operationalised by June, 2031;
(iv) Fiscal incentives for promoting availability of affordable alternative charcoal developed by June, 2025;
(v) 10% increased utilization of alternative charcoal at household, institution, and SME level by June, 2031;

(vi) One stakeholders' forum on alternative charcoal promotion conducted annually; and
(vii) Market information system on alternative charcoal established by June, 2024.

Outcome Indicators

(i) Percentage change in alternative charcoal production and use; and
(ii) Percentage change in alternative charcoal industries.

4.3 Market for Charcoal

Issue: Inadequate market niche for sustainable charcoal

Sustainable charcoal is considered to be the main source of earnings to the households/investors and the Government at large. Despite such potential, the market for sustainable charcoal is relatively small to attract more investors and increased production. Among others, the situation is attributed by informal trading, inadequate incentives to promote both domestic and export trade of sustainable charcoal, the regulatory barriers which recognize the business to be illegal and restriction of charcoal export. In this regard, the sub-sector experiences less consumption of sustainable charcoal, low export and fiscal revenues mainly from charcoal briquettes, and increased deforestation due to informal trading of charcoal.

Objective: Increased market niche for sustainable charcoal.

Strategies

(i) Promote the use of sustainable charcoal in the domestic market;
(ii) Encourage diversification of sustainable charcoal export markets; and
(iii) Develop market infrastructure for sustainable charcoal.

Targets

(i) Operational public procurement procedures for promoting sustainable charcoal consumption introduced by 2023;
(ii) National guidelines for utilisation of sustainable charcoal in private and public institutions developed by 2023;

(iii) Incentive mechanisms for promoting sustainable charcoal consumption in the domestic market developed by 2024;
(iv) The Export Control (Prohibition) order No. 663 of 1986 reviewed by 2023;
(v) Fiscal export incentives for sustainable charcoal introduced by 2024;
(vi) Ten sustainable charcoal export markets established by 2031;
(vii) Sustainable charcoal quality assurance and certification standards developed by 2024;
(viii) Sustainable charcoal marketing information system established by 2025;
(ix) Government electronic payment system for fiscal revenue collection in charcoal sub-sector developed by 2025;
(x) Market intermediaries' registration (See Annex 2) and certification system in the charcoal sub-sector developed by 2024; and
(xi) Sustainable charcoal trading centres at the ward level established by 2026.

Outcome indicators

(i) Percentage change in quantity of the domestic sustainable charcoal trade;
(ii) Percentage change in quantity of the export of sustainable charcoal trade; and
(iii) Percentage change in Government fiscal revenues.

4.4 Alternative Cooking Energy

Issue: Overdependence on Charcoal

Ability of the sustainable charcoal production to meet the domestic demand will not be achieved in both short and long-terms. In this case, promotion of alternative cooking energy to reduce overdependence on the traditional charcoal in the short-term is of paramount importance and sustainably protects the environment. Equally, it is important to diversify the energy sources in order to ensure its sustainability and hedge against any risk that may arise from a particular source of energy. Tanzania has managed to have several limited infrastructures for diversifying the energy sources including electricity, Liquefied Petroleum Gas (LPG), charcoal briquettes, Compressed Natural Gas (CNG), bio-gas and ethanol. Despite such potential for alternative cooking energy, there is still

overdependence on unsustainable charcoal as the households' energy source due to inadequate availability and relatively high cost of alternative cooking energy.

Objective: Enhanced adoption of alternative cooking energy

Strategies

(i) Promote conducive enabling environment for the adoption of alternative cooking energy; and
(ii) Encourage the use of efficient and clean cooking solutions.

Targets

(i) Stakeholders' forum on alternative cooking energy promotion conducted annually;
(ii) Five credit windows for financing alternative cooking energy production established and operationalised by June, 2031;
(iii) Fiscal incentives for promoting availability of affordable alternative cooking energy developed by June, 2025;
(iv) Market information system on biomass and non-biomass based alternative cooking energy established by June, 2024;
(v) Industries producing charcoal briquettes increased from 29 to 40 by June, 2031;
(vi) Adoption of clean cooking solutions increased from 10% to 75% by June, 2031; and
(vii) Firms investing in clean cooking solutions increased by 30% by June, 2031.

Outcome Indicators

(i) Percentage change in trade of biomass-based alternative cooking energy;
(ii) Percentage change in trade of non-biomass-based alternative cooking energy; and
(iii) Accessibility level of clean cooking solutions.

4.5 Institutions, Human Resources and Coordination

Issue: Inadequate institutional, human resource capacity and coordination

Institutional, human resource capacity and coordination play an important role in the management and facilitation of the charcoal sub-sector growth and sustainability. Notwithstanding such important role, the sub-sector experiences a number of challenges including inadequate skills among the actors, research and development capacity and infrastructure, and limited inter-sectoral coordination mechanisms. With regard to inter-sectoral coordination, there are several development projects which are implemented in silos resulting to limited impact in the charcoal sub-sector development. Likewise, the private sector is not coordinated due to the absence of umbrella association and the forum to represent the interests of the members. Additionally, there are multiple legal and regulatory instruments which contradict each other with regard to sustainable charcoal production, transport, marketing and use

Objective: Enhanced institutional, human resource capacity and coordination

Strategies

(i) Strengthen inter-sectoral coordination for the management of sustainable charcoal business;
(ii) Strengthen forestry training and research institutional capacity for the growth of sustainable charcoal production and utilisation; and
(iii) Promote skills development for the production and utilisation of sustainable charcoal.

Targets

(i) The Forest (Sustainable Charcoal Production, Transport and Trade) Regulations developed by June 2025;
(ii) Inter-sectoral forum for charcoal sub-sector established by June, 2023**;**
(iii) National steering committee for sustainable charcoal production and trade established by June, 2023;
(iv) Research and development financing mechanisms in the charcoal subsector developed by June, 2025;
(v) Mainstreaming of sustainable charcoal production and utilisation in 4 training institutions implemented by June 2025;
(vi) Informal skills development guidelines for sustainable charcoal production and utilisation established by June, 2026; and

(vii) Two apprenticeship programmes for sustainable charcoal production and utilisation conducted annually.

Outcomes

(i) Percentage change in collaborative projects for charcoal subsector development;
(ii) Proportion of adopted research findings;
(iii) Accessibility level of business development services by charcoal producers;
(iv) Percentage change in local population participation in the sustainable charcoal production and utilisation; and
(v) Percentage change in charcoal producers complying with best charcoal production and utilisation practices.

4.7 Good Governance, HIV & AIDS Prevention and Gender Mainstreamed

4.7.1 HIV & AIDS

Issue: Inadequate measures to address HIV & AIDS in the charcoal subsector.

Objective: Impact of HIV & AIDS infections reduced in the charcoal subsector.

Strategy

Mainstream HIV & AIDS protection and supportive measures in the sustainable charcoal value chains.

Targets

(i) HIV & AIDS preventive programs increased from 10 to 30 by June 2031; and
(ii) 80% of persons living with HIV & AIDS in the charcoal sub-sector are supported by June 2031.

Outcome Indicators

(i) Change in the rate of infection; and
(ii) Change in the mortality rate.

4.7.2 Gender

Issue: Inadequate mainstreaming gender in the charcoal subsector.

Objective: Mainstreamed gender equity and equality in the charcoal subsector.

