UNITED REPUBLIC OF TANZANIA

THE VICE PRESIDENT'S OFFICE

LONG-TERM VISION FOR A LOW-EMISSION DEVELOPMENT STRATEGY

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2050 PATHWAYS PLATFORM

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The Long-Term Vision (LTV) and Roadmap for the Tanzania's Long Term Low Emission Development Strategy are output of collaborative efforts from various stakeholders within the country, regionally and global communities.

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This collective effort reflects our shared commitment to achieving a long-term term resilient, inclusive, and low-emission future for the United Republic of Tanzania.

Eng. Cyprian John Luhemeja

Permanent Secretary

EXECUTIVE SUMMARY

The United Republic of Tanzania is at a pivotal juncture in its development journey. Facing intensifying climate change impacts such as rising temperatures, severe droughts, floods, and sea-level rise the nation's ecosystems, economy, and communities are increasingly vulnerable. Without decisive action, climate change could continue to cause economic losses of up to 5% of GDP by 2050 and drive millions into deeper poverty. In response, Tanzania has developed this Long-Term Vision (LTV) to serve as the foundation for building a long-term, integrated, low-emission, climate-resilient future. This Vision is anchored in Tanzania's commitment to sustainable development, economic diversification, poverty reduction, and global climate leadership. It emphasises balancing socio-economic growth with environmental protection, enabling Tanzania to achieve prosperity without sacrificing its natural wealth or community resilience as reflected in the National Development Vision (NDV) 2050, Zanzibar Vision 2050, the Paris Agreement, and the Sustainable Development Goals.

Based on the above, Tanzania's aspiration is clear: by 2050, the country envisions itself as a net-zero, climate-resilient nation with an inclusive, competitive, and self-reliant economy. Accordingly, the LTV identifies eight priority sectors crucial for driving this transformation: energy, agriculture, forestry, transport and infrastructure, mining and industry, waste management, blue economy, and cross-cutting areas such as gender equality, youth empowerment, capacity building, technology transfer, and climate finance.

It charts a path toward a future where renewable energy powers the economy, agriculture is resilient and low-carbon, forests are sustainably managed, infrastructure is climate-proofed, industries are green and competitive, waste is minimized through circular economy models, and aquatic and marine resources are sustainably harnessed. Special emphasis is placed on ensuring that women, youth, and marginalized communities are central to this transformation, acting as leaders in climate action and sustainable development.

Complementing the Vision is a detailed Roadmap for elaboration of the 2050 Long Term Low Emission Strategy (LT-LEDS). It provides systematic approaches, milestones, stakeholder engagement strategies, and coordination mechanisms to guide development of the LT-LEDS. The roadmap emphasizes inclusive participation, scientific rigor, and integration of national development priorities to ensure a robust and actionable climate strategy.

Realizing this Vision will unlock wide-ranging benefits for Tanzania: strengthening climate resilience, stimulating inclusive economic growth, creating green jobs, attracting international investment, and enhancing Tanzania's global competitiveness. It offers an opportunity to harness innovation and partnerships to build a society that is environmentally secure, socially inclusive, and economically dynamic.

This LTV is a call for **bold, and collective action**. It invites all Tanzanians—government, private sector, development partners, research and academia, civil society, and communities—to champion and drive the transformation needed for a sustainable future. Through shared commitment, visionary leadership, and strategic collaboration, Tanzania is poised to become a continental leader in low-carbon and climate-resilient development by 2050.

ACRONYMS

AFD	**Agence Française de Dévelopement**
AfDB	African Development Bank
ANGOZA	Association of NGOs Zanzibar
ASM	Artisanal and small-scale mining
BAU	Business as Usual
BRT	Bus Rapid Transit
CAN TZ	Climate Action Network Tanzania
CCD	Climate Change Department
COSTECH	Commission for Science and Technology
CRDB	Credit for Rural Development Bank
CSA	Climate Smart Agriculture
CSA	Climate Smart Agriculture
CSOs	Civil Society Organizations
CSR	Corporate Social Responsibilities
DART	DAR Rapid Transit
DCC	Dar es Salaam City Council
DOE	Division of Environment
EBRD	European Bank for Reconstruction and Development
EEZ	Exclusive Economic Zone
EMA	Environmental Management Act
ENR	Environment Natural Resources
EPRA	Energy and Petroleum Regulatory Authority
EU	European Union
EWURA	Energy and Water Utility Regulatory Authority
FAO	Food and Agriculture Organization
FGD	Focus Group Discussion
FYDP II	Secondary Five-Year Development Plan
GCF	Green Climate Fund
GDC	Geothermal Development Company
GDP	Gross Domestic Product
GFC	Green Climate Fund
GhG	Greenhouse Gas
GIZ	German Agency for International Cooperation
HFO	Heavy Fuel Oil
HNAP	Health National Adaptation Plan
ICT	Information Communication and Technology
IEA	International Energy Agency
IFC	International Finance Cooperation
ILO	International Labour Organization
IMF	International Monetary Fund
IMS	Institute of Marine Science
INEP	Integrated National Energy Plans
KCIC	Kenya's Climate Innovation Center
LCPDP	Least Cost Power Development Plan
LGA	Local Government Authority

LHRC	Legal Human Rights Center
LIWAY	Livelihoods Improvement for Women and Youth
LT LEDS	Long term Low emission Development Strategy
LTS	Long Term Strategy
LTV	Long term Vision
M& E	Monitoring and Evaluation
MCDGC	Ministry of Community Development, Gender and Children
MDAs	Ministry Department and Agencies
MDAs,	Ministry, Departments and Agencies
MNRT	Ministry of Natural Resources and Tourism
MOF	Ministry of finance
MPAs	Marine Protected Areas
MRV	Monitoring Reporting and Verification
MW	Mega Watt
MW	Megawatt
NAMIS	National Agriculture Management Information Systems
NAP	National Adaptation Plan
NAPA	National Adaptation Plan of Action
NCCRS	National Climate change Response Strategy
NCCSC	Nation Climate change Steering Committee
NCCTC	National Climate Change Technical Committee
NCMC	National Carbon Monitoring Center
NDC	Nationally Determined Contribution
NDV	National Development Vision
NDV	National Development Vision
NEP	National Environment Policy
NGOs	Non-governmental Organizations
NMB	National Microfiance Bank
OM	Operation Manual
PA	Paris agreement
PIM-OUT	Public Investment Management Operational Manual
PMO	Prime Ministers' Office
POPC	Presidents Office Planning Commission
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PSMP	Power System Master Plan
PSMP	Power System Master Plan
PV	Photovoltaic
REA	Rural Energy Agency
REDD+	Reduced Emissions from Deforestation and Forest Degradation
SDGs	Sustainable Development Goal
SFM	Sustainable Forestry Management
SGR	Standard Gauge Railway
SMEs	Small and Medium Enterprises
TANESCO	Tanzania National Electric Supply Company
TBC	Tanzania Broadcasting Corporation
TBS	Tanzania Bureau of Standard

TDV	Tanzania Development Vision
TEITI	Tanzania Extractive Industry Transparency Initiative
TFS	Tanzania Forest Services
TGNP	Tanzania Gender Networking Program
TIRDO	Tanzania Industrial Research and Development Organization
TMA	Tanzania Meteorological Authority
TNZ	The Nature Conservancy
TPDC	Tanzania Petroleum Development Corporation
TPSF	Tanzania Private Sector Foundation
TRA	Tanzania Revenue Authority
TRC	Tanzania Railway Corporation
UK	United Kingdom
UNDP	United Nation Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNIDO	United Nations Industrial Development Organizations
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
USD	United States Dollars
VAT	Value Added Tax
VPO	Vice President's Office
WB	World Bank
ZCCSC	Zanzibar Climate Change Steering Committee
ZCCTC	Zanzibar Climate Change Technical Committee
ZDV	Zanzibar Development Vision
ZECO	Zanzibar Electricity Company
ZEMA	Zanzibar Environmental Management Authority
ZIPA	Zanzibar Investment Promotional Agency

1. INTRODUCTION

1.1 Background

The United Republic of Tanzania (URT) (including Tanzania mainland and Zanzibar islands) has continued to face significant climate change related challenges which are threatening the economic development, community livelihoods, prosperity and ecosystem services [1]. Additionally, climate change impacts have major economic costs with wide-spread and long-term socio-economic consequences. Extreme weather events such as floods, sea level rise and droughts are already negatively impacting all sectors of the economy including agriculture, human health, water resources, marines and coastal resources, biodiversity, infrastructure and transport, human settlement and tourism [2] leading to unprecedented socio-economic and ecological catastrophes.

Despite these threats, Tanzania is not well prepared to respond to the impacts of climate change. For instance, Tanzania is ranked 148th in the Notre Dame Global Adaptation Index (ND-GAIN) with a vulnerability score of 0.535 and a readiness score of 0.295, making it the 33rd most vulnerable country and the 43rd least ready country [3]. Current impacts and projected future risks have been established to be significant enough to disrupt and limit economic growth and community well-being[4]. Tanzania is among the top 10 countries in the sub-Saharan Africa region, which have the highest frequency of natural disasters, with more floods, droughts and epidemics[5]. These levels of vulnerability call for a collective and inclusive process to put in place relevant policies and actions important for economic growth and climate-resilient society. However, if not well planned, such processes are also likely to exacerbate the climate change crisis through increased Greenhouse Gas (GhG) emissions.

To ensure resilience and advancement of adaptive capacity, the country needs to put in place the Long-Term Climate Strategy (LT-LEDS) that incorporates extensive climate adaptation and mitigation measures. This aligns with the requirements of Article 4.19 of the Paris Agreement of which Tanzania is a party. This article invites all parties to develop and communicate its LT-LEDS, mindful of Article 2 that calls to do so with common but differentiated responsibilities and respective capabilities, and national circumstances.

It is on this basis that Tanzania embarked on the process of laying the foundation for the elaboration of the national Long Term Low Emission Development Strategy through the current standalone document that integrates Tanzania's Long-Term Vision and an LT-LEDS elaboration roadmap. The next step in the country's LT-LEDS process will focus on the development of pathways for the attainment of the vision outlined herein. It will further be

[1] Williams, P. A. et al., (2021). Feasibility assessment of climate change adaptation options across Africa: an evidence-based review. Environmental Research Letters, doi:10.1088/1748-9326/ac092d.

[2] URT) (2021). National Climate Change Response Strategy (2021-2026). Vice President's Office, Division of Environment, Government Printer, Dodoma. Tanzania

[3] Notre Dame Global Adaptation Initiative, (2021). "ND-GAIN Country Index", https://gain.nd.edu/our-work/country-index/

[4] URT (2021) National Determined Contribution. Vice President's Office, Division of Environment, Government Printer, Dodoma. Tanzania

[5] International Monetary Fund (2023) Building Resilience to Climate Change: United Republic of Tanzania. Africa Department. https://doi.org/10.5089/9798400241772.002. accessed Jan 2025

leveraged by URT as the necessary strategic response to these challenges by integrating low-emission development into national planning processes and by exploring the potential of sustainable climate action as a driver to achieve the country's socio-economic aspirations.

1.2 The Relevance of LTV and Roadmap in Tanzania

1.2.1 The Long-Term Vision

Tanzania became a party to the United Nations Framework Convention (UNFCCC) and the Paris Agreement (PA), by ratifying them in 1996 and 2018, respectively[6]. In July 2021, Tanzania submitted its updated and ambitious Nationally Determined Contribution (NDC), which set a target of reducing greenhouse gas (GHG-especially Carbon dioxide, methane and Nitrous Oxide, through carbon sequestration) emissions. Tanzania has continued to indicate a strong commitment and key leadership role towards contributing to holding the increase in the global average temperature to well below 2°C and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels. Equally, both the national development vision 2050 (draft) and the Zanzibar Vision 2050 place stronger emphasis on climate resilience and sustainable development goals. Pillar three of the draft national Vision 2050 released by the National Planning Commission in February 2025 sets a clear objective aimed at achieving development that safeguards **environmenta**l and **ecological integrity** while enhancing **low carbon development** and **resilience** in the face of changing climate[7]. The pilar identifies key climate change aspirations below which are directly linked with the LTV:

i. A sustainable and resilient future that embraces a clean energy mix, low carbon alternatives, carbon sequestration and institutionalized carbon trading mechanisms to reduce greenhouse gas emissions;
ii. A climate ready nation with a disaster risk preparedness framework to effectively mitigate, respond to natural and human made disasters, protecting people, infrastructure and property;
iii. Mainstreamed and localised environmental management, including climate change action across levels of the government and society
iv. A climate- resilient society that embraces climate smart practices and targeted resilience building measures;
v. A leading nation in climate change responses, supported by robust climate governance that upholds international climate change protocols.

The Zanzibar Vision 2050 strongly envisions a future of sustainable, resilient and low-carbon economic development. The fourth pillar titled Governance and Resilience, sets an ambitious objectives aimed at ensuring the continuity of social, economic, political and environmental stability in Zanzibar through accountable, transparent, responsible and effective governance that emphasises the management of all national resources with implementable monitoring and evaluation frameworks. To this end, the vision identifies four strategic areas including sustainable utilization and management of land and environment and climate change. On the latter, the vision sets a strategic direction of Pursuing comprehensive green and blue

[6] URT (2021) National Determined Contribution. Vice President's Office, Division of Environment, Government Printer, Dodoma. Tanzania

[7] URT (2024) Draft Tanzania Development Vision 2050. Planning Commission, Government City- Dodoma, Tanzania

development through the sustainable management of Environment Natural Resources (ENR) and climate resilience, contributing to socio-economic development goals. The specific aspirations accompanying this strategic direction include the following:

i. Reliable, effective and enforceable policies and management tools for sustainable ENR management and enhanced climate resilience;
ii. An enabling environment for climate change management through sustainable climate financing mechanisms
iii. Strengthened sustainable ENR and climate resilient conservation practices as part of efforts to increase the greening of the island;
iv. An increased share of protected marine and forest conservation areas to ensure the continuity of ecosystem biodiversity; and
v. Strengthened sustainable ENR and climate resilient conservation practices as part of efforts to increase the greening of the island;
vi. An increased share of protected marine and forest conservation areas to ensure the continuity of ecosystem biodiversity.

The LT-LEDS process, initiated through the current Vision document, can support the attainment of the above aspirations by grounding them in a unified institutional framework. More specifically, a long-term strategy informed by this Long-Term Vision will benefit the country by:

i. **Enhancing Policy Coherence and Long-Term Planning**

- An LTV for Low Emission Development will foster the **synergy between climate actions and socio-economic** development planning and decision-making by guiding integration of climate priorities into broader national development goals, facilitating progress on effective mainstreaming across sectors as well as inform NDC updates, setting the direction for the country, and enabling NDC-LT-LEDS alignment as invited in the Global Stocktake
- A clear and well-consulted LTV will further inform the analytical process required for development of a relevant and robust LTS.

ii. Attracting Climate Finance and Investment

Having a clear, robust LT-LEDS will increase international confidence on Tanzania's integrated and long-term planning thereby enhancing **access to international climate finance** and encouraging private sector investment in the key sectors identified by the LT-LEDS.

iii. Building Climate Resilience and Adaptation Capacity

By incorporating **adaptation alongside mitigation**, Tanzania will ensure long-term resilience in vulnerable sectors such as **agriculture, water, energy, health, and coastal systems**, which are critical for rural livelihoods.

iv. Driving Innovation and Green Job Creation

Using LTV-LED lens, Tanzania will guide investment in **green industries, skills development, and technologies**, creating jobs and stimulating inclusive economic growth, especially for youth and rural communities.

v. **Strengthening Global Competitiveness and Climate Diplomacy**
A long-term low-emission vision positions Tanzania as an aspiring **climate-smart economy**, enhancing its reputation and competitiveness in global markets, particularly for climate-sensitive sectors like tourism, agriculture, and export

vi. **Providing an opportunity** for development partners and other relevant stakeholders to work together, reflect, and align their plans and financial opportunities towards national climate actions and sustainable development.

1.2.2 The Roadmap

Accompanying the LTV is the roadmap (see chapter 4) which has been designed to provide initial stages and frameworks that will support Tanzania in the process elaborating a comprehensive and participatory LT-LEDS guided by the science and national development priorities for the long-term horizon to 2050. It intends to offer guidance on steps, actions, timeline, milestone, responsibilities for developing the LT-LEDS document. The roadmap further aims to provide guidance on how to ensure strong coordination, conscious resource allocation and utilization, inclusiveness, co-development of the LT-LEDS and timely delivery of key outcomes.

2. TANZANIA'S SOCIO-ECONOMIC CONTEXT, CLIMATE LANDSCAPE, AND POLICY ISSUES

2.1 National Profile

Located in Eastern Africa between latitudes 1º South and 12º South and between longitudes 29º East and 41º East, Tanzania is one of the largest countries in the region, with rapid growth economy. The country shares borders with Kenya and Uganda to the North, Rwanda, Burundi, Democratic Republic of Congo to the West, Zambia to the southwestern, Malawi and Mozambique to the South, in the east the country borders the Indian Ocean. The total area of Tanzania is 945,087 square kilometres, of which the mainland comprises of 939,702 square kilometres while the islands of Zanzibar, in the Indian Ocean, comprise of 2,654 square kilometres. Tanzania mainland is dominated by large central plateaus covered with grasslands, plains and rolling hills including Mount Kilimanjaro (5,895m above mean sea-level)-the highest Mountain in Africa.

2.2. Climate Profile

Tanzania is among the most vulnerable to climate change, but with low readiness or least prepared to address the related impacts. In 2022, the country ranked 47th most vulnerable to climate change among 192 assessed in the ND-GAIN Country index. The country was further rated the 58th least prepared to leverage investments to adaptation actions.

Due to the country's topographical diversity, the country has up to four distinct climatic zones; namely, the coastal area and immediate hinterland; the central plateau; the semi temperate highland areas; and the high moist lakes regions[8]. The meteorological seasons are well defined but influenced by monsoon winds. Tanzania experiences bimodal and unimodal conditions in different parts of the country. The former, consisting of long rains (Masika) coming between March to May and short rains, (Vuli), between October to December[9]. Heavy rains fall in April and May in i) hot and humid coastal belt, of 750 - 1,250 mm of rainfall annually, with Zanzibar receiving 1,400 - 2,000 mm; ii) hot and arid central plateau receives about 500 mm of rainfall; iii) cooler semi-temperate high moist lakes regions in the north and west receive 750 - 1,250 mm of rainfall annually; and iv) highlands of the northeast and southwest including the coldest parts of the country with average temperatures of 20-23°C[10]. Altitudes play an important factor in rainfall patterns; higher elevations usually receive more precipitation than lower ones. Trend analysis for rainfall accounts for the long-term change in precipitation and have indicated overall decreasing annual precipitation trend in the last and current decades whereby the decline is linked to global warming[11,12,13].

[8] URT (2022) National Environmental Master Plan for Strategic Interventions (2022 – 2032), Vice President's Office, Government Printer, Government City-Dodoma. Tanzania

[9] Shemsanga, C., Nyatichi, A, O., and Gu, Y., (2010) The Cost of Climate Change in Tanzania: Impacts and Adaptations. Journal of American Science

[10] Borhara, K.; et al., (2020) On Tanzania's Precipitation Climatology, Variability, and Future Projection. Climate, 8(34). https://doi.org/doi:10.3390/cli8020034

[11] Hoell, A.; et al., (2017). Reconciling theories for human and natural attribution of recent East Africa drying. J. Clim. , 30, 1939–1957.

[12] World Bank, "World Bank Open Data," 2019. Online Available: https://data.worldbank.org (Accessed Nov 2024

[13] URT (2021). National Climate Change Response Strategy (2021-2026). Vice President's Office, Division of Environment, Government Printer, Dodoma. Tanzania

It is projected that, by 2041 areas in the western and central part of the country could witness temperature increase to above 2°c[14]. Other parts of the country are likely to experience temperature increase to above 1°c. Other projected climate changes in Tanzania include increased duration of heat waves and dry spells, increased frequency and intensity of heavy rains, and rising sea levels[15]. Heat stress is further projected to affect labour (both skilled and unskilled labour) productivity by more than 4%, increase the incidence of heat-related diseases and vector and waterborne diseases.

It should be noted that, Tanzania has experienced severe and recurring extreme weather events especially droughts and floods with devastating impacts to both nation economy and household livelihoods[16]. For instance, the last four decades, floods accounted for about two thirds of all natural disasters affecting the country, while droughts were the second most experienced disasters both making Tanzania the 10 most vulnerable country in the Sub-Saharan Africa. Other related events are those linked to heat stress; sea level rise, rising average temperatures and extreme hot days, and have continued to pose profound negative impacts on the GDP and wellbeing of the communities. Recent studies show that more than 70% of all natural disasters in Tanzania are related to droughts or floods and cost between 2-3% of the GDP[17]. Future projections further show that climate change impacts may lead to 2-5% loss of Tanzania's GDP by 2050, pushing 2.6 million Tanzanian into deep poverty and force up to 13 million people into internal migration crises[18]. Some other climate change setbacks predicted by the World Bank study above include: reduce livestock production by 11%, increased costs of annual repair for up to US$ 216 million, decreased montane forests by 64% and reduced labour productivity from 20-40%.

The combined effect of temperature increases, and other projected climate change effects will have significant negative impacts to most sectors and especially agriculture and food security, water resources (also affect the performance of hydropower generation and energy access), tourism, human settlement and human health. These impacts will further slowdown inclusive economic growth aspirations and may push more households into deep poverty [19,20]. For instance, climate change impacts are projected to damage the usability of important transport links including those on coastal areas. Related disruptions will have increased annual rehabilitation costs ranging between $108–109 million[21]. Under Business As Usual (BAU), costs are expected to rise to $117 millions by 2030 and $198–233 millions by 2050[22].

