Part I: Project Information

GEF ID
10418

Project Type
FSP

Type of Trust Fund
MTF

CBIT/NGI
CBIT **No**
NGI **No**

Project Title
Building resilience through sustainable land management and climate change adaptation in Dodoma

Countries
Tanzania

Agency(ies)
AfDB

Other Executing Partner(s)
Tanzania National Roads Agency (TANROADS); City Council of Dodoma;

Executing Partner Type
Government

GEF Focal Area
Multi Focal Area

Sector

Taxonomy
Focal Areas, Land Degradation, Sustainable Land Management, Restoration and Rehabilitation of Degraded Lands, Sustainable Livelihoods, Improved Soil and Water Management Techniques, Income Generating

Activities, Sustainable Agriculture, Land Cover and Land cover change, Land Degradation Neutrality, Aquifer, Freshwater, International Waters, Climate Change, Climate Change Adaptation, Least Developed Countries, Climate resilience, Private sector, Livelihoods, Innovation, Complementarity, Climate information, Mainstreaming adaptation, Influencing models, Strengthen institutional capacity and decision-making, Demonstrate innovative approache, Stakeholders, Local Communities, Participation, Type of Engagement, Consultation, Beneficiaries, Awareness Raising, Communications, Gender Equality, Gender Mainstreaming, Gender results areas, Knowledge Generation and Exchange, Capacity, Knowledge and Research, Capacity Development, Training, Knowledge Generation, Learning, Adaptive management

Rio Markers

Climate Change Mitigation

No Contribution 0

Climate Change Adaptation

Principal Objective 2

Biodiversity

No Contribution 0

Land Degradation

Principal Objective 2

Submission Date

10/11/2019

Expected Implementation Start

4/10/2023

Expected Completion Date

4/11/2027

Duration

48In Months

Agency Fee($)

486,124.00

A. FOCAL/NON-FOCAL AREA ELEMENTS

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount($)	Co-Fin Amount($)
LD-1-4		GET	1,358,100.00	32,885,674.00
CCA-1		LDCF	2,416,676.00	42,218,000.00
CCA-2		LDCF	1,342,324.00	62,896,326.00
		Total Project Cost($)	**5,117,100.00**	**138,000,000.00**

B. Project description summary

Project Objective

To demonstrate an integrated approach for reducing pressures on the city?s critical infrastructure, environmental and urban assets and increasing the city?s climate resilience through integrated urban development planning for climate change adaptation and sustainable land management

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
1. Policy and institutional framework for sustainable urban and regional development	Technical Assistance	1. Climate change resilience is integrated into policies, regulations and urban planning and land development	1.1. Climate Risk and vulnerability mapping for Dodoma City and recommendations for re-zoning, where necessary 1.2 Supporting the implementation of the 2018 City of Dodoma master plan by developing individual sector plans. 1.3 Institutional Capacity developed to adequately address climate vulnerabilities in communities of the DMA	LDCF	593,324.00	49,940,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
2. Reversing and managing the negative impacts of growth of the urban footprint on land	Technical Assistance	2. Sustainable land management and reversing land degradation through citylevel and community based actions	2.1 Sustainable land development and management plans 2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship. 2.3 Rehabilitation of brownfields and degraded land under sustainable land management practices	GET	1,293,429.00	31,095,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
3. Urban Resilience to Climate change	Investment	3. Sustainable urban planning and land management to improve urban resilience to climatic change and variability	3.1 Updating building standards and codes to mitigate effects of climate related risks with enforcement of these standards 3.2 Flood risk and sustainable water, groundwater and drainage management 3.3 Early warning system for extreme climatic, weather and other natural disasters 3.4 Demonstrate nature-based solutions for improved urban resilience and alternative livelihood creation through community based enterprises	LDCF	2,416,676.00	42,218,000.00

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing($)	Confirmed Co-Financing($)
4. Knowledge Management, Monitoring and evaluation (M&E)	Technical Assistance	4.1. Effectiveness of the outputs assessed, experience documented, and knowledge management	4.1 Strengthening linkages with universities, other research institutions, other cities and relevant platforms to support sustainability and scale-up research on best practices for resilient urban development. 4.2 Data collection and M&E	LDCF	570,000.00	8,000,000.00
			Sub Total ($)		**4,873,429.00**	**131,253,000.00**

Project Management Cost (PMC)

LDCF	179,000.00	4,956,326.00
GET	64,671.00	1,790,674.00
Sub Total($)	**243,671.00**	**6,747,000.00**
Total Project Cost($)	**5,117,100.00**	**138,000,000.00**

Please provide justification

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount($)
GEF Agency	AfDB	Loans	Investment mobilized	138,000,000.00
			Total Co-Financing($)	**138,000,000.00**

Describe how any "Investment Mobilized" was identified

The "Investment Mobilized" was identified from an AfDB-funded project titled "Tanzania: Dodoma City Outer Ring Road Construction Project" which will co-finance the GEF project.

D. Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
AfDB	GET	Tanzania	Land Degradation	LD STAR Allocation	1,358,100	129,020	1,487,120.00
AfDB	LDCF	Tanzania	Climate Change	NA	3,759,000	357,104	4,116,104.00
			Total Grant Resources($)		**5,117,100.00**	**486,124.00**	**5,603,224.00**

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

F. Project Preparation Grant (PPG)

PPG Required **true**

PPG Amount ($)

150,000

PPG Agency Fee ($)

14,250

Agency	Trust Fund	Country	Focal Area	Programming of Funds	Amount($)	Fee($)	Total($)
AfDB	GET	Tanzania	Land Degradation	LD STAR Allocation	50,000	4,750	**54,750.00**
AfDB	LDCF	Tanzania	Climate Change	NA	100,000	9,500	**109,500.00**
				Total Project Costs($)	**150,000.00**	**14,250.00**	**164,250.00**

Core Indicators

Indicator 3 Area of land and ecosystems under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
0.00	0.00	0.00	0.00

Indicator 3.1 Area of degraded agricultural lands under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.2 Area of forest and forest land under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.3 Area of natural grass and woodland under restoration

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 3.4 Area of wetlands (including estuaries, mangroves) under restoration

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
75000.00	75000.00	0.00	0.00

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
75,000.00	75,000.00		

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	0	612,000		
Male	0	612,000		
Total	0	1224000	0	0

Provide additional explanation on targets, other methodologies used, and other focal area specifics (i.e., Aichi targets in BD) including justification where core indicator targets are not provided

The project core indicator 4 relates to 75000 hectares of area of landscapes under improved practices. Annex J includes a preliminary identification of degraded lands in Dodoma Urban District, including areas that have lost soil organic carbon (SOC) stock, areas that have been deforested and areas that have shifted land cover. In Dodoma Urban District more than 4000 ha of forest have been lost between 2001 and 2020 (on average 210 ha per year). Part of those areas represent an opportunity for the project to allocate efforts and increase forest cover and sustainable practices. This is related to the following Aichi targets: ? Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity ? Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services

Meta Information - LDCF

LDCF true
SCCF-B (Window B) on technology transfer false
SCCF-A (Window-A) on climate Change adaptation false

Is this project LDCF SCCF challenge program?
false

This Project involves at least one small island developing State(SIDS). false

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This Project involves at least one fragile and conflict affected state. false

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This Project will provide direct adaptation benefits to the private sector. false

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This Project is explicitly related to the formulation and/or implementation of national adaptation plans (NAPs). true

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This Project has an urban focus. true

This Project covers the following sector(s)[the total should be 100%]:*

Agriculture	**0.00%**
Natural resources management	**30.00%**

Climate information services	**10.00%**
Coastal zone management	**0.00%**
Water resources management	**40.00%**
Disaster risk management	**0.00%**
Other infrastructure	**20.00%**
Health	**0.00%**
Other (Please specify:)	**0.00%**
Total	**100%**

This Project targets the following Climate change Exacerbated/introduced challenges:*

Sea level rise false

Change in mean temperature false

Increased climatic variability true

Natural hazards true

Land degradation true

Coastal and/or Coral reef degradation false

Groundwater quality/quantity true

Core Indicators - LDCF

CORE INDICATOR 1

Total

Male

Female

% for Women

Total number of direct beneficiaries

1,224,000

612,000

612,000

50.00%

CORE INDICATOR 2

Area of land managed for climate resilience (ha)

75,000.00

CORE INDICATOR 3

Total no. of policies/plans that will mainstream climate resilience

9

CORE INDICATOR 4

Male

Female
% for Women
Total number of people trained
600
300
300
50.00%

To calculate the core indicators, please refer to Results Guidance

OBJECTIVE 1

Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaption

OUTCOME 1.1

Technologies and innovative solutions piloted or deployed to reduce climate-related risks and / or enhance resilience

View

OUTCOME 1.2

Innovative financial instruments and investment models enabled or introduced to enhance climate resilience