Strategy

Encourage and support women to participate in all aspects of charcoal subsector development and management.

Targets

(i) Two (2) women supporting programmes in the charcoal subsector established annually; and

(ii) Women participation in the charcoal stakeholders' associations increased by 20% by June, 2031

Outcome Indicators

Proportion of females in the charcoal subsector value chain.

4.7.3 Governance

Issue: Inadequate mechanisms to address governance challenges issues in the charcoal sub-sector.

Objective: Enhanced good governance in the charcoal sub-sector.

Strategy

Strengthen transparency, accountability and rule of law in the charcoal sub-sector.

Targets

(i) Anti-corruption strategies for charcoal subsector institutions and organizations customized and implemented by June 2025; and

(ii) Apex body for charcoal associations established and efficiently governed by June 2024.

Outcome Indicator

Change in incidences of corruption.

CHAPTER FIVE

LOGFRAME FOR IMPLEMENTATION OF THE STRATEGY

5.1. OVERVIEW

The log-frame consists of the objectives, strategies, targets, resources per each target, timeframe for implementation and the responsible institution and how they are connected.

Table 2: Result based log-frame for the National Charcoal Strategy 2021 - 2031

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Vision: The charcoal value chains in Tanzania become sustainable, economically viable, and environmentally sound while improving livelihoods			
Strategic Objective 1: Enhanced sustainable charcoal production and utilization			
Targets for Forest Plantations			
State-owned forest plantations for sustainable charcoal production increased from 1 to 3 by June, 2031	Change in area of forest plantations for sustainable charcoal production	MNRT reports PO-RALG reports TFS reports DFO reports M&E reports	• Conducive climate • Availability of land • Continued Stakeholders' commitment
Woodlots for charcoal production increased by 10% by June 2031	Change in area of community-owned plantations/woodlots for sustainable charcoal production	MNRT reports TFS reports DFO reports M&E reports	• Conducive climate • Readiness for communities to establish woodlots • Continued Stakeholders' support and commitment
Forest Plantations for sustainable charcoal under public-private partnership increased by 3 by June, 2031	Change in number of public-private partnership plantations producing sustainable charcoal	MNRT (FBD), TFS PO-RALG M&E reports	• Conducive climate • Readiness of private sector to partner with the Government
Tree seeds orchards for sustainable charcoal production increased by 400 ha by June, 2031	Change in number of tree seeds orchards for sustainable charcoal production	MNRT (FBD) reports TFS PO-RALG M&E reports	• Conducive climate • Availability of land • Access to financial support

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Germplasm centres producing seeds for sustainable charcoal production increased by 3 by June, 2031	Change in number of Germplasm centres producing seeds for sustainable charcoal production	MNRT (FBD) reports TFS PO-RALG M&E reports	• Conducive climate • Availability of land • Access to financial support
Area under community-owned forest plantation/ woodlots for sustainable charcoal production increased by 60,000 ha by June, 2031	% Change in area under community-owned forest plantation/woodlots for sustainable charcoal production	MNRT (FBD) reports TFS PO-RALG M&E reports	• Conducive climate • Readiness for communities to establish woodlots • Continued Stakeholders' support and commitment
Area under private forest plantations for sustainable charcoal production increased by 50,000 ha by June, 2031	% Change in area of private forest plantations for sustainable charcoal production	MNRT (FBD) reports TFS PO-RALG M&E reports	• Conducive climate • Continued Stakeholders' support and commitment
Certified forests/woodlots for sustainable charcoal production increased by 60% by June, 2031	Change in number of certified forests/woodlots for sustainable charcoal production	MNRT (FBD, TFS) reports PO-RALG, M&E reports	• Readiness of communities to certify forests • Continued Stakeholders' support and commitment
Sustainable charcoal production forest plantations managed according to the technical order increased by 60%	Change in number of forest plantations managed according to the technical order for sustainable charcoal production	MNRT (FBD, TFS) reports PO-RALG, M&E reports	• Conducive climate • Compliance to regulations and guidelines • Continued Stakeholders' support and commitment

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Sustainable charcoal production woodlots managed according to the technical order increased by 40% by June, 2031	Change in number of forest woodlots managed according to the technical order for sustainable charcoal production	MNRT (FBD, TFS) reports PO-RALG, M&E reports	• Conducive climate • Compliance to regulations and guidelines • Continued Stakeholders' support and commitment
Fiscal and monetary incentives mechanism developed for the adoption of efficient charcoal kilns by June, 2024	Change in number fiscal and monetary incentives for the adoption of efficient charcoal kilns	PO-RALG, MNRT (FBD) MoFP reports M&E reports	• Stakeholders' support and commitment
Three credit windows for sustainable charcoal investments established by June, 2025	Change in number of credit windows for sustainable charcoal investments	MNRT (FBD) MoFP reports BOT, M&E reports	• Willingness of microfinancing institution to provide credit to charcoal stakeholders
Two areas designated for sustainable charcoal production from plantations/woodlots in Njombe and Mufindi districts developed by June, 2028	Change in number of designated areas for sustainable charcoal production from forest plantations in Njombe and Mufindi districts	MNRT (FBD) MoFP reports M&E reports	• Stakeholders' support and commitment
Micro financing mechanisms for small-scale and medium-scale sustainable charcoal production developed by June, 2024	Change in number of Micro financing mechanisms for small-scale and medium-scale sustainable charcoal	MNRT (FBD) MoFP reports M&E reports	• Stakeholders' support and commitment
Targets for Natural Forests			

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Unreserved forests upgraded into CBFM increased by 30% by June, 2031	Change in the size of unreserved forests	MNRT (FBD) PO-RALG, M&E reports	• Continued Stakeholders' support and commitment
CBFM scheme practising sustainable charcoal production from natural forest increased by 10% by June 2031	Change in the number of CBFM scheme practising sustainable charcoal production from natural forest	PO-RALG, MNRT (FBD) M&E reports	• Continued Stakeholders' support and commitment
JFM benefit sharing scheme in the charcoal subsector increased by 30% by June, 2031	Change in the number of JFM benefit sharing scheme in the charcoal subsector	PO-RALG, MNRT (FBD) MoFP M&E reports	• Continued Stakeholders' support and commitment
Sustainable natural forest harvesting plans for sustainable charcoal production under different tenures instituted by June, 2028	Change in the number of natural forests with harvesting plans for sustainable charcoal production	PO-RALG, MNRT (FBD) M&E reports	• Continued Stakeholders' support and commitment
Area under natural regeneration in charcoal producing villages increased by 30% by June 2031	Change in the size of the area under natural regeneration in charcoal producing villages	PO-RALG, MNRT (FBD) M&E reports	• Conducive climate • Adequate forest management capacity • Continued Stakeholders' support and commitment
Charcoal producing villages practice natural regeneration increased by 10% by June 2031	Change in the number of charcoal producing villages practice natural regeneration	PO-RALG, MNRT (FBD) M&E reports	• Conducive climate • Continued Stakeholders' support and commitment