[14] URT (2024) Draft Tanzania Development Vision 2050. Planning Commision, Government City- Dodoma, Tanzania

[15] IMF (2023) Building Resilience to Climate Change : The United Republic of Tanzania Report.

[16] Magang, D.S., Ojara, M.A., Yunsheng, L. et al. (2024) Future climate projection across Tanzania under CMIP6 with high-resolution regional climate model. Sci Rep 14, 12741 (2024).

[17] https://www.iied.org/sites/default/files/pdfs/2023 11/22086g.pdf?utm_source=chatgpt.com

[18] World Bank Group (2024) Tanzania Country Climate and Development Report. CCDR Series. Washington, DC: World Bank Group. http://hdl.handle.net/10986/42483 License: CC BY-NC-ND 3.0 IGO

[19] World Bank Group. 2022b. Climate and Development: An Agenda for Action—Emerging Insights from World Bank Group 2021–22 Country Climate and Development Reports. Washington, DC: World Bank Group. http://hdl.handle.net/10986/38220.

[20] World Bank Group & International Monetary Fund & London School of Economics and Political Science & Brookings Institution, 2023. "The Big Push for Transformation through Climate and Development," World Bank Publications - Reports 39478, The World Bank Group.

[21] World Bank Tanzania Transport Team.(2024). "Transport Vulnerability Assessment Note." Prepared for the URT Country Climate and Development Report. World Bank.

[22] ibid

Fortunately, findings of the recent studies reveal that, Tanzania can limit the negative impacts of climate change and boost its GDP by up to 0.5% by 2050[23]. This can be achieved if Tanzania will urgently take bold actions to reduce GHGs emissions, acquire needed relevant technologies and climate finance and strengthen adaptation options[24]. This means that there is a need for the country to urgently develop and implement comprehensive micro and macro-economic development strategies that promote sustainable and climate resilient socio-economic trajectories with a low carbon footprint.

2.3 Population Size and Socio-economic Context

2.3.1 Population Trends

Tanzania has a young population which is rapidly growing and reached 61.7 million persons in 2022. Its population has a growth rate of 3.2%[25] and is projected to double in the year 2044 [26]. The Tanzanian population is very unevenly distributed, whereby the highest population concentration is near Lake Victoria (with enough water and fertile land) and large cities such as Dar es Salaam and Zanzibar[27]. The arid and semi-arid parts of the country have low population. By 2050, Tanzania's population is projected to be 130 million people (under low fertility scenario) and or 140 million people (under high fertility scenario) with over half living in urban areas[28]. This type of demographic shift will mean more demand for food security, settlement, energy, employment, water and will increase pressure on natural environment and infrastructure[29]. The government will need to double spending on water, energy, health and education services.

Despite the envisaged urbanization trends, a significant portion of the population will continue living in rural areas and relying on rain-fed subsistence agriculture, which is characterised by weak infrastructural developments, limited irrigation systems and access to downscaled climate services. This will compromise efforts to address poverty across levels and increase climate vulnerability of the country.

Moreover, competition over natural resource and related conflicts are also likely to aggravate especially on water, land and forest resources sparked by population growth and increased

[23] World Bank Group (2024) Tanzania Country Climate and Development Report. CCDR Series. Washington, DC: World Bank Group. http://hdl.handle.net/10986/42483 License: CC BY-NC-ND 3.0 IGO

[24] SISEPUEDE, 2024. GHG emissions pathways. Technical note for URT Country Climate and Development Report.
Washington DC: World Bank.

25 URT, (2022) National Bureau of Statistics and President's Office – Finance and Planning, Office of the Chief Government Statistician, Zanzibar. The 2022 Population and Housing Census: Initial Results. Dodoma, Tanzania.

[27] Irish Aid (2018) Tanzania Country Climate Change Risk Assessment Report. Irish Aid, Resilience and Economic Inclusion Team, Policy Unit.

[28] URT (2024) Draft Tanzania Development Vision 2050. Planning Commision, Government City- Dodoma, Tanzania

[29] URT (2024), Ministry of Finance, Tanzania National Bureau of Statistics and President's Office - Finance and Planning, Office of the Chief Government Statistician, Zanzibar. The 2022 Population and Housing Census: Tanzania Basic Demographic and Socio-Economic Profile Report; Tanzania.

demands for land and forest products[30]. Addressing these vulnerabilities requires an integrated long-term effort supported by corresponding regulatory frameworks (i.e. climate policies and strategies such as the NDC and LT-LEDS), capacity building across levels, access to technology and financial mechanisms.

2.3.2 Socio-economic context

Tanzania is a lower middle-income status with per a capita GDP of $1,149. Despite this, the poverty level remained high at 26% in 2022, and the country is among the less prepared to climate change impacts[12,13].

Over the past two decades, Tanzania's economy has performed well, with real GDP growth ranging between 4.5% and 7% over the past decade[31],[32]. However, the growth has not been accompanied with strong diversification, affordable technology options, or enhanced export surpluses which are crucial for job creation, attracting foreign currency and reducing household poverty.

Key sectors driving the economy include agriculture (employing about 60% of the population), mining, tourism, and fisheries. Other important sectors are construction, finance and insurance, manufacturing, and trade and repair[33]. The positive trends in these sectors could continue if supported by an improved business environment, access to affordable and reliable low-carbon energy sources, and credit expansion for the private sector, especially in rural areas.

However, the agriculture sector in Tanzania is heavily dependent on rainfall, with limited investment in necessary irrigation infrastructure[34]. This dependency, coupled with limited livelihood and income-generating opportunities in rural areas, has led to unprecedented rural-urban migration. Many of the migrating youth are unskilled and lack the qualifications needed to secure employment, adding pressure to urban unemployment rates.

At the same time gender inequality remains high in Tanzania, deeply rooted in socio-cultural norms that constrains women's access to education, credit, and productive resources. For instance, although women make up over 70% of the agricultural labour force**,** they own less than 20% of land[35] and face barriers in accessing agricultural inputs, markets, and financial services. Similarly, only 7% of women in rural Tanzania have access to formal credit[36] These inequalities are intensified by climate change—droughts and floods increase women's unpaid

[30] World Bank Group (2022), Climate and Development : An Agenda for Action - Emerging Insights from World Bank Group 2021-22 Country Climate and Development Reports. © World Bank Group. http://hdl.handle.net/10986/38220 License: CC BY-NC-ND

[31] Bank of Tanzania. (2024). Tanzania Financial Stability Report 2023. https://www.bot.go.tz/Publications/Filter/4.

[32] Africa Development Bank Group (2024), African Economic Outlook: Driving Africa's Transformation. The Reform of the Global Financial Architecture. https://www.afdb.org/sites/default/files/2024/06/06/aeo_2024_-_country_notes.pdf

[33] Bank of Tanzania (2025a). Monthly Economic Review: January 2025.

[34] International Monetary Fund (2023). Building Resilience to Climate Change: United Republic of Tanzania. African Dept.

[35] FAO (2018) – The Gender Gap in Land Rights. https://openknowledge.fao.org/server/api/core/bitstreams/4966d50c-233b-43a9-8fa7-8d43263dd082/content?utm_source=chatgpt.com

[36] World Bank (2020) – Tanzania Gender Assessment https://documents1.worldbank.org/curated/en/099155103312251069/pdf/P1760510ca289d0400a40e03f6408826f07.pdf

labour, reduce crop yields, and force girls out of school to help at home. The Tanzania NDC (2021) highlights that climate impacts disproportionately affect women, especially in rural areas, compounding their vulnerability and economic marginalization.

Cognizant of the above, the Long-Term Low Emission Development Strategy (LT-LEDS) and updated NDC offer a strategic opportunity to reduce gender disparities through inclusive climate action. Gender-responsive interventions in climate-smart agriculture, renewable energy, and ecosystem restoration can empower women economically and socially. For example, access to solar irrigation or clean cooking technologies reduces labour burdens and health risks, while women-led cooperatives enhance resilience and incomes.

It is on this basis that, the Tanzania's LTV is developed to serve as an important tool by positioning women not only as beneficiaries climate action but important change agents for low carbon and climate resilient actions.

2.4. Government priorities

The government of Tanzania has been putting in place long-term visions, policies and programs to ensure a diversified economy, enhanced industrial and service sectors that could lift the country's economy into upper-middle-income status. After independence in the early 1960s, the priority was put an emphasis on reducing poverty, illiteracy and disease through promoting rural development and agriculture transformation; the second long-term vision (from 1967 to mid 1980s) focused on the philosophy of socio-economic liberation and self-reliance. The third long-term vision (Tanzania Development Vision-TDV 2025) aimed at ensuring people have high-quality livelihoods, good governance and a competitive economy.

Both the new National Development Vision 2050 and the Zanzibar Development Vision maintain poverty reduction and promoting sustainable socioeconomic transformation as the country's highest priorities. In addition, there is a new focus on managing climate risks and mitigating the impact of climate change, which is evidenced by the inclusion of a dedicated pillar to climate in both vision documents. The focus of pillar three under the National Vision 2050 (draft) is on "achieving development that safeguards environmental and ecological integrity while enhancing low carbon and socio-economic resilience in face of face of a changing climate"[37]. Similarly, the objective of Pillar of the Zanzibar 's Development Vision 2050[38] *(i.e. Governance and Resilience*) is ensuring the continuity of the social, economic, political and environmental stability in Zanzibar through among other things, responsible governance that emphasizes the Management of all natural resources with implementable monitoring and evaluation framework.

Thus, the utilisation of this LTV towards developing a comprehensive LT-LEDS will open more opportunities needed to realise the nation development vision 2050 and the Zanzibar Vision 2050 while achieving climate resilience targets and enhancing sustainability among citizens.

[37] [37] URT (2024) Draft Tanzania Development Vision 2050. Planning Commision, Government City- Dodoma, Tanzania

[38] https://www.planningznz.go.tz/dashboard/uploads/32935.pdf

2.5 Relevant Climate Change Policies and Frameworks

Tanzania is among the countries most vulnerable to the impacts of climate change, necessitating substantial and coordinated investments and innovations to enhance preparedness and climate action. Sectors are required to better prioritize investments for a more efficient response to the immediate global challenges ahead[39]. Tanzania is one of the early adopters of several international agreements and plans including the UNFCCC, Paris Agreement and sustainable Development Goals (SDGs). To fulfil international and national obligations, Tanzania has put in place several policies and institutional frameworks pertinent for addressing climate change issues and promoting sustainable socio-economic growth.

2.5.1 Existing Policy and Institutional Frameworks

Tanzania has put in place several policies to address climate change adaptation and mitigation (table 1). However, these policies and strategies face the challenges of being aligned and mainstreamed into sectoral plans while ensuring strengthened institutional and robust Monitoring and Evaluation frameworks. Previous policies and related frameworks developed in the 2000s did not fully consider and integrate climate risks as such limited climate actions were implemented. Even those developed later still missed information on climate risks and vulnerabilities, robust M& E frameworks and needed financial resources to support climate action. Equally, these policies and strategies still face complex challenges of addressing vertical integration at the sub-national level, private sector and community's engagements towards enhancing implementation. Existing policies also face the challenge of lacking long term climate targets that are supported by needed resources. Relevant private and public financial institutions have not integrated climate change and related indicators in their policies and strategies.

Under the coordination of the Vice President's Office (VPO), the government has put in place several relevant policies and strategies. Selected key and current documents include the Nationally Determined Contribution (NDC, 2021), National Environmental Policy (NEP, 2021), National Climate Change Response Strategy, (NCCRS, 2021), National Five-Year Development Plan III (FYDP 2021/22- 2025/26), National Clean Cooking Strategy (2024), National Blue Economy Policy (2024) and National Environmental Master Plan for Strategic Interventions (2022).

Both the NCCRS 2021-26 and the NDC have entailed a set of adaptation and mitigation interventions in major economic sectors, which are designed to strengthen Tanzania's climate resilience and contribute to global efforts to reduce greenhouse gas (GHGs) emissions.

The FYDP has mandates to inform national planning across sectors and the current plan has identified climate change as a potential challenge that need to be addressed in holistic manner. The Plan also insist on climate smart practices including utilizing renewable energy sources and technologies. These policies further call for enhanced coordination, and need for mainstreaming climate change into all sectors.

[39] BMZ and GIZ (2021) Climate Risk Profile: Tanzania. https://www.adaptationcommunity.net/wp-content/uploads/2021/02/GIZ_Climate-Risk-Profile-Tanzania_EN_final.pdf

Other relevant documents include, National Water Policy, (2002), National Adaptation Programme of Action (NAPA 2007), Environmental Management Act (EMA 2004), National Energy Policy (NEP 2015), National Agriculture Policy, (2013), Tanzania's SE4ALL Action Agenda (2015), Power System Master Plan (2020) Tanzania Agriculture Climate Resilience Plan, 2014–2019, National REDD+ Strategy and Action Plan (2013), Health National Adaptation Plan (HNAP, 2018-2023), Tanzania's Long Term Perspective Plan (2011-2026).

This long-term perspective plan intended to act as road towards achieving the vision 2025 targets. The implementation of the identified climate relevant policies and strategies have remained challenging as majority of the sectors including Energy, transport, education, settlement, health, community development, mining industry haven't mainstreamed (or are in the process of mainstreaming) climate change into their specific sectoral plans and in budgets and financial resources. Other challenge is that most of local government/subnational have limited understanding of climate change issues which is a key barrier for climate responsive long-term planning for increasing climate resilience at local level. A limited number of local government authorities (e.g. Chamwino, Mpwapwa, and Kondoa) with support of development partners and CSOs have prepared relevant climate resilient strategies but faces challenge of limited capacity for implementation and monitoring of the same. Based on these challenges,the ministries of finance, Planning and Investments as well as well as Ministry responsible for Local Government and Authorities are identified as key stakeholders in shaping climate policy, mobilising required resources for climate action and enhancing M& E.

The updated NDC and the NCCRS have indicated the needed financial resources to realise their implementation. Several government institutions including the ministry of finance and the Ministry of Planning and Investment have started putting in place infrastructure and budgets to address climate change across sectors [40]. This includes revising the Public Investment Management Operational Manual (-OM) to embed climate criteria in infrastructure projects and initiating a project mapping exercise with development partners to track NDC-related investments and identify funding gaps. Plans are also underway to establish a dedicated climate finance department to coordinate resources and improve financial readiness across sectors. The Ministry of Planning and Investment is already working to mobilise internal and external resources from the international community and development partners.

2.5.2 Tanzania's NDC

Tanzania submitted its Intended Nationally Determined Contribution (INDC) in 2015 and then its updated NDC in 2021. In its updated NDC, Tanzania commits to adaptation measures important to reduce climate risks and enhance a resilience[41]. It also calls for integrating climate actions into sectoral strategies and plans across levels. Some of the prioritized

[40] National Bureau of Statistics (NBS) [Tanzania] (2019(National Climate Change Statistics Report, 2019 (NCCSR, 2019), Dodoma, Tanzania Mainland.

[41] International Monetary Fund (2024) United Republic of Tanzania. Third Review Under the Extended Credit Facility Arrangement, Request for Extension of the Extended Credit Facility Arrangement and Rephasing of Access, and Request for An Arrangement Under the Resilience and Sustainability Facility. World Bank Assessment Letter for the Resilience and Sustainability Facility. https://www.elibrary.imf.org/view/journals/002/2024/187/article-A003-en.xml

adaptation sectors include agriculture, coastal, marine environments and fisheries, livestock, energy, water sanitation and hygiene, forestry, tourism, land use and human settlements development, health, wetland and infrastructure. The NDC also aims to reduce vulnerability and improve adaptive capacity, positioning the country to meet its climate and development aspirations. The cross-cutting sectors include disaster risk reduction, gender mainstreaming, technology development and transfer and climate finance.

On mitigation part, the NDC commits to reducing GHG emissions economy-wide between 30-35% by 2030 compared to the business-as-usual scenario. Tanzania identified four priority mitigation sectors in its NDC— forestry, energy, transport, and waste management. About 138 - 153 million tons of Carbon dioxide equivalent (MtCO2e)-gross emissions is expected to be reduced, depending on the baseline efficiency improvements, consistent with its sustainable development agenda. The country will need an investment of USD 19.2 billion to realise its NDC targets. Although, targets and other relevant efforts were made, some challenges still existing, such as having limited comprehensive data on climate-relevant spending to enable the government to make informed decisions and prioritize climate investments. This calls for the government to ensure integration of climate change practices through a comprehensive approach that spans budgeting, monitoring and evaluation, financial reporting, and expenditure tracking[42]. Integrating climate change considerations into all public infrastructure projects is also key to ensuring that public investments contribute to building low-carbon and climate-resilient infrastructure.

As part of its continued commitment to the global efforts to fight climate change, Tanzania has already started a process to review and update its current NDC, a process which is closely monitored to ensure alignment with the LTV under development.

2.6 Achieving Sustainable Development in Climate Change Era

The growth and sustainability of Tanzania's economy and livelihoods is heavily dependent on climate sensitive sectors which are currently dwindling due to adverse impacts of climate change[43]. As a result, Tanzania has limited options but to take deliberate efforts towards strengthening adaptation and mitigation actions based on national development priorities. To achieve these, well-thought and coordinated efforts are needed.

Both the updated NDC and the National Climate Change Response Strategy have called for the country to embark on a climate resilient development trajectory and for mainstreaming climate change into sector policies and plans. These frameworks provide the country with unique opportunity for building a resilient society and reduce GHGs emission through set of adaptation and mitigation interventions. Most interventions target climate change induced extreme events like droughts, floods and sea level rise, which have long term implications to all productive sectors and agriculture.

[42] Ibid

[43] Mwanga, S., (2020). The Role of Civil Society Organizations and Networks in Advancing and Achieving the Paris Agreement and Sustainable Development Goals: Perspectives from Tanzania, Hanns Seidel Stiftung https://www.hss.de/download/publications/AMEZ_28_Climate_Change_10.pdf

Prioritizing adaptation measures and practices will reduce climate risks and enhance preparedness while enhancing adaptive capacities across levels. Under mitigation measures Tanzania considers reducing GHGs emissions and enhancing carbon sink through **energy, transport, forestry** and **waste**.

The experiences have shown that putting in place policies and strategies is one thing but equally important is strengthening institutional and human capacities and mainstream them into sectoral plans. This should also be coupled with resource mobilization, tapping into climate finance and relevant technologies from international community and development partners to bolster implementation and MRV of low Carbon development strategies.

2.6.1 Coordination

Climate change is a cross-cutting topic, requiring strong coordination between a wide range of stakeholders including the public, private sector, research, academia and media. Strong institutional coordination has high potentials to improve cross-government and overlapping collaboration. The coordination and implementation of the climate change and environmental issues in Tanzania is guided by the National Environmental Policy (2021), the Environmental Management Act (EMA) 2004, and the related sector policies and legislations. EMA provides for the institutional framework for environmental management in the country (Figure 2). At the national level, the Vice President's Office, Division of Environment (DoE) is responsible for all climate related activities

The DoE is the focal point to the UNFCCC and coordinates both environment and climate change issues and ensure Monitoring and Evaluations. VPO also is a Nationally Designated Authority for Green Climate Fund and focal point for Global Environmental Facility. Specific issues related to climate change are coordinated by the National Climate Change Steering Committee (NCCSC) and Zanzibar Climate Change Steering Committee (ZCCSC) composed by permanent secretaries from other sector ministries and the National Climate Change Technical Committee (NCCTC) and Zanzibar Climate Change Technical Committee (ZCCTC).

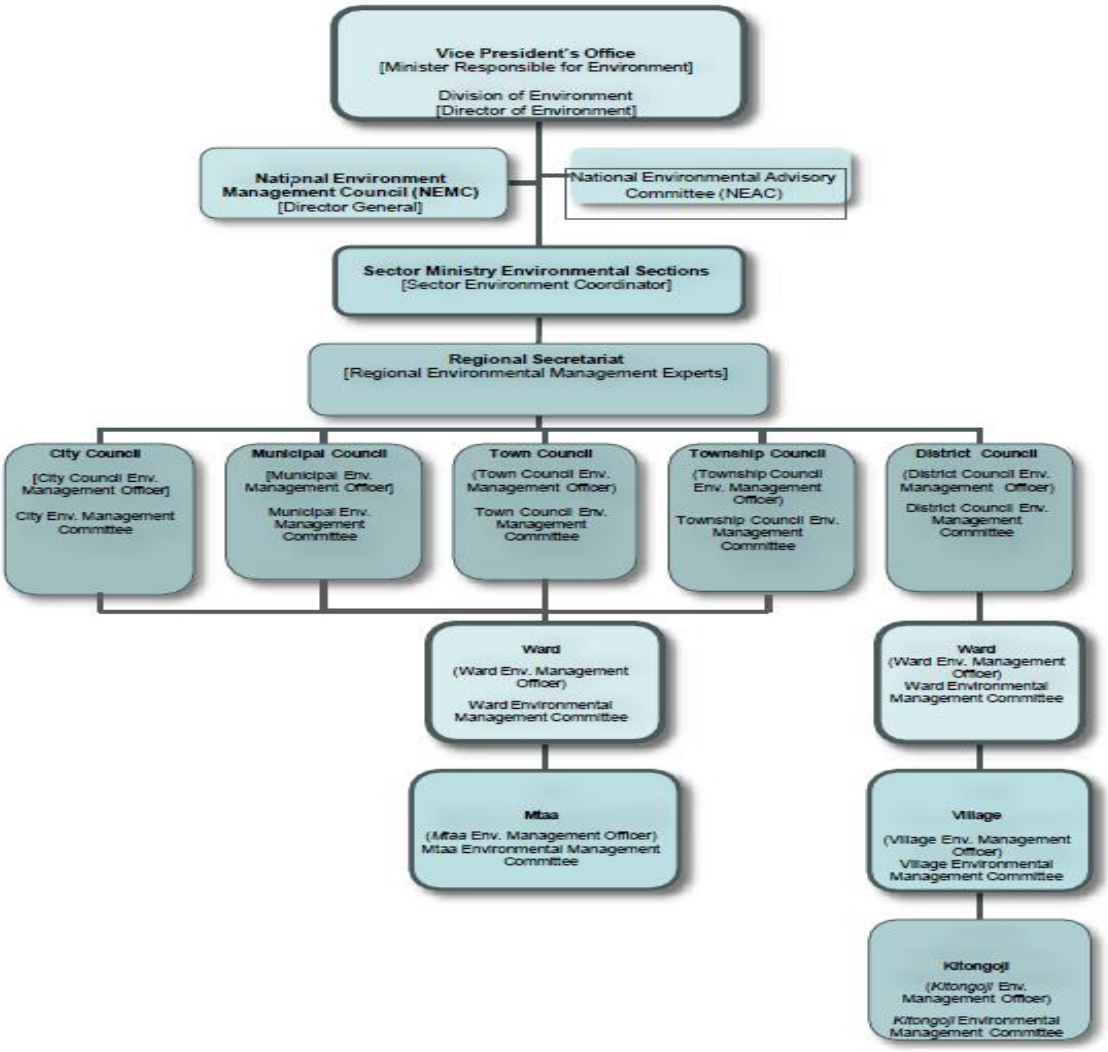
The NCCSC and ZCCSC are responsible for analysis, providing policy guidance and coordinating climate change activities across sectors, whereby the NCCTC and ZCCTZ are responsible for providing technical advice to the national climate change focal point[44]. The National Carbon Monitoring Centre (NCMC) is responsible for planning, coordination and management of GHG inventory, carbon credits and MRV system.