View

OBJECTIVE 2

Mainstream climate change adaption and resilience for systemic impact

OUTCOME 2.1

Strengthened cross-sectoral mechanisms to mainstream climate adaption and resilience

View

OUTCOME 2.2

Adaptation considerations mainstreamed into investments

View

OUTCOME 2.3

Institutional and human capacities strengthened to identify and implement adaptation measures

View

OBJECTIVE 3

Foster enabling conditions for effective and integrated climate change adaption

OUTCOME 3.1

Climate-resilient planning enabled by stronger climate information decision-support services, and other relevant analysis, as a support to NAP process and/or for enabling activities in response to COP guidance

View

OUTCOME 3.2

Increased ability of country to access and/or manage climate finance or other relevant, largescale, pragmatic investment, as a support to NAP process and/or for enabling activities in response to COP guidance

View

OUTCOME 3.3

Institutional and human capacities strengthened to identify and implement adaptation measures as a support to NAP process and/or for enabling activities in response to COP guidance

View

Part II. Project Justification

1a. Project Description

1. The PIF correctly identifies that climate change increases the risk of both drought and flooding, which combined with the rapid urban expansion increases the risk and level of land degradation in and around DMA In addition, the ever-increasing rural population, combined with climate change is resulting in agricultural lands being further degraded, while demand for fuelwood and charcoal results in the unstainable cutting of woodlands, which leave vulnerable soils at risk of erosion and further land degradation.

In urban areas, unplanned and uncontrolled settlement results in some of the best land for agriculture and forestry being urbanized, but with inadequate infrastructure. This leads to increased runoff, which exacerbates the problem of flooding and combined with inadequate sanitation increases the risk of groundwater contamination and the risk of disease,inadequate housing provides unsuitable living conditions, and inadequate utilities and services produce unsatisfactory living conditions. The project correctly identifies the need for better planning, but does not mention that planning and building conditions need to be supported by adequate development control, or enforcement of the rules. In addition, the project makes little mention of the role that clear land rights play in allowing cities to reach their potential and the need to develop tradable industries[1][1].

In rural areas, over population and inappropriate farming methods result in soils being over-worked[2][2]. Combined with climate change and increased risk of drought this leads to low levels of production, reduced soil condition, and increased soil erosion which result in land degradation[3][3]. Over grazing further exacerbates this problem. Cutting of trees for fuelwood and charcoal also adds to land degradation and increases runoff, which increases the risk of flooding, but also resulting in less infiltration and recharge of the aquifer.

2. The baseline scenario is to take an integrated approach to the problem associated with land degradation and climate change in and around Dodoma. This is linked to the baseline project, which is the development of a 110.2 km ring road, which will allow traffic on the north-south and east-west main roads to bypass Dodoma City centre. In addition, the ring road, will allow easier access between areas of Dodoma.

3. The proposed alternative scenario (i.e., the GEF Project) remains substantially the same as in the PIF with the outcomes and components (activities) shown in the Logical Framework.

1) the global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description)

While East Africa is considered a late ?urbanizer?, it is today the fastest urbanizing region on the continent, with an average urban population growth rate of 4.5% to 5.7% per annum[4]; higher than the average growth rate for Africa of 4%. This urban growth rate would add 70.1 million new inhabitants to East Africa?s cities and towns between 2018 and 2030. Most of the growth in East Africa is taking place in secondary or tertiary cities such as Dodoma which currently have up to 500,000 inhabitants. These cities will host nearly half of all East Africa?s urban residents (47%) by 2030.
Tanzania has one of the highest urban population growth rates in the region, with cities such as Dar es Salaam growing at a rate of more than 5% per year.

Depending on the scenario, temperature in Tanzania is projected to rise by between 1.4 and 3.6 ?C by 2080. The PIF correctly identifies that climate change increases the risk of both drought and flooding, which combined with the rapid urban expansion increases the risk and level of land degradation in and around DMA.

Historic emissions for Tanzania are low, but like other countries in the region, Tanzania has a vision for rapid industrialization, which will lead to signi?cant increases in emissions[5][4].

Climate change is likely to cause severe damage to the infrastructure sector in Tanzania. In urban areas, unplanned and uncontrolled settlement results in some of the best land for agriculture and forestry being urbanized, but with inadequate infrastructure. This leads to increased runoff, which exacerbates the problem of flooding and combined with inadequate sanitation increases the risk of groundwater contamination and the risk of disease,inadequate housing provides unsuitable living conditions, and inadequate utilities and services produce unsatisfactory living conditions.