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Bamboo production increased for sustainable charcoal production increased by 35% by June, 2031	Change in the number of bamboo plantations/ woodlots for sustainable charcoal production	PO-RALG, MNRT (FBD) M&E reports	• Continued Stakeholders' support and commitment
Tree seed banks for sustainable charcoal production increased from 1 to 3 by June, 2031	Change in the number of tree seed banks for sustainable charcoal production	PO-RALG, MNRT (FBD) M&E reports	• Conducive climate • Adequate forest management capacity • Continued Stakeholders' support and commitment
Research on natural regeneration on sustainable charcoal plots increased from 2 to 5 by 2031	Change in the number of research on natural regeneration on sustainable charcoal plots	PO-RALG, MNRT (FBD) M&E reports	• Continued Stakeholders' support and commitment
Urban households using efficient cooking stoves increased by 45% by June, 2031	Percentage change in the urban households using efficient cooking stoves	PO-RALG, MNRT (FBD) MoE M&E reports	• Continued Stakeholders' support and commitment
Fiscal and monetary incentives for the adoption of efficient charcoal kilns developed by June, 2024	Percentage change in the adoption of efficient charcoal kilns	PO-RALG, MNRT (FBD) MoFP, and MoE M&E reports	• Continued Stakeholders' support and commitment
Enhanced production and use of alternative charcoal			
Targets			
Twelve technologies (carbonisation, grinding, pressing, extrusion and binding) for alternative charcoal production promoted by June, 2031	Number of technologies	PO-RALG, MNRT (FBD), MITI, MoFP, MoEST and MoE reports	• Continued demand • Political will

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Ten feedstock for production of alternative charcoal promoted by June, 2031	Number of feedstock	VPO, MoA, MNRT and MoE reports	• Conducive climatic condition • Adequate management capacity of the feedstock • Continued Stakeholders' support and commitment
Five credit windows for financing alternative charcoal production established and operationalised by June, 2031	Number of credit windows	MoFP, MoA, MNRT and MoE reports	• Political will • Continued Stakeholders' support and commitment
Fiscal incentives for promoting availability of affordable alternative charcoal developed by June, 2025	Available fiscal incentives	MoFP, MoA, MNRT and MoE reports	• Political will • Continued Stakeholders' support and commitment
10% increased utilization of alternative charcoal at household, institution, and SME level by June, 2031	Change in alternative charcoal utilisation	PO-RALG, MNRT (FBD), MITI, MoEST and MoE reports	• Continued demand • Political will
One stakeholders' forum on alternative charcoal promotion conducted annually	Number of stakeholders' Forum	MNRT reports	• Stakeholders' interest s and commitments
Market information system on alternative charcoal established by June, 2024	Operational market information system	MNRT reports	• Political will
Strategic Objective 3: Increased market niche for sustainable charcoal			
Targets			
Operational public procurement procedures for promoting sustainable charcoal consumption introduced by 2023	Change in Public procurement procedures of sustainable charcoal	MNRT (FBD) PPRA reports M&E reports	• Continued Stakeholders' support and commitment

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
National guidelines for utilisation of sustainable charcoal in private and public institutions developed by 2023	Number of Guidelines on advocating consumption of sustainable charcoal in private and public institutions	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Incentive mechanisms for promoting sustainable charcoal consumption in the domestic market developed by 2024	Change in quantity of sustainable charcoal consumed	MNRT (FBD) Reports, TFS M&E reports	• Continued Stakeholders' support and commitment
The Export Control (Prohibition) order No. 663 of 1986 reviewed by 2023	• Export Control Order lifted • Quantity of legal charcoal exported • % increase of Government revenues from charcoal sub-sector	MNRT (FBD) MITI MoFP reports M&E reports	• Continued Stakeholders' support and commitment
Fiscal export incentives for sustainable charcoal introduced by 2024	• Number of fiscal export incentives for sustainable charcoal introduced • Quantity of sustainable charcoal exported	MNRT (FBD) MoFP reports M&E reports	• Continued Stakeholders' support and commitment
Ten sustainable charcoal export markets established by 2031	• Number of export market established • Number of stakeholders exporting sustainable charcoal	MNRT (FBD) MITI MoFP MoFA reports M&E reports	• Continued Stakeholders' support and commitment

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Sustainable charcoal quality assurance and certification standards developed by 2024	Number of standards on charcoal	MNRT (FBD) MITI (TBS) MoFA reports M&E reports	• Continued Stakeholders' support and commitment
Sustainable charcoal marketing information system established by 2025	Number of marketing centres for sustainable charcoal information system	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Government electronic payment system for fiscal revenue collection in charcoal sub-sector developed by 2025	Number of improved systems for revenue collection from sustainable charcoal	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Sustainable charcoal trading centres at the ward level established by 2026	Change in number of charcoal trading centres	MNRT (FBD, TFS) reports M&E reports	• Continued Stakeholders' support and commitment
Strategy Objectives 3: Enhanced adoption of alternative energy			
Targets			
Stakeholders' forum on alternative energy promotion conducted annually	Number of stakeholders' forum on alternative energy that promote sustainable charcoal	MNRT (FBD, TFS) reports M&E reports	• Continued Stakeholders' support and commitment
Five credit windows for financing alternative energy production established and operationalised by June, 2031	Number of credit windows for alternative energy production	MNRT (FBD) MoFP reports BOT, M&E reports	• Continued Stakeholders' support and commitment
Fiscal incentives for promoting availability of affordable alternative energy developed by June, 2025	Number of fiscal incentives for promoting an availability of affordable alternative energy	MNRT (FBD) MoFP reports M&E reports	• Continued Stakeholders' support and commitment

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Market information system on biomass and non-biomass based alternative energy established by June, 2024	Number of market information system	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Industries producing charcoal briquettes increased from the 29 to 40 by June, 2031	• Number of industries producing charcoal briquettes • Quantity of charcoal briquettes produced	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Adoption of clean cooking solutions increased from 10% to 75% by June, 2031	% change of stakeholders adopting clean cooking solution	ME reports M&E reports	• Continued Stakeholders' support and commitment
Firms investing in clean cooking solutions increased by 30% by June, 2031	Number of firms producing clean cooking solutions	ME reports M&E reports	• Continued Stakeholders' support and commitment
Strategy Objectives 4: Enhanced institutional, human resource capacity and coordination			
Targets			
The Sustainable Charcoal (Production, Transport and Trade) Regulations developed by June 2023	Sustainable charcoal (Production, Transport and Trade) Regulations in place	MNRT (FBD) MITI (TBS) MoFA reports M&E reports	• Continued Stakeholders' support and commitment
Inter-sectoral forum for charcoal sub-sector established by June, 2023	Number of fora for charcoal sub-sector	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
National steering committee for sustainable charcoal production and trade established by June, 2023	National Steering Committee in place	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Research and Development Financing mechanisms in the charcoal subsector developed by June, 2025	Number of financing mechanisms to support R&D in the charcoal subsector	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Mainstreaming of sustainable charcoal production and utilisation in 4 training institutions implemented by June 2025	• Short courses in forestry training institutions on charcoal production, utilisation and trade • Number of curriculum reviewed to incorporate sustainable charcoal production, utilisation and trade	FTI, FITI, CFWT, MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Informal skills development guidelines for sustainable production and utilisation established by June, 2026; and	Guidelines on training Indigenous Knowledge		• Continued Stakeholders' support and commitment
Two apprenticeship programmes for sustainable charcoal production and utilisation conducted annually.	Number incubator programme		Continued Stakeholders' support and commitment
Strategy Objectives 5: Impact of HIV & AIDS infections reduced in the charcoal subsector			
Targets			
HIV & AIDS preventive programs increased from 10 to 30 by June 2031	Change in habit and attitude	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
80% of persons living with HIV & AIDS in the charcoal sub-sector are supported by June 2031.	Change in health of people with HIV and AIDS	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment

OBJECTIVES & TARGETS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
Strategy Objectives 6: Mainstreamed gender equity and equality in the charcoal subsector.			
Targets			
Two (2) women supporting programmes in the charcoal subsector established annually; and	# of women programmes supported	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Women participation in the charcoal stakeholders' associations increased by 20% by June, 2031	# of women association supported	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Strategy Objectives 7: Enhanced Good governance in the charcoal sub-sector			
Targets			
Anti-corruption strategies for charcoal subsector institutions and organizations customized and implemented by June 2025	Number of corruption cases reduced in the charcoal sub-sector	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment
Apex body for charcoal associations established and efficiently governed by June 2024	Apex body in place	MNRT (FBD) reports M&E reports	• Continued Stakeholders' support and commitment

CHAPTER SIX

ROLES AND RESPONSIBILITIES OF STAKEHOLDERS

6.1 Overview

Charcoal sub-sector requires coordination and harmonization of legal and non-legal requirements with key stakeholders. The harmonization suggested should be coordinated by MNRT because they are the custodian of high number of forests and is the one responsible for forest management in the country. Charcoal should be a sub-sector with desk officers in various levels such as district and MNRT.

This chapter presents the institutional framework which also includes the responsibilities of key actors in the implementation of this NCS and AP. The key actors include the Ministries, Departments and Agencies, and Private Sector stakeholders both profit-making and non-profit-making.

6.2 Institutional Framework

The MNRT will oversee implementation of the National Charcoal Strategy and Action Plan (NCS & AP) in Tanzania Mainland. The Ministry will implement the strategy in collaboration with other key stakeholders including key Ministries, Vice President Office, LGAs and non-state actors. The roles and responsibilities of the key actors are as follows:

6.2.1 Ministry Responsible for Charcoal Sub-Sector

The Ministry (MNRT) has the overall coordination and management responsibitities of the sub-sector. It will assume the leading role in the mobilisation of fund to implement the Strategy as well as provide performance reports regularly and, promote PPP and Public-Private Dialogues (PPDs). The Ministry will also ensure effective inter-ministerial coordination on matters that require more than one

Ministry and develop the M&E indicators to ensure the effective implementation of this Strategy.

6.2.2 Sector Ministries

Sector-based Ministries will play an important role in the implementation of the NCS & AP of 2021. These Ministries include those responsible for Finance and Planning; Lands; Energy; Minerals; Water; Environment; Legal Affairs; Agriculture; Public Service Management; Industry and Trade; and LGAs. The sector-based Ministries have a responsibility to ensure that their strategies and plans reflect the focus of this Strategy towards promoting the sub- sector.

The roles of VPO, MoE, PORALG in the charcoal sub-sector, will be to raise awareness and coordinate environmental awards. The MoE will raise awareness on alternative energies, efficient conversion of wood to charcoal and efficient use of woodfuel (charcoal and firewood) technologies. PORALG shall supervise conservation, collection of revenues through license and are custodians of some forests that are under District councils. TFS is the custodian of forest resources that are under central government and general lands, will provide transit permit, registration and implement patrol.

6.2.3 Academia and Research based Institutions

The Academia and research-based institutions will be responsible for producing technical and professional experts, provide technical expertise, conduct research, and disseminate findings. Others will be on capacity building to charcoal stakeholders, conduct outreach activities, participate in policy and legal process and provide consultancy services.

6.2.4 Government Departments, Councils, Authorities and Executive Agencies

There are various Departments, Councils, Authorities and Executive Agencies that are part of the institutional settings which will play an important role in the implementation of this Strategy. These Departments, Councils, Authorities and Executive Agencies include the following, but not limited to; TFS, TaFF, Tanzania Revenue Authority (TRA), Tanzania Ports Authority (TPA), National Environmental

Management Council (NEMC), Tanzania National Business Council, Energy and Water Regulatory Authorities (EWURA) and the Tanzania Bureau of Standards (TBS). The Authorities and Agencies shall be responsible in the implementation of this Strategy in their areas of jurisdiction. However, the Ministry responsible for the forest sector (MNRT) shall ensure that these stakeholders are well coordinated.

6.2.5 Local Government Authorities

LGAs are among the main players in the transformation of the charcoal sub-sector. Based on this fact, LGAs are expected to collaborate with the Central Government in the management of forest resources for charcoal production; ensure forest law enforcement and establish sustainable charcoal production. In collaboration with the Central Government, LGAs are also expected to ensure capacity building and awareness for the Private Sector, staff and local communities; preparation and enforcement of by-laws; and promote partnership with the Private Sector.

6.1.6 Local Communities

In implementation of NCS & AP, local communities will participate in various charcoal value chain activities, formulation of by-laws and contract agreement, and rising awareness to various stakeholders. Local communities will also be responsible in forming charcoal groups, cooperatives/associations along the charcoal value chain. Local communities will be responsible in abiding to legal frameworks and guidelines.

6.1.7 NGOs, CBOs, and FBOs

In implementation of the NCS & AP; NGOs, CBOs and FBOs will be part of the value chain that include overseeing forest management, sustainable harvesting, production and use of charcoal. They will also advocate and create awareness on the benefits available in charcoal industry, assisting local communities in the formulation of by-laws and contracts as well as capacity building and developing networks. They will also play a role of watchdogs, provide advisory services, encourage active involvement of stakeholders; promote policy and legislation implementation; and conduct research. Other area will be in facilitating fora, public

debates and discussions; and defend interests of vulnerable and disadvantaged groups.

6.1.8 Private Sector

Private sector will be part in training communities on development and implementation of the integrated plans on wildfire, agricultural encroachment and grazing. They will also supply sustainable and alternative energy sources, Improving Cooking Stoves (ICS), market networks of ICS, LPG and briquettes, industrial production of feedstock, processing, transporting of charcoal and marketing/trading and create employment in the charcoal sub-sector.

6.1.9 Development Partners

In implementation of this NCS & AP, the Development Partners will provide financial and technical support; transfer of technology; facilitate strategy and action plan implementation and investments.

CHAPTER SEVEN

MONITORING AND EVALUATION

7.1 Monitoring and Evaluation Framework

This framework shows how strategic objectives, which intends to make charcoal value chains in Tanzania to be sustainable, economically viable, and environmentally sound while improving livelihoods, can be achieved through systematic measures and controls. By creating common monitoring and reporting tools to be used by all stakeholders, this framework simplifies the overall monitoring and evaluation (M&E) system that can be adopted by key stakeholders to achieve the intended outcomes of the Strategy.

The Ministry responsible for forests has the overall responsibility for M&E of the Strategy implementation. Each stakeholder will have to establish a reliable internal monitoring system. This will ensure effective M&E and availability of capacity to assess efficiency and effectiveness of their respective organizations in relation to the National Charcoal Strategy and Action plan (2021 - 2031).

Monitoring and evaluation will involve, among other things, establishing baselines, indicators and sources of information. Periodic tracking of progress on implementation of the milestones and targets will be done. In addition, there will be an annual review, which will focus on assessing whether the planned activities are in line with the achievement of set targets. Moreover, the review will involve conducting case studies, diagnostic studies, surveys, and beneficiary assessments to track any changes in terms of outputs realized over the period under review.