On the other hand, sector Ministries (such as agriculture, water, natural resources and tourism, energy, mining, waste management, transport etc) are responsible for implementing the adaptation and mitigation interventions, in collaboration with Local Government Authorities (LGAs). Even though, the Ministry of finance has no coordination role in the current structure, it is crucial for resource mobilisation and budget monitoring across sectors.

The Finance, Planning and Investments ministries can also play an important role in mainstreaming climate change into sector ministries.

[44] Irish Aid (2018) Tanzania Country Climate Change Risk Assessment Report. Irish Aid, Resilience and Economic Inclusion Team, Policy Unit.

Figure 1. The Institutional arrangement for Environmental, Climate change issues in Tanzania



3. TANZANIA'S 2050 VISION

3.1 Tanzania Long Term Vision Development

The LTV is considered as the first step for Tanzania towards developing its inclusive and transformative LT-LEDS. The process to develop this LTV for Tanzania is anchored in agreed principles and feedback from stakeholders' consultation to reach consensus on where both the sectors and country want to be by 2050. The LTV process is guided by existing national economic aspirations and circumstances.

3.1.1 Methodology

The development of this LTV was informed by a rigorous process grounded in comprehensive literature review and extensive multi-stakeholder engagement. A series of participatory and inclusive consultations were conducted across national and sub-national levels in the mainland and Zanzibar, engaging key stakeholders including central government ministries, departments and agencies (MDAs) including the Planning Commission, civil society organizations (CSOs), non-governmental organizations (NGOs), development partners, academia, private sector actors, financial institutions, local government authorities, and media representatives. This consultative approach facilitated a shared understanding of Tanzania's socio-economic, environmental context, and the national and sectoral development aspirations towards 2050 and beyond which helped the alignment of the LTV with both national development priorities and international climate commitments. This approach helped to ground this LTV on national and local realities, building a country-wide view to enable alignment of both national development priorities and international climate commitments.

Steps followed towards this LTV:

i. **Literature review:** An in-depth and extensive review of national policies, plans and strategies to gather benchmark information on climate change and GHG emission trends in the country, identify needs, gaps, stakeholders and international best practices to inform the LTV development. It also reviewed of international literature to identify lesson learns and best practices from champion countries that have already prepared and submitted their LT-LEDS to the UNFCCC.

ii. **Enhancing political buy-in and inception workshops:** High-level inception workshops were held both in Dodoma and Zanzibar to inform government focal points and wider stakeholders about the objectives, scope and planned outcomes of the process. It further intended to create an understanding on how different stakeholders will be engaged and secure buy-in and ownership of the process at multiple levels.

iii. **Sectoral workshops:** The inception workshops were followed by sectoral level consultation in Zanzibar and Dodoma, whereby government officials from all relevant sectors, as well as stakeholders from the private sector, research, academia and CSOs participated. The aim of the workshop was to gather in-depth feedback from participants

on sectoral and government priorities, opportunities, needs and challenges for development and implementation of LTV and LTS in Tanzania.

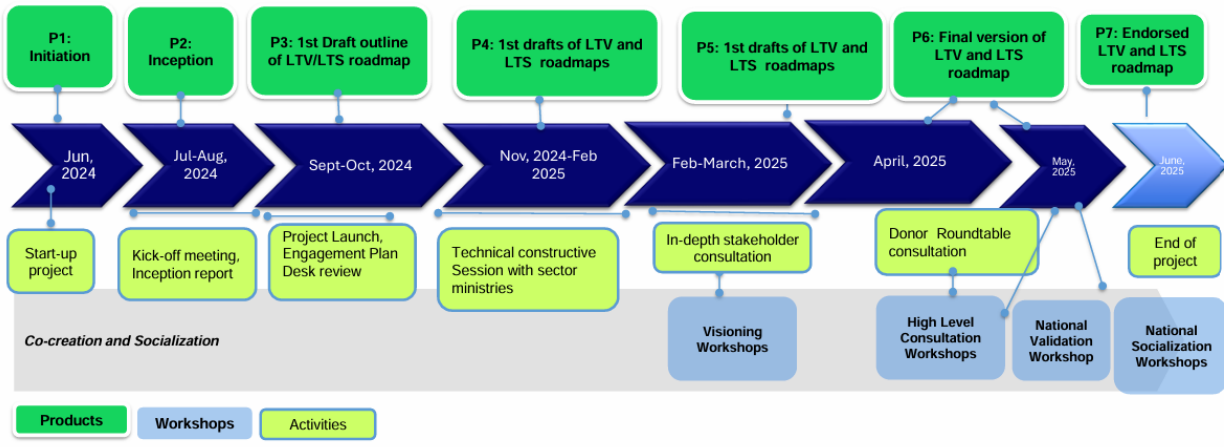
iv. **Visioning workshops and in-depth interviews:** visioning workshops were conducted in five zones and the representatives met in Mwanza, Dodoma, Zanzibar, Mbeya and Arusha. During these workshops key informant interviews and focus group discussions were conducted to enhance the consultation processes. These intended to strengthen participation and co-construction approach of the visioning process. To ensure inputs and validation across stakeholders the LTV draft document was uploaded to VPO website for a public consultation.

v. **High-level Sectoral Consultation Workshop:** undertaken before the validation workshop, this session aims to create a space for any last inputs in the Vision document from key sectoral ministries – increasing awareness and whole-of-government ownership.

vi. **Validation workshop:** aims to strengthen buy-in and secure validation for the LTV and LT-LEDS roadmap.

vii. **Socialization workshop:** aim to disseminate the documents and ensure key stakeholders have full understanding, ownership and buy-in of the developed LTV and roadmap towards LT-LEDS.

Figure 2 Overview of the LTV development and stakeholder consultation process in Tanzania



3.1.2 Tanzania' s LTV Guiding Principles

The development of Tanzania's LTV is guided by principles which are based on lessons and experiences from previous and recent policies and their implementations (characterizing reasons for success, failure and opportunities) in Tanzania. The process to develop the LTV also engaged, learnt from and reviewed the Tanzania Development Vision 2050 (draft). They are also informed by background report, key informant interviews, stakeholders (visioning) workshops and internation best practices and standards. In the process different stakeholders including government Ministries, Departments and Agencies (MDAs), Development partners,

Civil Society, private sector, media, academia and researchers are involved. Hence principles are identified as described below:

The guiding principles:

i. **Country driven and National Contribution to global climate targets:** Tanzania is a party to the Paris Agreement and will continue to take deliberate efforts to contribute to limiting global average temperature to well below 2°C . However, Tanzania is among the most vulnerable country, hence prioritises resilience building across sectors and will go beyond by working with the international community to ensure timely availability of climate finance and relevant technologies.

ii. **Good governance:** good governance plays a pivotal role in fostering inclusive economic growth and ensuring sustainable development. It further enhances strong policy and implementation coordination while ensuring ownership and collaboration as well as timely service delivery. This increases accountability, leverage resources, address conflicting interests and unnecessary overlaps among stakeholders.

iii. **Just transition:** By ensuring just transition Tanzania aims to ensure unified efforts and best practices that will be fair, empower and motivate everyone, especially rural people, to prepare and engage fully in building and benefiting from low carbon economy and a climate resilient society.

iv. **Structure and Content:** This LTV aims to ensure that climate objectives are structured and implemented in such a way that promote inclusive economic growth, contribute to reduction of poverty and climate vulnerability, a fair transition pathway towards new (green) opportunities for livelihoods and reduces gender inequality while ensuring sustainability.

v. **Meaningful stakeholder engagement and participation:** the achievement of this LTV and the upcoming LT-LEDS depends on collective contributions from diverse stakeholders. A cohesive, well informed, responsible and committed stakeholders have high potentials realise the implementation of climate and economic goals.

vi. **Integrated climate resilient and competitive socio-economic development:** for Tanzania climate and development are interlinked. The LTV needs to ensure that climate objectives are structured and implement in such a way that enhances the achievement of socio-economic objectives.

vii. **Continues innovation, research and technology access:** this LTV is developed and will be implemented in the climate change era and related impacts are unfolding at high-speed causing several losses and damages. Tanzania needs to promote innovative solutions including digital utilisation, undertake and disseminate relevant and local specific research and then invest in acquiring and utilising best and current technologies. Enhance education and capacity-building, where necessary, with the support of international partners.

viii. **Strategic regional and international partnership and cooperation:** the international community remains important in ensuring countries like Tanzania have access to both climate finance and needed technologies.

ix. **Inclusive and gender sensitive:** This is geared towards addressing the inherent inequalities and promoting gender equality to harness both the role of men and women in low carbon development strategies and actions

x. **Monitoring, reporting and verification:** to understand better the progress made and relevant challenges, the country must ensure robust MRV system is in place and is supported by enough relevant financial and human resources.

3.2 Tanzania Overarching Vision

By 2050, Tanzania is a net-zero and climate-resilient nation with an inclusive, competitive and self-reliant economy.

3.3 Strategic Sectoral goals

3.3.1 The rationale and basis for selecting priority sectors

The selection of strategic sectors is based on:

i. Current and potential future of the sector to play a significant role in promoting livelihood options and inclusive national socio-economic growth. This includes the role of the sector in creating opportunities for employment to majority, women, youth and supporting rural development while addressing inequalities among citizens.

ii. Have potential to lead the country into strengthened adaptative capacities, resilient and prosperity. The selected sectors are those where, if the necessary level of planning and investment is available, supported by appropriate technologies and awareness/capacity building, have the potential to support the population in achieving a resilient and low-carbon economy that is well-adapted to sustain the impacts of climate change.

iii. Potential to support the country to contribute to the achievement of GHGs emission reduction and hence achieving both the NDC and the parent Paris Agreement and other UNFCCC commitments.

iv. Sectors which have been identified by other national development and climate policies as either vulnerable and or important sectors to foster development, contribute to reducing GHGs emission and or enhance adaptations (please see table 1 providing a summary of these sectors which are further discussed in detail in subsequent sectors)

Table 1 Summary of existing sectoral strategies that have informed the LTV visions

Priority sector	Sectoral Vision	Relevant documents
Energy	Promoting access to clean, modern affordable, reliable, climate resilient and sustainable for everyone.	PSMP-2020, National Clean Cooking Strategy-2024, NDC, NCCRS-2021, NDV-2050, Energy Efficiency Strategy 2024, Tanzania Energy Compact 2024, National Carbon Trading Guideline 2022, National Carbon Trading Regulation 2023, National Renewable Energy Strategy (draft)

Agriculture	Transform the agricultural sector into more productive, resilient and low carbon supported by modern technologies and climate smart practices	NDC-2021, NCCRS-2021, NDV- 2050, National Agriculture Master Plan 2050, Agriculture Climate Resilience Plan 2014-2023, National Ecological Organic Agriculture Strategy (2023 - 2030)
Forestry	Achieve sustainable forest management characterized by effective climate change mitigation, enhanced governance and carbon credits, active community engagement, and the integration of sustainable forest management practices	NDC, NCCRS, National Forestry Policy, NDV 2050, National Forestry Research Master Plan III (NAFORM III) 2021 – 2031, National Carbon Trading Guideline 2022, National Carbon Trading Regulation 2023, National Clean Cooking Strategy-2024
Transport and infrastructure	Have an efficient, affordable, climate resilient, low carbon transport and infrastructure services to all segments of the population and sectors with maximum safety and minimum environmental degradation	NDC, NCCRS, NDV-2050, National Carbon Trading Guideline 2022, National Carbon Trading Regulation 2023.
Industry	A competitive, revolutionized and sustainable industrial sector that support inclusive envelopment	NDC, NCCRS, NDV-2025 and 2050, Zanzibar Development Vision 2050
Blue economy	Facilitate effective management and sustainable use of Blue Economy resources to boost inclusive national economy growth.	Blue Economy Policy-2024, NDV-2050, Zanzibar Blue Economy Policy, 2020, ZDV, 2050
Mining	Having a sustainable, inclusive and low carbon mining sector that contributes to a resilient society and integrated economic growth.	NDC, NCCRS, NDV-2025 and 2050, The Mining Act, 2010 (Amended 2017 & 2021), Local Content Regulations (2018, revised 2022), Mining (CSR) Regulation 2023, Mining (Mineral and Mineral Concentrait) Regulation 2024, Tanzania Extractive Industries Transparency Initiative – TEITI, 2022; ILO, 2023)
Waste	Promote a low carbon waste management practice that support reuse, reduce and recycle.	National Solid Waste Management-2018-2028, Zanzibar Solid Waste Management Strategy, 2022, NDC, NCCRS, NDV-2025 and 2050
Crosscutting themes | Means of Implementation		
Technology transfer	Promoting acquisition and installation of appropriate and low carbon technology across sectors for climate-resilient production.	NDC, NCCRS, NDV- 2025, NDV 2050 (draft), National Intellectual Property Policy (2020), National ICT Policy (2016), Digital Agenda for Tanzania Initiative Strategic Plan (2023-28)
Capacity building	Build the capacity across key sectors and stakeholders to implement effective climate change mitigation and adaptation strategies, ensuring a skilled	NDC, NCCRS, NDV- 2025, NDV 2050, Digital Agenda for Tanzania Initiative Strategic Plan (2023-28), Five Year Development Plan (2021/22-2025/26)

	workforce and strong institutional frameworks, policies and regulations, for a low-carbon economy	
Climate finance	Develop internal capacities to attract and mobilise the climate finance needed to effectively implement climate change mitigation and adaptation programmes	NDC, NCCRS, NDV-2025 and 2050, National Environmental Master Plan for Strategic Interventions (2022-2032)

The information in Table 1 above is further expanded in the subsections below, providing for each sector, an in-depth account of the low carbon goal, current situation, aspirations and where possible case study of best practices of low carbon development approaches from other countries as an inspiration for Tanzania.

3.3.1 Energy

***Sectoral Vision*:**

Tanzania has an inclusive, reliable, affordable, and efficient energy system, which is largely supportive of low carbon trajectory, resilient society and fostering socio-economic growth.

The energy sector plays a pivotal role in enabling the socio-economic development of both households and the country[45]. Access to electricity in Tanzania is still limited, especially for majority rural households. Renewable energy has high potential to address this challenge and foster economic growth. The Power System Master Plan (PSMP,2020) provides a forecast of the anticipated needs of the population and economy for Tanzania for the period up to 2044 that the country will need 17,611 MW compared to 1,120 MW in (2019). Currently, total installed capacity is 3,404.20MW, comprised 2,011.27 MW hydro (59.1%); 1,198.82 MW natural gas (35.2%); 101.12 MW heavy fuel oil (HFO) and diesel (3%); 5 MW solar and photovoltaics (PV) (0.1%); and 87.99 MW biomass and co-generation (2.6%)[46]. Still energy access and use are still far from being reality among poor and rural population[47,48]. Even though Tanzania's energy system has improved in recent years, several challenges exist. Affordability is a persistent challenge: many low-income households continue to rely on traditional biomass for cooking due to the high upfront and recurring costs of clean energy alternatives[49]. Reliability also remains an issue—Tanzania's power grid experiences frequent outages and transmission losses, especially during periods of hydropower shortfall linked to climate variability and/or change. Technical and non-technical losses in the transmission and distribution system are estimated at over 20%, further constraining consistent electricity

[45] URT (2021). National Climate Change Response Strategy (2021-2026). Vice President's Office, Division of Environment, Government Printer, Dodoma. Tanzania

[46] URT (2025) National Energy Compact For United Republic Of Tanzania

[47] Tanzania National Bureau of Statistics (2022) Impact of Access to Sustainable Energy Survey 2021-2022. TZA-NBS-IASES-2021-2022-v01.

[48] World Bank (2024) Improving Sustainability of the Power Sector and Accelerating Electricity Access: A Proposed WBG Roadmap.

[49] World Bank (2021) Making Power Affordable for Africa and Viable for Its Utilities. World Bank

supply [50] . These challenges underscore the need for continued investment in grid modernization, diversified energy generation, and pro-poor access models to meet the long-term vision of a sustainable, inclusive, and low-carbon energy system.

Some of the other persistent challenges facing Tanzania's energy sector include continued dependence on unsustainable biomass and waste for cooking by most households, aging and inadequate electricity infrastructure, high energy costs, and limited access to finance for the deployment of new and low-carbon technologies. To address these issues, Tanzania needs to scale up investments in energy efficiency, clean cooking solutions, and climate-smart technologies. This also requires promoting behavioural change around energy use and mobilising financial resources to improve energy affordability, especially for low-income households. In addition, strengthening policy and regulatory frameworks will be critical. This includes updating and enforcing national energy efficiency standards, accelerating implementation of the National Clean Cooking Strategy, creating fiscal incentives (e.g., VAT exemptions) for renewable and energy-efficient technologies, and streamlining regulatory approvals for off-grid and mini-grid energy providers. Enhanced coordination among key stakeholders—such as TANESCO, EWURA, REA, and the Ministry of Energy—will also be essential to improve sector governance and deliver on the country's long-term energy and climate goals.

The PSMP, 2020 and National Energy Compact, 2025 have set a primary goal of increasing access to modern and clean energy; and enhancing power supply availability, reliability and affordability for everyone. On the other hand, the NDC has put forward the energy sector among the four priority sectors for climate change mitigation due to its significant potential in greenhouse gas emissions reduction[51]. Achieving the primary goal of the PMSP, National Energy Compact and related energy targets and taping the global decarbonization opportunities Tanzania needs to have a sharpened vision. Some of the areas which may need to be utilised and put forward by the energy include: exploring options for improved clean power interconnection with neighbouring countries ; promoting clean technologies for power generation and diverse renewable sources such as geothermal, wind, hydro, solar and bioenergy and promoting clean cooking technologies. Enhancing climate-smart rural electrification, including development of micro and mini-grid renewable generation have also been identified.

Aspirations:

i. Achieved a leading share of renewable energy in the national energy mix, powering a sustainable future.
ii. Secured a resilient, reliable, and efficient energy system that supports national growth and stability.
iii. Diversified national energy sources, ensuring robust and adaptive solutions for a rapidly changing world.
iv. Fully transitioned to sustainable and green energy systems, minimizing national environmental footprint.

[50] Kawambwa, S and (2024) Revenue loss reduction in electrical distribution networks using distributed generators: A case of Tanzania electrical distribution network. Journal of ICT Systems. DOI: https://doi.org/10.56279/jicts.v2i2.119

[51] URT (2021) Nationally Determined Contribution, Vice President's Office. Dodoma- Tanzania

v. Made energy solutions universally affordable and accessible, empowering all communities.
vi. Pioneered advanced climate-smart technologies and innovations, driving global leadership in clean energy.
vii. Tanzania is powered entirely by sustainable energy, with renewable sources and ultra-efficient systems ensuring clean, reliable, and accessible power for all citizens and industries.

Relevant International Case Study: Kenya's Renewable Energy Transition

Kenya offers a compelling example of how a developing country can successfully transition toward a clean, resilient, and inclusive energy system. As of 2021, nearly **90%** of Kenya's electricity generation came from renewable sources—led by geothermal (~799 MW), hydro, wind, and solar energy—placing the country among the global leaders in clean energy share. This transformation has been underpinned by a strong policy and regulatory framework that provided clarity, direction, and investor confidence.

Several key policies and regulatory reforms enabled Kenya's success:

- The **Energy Act (2019)** consolidated all energy laws, provided a modernized framework for regulation across electricity, renewable energy, and petroleum sectors, and mandated the development of Integrated National Energy Plans (INEPs).

- The **Feed-in Tariff Policy (2008, revised 2010)** was instrumental in encouraging private sector investment in renewable energy, especially in wind, biomass, and small hydro, by guaranteeing long-term power purchase agreements (PPAs).

- The introduction of the **Least Cost Power Development Plan (LCPDP)** institutionalized long-term energy planning and prioritized renewables based on cost and security of supply.

- The establishment of the **Geothermal Development Company (GDC)** de-risked geothermal exploration by taking over upstream drilling, making it more attractive for independent power producers (IPPs).