Other infrastructure problems include water and sanitation, solid waste management, energy, and healthcare services, which have not been able to keep up with rapid urbanization and population growth.

Last but not least, transport infrastructure is vulnerable to extreme weather events, yet essential for trading agricultural goods.

In the DMA urban periphery, climate change related hazards especially rainfall variability causes great damage to rainfall dependent livelihood activities. This is of particular importance to local communities

in Dodoma region whom their livelihood security, food security, household income, and capacity to access various social services are highly determined by the performance of farming and livestock keeping activities. From these findings, it is evident that interventions to deal with climate change impacts on livelihood activities should involve strategies that reduces or addresses rainfall variability challenges and also find alternative activities.

In addition, the ever-increasing rural population, combined with climate change and inappropriate famring-methods is resulting in agricultural lands being degraded. 75 % of Tanzania?s population is employed in agriculture and heavily relies on the sector for food security and livelihoods. However, Tanzania has one of the lowest levels of agricultural production in sub-Saharan Africa and the majority of agricultural produce comes from smallholder farms and is cultivated on rainfed land. Currently, only 1.5 % of the national crop land suitable for irrigation (29.4 million ha) is irrigated. Since crops are predominantly rainfed, they depend on water availability from precipitation and are prone to drought. However, the length and intensity of the rainy season is becoming increasingly unpredictable and the use of irrigation remains limited. It is expected that per capita water availability will decline by 2080 mostly due to population growth. Model projections indicate that water saving measures are expected to become particularly important after 2030 in western Tanzania. Precipitation trends are highly uncertain and project little change to an annual precipitation decrease of up to 42 mm by 2080. Future dry and wet periods are likely to become more extreme. Hence, especially smallholder farmers suffer from the impacts of climate variability, which can reduce food supply and increase the risk of hunger and poverty. Cutting of trees for fuelwood and charcoal also adds to land degradation and increases runoff, which increases the risk of flooding, but also resulting in less infiltration and recharge of the aquifer.

Further environmental issues include human-induced impacts like deforestation with a high demand for fuelwood and charcoal, land degradation and overgrazing, highlighting the need for adaptation measures to protect Tanzania?s biodiversity and maintain fragile ecosystems and their services. Limited adaptive capacity in the agricultural sector underlines the country?s vulnerability to climate change.

It is of critical importance that all countries adopt circular development pathways, which systematically phase out high-carbon pathways and unlocks opportunities for sustainable and climate resilient development.

The global environmental problems to be addressed through this project concern the systemic degradation of land and water resources in the semi-arid Dodoma region, caused by rapid and unsustainable urban development pathways, as well as, to strengthen the city?s preparedness to increasing climate variability and extreme weather events, such as drought and flooding, thereby protecting some of the city?s critical infrastructure, environment, and urban assets.

Target 15.3 of the Sustainable Development Goals (SDGs) sets out a new global ambition: to achieve a Land Degradation Neutral (LDN) World by the year 2030. LDN aims to maintain and increase the amount of healthy and productive land resources, in line with national development priorities. Tanzania

is not exempt from the effects of land degradation. It is estimated that 61 percent of the country is in danger of turning into desert due to ongoing degradation (NAPCD, 2000; URT, 2014). The magnitude, rates and negative impact on people?s livelihoods and environment vary across regions and agro-ecological zones. The impacts of land degradation are numerous including reduced productivity, food insecurity associated with destruction of important ecosystems and loss of biodiversity and soil fertility. In this regard, the Government has taken a number of initiatives to address land degradation impacts[6][5]; these include putting in place policies, plans, programmes and its corresponding legislations. Furthermore, projects and programmes that aim to promote Sustainable Land Management (SLM) have been implemented in various areas of the country, including Katavi, Dodoma, Singida, Morogoro, Lindi, Kilimanjaro, Rukwa and Tabora Regions. Some of these projects are ongoing and other transformative projects to be implemented will address LDN in Tanzania by the year 2030. In addition to climate change other factors affecting land degradation are over population and poverty. In the 1980?s Corker[7][6] identified that large parts of Tabora Region were overpopulated, based on the then current farming systems. Mongi (2012)[8][7] has identified that a major cause of land degradation in Tanzania is poverty, with encroachment on marginal lands producing a vicious circle of land degradation Figure 1.