7.1.1 Overall and specific objectives

The overall objective of M&E framework is to guide implementation of the National Charcoal Strategy. Specifically, the M&E framework intends to:

(i) Establish benchmark of indicators;

(ii) Set targets and standards to guide implementation;
(iii) Guide actors' participation in implementation and monitoring activities; and
(iv) Control use of resources during implementation.

7.1.2 Guiding principles

The primary goal of this M&E system is to enable stakeholders in the charcoal subsector appreciate the progress made towards attainment of the Strategy objectives. Key guiding principles of the M&E system are:

(i) Build capacity for M&E;
(ii) Harmonization and alignment of the framework with other M&E systems;
(iii) Adoption of Result-Based- Management approach; and
(iv) Flexibility in applying the M&E framework.

7.1.3 Scope of M&E framework

M&E framework provides overall charcoal subsector development trends. The framework covers but is not limited to the following:

(i) Assessment of inputs, processes, outputs, outcomes and impacts of the National Charcoal Strategy; and
(ii) Databases and reporting schedules used for the National Charcoal Strategy M&E framework.

7.1.4 Performance indicators

The matrix of performance indicators is shown in Table 3.

Table 3: Performance indicators for the National Charcoal Strategy M&E Framework

Objective	Output Indicators	Outcome Indicators	Baseline	Source
Enhanced sustainable charcoal production and utilization	**Forest Plantations**			
	Number of state-owned forest plantations for sustainable charcoal production	Change in area of forest plantations for sustainable charcoal production	0	Surveys and Progress Reports
	Number of woodlots for charcoal production	Change in area of community-owned plantations/woodlots for sustainable charcoal production	Baseline study	
	Number of plantations for sustainable charcoal under public-private partnership	Change in area of private forest plantations for sustainable charcoal production	Baseline study	
	Number of tree seeds orchards for sustainable charcoal production	Change in fiscal revenues collected from the sustainable charcoal investments, and production forest plantations and woodlots	Baseline study	
	Number of germplasm centres producing seeds for sustainable charcoal production	Change in investment value in the sustainable charcoal subsector		
	Size of community-owned forest plantation/woodlots for sustainable charcoal production	Change in the households'		
	Size of private forest plantations for sustainable charcoal production			
	Number of certified forests/woodlots for sustainable charcoal production			
	Number of sustainable charcoal production forest plantations managed according to the Technical Order			

Objective	Output Indicators	Outcome Indicators	Baseline	Source
	Number of urban households using efficient cooking stoves	standard of living	Baseline study	
	Fiscal and monetary incentives for the adoption of efficient charcoal kilns in place	Change in the compliance level of decent work standards in the charcoal subsector	Baseline study	
	Number of credit windows for sustainable charcoal investments	Change in the deforestation rate caused by unsustainable charcoal production	10%	
	Number of designated sustainable charcoal production areas			
	Operational micro financing mechanisms for small-scale and medium-scale sustainable charcoal production		Baseline study	
	Natural Forests			
	Size of unreserved forests under CBFM	Change in area under natural forest reserves	25,530,000 ha	Surveys and Progress Reports
	Number of CBFM scheme practising sustainable charcoal production from natural forest	Change in growing stock in natural forests	18,800,000 m^3	
	Number of JFM benefit sharing agreements in the charcoal subsector	Change in natural forest cover		
	Number of natural forest with harvesting plans for sustainable charcoal production	Revenues collected from natural forests	Baseline study	
	Size of the area under natural regeneration in charcoal producing villages	Percentage change in incidences of illegal harvesting.	Baseline study	
	Number of charcoal producing villages practice natural regeneration			
	Size of bamboo production forests/woodlots for sustainable charcoal			

Objective	Output Indicators	Outcome Indicators	Baseline	Source
	production		Baseline study	
	Number of tree seed banks for sustainable charcoal production			
	Number of adopted research on natural regeneration on sustainable charcoal plots			
	Number of urban households using efficient cooking stoves			
	Operational fiscal and monetary incentives for the adoption of efficient charcoal kilns			
Enhanced production and use of alternative charcoal	Number of technologies (carbonisation, grinding, pressing, extrusion and binding) for alternative charcoal production	Percentage change in alternative charcoal production and use	Baseline study	Baseline study and progress reports
	Number of feedstock for production of alternative charcoal		Baseline study	
	Number of credit windows for financing alternative charcoal production		Baseline study	
	Number of fiscal incentives for promoting availability of affordable alternative charcoal	Percentage change in alternative charcoal industries	Baseline study	
	Percentage increase in utilization of alternative charcoal at household, institution, and SME		Baseline study	
	Number of stakeholders' forum on alternative charcoal promotion		Baseline study	
	Report on market information system on alternative charcoal		Baseline study	

Objective	Output Indicators	Outcome Indicators	Baseline	Source
Increased market niche for sustainable charcoal	Operational public procurement procedures for promoting sustainable charcoal consumption	Percentage change in the domestic sustainable charcoal trade volume.	0	Surveys and Progress Reports
	Operational national guidelines for the consumption of sustainable charcoal in private and public institutions	Percentage change in the legal export of sustainable charcoal trade volume	0	
	Operational incentive mechanisms for promoting sustainable charcoal consumption in the domestic market	Percentage change in Government fiscal revenues	Baseline study	
	Reviewed Export Control (Prohibition) Order			
	Operational fiscal export incentives for sustainable charcoal			
	Number of sustainable charcoal export markets			
	Operational sustainable charcoal quality assurance and certification standards			
	Operational sustainable charcoal marketing information system			
	Operational Government electronic payment system for fiscal revenue collection in charcoal sub-sector			
	Operational market intermediaries' registration and certification system in the charcoal sub-sector			
	Number of ward-level sustainable charcoal trading centres at the ward level			
Enhanced adoption of alternative	Number of stakeholders' forum on alternative energy promotion	Percentage change in the biomass-based alternative energy trade volume.	Baseline study	Surveys and Progress
	Number of credit windows for financing			

Objective	Output Indicators	Outcome Indicators	Baseline	Source
energy	alternative energy production	Percentage change in the non-biomass-based alternative energy trade volume Accessibility level of clean cooking solutions	Baseline study 10% of households	Reports
	Operational fiscal incentives for promoting an availability of affordable alternative energy			
	Functional market information system on biomass and non-biomass based alternative energy			
	Number of industries producing charcoal briquettes			
	Number of households adopting clean cooking solutions			
	Number of firms investing in clean cooking solutions			
Enhanced institutional, human resource capacity and coordination	Operational forest (Production, Transport and Trade of Sustainable Charcoal Regulations	Percentage change in collaborative projects for charcoal subsector development Proportion of adopted research findings Accessibility level of business development services by charcoal producers Percentage change in local population participation in the sustainable charcoal production Percentage change in charcoal producers complying with best	0 Baseline study Baseline study Baseline study	Progress Reports
	Functional inter-sectoral forum for charcoal sub-sector			
	Functional National Steering Committee for Sustainable Charcoal Production and Trade			
	Operational research and development financing mechanisms in the charcoal subsector			
	Number of training institutions teaching sustainable charcoal production and utilization			
	Operational informal skills development guidelines for sustainable charcoal production and utilisation			