- Regulatory oversight by the **Energy and Petroleum Regulatory Authority (EPRA)** ensured price regulation, technical standards enforcement, and transparent licensing processes.

- Kenya's **Last Mile Connectivity Project**, financed by the World Bank and AfDB, focused on subsidized grid connections and expanded electricity access to rural and peri-urban populations.

As a result of these policies and investments, Kenya expanded national electricity access from **37% in 2013 to 75% by 2022**, while maintaining one of the greenest energy mixes globally (IEA, 2022; AP News, 2024; Energy Act 2019; World Bank, 2023). Off-grid and mini-grid solutions were also supported through enabling regulations and donor partnerships, contributing to rapid gains in rural access.

Relevance to Tanzania:
Kenya's experience shows that renewable and clean energy development—including geothermal and decentralized/off grid solutions for solar and wind—can be a powerful driver of energy access, economic growth, and climate mitigation. Tanzania can has a unique opportunity to accelerate these through the recent bold commitment for energy transformation as reflected in the key Energy frameworks notably the Tanzania's M300-Energy Compact, the national energy efficiency strategy and the national clean cooking strategy where by: the energy compact sets a target of increasing access to clean energy from 11.9% in 2021 to 21% by 2030 and increase the share of renewable energy in the energy mix from the current 61.8% to 75% by 2030. The clean cooking sets a target of ensuring that 80% of the population is using clean cooking energy by 2034. Inevitably, these interventions would strongly support the 2050 vision of a clean, reliable, affordable and low carbon energy system.

3.3.2 Agriculture (crops, fisheries and livestock)

***Sectoral Vision*:**
By 2050, Tanzania has a climate-resilient, climate smart and low carbon agricultural sector which plays significant supporting role to citizens and nation's socio-economic growth.

The Tanzania Development Vision (TDV-draft) 2050 has put forward agriculture as an important sector with high potentials for socio-economic transformation. The sector contributes about 28% of GDP and employs about 61% of the labour force[52]. Majority of the rural population directly rely on agriculture for their livelihoods. If well modernised agricultural sector has high potentials to create more jobs for youth and women and hence contribute to poverty reduction. Agriculture in Tanzania encompasses crops, livestock and fisheries and plays a critical role in ensuring food security in the country. Linked to that, Tanzania is envisioning to become a reliable regional food basket. However, agricultural sector in Tanzania is not yet well developed and is dominated by smallholder farmers who practice rain-fed and shifting agriculture with limited extension services. This puts the sector and the country economy into high risks especially under climate change era. The sector is also linked to high rate of deforestation and land use change/degradation, which contribute to GHGs emissions at the same time make the sector more vulnerable. The agriculture is among the significant contributor to GHG emission especially releasing methane, nitrous oxide and carbon dioxide from livestock and agrochemical use. Reducing GHG emissions from the agricultural sector while also increasing productivity to become a reliable regional food basket and enhancing sector adaptive capacity to the impacts of climate change has remained an important long-term vision of the sector[53].

Both the TDV, 2050, and the Agriculture Master Plan, 2050 have expressed high demand to transform the sector into more resilient and low carbon support with modern technologies, climate smart and best practices (including agro-ecology and organic farming). These will lead to stabilised sector productivity per hectare, increase income, reduce post-harvest losses,

[52] URT (2024) Ministry of Finance, Tanzania National Bureau of Statistics and President's Office - Finance and Planning, Office of the Chief Government Statistician, Zanzibar. The 2022 Population and Housing Census: Tanzania Basic Demographic and Socio-Economic Profile Report; Dodoma, Tanzania.
[53] URT (2023) National Ecological Organic Agriculture Strategy (2023 - 2030). Ministry of Agriculture

enhance carbon sink and soil stability, improve food security and meet market and industrial demands. Having low carbon agricultural sector offers double benefits to Tanzania; **first** empowering the sector to optimize climate smart practices, optimize water and land use for enhanced productivity, increase efficiency and reduce risks; and **second** building a climate resilient sector that will support smallholder farmers and create jobs for youth and women. To achieve sector objective, an ambitious, sector specific climate actions and financing mechanisms need to be implementation.

Aspirations

i. Climate-Smart Agriculture (CSA) and nature-based solutions promote an inclusive, low-carbon, resilient agricultural sector that significantly contributes to sustainable development.
ii. Land and water resources are sustainably managed for a low-carbon agricultural sector.
iii. Post-harvest losses and waste in agriculture are minimised and supported with extension services.
iv. Renewable energy is the primary energy source in the agricultural sector.
v. Research and innovation drive low-carbon, resilient agricultural practices.
vi. Agricultural products are efficiently processed for value-added goods.
vii. Agriculture creates meaningful employment and improves livelihoods, enhancing community well-being.
viii. Improve access to climate services, credits and insurance for smallholder farmers to enhance their adaptive capacity and support the transition to climate-resilient practices
ix. Well-developed livestock and pastures that embrace sustainable agricultural practices and inclusive economic growth.

Relevant International Case Study: Rwanda's Climate-Smart Agriculture Vision

Rwanda offers a strong example of how a developing country can strategically transform its agriculture sector into a low-carbon, climate-resilient engine of inclusive economic growth. Under its **Green Growth and Climate Resilience Strategy (2022)**, Rwanda has mainstreamed Climate-Smart Agriculture (CSA) across national and district-level planning. This is operationalized through initiatives like the **Green Gicumbi Project**, a flagship program supported by the **Green Climate Fund (GCF)**, which integrates sustainable land and watershed management, climate-resilient agriculture, and agroforestry practices.

Implemented in northern Rwanda since 2019, the project has restored degraded landscapes through bench terracing, promoted organic composting, improved access to drought-resistant crop varieties, and supported smallholder farmers—especially women and youth—with extension services and access to climate finance. The initiative has led to measurable

increases in food security, household income, and ecosystem resilience in vulnerable highland areas[54,55] .

Rwanda has also institutionalized the use of agroecology and promoted integrated approaches to link agriculture with renewable energy, irrigation, and market access. Institutionalization has been supported through the **National Climate-Smart Agriculture Program**, which sets CSA implementation targets and budget lines within the agriculture sector strategy. In addition, the government established **district-level CSA focal points** within agricultural extension offices and embedded CSA monitoring indicators in the **National Agriculture Management Information System (NAMIS)**—ensuring alignment across ministries, financing institutions, and local governments.

Relevance to Tanzania:

Rwanda's experience provides critical insights for Tanzania as it pursues its 2050 agricultural vision. Like Tanzania, Rwanda's agriculture is dominated by smallholder farmers and is highly climate sensitive. Key lessons Tanzania can draw include:

- **Policy and Institutional Coherence:** Rwanda's success stems from aligning long-term agricultural planning with climate strategies, ensuring that CSA is not siloed but mainstreamed across government levels and programs.
- **Scaling CSA Practices:** The targeted promotion of terracing, agroforestry, drought-resilient crops, and sustainable irrigation can be adapted to Tanzania's varied agro-ecological zones.
- **Inclusive Implementation:** Rwanda's emphasis on empowering women and youth in agriculture, backed by training and credit access, aligns closely with Tanzania's aspirations for job creation and rural transformation.
- **Blending Finance Mechanisms:** By combining public investment with climate finance (e.g., through GCF and other partners), Rwanda has demonstrated a viable path to fund adaptation while improving productivity.

Tanzania can contextualize and tailor these approaches to its national priorities—such as becoming a regional food basket and reducing agricultural emissions—while ensuring the resilience of livelihoods in rural communities. Rwanda's case affirms that it is possible to align climate action with agricultural growth in a developing country context and provides a blueprint Tanzania can adapt and scale.

3.3.3 Forestry

***Sectoral Vision*:**

Achieve sustainable forest management characterized by effective climate change mitigation, enhanced governance, active community engagement, and the integration of sustainable forest management practices.

[54] National Institute of Statistics of Rwanda (NISR). 2022. Seasonal Agricultural Survey annual report

[55] World Bank. 2023. Rwanda—Transformation of Agriculture Sector Program Phase 2 Program-for-Results. Independent Evaluation Group, Project Performance Assessment Report 177336, Washington, DC: World Bank.

Tanzania’s forests cover approximately 48 million hectares, nearly 48% of the country’s total land area, providing vital resources and essential ecosystem services. These forests, primarily tropical moist and dry forests, are crucial for biodiversity conservation, climate regulation, and community livelihoods, supporting a diverse array of plant and animal species. However, the sector faces challenges, with over 80% of rural Tanzanians relying on wood-based energy, leading to significant deforestation. Deforestation, driven by population growth, agricultural expansion, charcoal production, and illegal logging, occurs at an estimated rate of approximately 370,000 hectares per year. Weak enforcement of laws and land tenure conflicts exacerbate illegal logging and forest degradation, thereby worsening the impacts of climate change. The high demand for fuelwood and charcoal, especially in urban areas, places immense pressure on forest resources. Moreover, traditional management practices are often inefficient, and there is limited support for sustainable forest management (SFM).

Deforestation contributes significantly to Tanzania's greenhouse gas emissions, accounting for 20-25% of total emissions. It undermines forests' roles in regulating local climates, maintaining water cycles, and controlling soil erosion, increasing communities' vulnerability to climate-related hazards. Many rural Tanzanians rely on forests for their livelihoods, and climate change poses a significant threat to these resources, thereby increasing the risk of disasters such as floods and droughts.

Aspirations:

Tanzania has outlined several aspirations for the forest sector by 2050, aligning them with the country's climate change mitigation and adaptation objectives:

i. Tanzania has successfully restored degraded land by expanding forest cover through reforestation, afforestation, and sustainable land management practices.
ii. Forests are managed sustainably, with reduced illegal logging and strengthened ecosystem protection, balancing economic growth with conservation.
iii. Tanzania’s forests are resilient to climate change, with enhanced biodiversity and ecosystems adapted to droughts, floods, and temperature extremes.
iv. Dependence on charcoal and firewood has significantly declined, replaced by solar, biogas, and improved cookstoves, reducing deforestation.
v. Effective policies, improved land tenure, and strict law enforcement ensure sustainable forest management, with local communities actively involved.
vi. Tanzania’s forests contribute to global climate efforts through REDD+ and carbon trading, generating revenue that supports conservation and sustainability initiatives.
vii. Forest conservation is a crucial component of national climate strategies, with a focus on prioritizing both adaptation and mitigation in policy decisions.
viii. Local communities effectively and sustainably manage forest resources, ensuring long-term conservation while meeting local needs.

Relevant International Case Study: Ghana's REDD+ Strategy for Sustainable Forest Management

Ghana's approach to sustainable forest management under the REDD+ mechanism offers a compelling model for countries like Tanzania that aim to reduce emissions from deforestation while enhancing rural livelihoods. Ghana launched its national REDD+ strategy in 2016, focusing on integrating conservation with economic development. A flagship initiative under this strategy is the Ghana Cocoa Forest REDD+ Programme (GCFRP), which covers over 5.9 million hectares of forest and cocoa-growing areas. The programme has engaged more than 140,000 cocoa farmers and is expected to reduce approximately 10 million tons of CO_2e emissions over 20 years (Forest Carbon Partnership Facility, 2020).

The success of GCFRP lies in its integrated approach, which combines agroforestry practices with incentives for forest conservation. Farmers receive training in climate-smart cocoa production, allowing them to increase yields while preserving forest cover. Moreover, the programme has established benefit-sharing mechanisms where communities earn financial rewards based on emission reductions. Institutional coordination is another cornerstone of success; the Forestry Commission of Ghana works closely with the Ministry of Food and Agriculture, traditional authorities, and private sector partners to ensure alignment of objectives and co-financing.

Relevance to Tanzania:

Tanzania, with over 48 million hectares of forest and significant pressures from agricultural expansion and biomass energy dependence, can greatly benefit from Ghana's example. By adopting agroforestry practices in high-pressure regions, particularly where cocoa or coffee is cultivated, Tanzania could replicate the dual gains of forest conservation and income generation. Additionally, the establishment of transparent benefit-sharing and monitoring frameworks could enhance community engagement and accountability. Strengthening institutional collaboration between the Forestry and Agriculture sectors and integrating REDD+ goals into national climate and development plans would further anchor long-term sustainability.

3.3.4 Transport and infrastructure

***Sectoral Vision*:**

By 2050, Tanzania has a modernised, sustainable, safe, reliable, affordable, efficient, climate-resilient, and low carbon sector which enhances inclusive socio-economic development that makes Tanzania an East and Central Africa logistic hub.

Tanzania's transport and infrastructure systems are under increasing pressure from both climate and non-climate stressors. The country's growing population and expanding economy have significantly increased demand for transportation networks, placing strain on existing infrastructure. At the same time, climate-related challenges, such as extreme weather events, floods, and overflowing rivers, continue to disrupt the movement of goods and passengers, affecting trade flow and economic activities. The World Bank Group projects that climate impacts could damage key transportation links, impeding labour mobility, trade, and freight operations. If no proactive measures are taken, the annual cost of such disruptions could rise to $216 million, with even higher rehabilitation and repair expenses. This calls for urgent action to build climate resilience into Tanzania's transport infrastructure.

To safeguard the sector's sustainability, it is essential to integrate climate resilience and low-carbon strategies into infrastructure planning, design, and construction. This aligns with Tanzania's development vision 2050 and Nationally Determined Contributions (NDC) targets, which emphasize climate-proofing critical infrastructure, including energy, transport, water supply, and health systems. A key priority is ensuring that new and existing infrastructure can withstand climate risks while contributing to emissions reductions. The expansion of the Standard Gauge Railway (SGR) and road networks presents a significant opportunity to reduce emissions and improve efficiency. Benefits include faster cargo delivery, streamlined processing, and reduced congestion on inter-regional roadways. However, additional measures are needed to future-proof the transport sector, including scaling up electric and alternative-fuel vehicles to reduce reliance on fossil fuels, expanding sustainable mass transit systems such as Bus Rapid Transit (BRT) and marine transport to improve mobility and reduce urban congestion, and enhancing climate-smart infrastructure planning by integrating climate data and risk assessments into project design and execution.

Achieving these goals will require substantial investments in financial and human resources, as well as the adoption of robust technologies. Public-private partnerships, public transport price regulation, taxes and fiscal incentives, international climate finance, and technological innovation will be crucial in ensuring that Tanzania's transport and infrastructure sector remains resilient, efficient, and sustainable in the face of emerging challenges.

Aspirations:

i. A transport and infrastructure system powered primarily by renewable energy, leveraging advancements in solar, wind, and biofuels to reduce dependency on fossil fuels.
ii. A green and inclusive public transport system integrating electric and hybrid vehicles, supported by smart mobility solutions for enhanced accessibility and affordability.
iii. A well-developed non-motorized transport network (pedestrian and cycling infrastructure) to promote efficiency, reduce emissions, and improve mobility.
iv. A sustainable maritime and inland water transport system utilizing smart logistics, green shipping technologies, and resilient port infrastructure to enhance trade and connectivity.
v. A climate-smart and efficient transport infrastructure integrating intelligent traffic management systems, e-mobility, and resilient road networks to withstand climate-related disruptions.
vi. A digitally connected and informed society, leveraging data-driven decision-making, public awareness campaigns, and policy integration to foster climate-smart transportation choices.

Relevant International Case Study: Morocco's Climate-Resilient and Low-Carbon Transport Infrastructure

Morocco has emerged as a leading example in North Africa for integrating climate resilience and decarbonization into its national transport and infrastructure systems, aligning well with

Tanzania's 2050 sectoral aspirations. Morocco's flagship initiative, the Al Boraq high-speed rail line, connects Tangier to Casablanca over 360 kilometers. This was the first high-speed train system in Africa and was inaugurated in 2018. The line has reduced travel time by over 50% between the two cities and significantly cut road congestion and transport-related emissions. The project, valued at USD 2 billion, is powered by electricity with plans to increase the share of renewables used in train operations to 50% by 2030[56] .

This initiative is part of Morocco's broader $10 billion rail modernization and expansion strategy aimed at upgrading 1,300 kilometers of railway to electric standards and increasing intermodal transport efficiency. The Office National des Chemins de Fer (ONCF) has also adopted smart traffic management systems to improve energy efficiency and minimize delays. Notably, Morocco's transport vision is integrated into its Nationally Determined Contributions (NDCs), aiming for a 23% reduction in GHG emissions by 2030 under conditional scenarios (UNFCCC, 2020).

In addition to rail, Morocco has also scaled up its Bus Rapid Transit (BRT) systems in major cities such as Marrakech and Rabat, designed with climate considerations including low-emission buses and resilient road surfaces. These urban mobility reforms are supported through public-private partnerships (PPPs) and concessional financing from development banks, including the African Development Bank (AfDB) and Agence Française de Développement (AFD). Such measures demonstrate a holistic approach to climate-resilient infrastructure, balancing mobility needs with sustainability imperatives.

Relevance to Tanzania

Tanzania can derive several key lessons from Morocco's integrated approach to developing climate-resilient, low-carbon infrastructure, particularly as it moves towards expanding the Standard Gauge Railway (SGR) and modernizing urban mobility:

- Adopt electric and renewable-powered transportation modes to reduce transport-sector GHG emissions and operational costs over the long term.
- Integrate climate risk assessments into all infrastructure planning and design processes, particularly for road, rail, and port expansions.
- Leverage blended finance mechanisms, including green bonds and concessional loans, to scale up climate-smart transport projects.
- Expand BRT and non-motorized transport in urban centers to address congestion, reduce pollution, and enhance inclusive mobility.
- Develop a national transport decarbonization strategy aligned with NDC targets and the Long-Term Vision, ensuring inter-ministerial coordination.

Morocco's progress illustrates that early investment in low-carbon and resilient infrastructure can yield both economic and environmental returns. By tailoring these strategies to its

[56] World Bank Group (2022) Background Paper Transport Decarbonization in Morocco. Country Climate and Development Report . World Bank

context, Tanzania can not only reduce vulnerabilities to climate risks but also unlock new opportunities in logistics, trade, and urban mobility consistent with its 2050 vision.

3.3.5 Mining and industry/manufacturing

***Sectoral Vision*:**

Tanzania's mining and industrial sectors are sustainable, inclusive, and low carbon, driving a resilient society and integrated economic growth

The National Development Vision 2050 has identified mining as one of the strategic sectors essential for catalysing transformative growth in Tanzania. The country is endowed with vast deposits of critical minerals, including lithium, graphite, and uranium, which remain largely untapped. The mining sector has been a reliable source of foreign exchange, employment, and national revenue, with significant growth potential[57]. Concurrently, the manufacturing industry is prioritized for its unique ability to stimulate growth, generate multiplier effects, and contribute to building a resilient economy.

Despite the sectors' economic importance, inclusivity remains a key challenge. Employment in mining and manufacturing is still largely male-dominated, with women and youth significantly underrepresented in formal roles, especially in high-skill and decision-making positions. Artisanal and small-scale mining (ASM), which supports over 1.5 million Tanzanians, operates mostly informally and often without adequate social protection or regulatory oversight. Meanwhile, local communities near mining and industrial sites frequently face limited participation in planning processes and inadequate benefit-sharing mechanisms. Enhanced inclusion of marginalized groups, particularly through targeted training, procurement opportunities, and equitable investment models, is essential to ensure the sectors contribute to shared national prosperity[58].

Both sectors are expected to attract substantial investments, foster job creation, promote technology transfer, and contribute to sustainable economic development. However, the resource-intensive nature of these industries, which require significant water and energy resources, presents emerging challenges. These sectors are also among the contributor of land degradation and environmental pollution. If not modernized, they could become major sources of greenhouse gas emissions, land degradation and water consumption.

To mitigate these risks, it is essential for these sectors to adopt low-carbon pathways, enhance energy efficiency, and implement effective water resource management and conservation strategies. Additionally, prioritizing the rehabilitation of ecosystems and integrating green technologies will be crucial for achieving long-term sustainability.

Given the interconnectedness of these sectors with others such as water, agriculture, transport, energy, environment, land, and tourism, there is a need to enhance cross-sectoral integration. This will ensure that local communities benefit inclusively and that the growth of

[57] URT (2024) Investor's Guide Tanzania Mining Sector. Ministry of Mining. Dodoma Tanzania

[58] Tanzania Extractive Industries Transparency Initiative (TEITI) (2024). 14th Report For The Fiscal Year 2021/2022

these sectors aligns with the Sustainable Development Goals. Proper coordination is essential to avoid competition for resources and to maximize the positive impacts of these industries on the nation's broader economic and social fabric.

Aspirations:

i. The mining industry in Tanzania operates with green and ethical practices, minimizing environmental impact, restoring ecosystems, and ensuring responsible resource extraction that benefits local communities.
ii. Tanzania industrial sector achieves carbon neutrality through the adoption of innovative technologies, large-scale emission reductions, and nature-based solutions, thereby leading the way for a climate-positive future.
iii. Tanzania's mining and industry sectors embrace a fully circular economy, eliminating waste by maximizing resource efficiency, prioritizing recycling and reuse, and redefining consumption to build a regenerative and sustainable economy.

Relevant International Case Study: Chile's Green Mining and Sustainable Industry Transition

Chile, the world's largest copper producer and a major player in lithium mining, has undertaken a comprehensive green transition in its mining and industrial sectors. As a resource-rich developing country, Chile shares structural similarities with Tanzania, particularly in the extraction of critical minerals vital for the global clean energy transition. Recognizing the environmental toll of conventional mining, Chile launched a national strategy to decarbonize and modernize the sector, anchored in its 'National Green Mining Policy 2050' published in 2022.

The policy sets a clear goal for the mining industry to achieve carbon neutrality by 2040. This ambition is supported by major reforms including: requiring 90% of all mining operations to be powered by renewable energy by 2030; setting mandatory water reuse quotas; and incentivizing electric fleet adoption in mining logistics through tax credits and co-financing models. As of 2023, over 55% of energy used in Chile's mining sector was already sourced from renewables—mainly solar and wind—up from just 14% in 2015 (Chile Ministry of Mining, 2023). In addition, Codelco, the state-owned copper giant, has pioneered clean production practices including electrification of underground mine equipment and deploying real-time emissions monitoring systems.