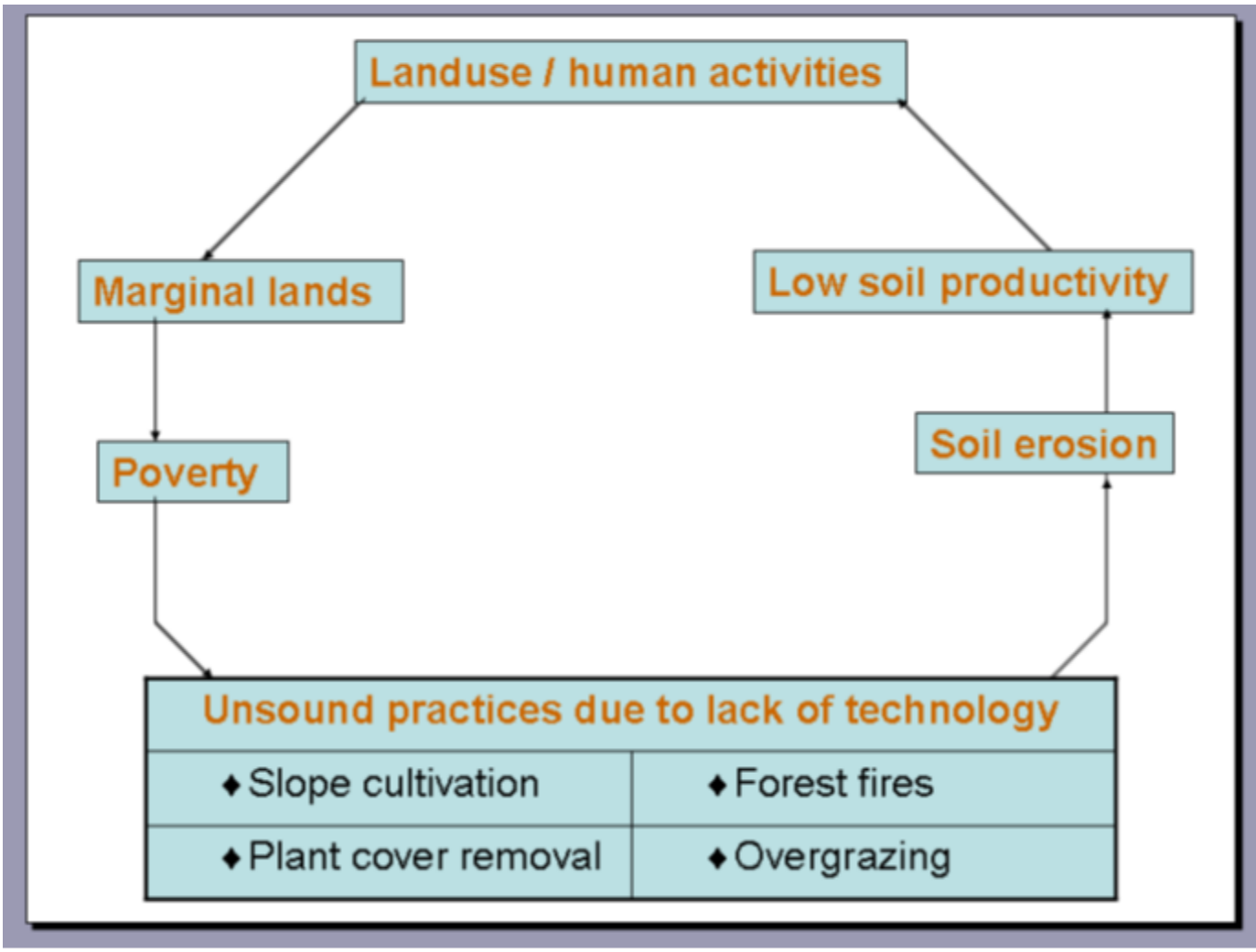

Figure 1. Land Degradation on Marginal Lands in Tanzania[9][8].

Adaptation challenges

The major adaptation challenges are partly related to potential impacts from unpredictable future rainfall patterns. High intensity rains, combined with unsuitable land management leads to excessive runoff, which creates floods, but also limits the recharge of the aquifer, which is Dodoma?s main source of water. It is reported that climate change is expected to double the risk of such extreme precipitation patterns with the next century.