Objective	Output Indicators	Outcome Indicators	Baseline	Source
	Number of apprenticeship programmes for sustainable charcoal production and utilisation	charcoal production practices.	Baseline study	
Impact of HIV and AIDS infections reduced in the charcoal subsector	Number of HIV/AIDS preventive programs in charcoal subsector	Rate of infection	Baseline study	Progress Reports
	Support level of persons living with HIV and AIDS	Mortality rate	Baseline study	
Mainstreamed gender equity and equality in the charcoal subsector	Number of women supporting programmes in the charcoal subsector	Proportion of females in the charcoal subsector value chain	Baseline study	Surveys Progress and Reports
	Number of women participation in the charcoal stakeholders' associations			
Enhanced good governance in the forest sector	Operational anti-corruption strategies for charcoal subsector institutions and organizations	Incidences of corruption	Baseline study	Surveys Progress and Reports
	Functional apex body for charcoal stakeholders			

7.2 Data collection and analysis

The main methods for data collection will be surveys, review of reports, field visits and institutional records. Data will be analysed and disseminated to the relevant stakeholders for implementation.

7.3 Monitoring and Evaluation Reports

7.3.1 Types of M & E reports

The following are the main M&E reports:

(i) Performance reports;
(ii) Evaluation reports;
(iii) Various reviews, studies and survey reports; and
(iv) Reviews.

7.3.2 Reporting schedule

The reporting schedule is presented in Table 4.

Table 4: Reporting schedule

Types of reports	Contents	Frequency
Performance reports	Consolidated reports covering progress on the implementation of activities	Quarterly, semi- and annual reports
Evaluation reports	Achievement of the policy objectives, challenges and lessons learnt including relevance, effectiveness, efficiency, impact/outcome and sustainability of interventions.	Twice (Mid-term in 2026 and Final evaluation in 2031)
Various reviews, studies and survey reports	Findings and recommendations on specific issues	As per need.
Policy Review	Overall achievements of the National forest policy objectives, challenges and lessons learnt.	After 10 Years

7.3.3 Reporting Flows

Reports on achievement of targets and milestones will be prepared by responsible institutions and forwarded to the Ministry responsible for forestry to produce consolidated performance reports on quarterly, semi-annual and annual basis. These reports will be disseminated to stakeholders for record and necessary actions. There will also be various meetings to discuss successes and challenges of the planned interventions. There will also be meetings involving external

stakeholders. The schedule of meetings to track the implementation progress is indicated in Table 5.

Table 5: Planned meetings

S/N	Type of meeting	Frequency	Chairperson	Participants
1	Division Meetings	Weekly	Director of Forestry and Beekeeping	All staff of the Division
2	MNRT Management meetings	Twice a month	Permanent Secretary	All Heads of Division and Units
3	MNRT Pre Management meeting	Twice a month	Assistant Director M & E	Assistant Directors and Assistant Head of Units
4	Performance review meetings	Quarterly	Permanent Secretary	All Heads of Divisions and Units
5	Steering Committee Meetings	Quarterly	Co-chaired by PS MNRT and PMO RALG	MNRT, MDAs, NSAs and DPs
6	National Forest Advisory Committee	Quarterly	Selected Chairperson among members	Retired forestry officers, private sector, PO RALG,
7	Mid-year review meetings	Twice per annum	Permanent Secretary	All Heads of Division and Sections
8	Annual review meetings	Annually	Permanent Secretary	All Heads of Division and Sections
9	Performance Assessment Framework (PAF) meetings	Annually	Co-Chaired between Government and Private Sector	Forestry, MDAs, NSAs and DPs
10	Joint Annual Review meetings	Annually	DPP MNRT	MNRT, MDAs, NSAs and DPs

7.3.4 Feedback Mechanism

A feedback mechanism will provide a two-way flow of information between report producers and users. The system will also incorporate stakeholders' views in order to improve the reports and their submission.

7.4 Use of Monitoring and Evaluation Information

Stakeholders willuse M & E reports for:

(i) Informed decision making;
(ii) Improving services delivery;
(iii) Demonstrated results as part of accountability; and
(iv) Planning.

CHAPTER EIGHT

THE ACTION PLAN TO IMPLEMENT THE STRATEGY

8.1 Overview

A National Action Plan for Charcoal (Table 6) covering all the five strategic areas have been developed in a participatory manner. The Plan will provide a step-by-step process and guidance on how the Strategy objectives, targets and outcomes are achieved through a set of activities. For each targets contained in the National Charcoal Strategy specific activities to achieve the target are identified and presented in the action plan. For each activity the implementation timeframe, required budget and responsible institutions are identified and summarised in the action plan matrix.

Table 6: Results based action plan matrix for implementation of National Charcoal Strategy

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
State-owned forest plantations for sustainable charcoal production increased from 1 to 3 by June, 2031	Establish forest plantations for sustainable charcoal production												10 billion	• **MNRT (FBD)** • TFS • PO-RALG • Private sector • Communities • CSOs
Woodlots for charcoal production increased by 10% by June 2031	Establish baseline of woodlots for sustainable charcoal production												50 million	• **MNRT**
	Establish woodlots for sustainable charcoal production												3 billion	• **MNRT (FBD)** • TFS • PO-RALG • VPO DoE • Private sector • Communities • CSOs
Charcoal producing villages practice natural regeneration increased by 10% by June 2031	Create awareness in villages on natural regeneration												5 billion	• **MNRT (FBD)** • PO-RALG • VPO DoE • Private sector • Communities • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Forest plantations for sustainable charcoal under public-private partnership increased by 3 by June, 2031	Encourage through awareness raising on opportunities for PPP investment in sustainable charcoal production and utilization												10 billion	• **MNRT (FBD and TFS)** • PO-RALG • MoE • Private sector • Communities • CSOs
Tree seeds orchards for sustainable charcoal production increased by 400ha by June, 2031	Establish tree seeds orchards for sustainable charcoal production												8 billion	• **MNRT (FBD and TFS)** • PO-RALG • Private sector • Communities • CSOs
Germplasm centre centres producing seeds for sustainable charcoal production increased by 3 by June, 2031	Establish Germplasm centres producing seeds for sustainable charcoal production												10 billion	• **MNRT (FBD, TFS TAFORI)** • PO-RALG • Private sector • Communities • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Area under community-owned forest plantation/ woodlots for sustainable charcoal production increased by 60,000 ha by June, 2031	Encourage to establish community-owned forest plantation/ woodlots for sustainable charcoal production												4 billion	• **MNRT (FBD, TFS)** • PO-RALG • Private sector • Communities • CSOs
Area under private forest plantations for sustainable charcoal production increased by 50,000ha by June, 2031	Encourage to establish private-owned forest plantations for sustainable charcoal production												2 billion	• **MNRT (FBD, TFS)** • PO-RALG • Private sector
Unreserved forests with management plans increased by 30% by June, 2031	Develop management plans in unreserved forests												10 billion	• **MNRT (FBD, TFS)** • PO-RALG • Commission of Land Use Plans