Chile has also supported industrial decarbonization through a national circular economy roadmap launched in 2020, emphasizing material efficiency, recycling of industrial waste, and industrial symbiosis. Public-private innovation partnerships—such as the Solar Industrial Process Heat initiative—have driven the adoption of low-carbon technologies in manufacturing. The government's collaboration with the United Nations Industrial Development Organization (UNIDO) and the Green Climate Fund (GCF) has further enabled

access to climate finance and technical assistance for emissions reduction in energy-intensive industries.

Relevance to Tanzania

Chile's policy and institutional advancements in green mining and low-carbon manufacturing offer tangible lessons for Tanzania as it positions itself to lead in critical minerals like lithium, graphite, and rare earths. The following pathways are especially pertinent for Tanzania:

- Develop a National Green Mining Strategy aligned with the 2050 LTV and NDC, with clear emissions reduction targets and renewable energy mandates.
- Mandate and incentivize water reuse and closed-loop production in both mining and industrial processing to minimize environmental impact.
- Establish partnerships with international institutions such as UNIDO, GCF, and the AfDB to mobilize finance and technical expertise for industrial decarbonization.
- Support technology transfer through industrial innovation hubs focusing on electric mobility, process electrification, and industrial waste reuse.
- Create regulations and incentives to phase out diesel-powered mine fleets and introduce electric and hybrid alternatives, backed by concessional finance mechanisms.

As Tanzania seeks to build an integrated and sustainable industrial economy, Chile's experience shows that environmental protection and economic growth can be pursued simultaneously with the right institutional frameworks, technological investments, and multi-stakeholder coordination.

3.3.6 Waste

Sectoral Vison:

Goal: By 2050, Tanzania will have a sustainable, inclusive and circular waste management system and mechanism that contributes to reduced sectoral GHG emissions and a safe environment for citizens.

Tanzania is increasingly grappling with significant challenges in managing waste, particularly in urban areas, due to limited waste sorting at the source, improper storage, inadequate collection, inefficient transportation, and insufficient treatment and disposal systems[59]. Inadequate waste management in Tanzania, particularly in urban areas like Dar es Salaam, has significant public health implications. A 2024 study found that in informal settlements such as Tandale, Manzese, and Tandika, 58% of respondents strongly agreed—and an additional 28% agreed—that poor waste collection contributes to increased outbreaks of cholera and typhoid. Furthermore, 51% linked mosquito breeding grounds from unmanaged waste to a rise in malaria and dengue cases, while 48% cited air pollution from burning waste as a cause of respiratory illnesses[60]. The economic burden is equally concerning: projections

[59] URT (2018) The National Solid Waste Management Strategy. Dodoma -Tanzania

[60] Kitole, F.A.; Ojo, T.O.; Emenike, C.U.; Khumalo, N.Z.; Elhindi, K.M.; Kassem, H.S. (2024)The Impact of Poor Waste Management on Public Health Initiatives in Shanty Towns in Tanzania. Sustainability , 16, 10873. https://doi.org/10.3390/ su162410873

estimate that by 2030, the cost of cholera attributable to climate change and poor sanitation could account for 0.32% to 1.4% of Tanzania's GDP due to healthcare costs, productivity loss, and mortality[61]. These impacts underscore the need for urgent investment in improved waste infrastructure, collection systems, and public awareness to mitigate both health and economic risks.

This poor waste management is already contributing to severe health issues, including frequent outbreaks of **cholera, typhoid, and malaria**, particularly in densely populated informal settlements, environmental degradation, and pollution, while also being a significant source of greenhouse gas (GHG) emissions. From 2010 to 2020, emissions from the waste sector in Tanzania increased from 4.78 MTCO2e to 6.38 MTCO2e[62]. Sanitary landfill and waste collection is at only 40% in Dar es Salaam and may limit the national from achieving carbon neutrality by 2050. Gaps in waste collection and disposal systems result in waste accumulating in streets, at collection points, and in drainage systems and rivers, intensifying flooding risks, particularly during heavy rains. The improper handling of waste in urban areas is further aggravated by climate change, which increases the frequency of extreme weather events, putting more pressure on already overwhelmed waste management systems.

The National Solid Waste Management Strategy (2018) recognizes waste as a contributor to GHG emissions in Tanzania, underscoring the urgent need for sustainable waste management solutions. In response to this global challenge, the Strategy advocates for the development and implementation of innovative waste management technologies and initiatives. This includes promoting waste reduction in production, sustainable product design, resource efficiency, and the adoption of nature-based solutions. Additionally, the strategy highlights the importance of reusing products where possible and recovering value from waste materials. Although eliminating waste entirely may not be realistic, the strategy calls for systematic application of modern waste management systems that prioritize sustainability and environmental and human health.

Tanzania's Vison on waste management emphasizes the need to integrate waste-to-energy management approaches, enhance the management of waste disposal sites, and encourage recycling and reuse practices. Identifying and mapping informal dump sites, implementing landfill gas recovery programs, and exploring electricity generation from waste are crucial steps in addressing waste-related challenges. These actions align with the broader goal of reducing GHG emissions and mitigating the impacts of climate change.

One emerging opportunity for Tanzania to address waste management challenges while mitigating climate change is through climate financing, particularly the carbon credit market. By adopting technologies that reduce GHG emissions, such as methane capture from landfills, waste-to-energy systems, and recycling projects, Tanzania can generate carbon credits. These credits can then be sold in international carbon markets to raise additional funding for waste

[61] Armah FA, Quansah R, Luginaah I, Chuenpagdee R, Hambati H, Campbell G (2015) Historical Perspective and Risk of Multiple Neglected Tropical Diseases in Coastal Tanzania: Compositional and Contextual Determinants of Disease Risk. PLoS Negl Trop Dis 9(8): e0003939. https://doi.org/10.1371/journal.pntd.0003939

[62] IMF (2024) United Republic Of Tanzania- Third Review Under the Extended Credit Facility Arrangement, Request For Extension Of The Extended Credit Facility Arrangement nd Rephasing of Access, and Request for An Arrangement Under the Resilience and Sustainability Facility World Bank Assessment Letter For The Resilience And Sustainability Facility

management infrastructure, further enhancing sustainability efforts. This financial mechanism could provide a significant source of revenue to support the implementation of modern waste management solutions, including waste segregation, recycling programs, and clean energy projects.

Furthermore, climate financing through carbon credit mechanisms could encourage private sector involvement and international partnerships, enabling the scaling of innovative waste management technologies and practices across the country. By attracting global investment in sustainable waste management, Tanzania can bolster its efforts to mitigate climate change while addressing local environmental and health challenges. This integrated approach, combining climate financing, waste-to-energy initiatives, and community engagement, will be crucial for transforming Tanzania's waste management sector and contributing to the country's long-term climate resilience.

To strengthen waste management practices, Tanzania must invest significantly in waste collection, segregation, and recycling infrastructure while fostering community involvement and private sector participation in waste management efforts. Public awareness campaigns, technological innovations, and partnerships with local and international organizations will play a pivotal role in transforming waste management practices in the country, contributing to both climate change mitigation and overall urban resilience.

Aspirations:

i. A nation that has transitioned into a low-waste society, where reduction, reuse, and recycling are fully embedded in daily life.
ii. Nationwide waste collection is fully optimized, with waste sorting at the source being a universal practice.
iii. Waste-to-energy solutions are operationalized, including biogas production and incineration with energy recovery, and contribute significantly to Tanzania's renewable energy mix.
iv. Landfill methane emissions have been significantly reduced through stringent regulations and advanced waste management practices.
v. Environmental education is deeply integrated into school curricula, fostering a generation committed to sustainable practices.
vi. Sustainable waste management is backed by strong policy, legal and financial support, with investments from diverse sources fuelling continuous innovation.

Relevant International Case Study: Rwanda's Circular Waste Management Approach

Rwanda has made notable progress in establishing a sustainable and circular waste management system, offering relevant insights for Tanzania. Key initiatives include a national ban on single-use plastics, the promotion of waste sorting and recycling, and the implementation of community-scale waste-to-energy solutions. For example, in Kigali, a biogas feasibility project was launched to convert organic waste into renewable energy, reducing both landfill volume and methane emissions .These initiatives are contributing to measurable GHG reductions: Rwanda's Nationally Determined Contribution (NDC) estimates

that improved waste management could avoid up to **0.37 $MtCO_2e$ annually by 2030**, primarily through methane capture, enhanced composting, and reductions in open burning .

Relevance to Tanzania:

Rwanda's integrated approach demonstrates how clear policy, local engagement, and investment in circular economy practices can significantly reduce GHG emissions while improving urban sustainability. Tanzania can adapt these practices by scaling up source segregation, promoting waste-to-energy innovation, and leveraging climate finance to modernize waste infrastructure—helping realize its 2050 goal of a zero-waste, low-emissions future.

3.3.7 Blue economy

***Sectoral Vision*:**

By 2050, Tanzania has strong, sustainable, and low carbon blue economy sector that contributes to a reduced sectoral GHG emissions while significantly contributing to inclusive water access, tourism growth and socio-economic growth.

Tanzania's Vision 2050 identifies the blue economy as a pivotal driver of sustainable economic growth, emphasizing the untapped potential of the country's oceans, rivers, lakes, and other water bodies. The blue economy has the potential to significantly boost socio-economic development, particularly through marine tourism, sustainable fishing, offshore energy, water resources, and coastal mineral extraction, alongside opportunities in marine carbon trading. These practices are poised to contribute substantially to employment and economic growth, with the fishing value chain and tourism serving as major sources of livelihood for local communities.

According to the World Bank (2020), the blue economy is expected to contribute over $6.4 billion annually to Tanzania's GDP by 2030, representing about 10% of the national GDP[63]. This will be driven by the expansion of sectors such as fisheries, tourism, and energy. With careful management, the blue economy can generate over 500,000 new jobs in the next 10 to 15 years, making it a key sector for employment, particularly in rural and coastal communities.

Water access and sanitation services plays a great role in enhancing human capital development, social inclusion and climate resilience. However, access to water and related services is still challenging to large number of the population[64]. There is growing demand, inadequate infrastructure, limited financial resources, leakages and climate variability. In 2021, access to basic drinking water services was at 74%, household sanitation 72%, and access to handwashing 41.5%. Despite the fact that some progress has been made over the years, much is still needed to close quite a large gap. Poor Water, Sanitation and Hygiene

[63] World Bank Group (2022). Blue Economy in Africa: A Synthesis Operational Brief Blue Economy For Resilient Africa Program. World Bank Group

[64] World Bank (2022) Tanzania Economic Update - Clean Water, Bright Future : The Transformative Impact of Investing in WASH (English). Tanzania economic update; issue no. 18 Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/099141002082366224

services is estimated to cost Tanzania about USD 2.4 billion (Tsh 5.6 trillion) each year[65]. The most affected are women, children, the elderly, persons with disabilities, other members of vulnerable groups, and poor households nationwide. To address the challenges Tanzania needs to implement integrated and climate resilience water resource management including conserving water sources, utilising groundwater, promoting reuse and strengthening relevant institutions.

Moreover, marine and coastal tourism is another cornerstone of Tanzania's blue economy. The tourism sector, particularly eco-tourism and marine tourism, is a vital source of income, supporting nearly 1.5 million people (Tanzania National Bureau of Statistics, 2020). In 2019, Tanzania's tourism sector contributed 17.5% of GDP and accounted for over 14% of total employment (World Travel & Tourism Council, 2020). The country attracts millions of tourists annually, with major destinations including the Serengeti, Ngorongoro Crater, and Zanzibar's beaches. By focusing on sustainable tourism practices, Tanzania can continue to generate significant revenue while ensuring that coastal and rural communities' benefit from tourism-related activities.

While blue economy is set to play a great role in diversifying Tanzania's economy beyond land-based activities, it is important to note that the world is transitioning and needs to be conscious of the technology and financing mechanisms and long-term returns. The sector should be developed in a way that embraces green job creation, a resilient society, sustainable blue carbon sequestration, improved community livelihoods, climate smart and contributes to GHG emission reduction.

Aspirations:

i. Climate-resilient coastal and marine infrastructure, adapted to rising sea levels and extreme weather events, featuring advanced infrastructure, early warning systems, and sustainable livelihoods for coastal communities.
ii. Sustainable fisheries and aquaculture practices, leveraging cutting-edge technology and innovation for effective fish stock management, fish processing, storage and long-term sustainability.
iii. Climate-smart aquaculture practices that align with global environmental goals.
iv. The Blue Carbon Market, which monetizes its extensive coastal ecosystems as significant carbon sinks, contributes to global climate solutions.
v. Marine renewable energy infrastructure, with offshore wind, tidal, and wave energy at the forefront of Tanzania's clean energy transition.
vi. Sustainable tourism that both protects marine biodiversity and promotes eco-friendly tourism practices, ensuring long-term conservation of Tanzania's coastal treasures
vii. Enhanced water use efficiency across all sectors
viii. Improved implementation of integrated water resource management programmes in all water basins supported by nature-based solutions
ix. Achieved universal access to safe and affordable drinking water

[65] ibid

Relevant International Case Study: Seychelles' Blue Economy Initiatives

Seychelles has emerged as a global leader in sustainable blue economy development, offering valuable inspiration for Tanzania's long-term ambitions. In 2018, Seychelles issued the world's first sovereign Blue Bond, raising $15 million to finance marine conservation and sustainable fisheries initiatives. Proceeds supported the implementation of Marine Protected Areas (MPAs), sustainable fishing practices, and the development of a robust Blue Economy Roadmap. The country has since expanded MPAs to cover 30% of its Exclusive Economic Zone (EEZ), introduced climate-resilient aquaculture practices, and fostered community-led marine conservation—demonstrating that economic growth and ocean protection can go hand-in-hand[66].

Relevance to Tanzania:
Seychelles' integrated model highlights how innovative financing, marine spatial planning, and policy coherence can unlock the socio-economic and environmental potential of the blue economy. Tanzania can draw on this experience by:

- Leveraging Blue Bonds or similar financial instruments to fund sustainable fisheries, coastal infrastructure, and marine biodiversity protection;
- Implementing comprehensive marine spatial plans to ensure sustainable resource use and conflict reduction;
- Promoting blue carbon initiatives and climate-smart marine tourism, aligned with national and global climate goals.

Similar interventions can help Tanzania achieve its 2050 aspirations for a low-carbon, inclusive blue economy that safeguards marine ecosystems while fostering livelihoods and economic transformation.

3.3.8 Cross-cutting issues | Means of implementation

3.3.8.1 Gender and youth inclusion

***Sectoral Vision*:**

By 2050, Tanzania will have empowered women and youth leading climate change mitigation and adaptation efforts through education, resources, and leadership opportunities.

Gender equality is essential for achieving sustainable development and enhancing climate resilience. Women, particularly in rural Tanzania, are disproportionately impacted by climate change due to their roles in agriculture, water management, and family care. As climate change worsens, resource scarcity disproportionately affects women, yet they are also vital agents of change. Women in Tanzania are critical drivers of low-carbon development and climate resiliency, yet systemic inequalities continue to limit their full participation.

[66] Le Gouvello, R., Brugere, C. and Simard, F. (2022). Aquaculture and Nature-based Solutions. Identifying synergies citation: between sustainable development of coastal communities, aquaculture, and marine and coastal conservation. Gland, Switzerland: IUCN.

Empowering women through education, access to resources, and leadership opportunities allows them to make significant contributions to climate action. This not only enhances women's participation in decision-making but also integrates gender-sensitive policies into climate adaptation and mitigation strategies.

Despite making up nearly 70% of the agricultural workforce, women in Tanzania face persistent barriers to accessing productive resources such as land, finance, and clean technologies[67]. For instance, only about 33% of women own agricultural land, and even fewer hold secure tenure, restricting their ability to adopt and lead climate-resilient and nature-based solutions such as regenerative agriculture and agroecological practices[68]. These approaches are essential not only for restoring degraded ecosystems and conserving biodiversity but also for achieving national adaptation priorities.

Closing the gender gap in climate finance and access to clean energy technologies is essential to building inclusive, climate-resilient economies. Recent progress in financial inclusion—reducing the gender gap from 10% in 2017 to 4% in 2023—offers promising ground, but more targeted investment is needed in women-led, low-carbon enterprises and ecosystem-based adaptation projects. Tools like green microfinance, gender-smart climate funds, and initiatives such as the Jasiri Gender Bond are beginning to channel resources toward women-led climate solutions[69]. Providing women with equal access to land, financial services, and technology will enable them to participate fully in low-carbon initiatives, enhancing both their economic status and the environmental sustainability of their communities. Supporting women's leadership in climate governance, involvement in green technologies, and biodiversity protection is not only vital for achieving Tanzania's NDC commitments and SDG targets,—it is a cornerstone for a just, inclusive, and can pave the way for economic diversification and climate-resilient future.

Youth represent the future of Tanzania's climate resilience and economic sustainability. With a rapidly growing young population, empowering youth with the skills, education, and resources necessary to engage in green industries is critical. Young people are more adaptable to new technologies and innovative solutions, making them invaluable players in the transition to a low-carbon economy.

By investing in youth entrepreneurship, vocational training in green sectors (such as renewable energy, waste management, and sustainable agriculture), and fostering a culture of environmental stewardship, Tanzania can cultivate a generation of leaders committed to sustainable development. Youth-led climate initiatives, community-based environmental projects, and advocacy for climate-friendly policies can play a transformative role in shaping the country's sustainable future.

[67] FAO. 2023. National gender profile of agriculture and rural livelihoods – United Republic of Tanzania. Dodoma. https://doi.org/10.4060/cc4557en

[68] https://africa.unwomen.org/en/stories/news/2023/02/support-for-land-use-planning-sees-over-2000-women-farmers-in-tanzania-become-land-owners

[69] https://fsdafrica.org/wp-content/uploads/2024/02/FSD-Africa-Jasiri-Gender-Bond-Impact-story-28.02.24.pdf

Aspirations

i. Women and youth lead transformative climate action and sustainability efforts, recognized in national policies and programs.
ii. Successful transition to a low-carbon, green economy, with thriving industries such as renewable energy and sustainable agriculture, providing sustainable livelihoods for women and youth.
iii. Communities that demonstrate resilience to climate change, with women and youth leading local initiatives that enhance food security, improve water availability, and promote disaster preparedness.
iv. Tanzania's legal frameworks are gender-responsive and youth-friendly, ensuring equal access to resources and opportunities for all citizens.

Relevant International Case Study: Ethiopia's Women and Youth in Green Jobs Program

Ethiopia has proactively integrated gender and youth considerations into its climate and economic development strategies through targeted green employment initiatives. One of the flagship programs, the **Livelihoods Improvement for Women and Youth (LIWAY)**, aims to increase incomes for 257,000 individuals—of which 50% are women and 75% are youth—by enhancing access to decent employment and entrepreneurship opportunities in sectors such as recycling, e-commerce, manufacturing, and construction. As of 2023, LIWAY had supported 58 businesses to improve inclusive practices and was on track to create over 49,000 jobs for women and youth in urban areas like Addis Ababa[70] .

Additionally, through the **Green Legacy Initiative**, Ethiopia has developed more than 120,000 plant nurseries nationwide, contributing to the creation of over 767,000 green jobs—many of them filled by women and youth—while supporting afforestation and land restoration goals (United Nations SDG Partnerships, 2023). These initiatives not only address barriers to formal employment by providing tailored training and financial support but also significantly contribute to inclusive green growth and Ethiopia's climate resilience objectives.

Relevance to Tanzania:

Ethiopia's approach offers valuable insights for Tanzania's 2050 vision of empowering women and youth in climate action. Key lessons include:

- **Skill Development:** Implementing training programs focused on green technologies and sustainable practices to equip women and youth with the necessary skills for employment in the green sector.
- **Inclusive Policies:** Developing policies that actively promote the inclusion of women and youth in climate mitigation and adaptation efforts, ensuring their voices are represented in decision-making processes.

[70] https://www.technoserve.org/fight-poverty/projects/livelihoods-improvement-for-women-and-youth-liway/?utm_source=chatgpt.com

- **Economic Empowerment:** Facilitating access to resources such as land, credit, and technology to enable women and youth to engage effectively in climate-resilient livelihoods.

By adopting similar strategies, Tanzania can create a robust framework where women and youth are central to climate action, driving both environmental sustainability and socio-economic growth.

3.3.8.2 Technology transfer and innovation

***Sectoral Vision*:**

By 2050, Tanzania has achieved a climate-resilient, low-carbon economy, powered by climate-smart technologies, and digital innovation, ensuring sustainable development, food security, and global leadership in climate action.

Technology, innovation, and digitalization are indispensable in building resilience and transitioning Tanzania to a low-carbon future. These elements are deeply integrated into daily life and play a crucial role across multiple sectors, including energy, agriculture, markets, education, water management, disaster risk reduction, climate services, transport, financial services, and public health [71]. By enhancing productivity, accessibility, efficiency, and economic growth, technology serves as a powerful catalyst for sustainable development.

If advanced and climate-smart technologies are effectively integrated with local knowledge, Tanzania has the potential to rapidly build a climate-resilient society. Smallholder farmers should be well trained to utilise technology in addressing climate change and easy access to relevant information. However, like many other developing nations, the country faces significant barriers to accessing and deploying cutting-edge, environmentally friendly technologies. Digital potential is also under-realized, and growth in the information and communication technology (ICT) sector has not substantially permeated other economic spheres. High costs and financial constraints remain key obstacles, limiting the widespread adoption of solutions necessary for climate action.