An additional contributing factor is related to the demand for water from urban dwellers. The approximately 570,000[10][9] urban dwellers entirely rely on the Makutapora well as the only source of water for the city of Dodoma and from which around 62 million litres of water is pumped out of the ground every day. A study which looked at the recharge mechanism sustaining this well-field over the past 60 years has shown that the re-provisioning of water happens episodically and is highly dependent on heavy seasonal rainfall provoked by the El Ni?o Southern Oscillation. Given the fact that the region of Dodoma is semi-arid with an annual rainfall that barely reaches 500 millimetres per year, it is highly critical for urban planners to take into consideration the increasing demand for water in the years to come. Scholars who have examined this issue have noted the demand for water has risen from 25 million litres in the 1970s to the 31 million in the 1980s and to the current 65 million litres per day of water consumption. Since the executive order by Ex-President John Pombe Magufuli to effectively relocate all government ministries, institutions from Dar Es Salam to Dodoma along with the emergence of new hotels and the University of Dodoma, the city has attracted (and continues to attract) small businesses, petty shops, and merchants. It has become increasingly critical to ensure that the right infrastructure is in place to accommodate the urban residents of tomorrow. Therefore, the uncertainty of future rainfall patterns and river flows, urban population growth and the rapid urbanization process are expected to drastically impact the domestic water supply sector and, by extension, the Makutapora well-field. Alternative sources of water therefore need to be explored and developed.

In addition to significant climate risks derived from the lack of rainfall, there are also very tangible adaptation challenges related to urban flooding in Dodoma. Even at an average rainfall of about 560 mm per year, the nature of the terrain (low-lying and flat) easily increases the risk of flash flooding in and around the city of Dodoma, during short, but high intensity storms. These violent storms and floods have been reported to destroy agricultural crops, property and severely damage buildings, built within flood risk areas. The last disaster, which affected most of central and southern Tanzania, including Dodoma, affected over18,000 people lead to more than 13 people losing their lives, destroyed 1,746 houses, and collapsed 1,075 latrines[11][10].

Root causes and systemic drivers of land degradation and linkages with climate change adaptation

Dodoma Region (including the capital city of Dodoma) exhibits clear symptoms of land degradation due to a number of biophysical and socioeconomic factors. These drivers significantly affect the social-environmental connections behind the provision of adequate ecosystem services to support communities? livelihoods and, by extension, the country?s economy. Systemic drivers thus cause changes that may end up negatively and/or positively pressure the balance by the environment and

society. A number of such direct and indirect drivers (Table 1) were identified as part of the Land Degradation Neutrality Target Setting Programme exercise which took place in 2018.

Table 1. Direct and indirect drivers of land degradation.[12][11]

Direct drivers of land degradation	Indirect drivers of land degradation
Improper management of the soil	Population pressure
Improper management of annual, perennial, scrub and tree crops	Migration
Deforestation and removal of natural vegetation	Land tenure
Over-exploitation of vegetation for domestic use	Poverty/wealth
Overgrazing and shifting cultivation	Labour availability
Industrial activities, waste deposition	Inputs (including access to credit/financing) and infrastructure
Uncontrolled Small scale mining	Education and training
Urbanization and infrastructure development	Access to knowledge and support services
Disturbance of the water cycle	Land use conflict (crop producer and livestock keepers)
Over-abstraction of water	Governance, institutional settings and policies (including taxes, subsidies, incentives)
Natural causes (flood, earthquakes, landslides)	Poor technology
Uncontrolled fires	Lack of commitment
Continuous mono-cropping	Inadequate awareness and lack of appropriate information

Relevant drivers identified for the Dodoma region according to the above table include direct drivers such as mismanagement of the soil, activities that remove natural vegetation (including deforestation), continuous mono-cropping, urbanization, and infrastructure development as well as the disturbance of the water cycle due to climate change related risks (floods, droughts, etc.). Indirect drivers are related to demographic growth, rural exodus of households to cities (including the capital city of Dodoma),

institutional challenges and the lack of adequate information and awareness for decision-making. The combination of these factors has led to a significant decline in the productivity of the land, high soil erosion and alarming signs of desertification exemplified by the increasing cover of bare lands in and around Dodoma city and the region.

The city of Dodoma is located in a mostly arid to semi-arid area that is characterized by a dry season which extends from late April to early December and a single wet season from late December to early April. With this savannah type of climate, rainfall is the single most determining meteorological factor which, according to fluctuations, can severely impact people and their livelihoods. Average rainfall patterns range from 550 to 600 millimetres per year whereas the temperature range from 7.8 degrees Celsius in July to a maximum of 36.7 degrees Celsius in December[13][12]. The El Ni?o-Southern Oscillation (also known as the ENSO phenomenon), which corresponds to the series of ocean-atmospheric interactions taking place along the tropical zone of the Pacific Ocean.