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Certified forests/ woodlots for sustainable charcoal production increased by 60% by June, 2031	Awareness raising on opportunities for forest certification for sustainable charcoal production												20 billion	• **MNRT (FBD, TFS)** • PO-RALG • Commission of Land Use Plans • CSOs
Sustainable charcoal production from forest plantations managed according to the technical order increased by 60% by June, 2031	Increase awareness and enforcement of the Technical Order 1												5 billion	• **MNRT (FBD, TFS)** • PO-RALG • Private sector • Communities • CSOs
Sustainable charcoal production woodlots managed according to the technical order increased by 40% by June, 2031	Increase awareness and enforcement of the Technical Order 1												5 billion	• **MNRT (FBD, TFS)** • PO-RALG • Private sector • Communities • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Urban households using efficient cooking stoves increased by 45% by June, 2031	Awareness raising to increase production and use of efficient cooking stoves												3 billion	• **MNRT (FBD, TFS)** • VPO-DoE • MoE • PO-RALG • Private sector • Communities • CSOs
Fiscal and monetary incentives for the adoption of efficient charcoal kilns developed by June, 2024	Formulate and encourage implementation of fiscal and monetary incentives for the adoption of efficient charcoal kilns												4 billion	• **MNRT (FBD, TFS)** • VPO-DoE • MoFP • PO-RALG • CSOs
Twelve technologies (carbonisation, grinding, pressing, extrusion and binding) for alternative charcoal production promoted by June, 2031	Awareness raising on alternative charcoal technologies												500 million	• **MNRT (FBD, TFS)** • VPO-DoE • MoFP • PO-RALG • CSOs
	Capacity building on design and use of the technologies												500 million	• **MNRT (FBD, TFS)** • VPO-DoE • MoE • PO-RALG • CSOs • Training institutions

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Ten feedstock for production of alternative charcoal promoted by June, 2031	Foster business enabling environment and supporting functions development												1 billion	• **MNRT (FBD, TFS)** • VPO-DoE • MoE • PO-RALG • CSOs
	Promote research on alternative charcoal production and utilisation technologies												500 million	• **MNRT (FBD)** • Research institutions • MoFP • MoEST • PO-RALG
	Develop standards for alternative charcoal production and utilisation technologies												100 million	• **MNRT (FBD, TFS)** • MoE • MIIT • PO-RALG • TBS
Five credit windows for financing alternative charcoal production established and operationalised by June, 2031	Encourage financial institutions to develop financing mechanisms for alternative charcoal												500 million	• **MoFP** • MNRT (FBD) • PO-RALG • MoE

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Fiscal incentives for promoting availability of affordable alternative charcoal developed by June, 2025	Develop fiscal mechanism to promote alternative charcoal												50 million	• **MoFP** • MNRT (FBD) • PO-RALG • MoE • MIIT • CSOs
10% increased utilization of alternative charcoal at household, institution, and SME level by June, 2031	Awareness raising to increase utilisation of alternative charcoal												300 million	• **MoFP** • MNRT (FBD) • PO-RALG • MoE • MIIT • CSOs
One stakeholders' forum on alternative charcoal promotion conducted annually	Establish and operationalise stakeholders' forum on alternative charcoal promotion												800 million	• **MNRT (FBD)** • MoFP • PO-RALG • MoE • MIIT • CSOs
Market information system on alternative charcoal established by June, 2024	Establish marketing information system on alternative charcoal												300 million	• **MNRT (FBD)** • MoFP • PO-RALG • MoE • MIIT • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Three credit windows for sustainable charcoal investments established by June, 2025	Encourage lending institutions to establish credit windows for sustainable charcoal investments												1 billion	• **MNRT (FBD, TFS)** • VPO-DoE • BOT • CSOs
Two areas designated for sustainable charcoal production areas from forest plantations in Njombe and Mufindi districts by June, 2028	Designate sustainable charcoal production areas from forest plantations in Njombe and Mufindi districts												2 billion	• **MNRT (FBD, TFS)** • VPO-DoE • CSOs • Private sector • Communities
Micro financing mechanisms for small-scale and medium-scale sustainable charcoal production developed by June, 2024	Encourage micro financing mechanisms for small-scale and medium-scale sustainable charcoal production												2 billion	• **MNRT (FBD, TFS)** • MoFP • CSOs • Private sector • Communities
Unreserved forests upgraded into CBFM increased by 30% by June, 2031	Upgrade unreserved forests into CBFM												1 billion	• **MNRT (FBD, TFS)** • PO-RALG • CSOs • Communities

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
CBFM scheme practicing sustainable charcoal production from natural forest increased by 10% by June 2031	Awareness on practice of sustainable charcoal production in CBFM												100 million	• **MNRT (FBD, TFS)** • PO-RALG • CSOs
JFM benefit sharing scheme in the charcoal subsector increased by 30% by June, 2031	Develop JFM benefit sharing scheme for charcoal subsector												60 million	• **MNRT (FBD, TFS)** • PO-RALG • CSOs
Sustainable natural forest harvesting plans for sustainable charcoal production under different tenures instituted by June, 2028	Develop and institute sustainable natural forest harvesting plans for sustainable charcoal production under different tenures												60 million	• **MNRT (FBD, TFS)** • PO-RALG • MoE • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Area under natural regeneration in charcoal producing villages increased by 30% by June 2031	Increase awareness of the natural regeneration for charcoal production												50 million	• **MNRT (FBD)** • PO-RALG • CSOs
Bamboo production increased for sustainable charcoal production increased by 35% by June, 2031	Awareness on bamboo plantations for charcoal production												100 million	• **MNRT (FBD, TFS)** • PO-RALG • CSOs
Tree seed banks for sustainable charcoal production increased from 1 to 3 by June, 2031	Establish tree seed banks for sustainable charcoal production												200 million	• **MNRT (FBD, TFS)** • PO-RALG • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Operational public procurement procedures for promoting sustainable charcoal consumption introduced by 2023	Promote and introduce public procurement procedures for promoting sustainable charcoal consumption												50 million	• **MNRT (FBD, TFS)** • PPRA • CSOs
National guidelines for the utilization of sustainable charcoal in private and public institutions developed by 2023	Develop national guidelines for the utilization of sustainable charcoal in private and public institutions												200 million	• **MNRT (FBD, TFS)** • VPO-DoE • CSOs
Incentive mechanisms for promoting sustainable charcoal consumption in the domestic market developed by 2024	Develop incentive mechanisms for promoting sustainable charcoal consumption in the domestic market												20 million	• **MNRT (FBD, TFS)** • VPO-DoE • MoE • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
The Export Control (Prohibition) Order No. 663 of 1986 reviewed by 2023	Encourage and spearhead review Export Control (Prohibition) Order No. 663 of 1986												50 million	• **MNRT (FBD)** • MITI • MoFP
Fiscal incentives for promoting availability of affordable alternative energy developed by June, 2025	Formulate and raise awareness on fiscal export incentives for sustainable charcoal introduced												50 million	• MNRT (FBD) • MoFP
Ten sustainable charcoal export markets established by 2031	Export market survey to establish quantity and contacts												50 million	• **MNRT (FBD)** • MITI • MoFP • MoFA
Sustainable charcoal quality assurance and certification standards developed by 2024	Develop standards for quality assurance and certification												20 million	• **MNRT (FBD)** • MITI (TBS) • MoFA
Sustainable charcoal marketing information system established by 2025	Conduct market information system												100 million	• **MNRT (FBD)**