Aspirations

i. Achieve universal access to climate-smart technologies across key sectors.
ii. Strengthen local innovation ecosystems to develop homegrown solutions tailored to the country's climate challenges.
iii. Establish strong financial mechanisms and partnerships to facilitate the adoption of affordable, low-carbon technologies.
iv. Enhance digital infrastructure to support climate data collection, early warning systems, and climate-resilient decision-making.
v. Foster a knowledge-driven society where technology and indigenous practices work hand in hand to build long-term resilience

[71] World Bank Group. 2022. Climate and Development : An Agenda for Action - Emerging Insights from World Bank Group 2021-22 Country Climate and Development Reports. Washington, DC: World Bank. http://hdl.handle.net/10986/38220 License: CC BY-NC-ND.

Relevant International Case Study: Kenya's Climate Innovation Center (KCIC)

Kenya's Climate Innovation Center (KCIC), established in 2012 with support from the World Bank's infoDev and the Danish and UK governments, stands as a pioneering model of how technology transfer and innovation can be institutionalized to support climate resilience and green growth. KCIC supports local entrepreneurs to develop, pilot, and commercialize climate-smart technologies across renewable energy, water management, and agribusiness. By 2023, the center had incubated over 2,400 small and medium enterprises (SMEs), facilitated the creation of over 13,000 jobs, and helped avoid more than 250,000 tons of CO_2 emissions annually (World Bank, 2023).

KCIC provides a comprehensive package of technical assistance, seed funding, market access, and business incubation. It also engages in policy dialogue to create a more conducive environment for clean technology innovation. This integrated approach enables scalable and market-ready climate technologies tailored to local needs, especially among youth and women-led startups. Kenya's policy support for innovation—such as its Vision 2030 and National Climate Change Action Plan—has been instrumental in linking innovation to national development goals.

Relevance to Tanzania

Kenya's experience through KCIC offers critical lessons for Tanzania's aspiration to build a climate-resilient, innovation-driven economy:

- Establish a dedicated national innovation center for climate technologies that nurtures local startups, focusing on water, energy, and agriculture sectors.
- Leverage donor partnerships to provide seed capital and technical mentorship for green SMEs.
- Align innovation policies with Tanzania's 2050 Vision and climate goals, ensuring inter-ministerial coordination and private sector engagement.
- Expand digital infrastructure to support technology access in rural areas and facilitate real-time climate information services.

3.3.8.3 Climate finance

***Sectoral Vision*:**

By 2050, Tanzania has secured robust climate finance through international partnerships, green bonds, and private sector investment to drive renewable energy, climate-smart agriculture, and resilience-building initiatives.

Climate finance is crucial to enhancing adaptation and resilience-building efforts, ensuring the country can mitigate risks and sustain economic growth. The costs associated with climate change impacts in Tanzania are projected to range between 2-5% of GDP per year by 2040 and could rise further due to the increasing frequency and severity of extreme weather events such as droughts, floods, and cyclones. Additionally, the cost of implementing climate actions

in Tanzania between now and 2030 is estimated at USD 19.2 billion which is 22.5% of the current GDP. Decisive decisions and actions have to be taken as failure to implement them could result in even higher costs[72], straining national resources and development efforts.

Despite international climate finance mechanisms, Tanzania struggles with limited access to these funds, while domestic financing sources remain constrained. Strengthening institutional capacity to mobilize financial resources, improving governance structures, and empowering the financial sector are essential for scaling up climate action. Increased private sector engagement, innovative financing solutions, and stronger international partnerships will be critical to closing the climate finance gap.

Tanzania's climate finance strategy must also be underpinned by strong public financial management reforms that embed climate considerations into budgeting and fiscal policy. This includes mainstreaming climate change into national and sub-national planning, implementing green budgeting tools, and tracking climate-related expenditures across sectors. Initiatives such as green public investment programs, climate budget tagging, and environmental fiscal reforms (e.g., eco-taxes, removal of fossil fuel subsidies) can help align public spending with national mitigation and adaptation goals. Countries like Rwanda and Indonesia have shown how climate budget tagging systems can improve transparency, attract external finance, and prioritize climate-resilient development. Tanzania's adoption of similar instruments would enhance its ability to direct public resources toward low-carbon infrastructure, sustainable agriculture, and disaster risk reduction.

Aspirations:

i. Accessed climate finance through international partnerships, green bonds, and private sector investment to support low-carbon sustainable development initiatives.
ii. Strengthened financial sector to facilitate sustainable investments in green industries, infrastructure, and climate adaptation.

Established itself as a regional leader in climate action by actively participating in international climate discussions and mobilizing resources for collective adaptation and mitigation efforts.

Relevant International Case Study: Egypt's Benban Solar Park

Egypt's Benban Solar Park exemplifies how developing nations can effectively mobilize climate finance through international partnerships and private sector investment. Initiated in 2014 as part of Egypt's Sustainable Energy Strategy 2035, the project aimed to generate 20% of the country's electricity from renewable sources by 2022. Located in the Aswan Governorate, the solar park has a total capacity of 1,650 MW, producing approximately 3.8 TWh annually. The project attracted significant international financing, including a $653 million pledge led by the International Finance Corporation (IFC) and contributions from entities such as the African Development Bank and the Asian Infrastructure Investment Bank. Private sector involvement was substantial, with companies like TAQA Arabia and Acciona Energy participating. The (EBRD) and the Green Climate Fund (GCF) also provided financing,

[72] World Bank Group. (2024). Tanzania Country Climate and Development Report. CCDR Series. World Bank Group.

facilitating the development of multiple solar plants within the park. By its completion in 2019, Benban had become one of the largest solar installations globally, significantly contributing to Egypt's renewable energy targets and reducing greenhouse gas emissions. The solar park is estimated to offset around **2 million tonnes of CO_2 annually**, supporting Egypt's nationally determined contributions under the Paris Agreement (EBRD, 2021).

Relevance to Tanzania:

Egypt's experience with the Benban Solar Park offers valuable insights for Tanzania as it seeks to enhance climate finance mechanisms:

- **International Partnerships:** Collaborating with global financial institutions can mobilize the necessary capital for large-scale renewable energy projects.
- **Private Sector Engagement:** Encouraging private investment through favourable policies and incentives can drive the development of sustainable infrastructure.
- **Strategic Planning:** Aligning renewable energy projects with national development strategies ensures coherence and facilitates stakeholder alignment.

By adopting similar approaches, Tanzania can advance its goal of securing robust climate finance to support renewable energy initiatives, climate-smart agriculture, and resilience-building efforts, thereby promoting sustainable economic growth and environmental sustainability.

3.3.8.4 Capacity Building

***Sectoral Vision*:**

By 2050, Tanzania has built the capacity across key sectors to implement effective climate change mitigation strategies, ensuring a skilled workforce and strong institutional frameworks for a low-carbon economy.

Capacity building is central to addressing the urgent need for coordinated and effective actions to combat climate change. As emphasized in Article 9 (d) of the United Nations Framework Convention on Climate Change (UNFCCC), developed nations and international bodies are called to support capacity-building efforts in developing countries like Tanzania. Despite Tanzania's active participation in global climate negotiations, the country still faces significant challenges in developing the necessary capacity including modelling and scenario development to mitigate climate change. These challenges range from a lack of technical expertise and infrastructure to limited financial resources. Strengthening Tanzania's ability to mitigate climate change is therefore crucial for reducing greenhouse gas emissions, preserving natural ecosystems, and achieving sustainable development. Enhanced capacity will empower Tanzania to design and implement effective climate policies and strategies that integrate mitigation goals across various sectors. Most Universities especially University of Dar es Salaam, Sokoine University of Agriculture and others have both Postgraduate, bachelor degree and tailor made courses that could be utilised to fill the knowledge gap. However, limited resources, high demands from the public, low capacities of institutional and markets demands create additional challenges. There is also still a gap in establishing linkages and coordination between learning institutions and market demands. Tanzania's capacity-building

efforts must focus specifically on climate change mitigation and adaptation in key sectors such as energy, blue economy, agriculture, tourism, forestry, and industry. In the energy sector, Tanzania has immense potential to harness renewable energy sources like solar, wind, and hydropower. However, the lack of technical expertise and investment in renewable energy technologies remains a barrier. Furthermore, Tanzania's agriculture sector, which is both vulnerable to climate change and a significant contributor to greenhouse gas emissions, requires capacity building in sustainable farming practices, climate-smart technologies, and low-emission agricultural techniques. Similarly, forestry management needs strengthened capacity to combat deforestation and promote reforestation as part of carbon sequestration efforts. In addition, industries must be equipped with the knowledge and technologies to reduce emissions and transition to cleaner, more energy-efficient processes. These sectoral capacities must be developed through targeted training programs, technology transfer, and improved policy frameworks that foster innovation in climate change mitigation

Aspirations

i. Strengthened capacity to significantly contribute to carbon emissions reduction through widespread adoption of renewable energy (solar, wind, hydropower).
ii. Capable human resource with skills and dedication to build resilience across all sectors of Tanzania's productive sector and society.
iii. Position Tanzania as a regional leader with capacity to mobilise needed climate finance to promote low-carbon development, balancing environmental preservation with socio-economic growth.
iv. Restore degraded ecosystems and strengthen local capacity for climate mitigation across all sectors.
v. Strengthened institutional frameworks that enable effective cross-sectoral coordination, policy implementation, and compliance with national and international climate commitments.
vi. Established transparent and data-driven governance systems to support evidence-based decision-making, climate accountability, and long-term planning across all levels of government.

Relevant International Case Study: Uganda's Institutional Climate Capacity Building

Uganda has taken significant strides in strengthening institutional and human capacity for climate change action through its **Climate Change Department (CCD)** and implementation of the **Uganda Climate Change Policy (2015)**. Supported by USAID, UNDP, and the World Bank, Uganda's approach has become a strong model for integrating climate action into governance.

Between 2016 and 2021, over **2,500 public officials** from national ministries and local governments were trained in greenhouse gas (GHG) inventory systems, climate-smart planning, and risk screening tools. These trainings were paired with the development of a **National GHG Inventory System**, climate vulnerability maps, and emissions baselines to support NDC implementation (UNDP Uganda, 2022).

At the district level, Uganda mainstreamed climate change into **over 100 District Development Plans**, backed by climate focal points and trained local planners. Simultaneously, academic institutions introduced climate-focused curricula and research

programs to create a pipeline of skilled professionals. A high-level inter-ministerial committee ensures cross-sectoral coordination of climate objectives, especially across energy, agriculture, and infrastructure sectors.

Relevance to Tanzania:

Uganda's experience offers Tanzania a replicable model in several areas:

- **Establish a national capacity strategy** linking sectoral climate priorities with institutional training goals.
- **Build a centralized GHG inventory system** for NDC tracking and mitigation modelling.
- **Train public officials at all levels** in emissions accounting, climate finance, and scenario development.
- **Mainstream climate priorities into local planning** with trained district planners and dedicated focal points.
- **Strengthen partnerships with universities** to scale up technical and policy skills aligned with Tanzania's LTV.

By tailoring Uganda's model to local needs, Tanzania can strengthen institutional readiness and build the skilled workforce needed to achieve its low-carbon, climate-resilient development goals.

4 ROADMAP FOR DEVELOPMENT OF TANZANIA'S LONG-TERM STRATEGY (LTS)

4.1 Preamble

Tanzania's LTS is envisaged to play a crucial role in achieving low and finally zero carbon development by 2050 while enhancing climate change adaptation in line with national development objectives. It aims to guide and coordinate a whole-of-economy transition and societal behaviours, ensuring that short and medium-term climate actions are aligned with long-term goals.

This roadmap intends to provide a clear approach that will guide the government and stakeholders in the development of a long-term low-emission development strategy ('LT-LEDS') for Tanzania. It offers guidance in terms of activities, timelines, stakeholders and responsibilities for full development of the LTS. It further sets strategies for operationalisation of LTV in alignment with the country's long-term development frameworks.

4.2 Elements/Structures of the Roadmap

The proposed outline of the roadmap for elaboration of the LTS is presented in Table 2, outlining the priority activities, objectives, proposed timelines, deliverables and responsible parties for six work packages. The packages are: (i) Scoping, team mobilisation and political buy-in (ii) Modelling Scenarios for GHG mitigation targets (iii) Stakeholder Engagement plan(iv) Climate adaptation & resilience targets (v) Policy & Institutional Framework Design (vi) Implications of just transition in terms of Costs-benefit assessment against key socio-economic objectives[55] and (vi) Finalization & Endorsement of the LTS. These elements are further discussed below and subsequently in Table 2 below.

4.3 Description of Elements of the Roadmap

i. **Scoping, resource mobilisation and political buy-in:** This aims to ensure the LT-LEDS process is well supported by both government and political leaders and has a robust technical team to drive it. This an important step as it harnesses necessary mandate, resources and legitimacy to proceed with the process and ensures implementation and long-term sustainability.

ii. **Modelling and quantitative analysis:** This work will involve undertaking scenario modelling and economic assessments, sector-specific analysis, identifying low-carbon pathways for all sectors, and assessing institutional capacity. It also involves assessing adaptation and resilience requirements and procedures, conducting gender analysis, understanding the impacts of the planned transition on the economy and updating national long-term goals.

iii. **Enhanced stakeholder engagement:** the role of full engagement of stakeholders cannot be overemphasised. It prepares the public and private sector to understand and participate actively in the consultation, development and finally implementation of the LTS.

iv. **Climate adaptation & resilience targets supported middle and short-term milestones:** Define long-term low carbon adaptation, biodiversity conservation and nature positive milestones will be developed in line with national strategies and climate risk**.**

v. **Elaborations:** this involves developing the LTS, which encompasses sectoral plans and targets, milestones and identifying financial needs. This part will also cover defining the monitoring, reporting and verification framework. The national workshops will be held to validate the LTS draft document by stakeholders. It will be under this stage that the developed document will be disseminated, and capacity building will be undertaken to enhance LTS implementation.

vi. **Implications for just transition:** Cost-benefit assessment against key socio-economic objectives

vii. **Policy & Institutional Framework Design:** This will seek to align LTS with national and sectoral policy frameworks; ensure institutional coordination for effective implementation

Table 2 below provides a schematic flow chart of the sequences, timeline, responsible parties and key deliverables from each phase/action of the LTS development process.

Table 2 1 The suggested list of priority activities, deliverables, objectives and stakeholders :

Work Package / Priority Action	Objectives	Key Deliverables	Timeline	Potential Stakeholders
1. **Scoping, team formulation and political buy-in**	Form a robust technical committee; Build common understanding and alignment with political priorities and secure political support;	• Capable and robust technical committee • Political endorsement	Months 1-3	VPO-DoE, MoF, Planning Commission NCMC and Focal Ministries, LGAs and CSOs, Cities and private sector
2. **Scenario Modelling & Quantitative Analysis**	Identify low-carbon pathways across sectors; assess GHG mitigation potential and resilience needs; integrate gender, economic and	• GHG baseline and mitigation scenarios • Sector-specific low-carbon pathways • Adaptation and resilience requirement report	Months 2–6	VPO-DoE, FVPO, NCMC Focal Ministries (Energy, Transport (DART/TRC, Agriculture, TFS/MNRT, etc), Waste

	institutional capacity aspects	• Gender analysis report • Updated national long-term climate goals		Management Committee, Consultants, Academia, Development Partners, NBS
3. **Stakeholder Engagement & Communication Plan**	Ensure inclusive, transparent consultation across public, private, civil society, media and development partners	• Stakeholder mapping report • Engagement strategy • Records of multi-stakeholder consultations (regional, national) • Stakeholder feedback reports	Months 2–8 (Ongoing)	VPO-DoE, PMO-RALG, NGOs, CSOs, Private Sector, Academia, Development Partners
4. Adaptation and Resilience Target Setting	Define long-term low carbon adaptation, biodiversity conservation and nature-positive milestones in line with national strategies and climate risks	• Sector-specific adaptation targets • Alignment matrix with National Adaptation Plan (NAP) and biodiversity and nature-positive targets • Integration into the LTS framework	Months 4–8	VPO-DoE, Ministries of Agriculture, Water, Health, LGAs, Development partners, Consultants
5. Policy & Institutional Framework Design	Align LTS with national and sectoral policy frameworks; ensure institutional coordination for implementation	• Institutional and governance assessment report • Policy coherence matrix • Draft institutional framework for LTS implementation	Months 6–10	VPO-DoE, Planning Commission, Ministry of Finance, LGAs, Sector Ministries, Legal Experts
6. Just Transition Assessment	Analyze socio-economic implications of LTS pathways, including cost-benefit, employment,	• Just transition analysis report • Socio-economic impact assessment	Months 6–10	VPO-DoE, MoF, Labor Ministry, Academic Institutions, Private Sector,

	gender equity impacts and other ecological benefits such as biodiversity conservation and nature-positive outcomes	• Policy recommendations for inclusive transition		Gender Experts, Development Partners, CSOs
7. Finalisation & Endorsement of LTS	Validate, disseminate, and secure national ownership and endorsement of the LTS	• Final LTS Document • National validation workshop report • Capacity-building materials • Endorsement statement	Months 10–12	VPO-Doe, Sector Ministries, Media, Development Partners
8. Operationalisation including: policy and regulation adjustments, Finance and Investment Plans, and Socialisation	Assessment and adjust policy and regulations; Assessments of financial needs and sources; Financial/resource mobilization plan.	• **Policy and regulation adjustments;** • **Financial and** investment **plans** • Partnership building; • Capacity building to stakeholders • Develop and implement MRV	Months 10-12	VPO-DoE, Sector Ministries, Media, Development Partners

Table 3 1 Sector, Vision/aspirations and Owners/key stakeholders

Priority sector	Vision/Aspirations	Owners
Energy	**Vision:** Promoting access to clean, modern affordable, reliable, climate resilient and sustainable for everyone **Aspirations:** viii. Achieved a leading share of renewable energy in the national energy mix, powering a sustainable future. ix. Secured a resilient, reliable, and efficient energy system that supports national growth and stability. x. Diversified national energy sources, ensuring robust and adaptive solutions for a rapidly changing world. xi. Fully transitioned to sustainable and green energy systems, minimizing national environmental footprint	Ministry of Energy, VPO, PO-RALG, REA, TANESCO, PO-RALGSD, ZECO, TPDC, EWURA, DPs, CSOs, MWEE
Agriculture	**Vision:** Transform the agricultural sector into more productive, resilient and low carbon supported by modern technologies and climate smart practices **Aspirations:** x. Climate-Smart Agriculture (CSA) and nature-based solutions promote an inclusive, low-carbon, resilient agricultural sector that significantly contributes to sustainable development. xi. Research and innovation drive low-carbon, resilient agricultural practices. xii. Agriculture creates meaningful employment and improves livelihoods, enhancing resilience to climate change and community well-being. xiii. Improve access to climate services, credits and insurance for smallholder farmers to enhance their adaptive capacity and support the transition to climate-resilient practices	Ministry of Agriculture, PO-RALG, VPO, DPs, CSO, PO-RALGSD, MAINRL
Forestry	Vision: Achieve sustainable forest management characterized by effective climate change mitigation, enhanced governance and carbon credits, active community engagement, and the integration of sustainable forest management practices Aspirations:	MNRT, TFS, FBD PO-RALG, MoF, MLF, NCMC DPs, CSO, PO-RALGSD, MAINRL

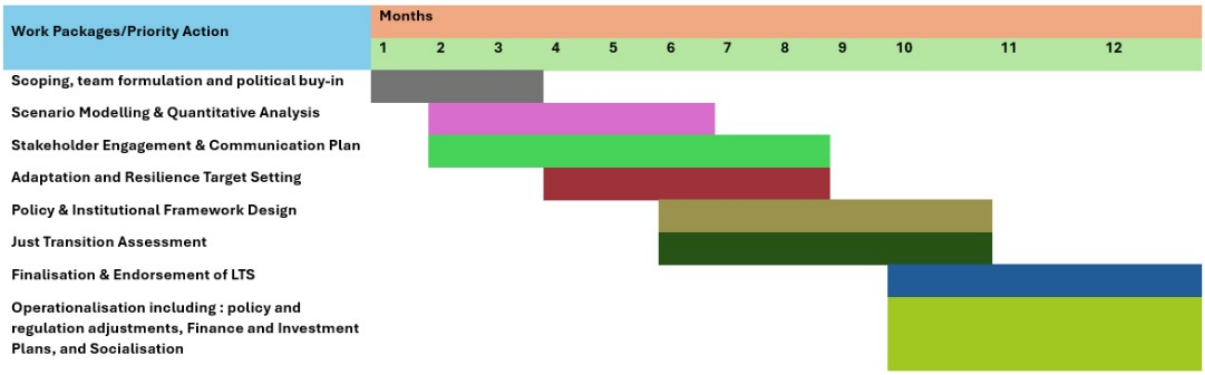
	ix. Tanzania has successfully restored degraded land by expanding forest cover through reforestation, afforestation, and sustainable land management practices. x. Forests are managed sustainably, with reduced illegal logging and strengthened ecosystem protection and nature-based solutions while balancing economic growth with conservation. xi. Tanzania's forests are resilient to climate change, with enhanced biodiversity conservation and ecosystems adapted to droughts, floods, and temperature extremes. xii. Tanzania's forests contribute to global climate efforts through REDD+ and carbon trading, generating revenue that supports conservation and sustainability initiatives.	
Transport and infrastructure	**Vision:** Tanzania has a modernised, sustainable, safe, reliable, affordable, efficient, climate-resilient, and low carbon sector which enhances inclusive socio-economic development that makes Tanzania an East and Central Africa logistic hub **Aspirations:** vii. A transport infrastructure system powered primarily by renewable energy, leveraging advancements in solar, wind, and biofuels to reduce dependency on carbon intensive fossil fuels. viii. A climate-smart and efficient transport infrastructure integrating intelligent traffic management systems, e-mobility, and resilient road networks to withstand climate-related disruptions. ix. A well-developed non-motorized transport network (pedestrian and cycling infrastructure) to promote efficiency, reduce emissions, and improve mobility. x. A sustainable maritime and inland water transport system utilizing smart logistics, green shipping technologies, and resilient port infrastructure to enhance trade and connectivity.	Ministry of Transport, ATCL, TRC, VPO, PO-RALG, DART, LATRA, NCMC, PO-RALGSD, MICT
Industry	**Vision:** A competitive, revolutionized and sustainable industrial sector that support inclusive envelopment **Aspirations:** Tanzania industrial sector achieves carbon neutrality through the adoption of innovative technologies, large-scale emission reductions, and nature-based solutions, thereby leading the way for a climate-positive future.	Ministry of Industries and, VPO, NCMC, SIDO,TIRDO, MTID