Rainfall patterns notably affect the availability and accessibility of waters resources which have been reported to be highly critical to Tanzania?s economy. Moreover, river basins, which contribute to the replenishment of underground aquifers and groundwater resources, provide drinking water for major urban centres in Tanzania, including for Dodoma where there is intense industrial activity. In the region of Dodoma, groundwater is mostly used to meet the requirements of urban households whereas water run-off is left for the adequate growing of grasslands and forests which are critical for the adequate delivery of ecosystem services including fuelwood, timber, climate regulation and water purification. In the specific case of Dodoma, the city is located right between the Rufiji and Wami-Ruvu basins from which water is piped and carried to Dodoma, Morogoro, Coast region and Dar es Salam. High intencity storms result in runoff, which causes flooding, but also means that soil moisture is not increased thus affecting crops and grassland productivity.

Given its location in a semi-arid agro-ecological zone, Dodoma region (including the capital city of Dodoma) is marginal for most annual crops, including maize. Soil degradation results in soil erosion, reduced soil fertility and loss of soil structure. The three are related and are caused, at least in part by: over-cultivation, over-grazing, failing to maintain soil fertility, inappropriate crop selection, lack of soil conservation, and climate risks. Major overarching factors are overpopulation (both humans and livestock) and poverty. Soil degradation can be reduced by maintaining good ground cover, soil fertility, soil structure, and limiting soil erosion. Typically, this will mean using crop rotations, planting crops suitable for the soil and climate, use of fertilizer or soil conditions, and soil conservation works. One way of estimating potential soil degradation is to use the Universal Soil Loss Equation (USLE)[14][13], A=RKLSCP. The rate of soil formation is around 0.1 mm per year, or 1 cubic metre of soil per ha per year, around 2.5 tons/ha /yr. If soil loss is greater than this, then the soil, by definition is

being degraded. But Sunday et al[15][14] suggest that rates of soil loss, in excess of 50 tons/ha/yr. are not uncommon.

The USLE is an empirically based equation, derived from a large mass of field data, especially erosion plots and rainfall simulator experiments, and computes sheet and rill erosion as follows: A=RKLSCP where A is computed soil loss, R is the rainfall-runoff erosivity factor, K is a soil erodibility factor, L is the slope length factor, S is the slope steepness factor, C is a cover management factor, and P is a supporting practices factor.

The R-factor is calculated as a product of the kinetic energy of a rainfall times its maximum 30-minute intensity of fall. As durations and intensities of rainstorms vary considerably from year to year, it is essential to consider a sufficiently long time period to obtain a representative R-value.

The K-factor represents the ease with which a soil can be eroded and is influenced by the soil texture, organic matter content, soil structural strength and permeability. K-values therefore need to be determined for individual soil types and can be estimated for known soils using the USDA erodibility nomograph

The L and S factors express the influence of the landscape on soil erosion. The LS combination is the ratio of soil loss from a particular slope to a ?reference slope (22.1 m length and uniform 9% grade).

The C-factor is the ratio of erosion under a specified cover and management to the amount of erosion under a continuous bare fallow. It considers the type and density of vegetative cover on the soil as well as all related management practices, such as time between operations, weed control, tillage, watering, fertilization, crop residues etc. This factor is obviously very complicated and can only be assessed with confidence for research-verified crop/land management combinations.

The P-factor is the ratio of the erosion resulting from the described practice to that which would occur with up-and-down slope cultivation. It recognizes the influence of conservation practices, such as contour planting, strip cropping, terracing and combinations.

Figure 2. Summary of Universal Soil Loss Equation.

As well as climate change the main drivers of land degradation are increasing population, and the lack of alternative livelihoods, which result in rural poverty and over exploitation of the land. The reliance on charcoal which results in woodlands been cut down, but not replanted. In urban areas the uncontrolled development of land, due to a lack of development control and a lack of planned and serviced settlement sites is a major reason for land degradation in urban areas, but in addition poor land rights (land registration) makes it difficult to transfer land into the highest and best use[16][15], which is exacerbated by a lack of building control, making it difficult for purchasers and investors to trust the standard of construction and hence the investment.