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Government electronic payment system (GePS) for fiscal revenue collection in charcoal sub-sector developed by 2025	Develop specific GePS for sustainable charcoal												30 million	• **MNRT (FBD)** • E-Government • TRA
Market intermediaries' registration and certification system in the charcoal sub-sector developed by 2024	Develop specific GePS for sustainable charcoal												30 million	• **MNRT (FBD)** • E-Government • TRA
Sustainable charcoal trading centres at the ward level established by 2026	Establish more charcoal trading centres at the ward level												50 million	• **MNRT (FBD, TFS)** • VPO-DoE • CSOs

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Stakeholders' forum on alternative energy promotion conducted annually	Establish stakeholders' forum on alternative energy promotion												3 billion	• **MNRT (FBD, TFS)** • VPO-DoE • MoE • MoFP • MITI • CSOs
Five credit windows for financing alternative energy production established by June, 2031	Encourage lending institutions to establish credit windows for alternative energy production												200 million	• **MNRT (FBD, TFS TAFORI)** • VPO-DoE • BOT • CSOs
Fiscal incentives for promoting an availability of affordable alternative energy developed by June, 2025	Formulate and raise awareness on fiscal incentives for promoting an availability of affordable alternative energy												50 million	• **MNRT (FBD)** • MoFP
Market information system on biomass and non-biomass based alternative energy established by June, 2024	Undertake a market information system study												60 million	• **MNRT (FBD)**

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Industries producing charcoal briquettes increased from the 29 to 40 by June, 2031	Encourage private sectors to establish industries for production of charcoal briquettes												50 million	• **MNRT (FBD)**
Adoption of clean cooking solutions increased from 10% to 75% by June, 2031	Encourage use of efficient and clean cooking solutions												20 million	• **MoE** • MNRT (FBD) • CSOs
Firms investing in clean cooking solutions increased by 30% by June, 2031	Encourage firms to invest on clean cooking solutions												50 million	• **MoE** • MNRT (FBD) • CSOs
The Sustainable Charcoal (Production, Transportation and Trade) Regulations developed by June 2023;	Develop Forest (Production, Transport and Trade) of Sustainable Charcoal Regulations												50 million	• **MNRT (FBD)** • VPO-DoE • MITI (TBS) • MoWT • MoE • MoFA
Inter-sectoral forum for charcoal sub-sector established by June 2023	Develop inter-sectoral forum for charcoal sub-sector												50 million	• **MNRT (FBD)**

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
National steering committee for sustainable charcoal production and trade established by June 2023	Establish and institute National Steering Committee for sustainable charcoal production and trade												500 million	• **MNRT (FBD)**
Research and Development Financing mechanisms in the charcoal subsector developed by June, 2025	Establish a mechanism for financing research and development by 2025												200 million	• **MNRT (FBD)** • VPO-DoE • MITI (TBS) • MoWT • MoE • MoFA • Research institutions
Mainstreaming of sustainable charcoal production and utilization in 4 training institutions implemented by June 2025	Support short course development and implementation for sustainable charcoal production, utilization and trade in forestry training institution												500 million	• **MNRT (FBD)** • TAFORI • FITI • FTI • CFWT-SUA
Informal skills guidelines for sustainable production and utilization established by June 2026	Develop guidelines for developing indigenous knowledge for sustainable charcoal production and utilization												4 million	• **MNRT (FBD)** • VPO-DoE • MITI (TBS) • MoEST

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Two apprenticeship programmes for sustainable charcoal production and utilization conducted annually	Support incubators development and implementation for sustainable charcoal production, utilization and trade training in forestry training institution												100 million	• **MNRT (FBD)** • TAFORI • FITI • FTI • CFWT-SUA • MoE • VPO-DoE • Clean energy Industries • CSOs
HIV & AIDS preventive programs increased from 10 to 30 by June 2031	Awareness raising programme on HIV/ AIDS preventive measures												30 million	• **MNRT (FBD)** • MoHCDEC
80% of persons living with HIV & AIDS in the charcoal sub-sector are supported by June 2031	Support persons living with HIV and AIDS												400 million	• **MNRT (FBD)** • MoHCDEC
Two (2) women supporting programmes in the charcoal subsector established annually	Support women in the charcoal sub-sector												500 million	• **MNRT (FBD)** • MoHCDEC

Targets	Proposed Activities	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Budget (TZS)	Key Actors
Women participation in the charcoal stakeholders' associations increased by 20% by June, 2031	Support women associations in charcoal sub-sector												500 million	• **MNRT (FBD)** • MoHCDEC
Anti-corruption strategies for charcoal subsector institutions and organizations customized and implemented by June 2025	Awareness on anti-corruption strategies												90 million	• **MNRT (FBD)** • PCCB
Apex body for charcoal stakeholders established by June 2024	Establish Apex body for charcoal stakeholders												500 million	• **MNRT (FBD)** • MoHCDEC

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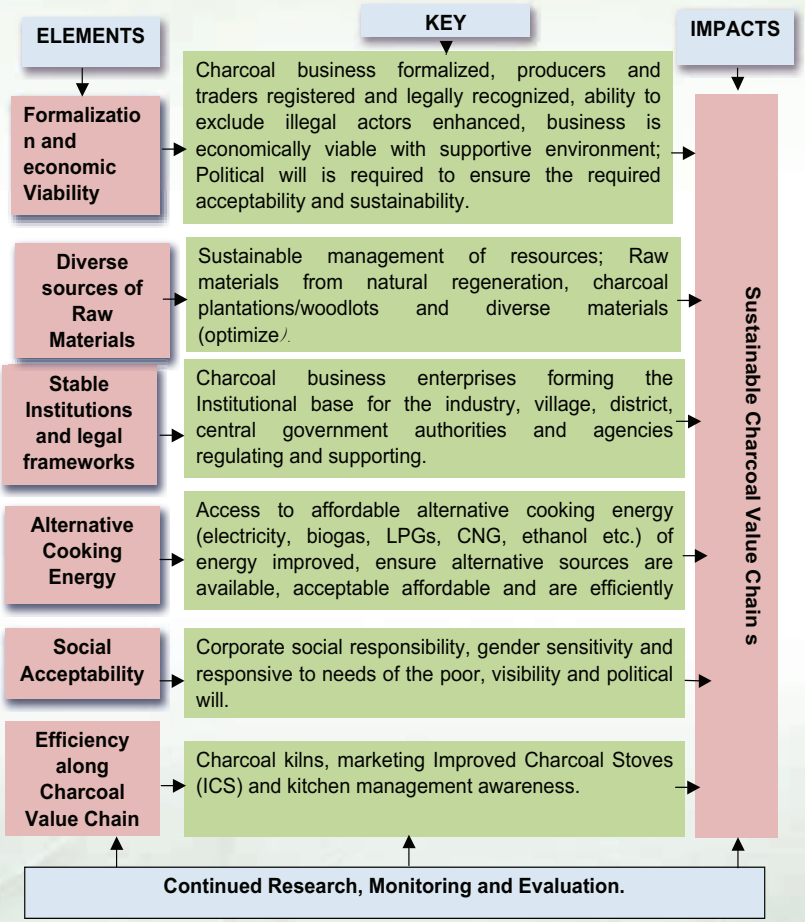
APPENDICES

Appendix 1: Integrated Sustainable Charcoal Model (ISCM) for Tanzania



Appendix 2: Proposed Mechanism for Formalization of Charcoal Business in Tanzania