Blue economy	**Vision:** By 2050, Tanzania has strong, sustainable, and low carbon blue economy sector that contributes to a reduced sectoral GHG emissions while significantly contributing to inclusive water access and socio-economic growth **Aspirations:** x. Climate-resilient coastal and marine infrastructure, adapted to rising sea levels and extreme weather events, featuring advanced infrastructure, early warning systems, and sustainable livelihoods for coastal communities. xi. Sustainable fisheries and aquaculture practices, leveraging cutting-edge technology and innovation for effective fish stock management, fish processing, storage and long-term sustainability. xii. Climate-smart aquaculture practices that align with global environmental goals. xiii. The Blue Carbon Market, which monetizes its extensive coastal ecosystems as significant carbon sinks, contributes to global climate solutions.	VPO, MoBEF, MLF, NCMC, MoF, DPs, CSOs, PO-RALGSD, MOW, MEM
Mining	**Vision:** Having a sustainable, inclusive and low carbon mining sector that contributes to a resilient society and integrated economic growth. **Aspirations:** iv. The mining industry in Tanzania operates with green and ethical practices, minimizing environmental impact, restoring ecosystems, and ensuring responsible resource extraction that benefits local communities. v. Tanzania industrial sector achieves carbon neutrality through the adoption of innovative technologies, large-scale emission reductions, and nature-based solutions, thereby leading the way for a climate-positive future	Ministry of Minerals, VPO, MoF, NCMC, PO-RALGSD,PO-RALG, MEM
Waste	**Vision:** By 2050, Tanzania will have a sustainable, inclusive and circular waste management system and mechanism that contributes to reduced sectoral GHG emissions and a safe environment for citizens. **Aspirations:** vii. A nation that has transitioned into a low-waste society, where reduction, reuse, and recycling are fully embedded in daily life.	VPO, NEMC, PO-RALG, DCC, PO-RALGSD

	viii. Nationwide waste collection is fully optimized, with waste sorting at the source being a universal practice. ix. Waste-to-energy solutions are operationalized, including biogas production and incineration with energy recovery, and contribute significantly to Tanzania's renewable energy mix. x. Landfill methane emissions have been significantly reduced through stringent regulations and advanced waste management practices.	
Crosscutting themes (Means of Implementation)		
Gender and Youth Inclusion	**Vision:** Tanzania will have empowered women and youth leading climate change mitigation and adaptation efforts through education, resources, and leadership opportunities Aspiration: v. Women and youth lead transformative climate action and sustainability efforts, recognized in national policies and programs. vi. Successful transition to a low-carbon, green economy, with thriving industries such as renewable energy and sustainable agriculture, providing sustainable livelihoods for women and youth.	MCDGWSG, VPO, PO-RALG, DPs, CSOs, NCMC, PO-RALGSD, MSDEGC
Technology transfer	**Vision:** Tanzania has achieved a climate-resilient, low-carbon economy, powered by climate-smart technologies, and digital innovation, ensuring sustainable development, food security, and global leadership in climate action. **Aspirations:** vi. Strengthen local innovation ecosystems to develop homegrown solutions tailored to the country's climate challenges. vii. Establish strong financial mechanisms and partnerships to facilitate the adoption of affordable, low-carbon technologies. viii. Enhance digital infrastructure to support climate data collection, early warning systems, and climate-resilient decision-making.	Ministry of communication and information technology, VPO, COSTECH, TCRA, VPO, DPs,NCMC

Capacity building	**Vision:** Build the capacity across key sectors and stakeholders to implement effective climate change mitigation and adaptation strategies, ensuring a skilled workforce and strong institutional frameworks for a low-carbon economy **Aspirations:** i. Strengthened capacity to significantly contribute to carbon emissions reduction through widespread adoption of renewable energy (solar, wind, hydropower). ii. Position Tanzania as a regional leader with capacity to mobilise needed climate finance to promote low-carbon development, balancing environmental preservation with socio-economic growth. iii. Restore degraded ecosystems and strengthen local capacity for climate mitigation across all sectors. iv. Established transparent and data-driven governance systems to support evidence-based decision-making, climate accountability, and long-term planning across all levels of government.	VPO, MoF,PO-RALG, MoEST, PO-RALG,NCMC, PO-RALGSD, MoEVT
Climate finance	**Vision:** Develop internal capacities to attract and mobilise the climate finance needed to effectively implement climate change mitigation and adaptation programmes **Aspirations:** i. Accessed climate finance through international partnerships, green bonds, and private sector investment to support low-carbon sustainable development initiatives. ii. Strengthened financial sector to facilitate sustainable investments in green industries, infrastructure, and climate adaptation	MoF, VPO, DPs, TIC, PO-LARG, MNRT, MoE, NCMC, PO-RALGSD

Figure 3 1 LT-LEDS Workflow Scheme



4.4 Conclusion

This LTS roadmap has been developed and or customized by considering the Tanzanian climate and governance landscape. The draft roadmap is envisaged to be adjusted, improved to incorporate new data and information generated from current scientific findings, draft Tanzania vision 2050 and stakeholders to ensure long term sustainability, ownership and green economic growth. Of more important is to ensure the document delivers the best LTS document that will be operational and implemented in such a way that is successful.

ANNEXES

Annex 1.1: Key questions to guide development of the LTS

Priority sector	Questions
Energy	1. What is the future role of renewable energy (hydro, solar, wind, geothermal) in Tanzania's energy mix? 2. How can energy access be expanded sustainably, especially in rural areas? 3. What low-carbon technologies are feasible for off-grid and mini-grid systems? 4. What policies are needed to phase out or reduce reliance on biomass and charcoal for cooking? 5. How can the grid be modernized to integrate intermittent renewable sources? **Modelling:** 1. How do different scenarios (e.g., accelerated renewable investments vs. conservative growth) impact electricity grid reliability, energy prices and carbon emissions for 2050? 2. What are the emissions savings and cost-benefit implications of shifting from biomass to clean cooking technologies? Including health and environmental considerations 3. How much off-grid and mini-grid electrification is needed to reach the country's clean and affordable energy mix target by 2030 and maintain it to 2050?
Agriculture	1. How can Tanzania promote climate-smart agriculture practices for smallholder farmers? 2. How can livestock emissions be managed while supporting rural livelihoods? 3. What role does irrigation option and water-efficient agriculture play in long-term climate resilience? 4. How can the agriculture sector balance productivity growth with carbon sequestration in soils and forests? **Modelling:** 1. What is the role of agroforestry and land-use change in carbon sequestration over the long term, by 2050? 2. What are the potential emissions reductions from shifting to sustainable land management and agroforestry? What is the scale of hectare management over time, and what could be priority areas or crops? 3. What is the role of climate-smart agriculture practices for smallholder farmers in the GhG reduction? 4. What are the estimated costs-benefits of the transformation for the agriculture sector, particularly in terms of employment, rural poverty, competitiveness and food security – can this be disaggregated to understand the impact on women 5. What are the possible trade-offs in allocating water to irrigation versus hydropower?
Transport	1. How can urban planning reduce transport emissions and promote public transit? 2. How can Tanzania improve logistics and freight systems to reduce fuel use? **Modelling:** 1. How will investments in public transit, non-motorized transport infrastructure, and rail systems affect overall energy consumption and emissions in urban and rural areas? 2. How do different policy incentives accelerate the uptake of electric mobility, and what are the long-term cost-benefit implications and emission reduction outcomes of such policies? 3. What are the emissions from different transport modes under BAU and low-carbon scenarios? 4. What infrastructure investments are needed for a low-emission transport system? 5. What is the potential for rail and marine transport to substitute for high-emission road freight? 6. What are the impacts of the transport sector roadmap to 2050 in terms of competitiveness, productivity and health?
Industry	1. What are the opportunities for fuel-switching, energy efficiency, and low-carbon industrial processes? 2. What incentives can attract clean tech investments and green manufacturing?

	Modelling: 1. What is the projected growth and emissions profile of key industries (e.g., cement, textiles, food processing) 2. What is the impacts of introducing green manufacturing and circular economy practices on GHG, employment, poverty reduction, GDP, competitiveness, energy demand? 3. What scenarios could facilitate Tanzania to foster green industrialization while maintaining competitiveness? What are the critical variables that might impact achieving this balance?
Blue economy	1. What are the sustainable development opportunities in coastal and marine ecosystems? 2. How can Tanzania balance marine resource extraction (e.g., fisheries, gas) with conservation and emissions reduction? **Modelling:** 1. How do scenarios compare in terms of balancing economic growth from the blue economy with long-term carbon neutrality and ecosystem health? 2. How can marine spatial planning optimize blue carbon, biodiversity, and livelihoods? 3. What role can mangrove restoration and marine protected areas play in carbon sequestration? 4. What climate-smart aquaculture practices could be integrated into the strategy and what role do they pay in GHG reduction and conservation?
Mining	1. How can cleaner technologies and energy efficiency be promoted in mining operations? 2. What role can the mining sector play in supporting green value chains (e.g., critical minerals for renewables)? 3. How can social and environmental safeguards be improved in mining zones **Modelling:** 1. How can mineral value chains (especially for strategic minerals like graphite, cobalt) contribute to the green transition? In terms of GDP, employment, trade balance and GHG 2. What are the co-benefits and GHG impact of cleaner technologies and energy efficiency in mining operations?
Infrastructure	1. How will investments in sustainable urban development (e.g., green buildings, low-carbon transport corridors) affect future emission trends? 2. What polices and regulatory standards could help spread sustainable urban development, and who are the key actors that would need to be engaged in this process? Including mayor, construction firms, etc? **Modelling:** 1. How can urban density and land use planning reduce transport and energy emissions? 2. What role can green infrastructure (e.g., parks, green roofs) play in mitigation and adaptation? 3. What are the priority transformations in this sector to achieve the 2050 objective of Tanzania, in term of GHG contribution, and costs and benefits?
Waste	**Modelling:** 1. What are the current GHG emissions from waste management practices (landfilling, open burning, etc.), and how will improvements (composting, recycling, waste-to-energy) alter these emissions by 2050? 2. What would be the economic, health, and environmental impact of the implementation of a full circular economy framework in primary and secondary cities? 3. What are the cost and emissions impacts of waste-to-energy versus circular economy solutions

Climate finance	1. How can different finance mechanisms (e.g., green bonds, carbon markets, concessional finance) be structured to support implementation of the LTS in Tanzania 2. What financing mechanisms would be most effective in supporting the delivery of each sectoral roadmap under the LTS? 3. What proportion of public, private and international finance would be necessary to deliver the set long-term vision for Tanzania? 4. How can public-private partnerships be leveraged to increase investment in sustainable technologies towards achieving low carbon development in Tanzania? 5. How can Tanzania ensure development partner's financing channels are explored and tapped for development and implementation of LTV/LTS in Tanzania? 6. How can climate risk be incorporated into long-term national budgeting and planning? 7. What social protection measures can help households buffer shocks and develop resilient livelihoods? 8. How can fiscal policy transition to a green fiscal policy that supports Tanzania's 2050 objectives? **Modelling:** 1. What are the total estimated financial cost-benefits of the delivery of the LTS? 2. What are the estimated investments needs and saving over time (annually or every 5 years to 2050) per sector / measures of roadmaps? 3. What are the estimated roles of public funding and business and households spending in the delivery of the defined roadmaps? 4. What fiscal and incentive policies provide the best cost-benefit outcomes for decarbonization? 5. What would be the impacts of proposed low-carbon policies on GDP, employment, trade balance, debt sustainability, and social equity while accounting for climate risks?
Capacity building	1. What capacity-building and data systems are required for MRV and tracking implementation of the LS? 2. How can human resources be strengthened and utilised to deliver the targets and sectoral roadmaps in the LTS? Including considerations across public agencies. 3. Which urgent skills are needed to achieve low carbon development vision? What is the role of the national education agencies, institutions and policies? **Modelling:** 4. What are the critical data gaps that need to be addressed to improve the accuracy of modelling projections for each sector 5. How can Tanzania's existing climate and economic monitoring systems be enhanced to feed into iterative and adaptive modelling processes? Should this capacity be built within ministries/public agencies? Or centralized somewhere?

Annex 1.2 Questions for Zonal Visioning Workshops

1. Overarching Vision Statements

1.1. What are your thoughts on the proposed long-term vision for the United Republic of Tanzania?

1.1.1. Is it understandable and Realistic?

1.1.2. Can it be more ambitious? If so, what else should be added or removed? e.g. innovation, inclusive, cost-effective?

2. Sectoral Aspirations for 2050

2.1. Given your sector knowledge, do you think the proposed 2050 vision is feasible?

2.1.1. What opportunities (i.e. mitigation options) do you see for achieving low-emission development pathways?

2.1.2. Are there specific actions you think should be prioritized to achieve this?

2.1.3. What are the current barriers (e.g. technology, technical know-how, financing, etc) and what actions should be taken to address the barriers?

3. Policy and Regulatory Framework (Country Commitments)

3.1. Is there any regional/localized instrument that would support the implementation of the LTV/LT-LEDS? Give details

4. Financing and Technical Support

4.1. What financial and technical support do you believe would be most effective in supporting the implementation of LTV and LT LEDS in:

4.1.1. Your sector?

4.1.2. Your zone?

4.2. Is there an opportunity for the private sector to contribute to the implementation of LTV and LTS? Explain

4.3. Is there a role for local communities to contribute to the implementation of LTV and LTS? explain

5. Complementary Initiatives

5.1. Are there existing or planned initiatives at your sectoral or Zonal level with complementary outcomes in terms of emission reduction? Please explain and specify

6. Others

6.1. Any other considerations that you think will promote the success of the LTV and LT LEDS?

Annex 2: List of stakeholder groups Consulted during the LTV development process

Stakeholders	Level of influence/relevance	Engagement phase	Engagement approach	Engagement tool	Remarks
VPO &FVP	○ Overall guidance ○ Convener of all meetings, ○ Signoff of all main deliverables	• Kick off meeting • Pre-launch meeting • Launch workshop • Visioning workshop • Validation workshop • Socialization workshop	Regular Consultation	• In person, Phone calls, Emails, Memos	Review of the following outputs •Send invites to all meetings and workshops • Chair consultation meeting/workshop Background report •Draft LTV and LTS roadmap structure •List to stakeholders to be engaged • Review final draft of LTS roadmap and Sign it off
MoF, MoFPC POPC	○ Fiduciary Management and Planning for LTS ○ Planning for Vision 2050 and other development plan	• Kick off meeting • Launch workshop • In-depth consultation • Visioning Workshop • Validation workshop • Socialization	Strategic consultation of government arrangements for climate finance Engagement and alignment with national Vision 2050 initiative	• In person • Phone calls, Emails	Review and inputs on the following outputs: • Draft LTV and LTS roadmap structure • Final draft of LTS roadmap Ensure alignment with the national vision 2050
2050 PP Secretariat	○ Technical guidance ○ Convening DPs roundtable events ○ Technical Clearance of all deliverable	• Kick off meeting • Pre-launch meeting • Launch workshop • Visioning workshop • Validation workshop • Socialization workshop	Frequent consultation	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	Review and clearance of deliverables before submission to the government • Gannt Chart • Inception report • Stakeholder engagement plan • Contents for kick off and project launch events (presentations etc.) • Reports of the kick off and project launch events • Background report • Draft LTV and LTS roadmap structure • List of consulted stakeholders • Notes from consultation • Draft LTV and LTS roadmap • Other deliverables
Cross Sectoral Ministries					
Ministry of Community Development, Gender &Children (MCDGC in mainland and Zanzibar), PORALG, ORTMSMIM)	○ Mandated for gender equality and special groups	• Launch workshop • In-depth consultation • Visioning Workshop • Validation workshop	In-depth consultation	• Face to face • Phone calls • Power point presentation	• Will ensure the LTS is gender sensitive

	○ In charge of regional administration and local government authorities			• Checklist/questionnaire	• PO RALG will facilitate consultation during visioning and in-depth consultation with cities and LGAs
Line Ministries					
Transport, energy, Natural resources and Tourism, Lands, Industries, Agriculture, MLWEE	○ Responsible for policy alignment in Sectors with largest amount of GhG emissions ○ *(Policy alignment, policy alignment, coordination)*	• Launching, • Visioning • In-depth consultation • Validation • Socialization		• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• Most of these are among key sectors targeted by NDC for emission reduction under the mitigation component. So will be engaged accordingly.
Key Agencies (NCMC, NEMC,REA, TPDC, TANESCO, ZECO, ZEMA, TRA, CTI, TMA,TBS, COSTECH, TIRDO)	○ Specialist mandates for supporting implementation of LTS	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop • Socialization workshop	In-depth consultation	• Face to face • Phone calls • Emails • Checklist/questionnaire	• These agencies have specific expertise and tools relevant for low carbon technologies including GHG inventories, activity data, products and building standards including for energy efficiency
Primary cities					
Dar es Salaam, Mwanza, Arusha, Dodoma, Unguja	○ Highest level of emission due to high energy demands, transport, waste, construction and high-rise buildings. Similarly have greatest for emission reduction	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop • Socialization workshop	In-depth consultation	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• Key implementors of the LTS through their development/business plans • Dar City Council (DCC) has a relevant Climate Action Plan. Has also conducted GhG inventory and identified LEDS in various sectors including energy, waste and Building. So DCC to share experience with other primary cities
Academic and Research Institutions (IRA, CC,SUA, UDOM,IRDP,SUZA,IMS,Nelson Mandela, ESRF, REPOA)	○ LT-LEDS excellences and knowledge hubs. Repository of data, expertise and networks for LT-LEDS. ○ Researchers, Trainers and mentors for Climate Change NRM	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop	In-depth consultation	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• Will be involved closely throughout the project life

	and Sustainable Development				
Development partners					
UN agencies (UNDP, UNEFP, FAO, UNIDO, UNOPS)	○ Potential donors, ○ Capacity building & Technical support	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop	Roundtable discussions	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• 2050 PP to organize roundtable consultation • CAN TZ consortium to provide inputs and take minutes of meeting
Multilateral DPs (WB,AfDB, EU)	○ Potential donors, ○ Capacity building & Technical support	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop	Roundtable discussions	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• 2050 PP to organize roundtable consultation • CAN TZ consortium to provide inputs and take minutes of meeting
Bilateral (UK, GIZ,USAID, Norway,Sweden, Finland)	○ Potential donors, ○ Capacity building & Technical support	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop	Roundtable discussions	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• 2050 PP to organize roundtable consultation • CAN TZ consortium to provide inputs and take minutes of meeting
Private sector					
TPSF	○ Investment in green and low carbon technologies	• Launch Workshop • Visioning workshop • In-depth consultation	In-depth consultation (Interview)	• Face to face • Power point presentation • Checklist	
Commercial institutions (CRDB, NMB,Standard Chattered)	○ Financing for clean and low carbon technologies ○ Green investment	• Launch Workshop • Visioning workshop • In-depth consultation	In-depth consultation (Interview/FGD)	• Face to face • Phone call • Virtual	• CRDB is a GCF accredited financial institution and therefore relevant for financing LTS technologies
Telecoms (Vodacom, Tigo, Airtel, Halotel, Zantel)	○ Financing for clean and low carbon technologies and festivals ○ Telecommunications/ disseminations	• Launch Workshop • Visioning workshop • In-depth consultation	In-depth consultation (Interview/FGD) Upload of draft LTS roadmap	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• Will play important role in supporting communication- phone calls and virtual • Also financing LTS technologies

Media					
TVs (ITV, TBC)	○ Information sharing and public sensitization about LT-LEDS during launch and socialization	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop		• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• Will play important role in educating the public about LTS during project launch, validation and socialization
New Paper (Daily news, Guardian, Mwananchi)	○ sensitization about LT-LEDS during launch and socialization	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop		• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• Will play important role in educating the public about LTS during project launch, validation and socialization
Civil Society Organizations					
WWF, IUCN, LHRC, ForumCC, CARE, ZACCA, CFP, TGNP, CODECOZ, ANGOZA, ZNCCIA, TNC	○ Local-community level training &sensitization, as well as financing for local level interventions and action for LT-LEDS	• Launching workshop • Visioning workshop • In-depth consultation • Validation workshop • Socialization workshop	In-depth consultation (Interviews)	• Face to face • Phone calls • Power point presentation • Checklist/questionnaire	• Some NGOs are already actively engaged in the LEDS through engagement in NDC and REDD+ discussions

Annex 3: List of all individual Stakeholders Consulted

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Annex 4: In-depth Summary of stakeholder engagement and consultations

Stakeholder Consultations: To foster a collaborative and constructive approach to the LTV/LTS formulation process, the consultant team organized an engaging series of multi-stakeholder workshops at both national and zonal levels (both mainland and Zanzibar separately), as detailed below. Table 1 presents a list of all stakeholder engagement events that organized for the LTV/LTS development process. It includes events already conducted and the remaining ones.

S/ N	Dates	Location	Events	Stakeholder groups
1.	Aug 26th 2024	Dodoma	Inception	Sector Ministries, MDAs, Universities, Financial Institutions (Banks), Research Institutions, Media, CSOs, Development Partners (DPs), and the Faith-based Organizations (FBOs)
2.	Aug 28th 2024	Unguja	Inception	Same as above
3.	Feb 19th -20th	Dodoma		Sector Ministries, Departments and Agencies (MDAs)
4.	Feb 26th -27th	Zanzibar		MDAs, LGAs + Private Sector, CSOs, Academic and Research
5.	March 12th -13th	Mbeya		Experts from Southern highland zone covering Mbeya, Songwe, Ruvuma, Njombe, Iringa, covering LGAs officials, private sector, CSOs, financial institutions, research and academia
6.	March 12th-13th	Mwanza		Experts covering Lake Zone, including Mwanza, Kagera, Kigoma, Simiyu, Geita, Mara, Shinyanga, Tabora, covering LGA officials, private sector, CSOs, financial institutions, research and academia
7.	March 18th -19th	Arusha		Experts covering Lake Zone, including Kilimanjaro, Arusha, Tanga, and Manyara, covering LGA officials, private sector, CSOs, financial institutions, research and academia
8.	May	Virtual	DPEG	Development Partner Second Round Table
9.	May 2025	Dodoma	High-Level Sectoral Stakeholders Workshop	Strategic sectoral ministries, Agencies and authorities
10.	May 2025	Dodoma	Validation workshop	Sector Ministries, MDAs, Universities, Financial Institutions (Banks), Research Institutions, Media, CSOs, Development Partners (DPs), and the Faith-based Organizations (FBOs)

11.	June	Dodoma	Socialisation Workshop	Same as above
12.	June	Unguja	Socialisation Visioning Workshop	Same as above

Annex 5. Zonal Consultation and Proceedings

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
1.	Industry and Energy	**1. Sectoral Vision Statement for 2050**						
		What are your thoughts on the proposed long-term vision for the URT?	Is it realistic?	Yes, it is both ambitious and realistic because it aligns with Tanzania's national development objectives	Yes, it captures key elements which reflect the overall goals of the vision	NIL	Yes, it outlines a realistic pathway toward achieving a low-carbon, climate-resilient economy by 2050.	Yes
			Can it be more ambitious?		*"By 2050, Tanzania will have an inclusive, reliable, affordable, and efficient energy system powered by a significant share of renewable and sustainable sources. This energy system will promote clean cooking solutions, driven by innovation and advanced technologies and adapted to withstand climate change impacts. It will support a low-carbon trajectory, build a resilient society, and foster sustainable socio-economic growth."*	NIL	Yes, however, there is room for increased ambition by incorporating cutting-edge innovations such as AI-driven climate solutions, blockchain-based carbon trading, and green industrialisation initiatives.	Yes
			What else should be added or removed? e.g. innovation, inclusive, cost-effective?	• Capacity building, fostering technological innovation • Strengthening inclusive and participatory stakeholder engagement • Strengthen and promote Public-Private Partnerships • Strengthen and promote a just	The vision needs to emphasize the necessity of energy resilience rather than only resilience for society	NIL	Yes, as stated above	NIL

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
				transition to clean, affordable, Renewable and efficient energy systems				
		2. Sectoral Aspirations for 2050						
		What should the LT-LEDS Goal be for your sector by 2050?		• Commitment to ensuring reliable, affordable, sustainable, inclusive and clean energy for all (National Energy Compact, 2050). • Sustainable, inclusive and low-carbon mining industry contributing to the resilience of a society and integrated economic growth.	"By 2050, Tanzania aims to achieve a carbon-neutral energy sector, with a substantial reduction in greenhouse gas emissions through the widespread adoption of renewable energy sources, enhanced energy efficiency measures, and the transition to clean cooking technologies.	NIL	NIL	NIL
		How would we achieve this goal? /What opportunities do you see for your institution and/or sector in promoting/achieving low-emission development pathways in the United Republic of Tanzania?		Energy: clean energy initiatives, e.g. adoption of clean energy technologies (e.g. JNHPP), solar power projects.	• Scaling up Renewable Energy Infrastructure: • Enhancing Energy Efficiency: • Promoting Clean Cooking Solutions: • Transportation Electrification and Low-Carbon Mobility: • Strengthening Policy and Institutional Capacity:	NIL	Key opportunities for achieving low-emission development pathways include expanding renewable energy sources like solar, wind, hydropower, and geothermal; promoting climate-smart agriculture (CSA) and regenerative farming; strengthening reforestation efforts under REDD+; transitioning to electric mobility and green logistics; and implementing circular economy principles in industrial production	• Transitioning to renewable energy. • Improving energy efficiency. • Promoting sustainable transport and industrial practices.
		Are there specific actions you think should be prioritised within your sector to achieve low-emission development in the United Republic		**Priority:** Renewable energy	• Accelerate the deployment of renewable energy:	NIL	Tanzania should prioritize policy enforcement, climate finance mobilization, digital transformation in energy and	• Government support. • Availability and accessibility of renewable energy

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
		of Tanzania? What are the current barriers (e.g. technology, technical know-how, financing etc) and what actions should be taken to address the barriers?		**Barrier:** Finance and technological resources **Action:** Strengthen and diversify resource mobilization efforts and sources	• Support decentralized energy solutions (mini-grids and off-grid Systems): • Promote clean cooking technologies: • Enhance energy efficiency across sectors: • Integrate energy storage and smart grid technologies		agriculture, and large-scale capacity building for green skills development.	
		3. Gaps and Challenges in the Sector						
		What are the key trends you see affecting GHG emissions in your sector?		NIL	NIL	NIL	NIL	NIL
			How do you see them affecting the sector in the United Republic of Tanzania?	NIL	NIL	NIL	NIL	NIL
			How do you think the sector can more broadly and strategically mitigate against climate change?	NIL	NIL	NIL	NIL	NIL
		What do you perceive as the main barriers/gaps to implementing a low-emission development strategy in your sector? (e.g. government support, mitigation targets?)		NIL	• Financing Constraints • Regulatory and Policy Barriers • Public Awareness and Engagement	NIL	• High costs of technology deployment, • Inadequate skills in renewable energy and sustainable farming • Limited access to climate finance. Enhanced Science,	• High cost • Limited access to technology
		How can these barriers/challenges be addressed or mitigated? How can these barriers/challenges be addressed or mitigated?		NIL	NIL	NIL	NIL	• The education system should be improved, meaning that education on the importance of low emissions should be taught. • Financial support from the government

S/N	Sector	Issue	Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
		What are the key challenges the sector faces by 2050?	NIL	NIL	NIL	NIL	NIL
		4. Policy and Regulatory Framework (Country Commitments)					

		Is there any legislative or other official government instrument that would support the development process for LTV/LT-LEDS of the United Republic of Tanzania? Please give details.	Relevant Policies and Regulations are available	NIL	NIL	• National Climate Change Strategy (2021-2026), • National Environmental Policy (2021), • Energy Policy (2015), • Tanzania Forest Policy (1998), • REDD+ Strategy (2013). • East African Community (EAC) Climate Change Policy, • Southern African Development Community (SADC) Climate Change Framework • African Union Agenda 2063.	• TBS-Prepare the standard regarding low emission levels. • NEMC-Set rules, laws and regulations regarding low emission levels. • OSHA-Workplace inspection

S/N	Sector	Issue	Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
		What policy changes do you think are necessary to facilitate a low-emission development strategy in URT?	• Energy Policy, 2015, requires changes to promote more clean energy initiatives (Clean cooking) • Provide subsidies in renewable and clean energy (affordable energy) • The Mineral Policy is to be Reviewed	NIL	NIL	NIL	NIL
		How could national processes better support provincial commitments under the framework of a long-term vision and strategy and vice versa?	It supports initiated projects, programs, financial and technical	NIL	NIL	NIL	NIL
		5. Financing and Investment (Financial institutions)					
		What financing mechanisms do you believe would be most effective in supporting low-emission initiatives in the United Republic of Tanzania through your sector?	NIL	NIL	NIL	• The government should establish a climate levy and expand its climate finance portfolio by leveraging the Green Climate Fund (GCF), the Adaptation Fund, and World Bank climate initiatives. • Strengthening public-private partnerships (PPPs) will attract private sector investment into renewable energy and climate adaptation projects. • Technical support should focus on scaling research and development (R&D) in climate technologies, • Developing sustainable agriculture value chains • Establishing knowledge-sharing platforms to enhance climate action across sectors.	Dedicated budget and proper utilization
		How can public-private partnerships be leveraged to increase investment in sustainable technologies towards	NIL	NIL	NIL	NIL	Implementation of environmental, social and governance (ESG) goals are

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
		achieving low emissions in the United Republic of Tanzania through your sector and other sectors? Please be specific.						sources of water, renewable energy and recycling.
		6. Opportunities for Collaboration						
		What strategic approaches should be used to promote stakeholder collaboration to enhance the effectiveness of the development of LT-LEDS in the United Republic of Tanzania?		• Harmonize policies to avoid conflict • Provide clarity on roles and responsibilities among stakeholders	NIL	NIL	• Investment in renewable energy projects, • Sustainable agriculture, • Green construction and conservation finance mechanisms like carbon credit markets. • Promote ecotourism models and circular economy practices that align with climate adaptation and biodiversity protection	• Use of concrete poles to TANESCO infrastructure. • Use of bio-gas/electric boiler instead of coal and HFO. • Use of gas/electricity for cooking instead of Charcoal and firewood
		Are there existing partnerships or networks that could support and facilitate this initiative?		Yes, there are existing partnerships and facilitate, and National and international organizations support this initiative (Eg: CAN, AfDB, EU, UNDP, GEF, WWF, etc.)	Yes, amongst others are the regional partnership, development partners, the private sector and NGOs are supporting and facilitating this initiative, but financial resources and technology are limited.	NIL	•	•
	Blue Economy and Fisheries	**1. Sectoral Vision Statement for 2050**						
		What are your thoughts on the proposed long-term vision for the URT?	Is it realistic?	Yes, as the vision statement supports and aligns with relevant policies	Yes	NIL	NIL	NIL
			Can it be more ambitious?	It is ambitious, but not more ambitious because it conforms with the current sectorial Policies and the current Draft of	Yes	NIL	NIL	NIL

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
				Tanzania Development Vision 2050.				
		What else should be added or removed? e.g. innovation, inclusive, cost-effective?		The vision needs to emphasize the necessity of developing a more robust early warning system as a fundamental requirement.	In the blue economy sector, ocean governance should also be added into the long-term vision is it carries a significant role in ensuring marine conservation plans.	NIL	NIL	NIL
		2. Sectoral Aspirations for 2050						
		What should the LT-LEDS Goal be for your sector by 2050?		Agreed with the developed vision statement	The long-term goal should be to achieve a sustainable, thriving blue economy that contributes significantly to Zanzibar's economic growth, social development, and environmental sustainability while minimizing greenhouse gas emissions.	NIL	NIL	NIL
		How would we achieve this goal? /What opportunities do you see for your institution and/or sector in promoting/achieving low-emission development pathways in the United Republic of Tanzania?		• Inclusive and regulated carbon trade in both coastal and terrestrial ecosystems • Enhanced clean technologies in the harvesting and processing of fisheries and forest products • Strengthened ecotourism in both	• Sustainable fisheries management, • Equipped offshore renewable energy sources like wind and wave power, • Healthier and sustainable coastal ecosystem, • Strengthened eco-tourism, and	NIL	NIL	NIL

S/N	Sector	Issue	Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
			terrestrial and coastal ecosystems.	• Utilizing energy-efficient technologies in maritime transport, • Existing marine spatial planning and • Robust monitoring systems to ensure responsible resource use.			
		Are there specific actions you think should be prioritised within your sector to achieve low-emission development in the United Republic of Tanzania? What are the current barriers (e.g. technology, technical know-how, financing etc) and what actions should be taken to address the barriers?	• Education and awareness campaigns to stakeholders • Enforce laws and regulations • Cost and benefit sharing with the surrounding communities	• Increase in the government's budget in the blue economy sector • Emphasize the increase in activities that enhance carbon emission reduction • Transitioning into advanced technologies enhances the low-emission development strategies in the blue economy sector. e.g. reducing the use of fossil fuel vessels on marine transportation • Enhancing awareness on the importance of	NIL	NIL	NIL

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
					low emission development (LT – LED) up to the national level.			
		3. Gaps and Challenges in the Sector						
		What are the key barriers/trends you see affecting GHG emissions in your sector?	Barriers/trends	• Inadequate financial resources • Knowledge, attitudes and Practices linked with taboos and customs • Inadequate technology • Dependency on fossil fuel for motorized fishing boats • Dependency of forestry resources as a source of energy for both domestic and fish processing and preservation	• Weak law enforcement • Inadequate awareness • Increase in Maritain transport • Increase in coastal tourism activities	NIL	NIL	NIL
			How do you see them affecting the sector in the United Republic of Tanzania?	NIL		NIL	NIL	NIL
			How do you think the sector can more broadly and strategically mitigate against climate change?	NIL	• Strengthening and initiation of seagrass and mangrove restoration program • Afforestation in marine and coastal areas		NIL	NIL

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
					• Promoting renewable energy • Implementation of marine conservation strategies • Encourage building high-class tourist hotels (e.g. 5*, 6*, etc)			
		What do you perceive as the main barriers/gaps to implementing a low-emission development strategy in your sector? (e.g. government support, mitigation targets?)		NIL	• Traditional practices • Insufficient Funds • Insufficient Coordination and Management • Technology insufficiency • Financial constraint	NIL	NIL	NIL
		How can these barriers/challenges be addressed or mitigated?		NIL	• Strengthening the policy and regulatory framework • Zanzibar's climate change strategy • Invest in climate-resilient infrastructure and technology	NIL	NIL	NIL
		What are the key challenges the sector faces by 2050?		NIL	NIL	NIL	NIL	NIL
		4. Policy and Regulatory Framework (Country Commitments)						
		Is there any legislative or other official government instrument that would support the development process for LTV/LT-LEDS of the		• Fisheries Sector Master Plan (2021/22 -2036/37)	• Zanzibar Blue Economy Policy - 2022	NIL	NIL	NIL

S/N	Sector	Issue	Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
		United Republic of Tanzania? Please give details.	• National Environmental Master Plan for Strategic Interventions (2022 – 2023) • National Forest Implementation Strategy (2021 – 2031) • National Clean Cooking Energy (2024 – 2034) • National Forestry Research Master Plan • National Strategy on Gender and Climate Change (2013) • National Ecological Organic Agriculture Strategy (2023 – 2030).	• Zanzibar Blue Economy Implementation Strategy 2022 • Gender mainstreaming strategy in the blue economy • Strategic plan of the blue economy and fisheries 2022 • Fisheries Policy 2022 • Implementation plan of the fisheries policy 2022 • Fisheries master plan - 2022 • Oil and Gas Exploration Act No. 6 of 2016 • Zanzibar National Plan of Action (ANPA) - 2023			
		What policy changes do you think are necessary to facilitate a low-emission development strategy in the URT	• Sectors' policies and framework should be developed with an eye on climate change and a low-emission focus • To prepare sectoral guidelines on the blue economy and update current guidelines on harvesting resources, e.g. forest resources	NIL	NIL	NIL	NIL

S/N	Sector	Issue	Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
		How could national processes better support provincial commitments under the framework of a long-term vision and strategy, and vice versa?	• The national process should involve all stakeholders in understanding the LTV and LTS. • Each sector should set commitments to low emissions. • Financial support should be shared among the stakeholders, with incentives for the sector's innovations in low-emission plans and practices.	NIL	NIL	NIL	NIL
		5. Financing and Investment (Financial institutions)					
		What financing mechanisms do you believe would be most effective in supporting low-emission initiatives in the United Republic of Tanzania through your sector?	NIL	**Blended Finance** • This approach combines public, philanthropic and private capital to mobilise larger sums of investments. **Blue bonds/ blue loans** • These are debt instruments specifically focusing on the projects that benefit the ocean's health.	NIL	NIL	NIL
		How can public-private partnerships be leveraged to increase investment in sustainable technologies towards achieving low emissions in the United Republic of Tanzania through	NIL	PPPs can leverage the expertise and resources of both the public and private sectors. They	NIL	NIL	NIL

S/N	Sector	Issue	Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
		your sector and other sectors? Please be specific.		can be used to finance projects such as sustainable port development and waste management system projects.			
		6. Opportunities for Collaboration					
		What strategic approaches should be used to promote stakeholder collaboration to enhance the effectiveness of the development of LT-LEDS in the United Republic of Tanzania?	• Undertake thorough stakeholder mapping and engagement plans • Foster greater engagement and consultative processes • Develop and employ friendly, unique and specific stakeholder engagement approaches • Strengthen transboundary coordination in the management of shared aquatic ecosystems. • Ensure gender equality and inclusion during the development process.	Multi-stakeholder engagement and institutional framework • Government coordination • Private sector involvement • Effective community participation • International partnership • Enhancing communication and awareness	NIL	NIL	NIL
		Are there existing partnerships or networks that could support and facilitate this initiative?	YES, amongst others are the regional partnership, development partners, the private sector and NGOs are	Yes • The presence of international organizations dealing with the reduction of	NIL	NIL	NIL

S/N	Sector	Issue		Dodoma	Zanzibar	Mbeya	Arusha	Mwanza
				supporting and facilitating this initiative, but financial resources and technology is limited.	GHG. e.g. UNDP • Presence of carbon credit projects businesses facilitating low carbon emission and mitigation			

Annex 6 Zonal Consultation Sectors and Stakeholders

Sector	Stakeholder groups	Type of engagement
Energy	TANESCO, Tanzania Petroleum Development Corporation (TPDC), Ministry of Minerals	Sectoral Ministries
	N/A	Southern Highland Zone (Mbeya)
	Industries, TANESCO	Northern Zone (Arusha)
	Industries, TANESCO, TBL	Lake Zone (Mwanza)
	Zanzibar Water Authority (ZAWA), Zanzibar Electricity Company (ZECO), Zanzibar Petroleum Regulatory Authority (ZPRA), Ministry of Water, Energy and Minerals	Zanzibar
Transport and Infrastructure	President's Office-Regional Authorities and Local Government (PO-RALG, Ministry of Transport, Planning Commission, Tanzania Meteorological Authority (TMA), Vice President's Office.	Sectoral Ministries
	TAZARA, TANROADS, and TARURA.	Southern Highland Zone (Mbeya)
	Transport, TANROADS, PORTS, TARURA, NHC	Northern Zone (Arusha)
	Transport, TANROADS, TMA, PORTS, TARURA, NHC	Lake Zone (Mwanza)
	Ministry of Information, Communication, and Technology (MOICT)	Zanzibar
Fisheries/Blue Economy	Ministry of Livestock and Fisheries (MLF), Ministry of Natural Resources and Tourism (MNRT), Vice President's Office (VPO-Doe)	Sectoral Ministries
	N/A	Southern Highland Zone (Mbeya)
	TOURISM	Northern Zone (Arusha)
	TAFIRI, TOURISM,	Lake Zone (Mwanza)
	Blue economy and Forestry, Department of Environment (DoE),	Zanzibar
Agriculture and Livestock	Ministry of Land, Ministry of Agriculture and Ministry of Livestock and Fisheries)	Sectoral Ministries
	TARI, the Ministry of Land, Housing, and Human Settlement Development, and Agriculture, Fisheries, and Livestock Divisions from LGAS.	Southern Highland Zone (Mbeya)

	Livestock, Farmers, and Forestry	Northern Zone (Arusha)
	Livestock, Farmers, Forestry	Lake Zone (Mwanza)
	Agriculture, Mining, TMA, livestock, Forestry and land, State University of Zanzibar (SUZA)	Zanzibar
Lands and Mining	N/A	Sectoral Ministries
	N/A	Southern Highland Zone (Mbeya)
	National Land Use Planning Commission.	Northern Zone (Arusha)
	National Land Use Planning Commission.	Lake Zone (Mwanza)
	Ministry of Water, Energy and Minerals (MoWEM), Department of Environment (DoE), Zanzibar Environment Management Authority (ZEMA)	Zanzibar
Waste Management	City council of Dodoma (CCD), National Environment Management Council (NEMC), and Ministry of Land (MoL)	Sectoral Ministries
	Mbeya University and Science Technology (MUST), LGAs (Environmental Management Officers), Town Planner	Southern Highland Zone (Mbeya)
	Cities and CSOs	Northern Zone (Arusha)
	Cities & CSOs	Lake Zone (Mwanza)
	Department of Environment (DoE), Stone Town Authority, City Planning, Zanzibar Environment Management Authority (ZEMA)	Zanzibar
Cross-cutting	Institute of Rural Development Planning (IRDP), Dodoma, The University of Dodoma, Ministry of Education, Science and Technology, National Bureau of Statistics, Prime Minister's Office (PMO).	Sectoral Ministries
	PORALG, TBS, and Regional Secretariat (Ruvuma)	Southern Highland Zone (Mbeya)
	Finance, planning and community development	Northern Zone (Arusha)
	Finance, planning and community development, CRDB	Lake Zone (Mwanza)
	MOCDGEC Ministry of Community Development Gender elders and Children (MOCDGEC), Gender and	Zanzibar

	community development (LGA), Zanzibar Climate Change Alliance (ZACCA),	
Finance and Planning	N/A	Sectoral Ministries
	CRDB, NMB, TMA, Coca-Cola.	Southern Highland Zone (Mbeya)
	N/A	Northern Zone (Arusha)
	N/A	Lake Zone (Mwanza)
	Finance and the Ministry of Trade, Industry and Development (MTID), Zanzibar Investment Promotion Authority (ZIPA)	Zanzibar