Rapid urbanization process along with the construction of infrastructure, housing and industrial activities which encroach on the surrounding productive agricultural and/or pastoral lands through the clearing of vegetation for Dodoma city and its peri-urban areas have been raised by the regional and district officials as among the contributing factors to the problem. As an after-effect, this may trigger the need to open new areas for agricultural production which will further contribute vegetation clearing. As a result, there is a real need to promote an integrated approach taking into account sustainable land management for the improvement and production practices across the rural-urban landscape to contribute to arresting and reversing land degradation and promote or increase the diversification of the urban food system. In addition, as part of this process, climate risks will also need to be considered to ensure that urban assets and productive landscapes are well adapted. Further it is planned that 25% of degraded hotspots in Dodoma will have improved by 2030 as compared to 2010.

Within the urban environment two types of land should be protected from further urban development. First lands that are highly suitable for agriculture, as once these lands are built on they can never be recovered. Second, are lands where their use may result in a loss of life or damage to investments The main risk being that of development in areas that may be subject to flooding, but there are also areas that may be affected by seismic activity (earthquakes), although this can be mitigated by enforcement of earthquake resistant building standards; however, this comes at an additional cost and requires enforcement by trained building inspectors.

Regarding more specifically Dodoma city and its peri-urban areas, regional and district level officials have raised among other contributing factors, the speedy urbanization process along with the construction of infrastructure, housing and industrial activities which encroach on the surrounding productive agricultural and/or pastoral lands through the clearing of vegetation. The loss of agricultural land to urban development triggers a need for replacement land to be found, but it is unrealistic to believe that there is suitable land around Dodoma that has not already been developed. Any land not currently being farmed is most unlikely to be suitable and clearing and development of lands now under woodland is likely to lead to further land degradation. The Land Degradation Neutrality Setting Report sets out ambitious targets to prevent and reverse and reverse land degradation Figure 3. To reach these targets will require a massive effort not least including development of alternative livelihoods, which will not cause further land degradation.

Land Degradation Neutrality Target Setting Programme Report, 2018,

Vice President?s Division of Environment, Has the following regional objectives ?LDN is achieved in the following land degradation hotspots: Dodoma, Singida, Tabora, Shinyanga and Manyara regions by 2030 as compared to 2010 additional 25% of the degraded hotspot regions has improved (net gain). ? And Specific LDN targets and measures based on targets to avoid, minimize and reverse land degradation:

? Restore 11,011,950ha of forests through sustainable forest management;

? Prevent and avoid decline of land productivity of forests on 2,640,600ha by 2030;

? Improve land productivity of shrub and grassland on 1,714,500ha by 2030;

? Improve land productivity of croplands on 8,462,500.5 ha by 2025;

? Improve land productivity of wetlands on 361,275ha by 2030;

? Increase soil organic Carbon in cropland to 54.5tons/ha by 2030;

? Reduce soil erosion (loss of top soils) by 19tons/ha.

Figure 3. Land Degradation Neutrality Setting Programme Report, pg. 7.

Drivers for climate vulnerability

The main five climatic related hazards affecting the households in Dodoma include recurrent drought, unusual rainfall trend, drought due to less rainfall during what would be rainy season, early end of rainy season, and prolonged drought during what would be rainy season.

The drivers are being defined in the below table.

Root causes and systemic drivers of climate vulnerability

Table 1. Direct and indirect drivers of climate vulnerability

Drivers of climate vulnerability	Impacts
Irregular and low rainfall during the year	Weak agricultural productivity
Severe frequent drought	Soil degradation

High temperatures and heat waves during the dry season	Crop failure and losses
Floods	Abandon of agricultural activities in some areas
Deforestation and removal of natural vegetation	Soil erosion

Policy Framework and Institutional Structure

The policy framework for the proposed Building resilience through sustainable land management and climate change adaptation in Dodoma is guided by national sectoral policies, environmental and climate change strategies, the FYNDP [A1] [A2] III (Five Year National Development Plan, iii 2021) as well as other agreements and protocols which Tanzania has signed.

National sectoral and environmental policies

NAPA (2007) has identified existing and potential adaptation linked to national sectoral policies such as Agriculture Policy (2013), Water Policy (2002), Forest Policy (1998), Land Policy (1997), Energy Policy (2015), Livestock Policy (2006), Environmental Policy (1997), Tourism Policy (1999). NAPAs existing and potential adaptation linked to these sectors include:

? *Agriculture sector* - water harvesting, shifting crop farming to more appropriate agro-ecological zones, sustainable water management.

? *Forest sector* - national wide tree planting, afforestation programmes in degraded lands using more adaptive species, establish multiple fast growing tree species in community woodlots, promote alternative sources of energy for both domestic and industrial use, promote appropriate and efficient technologies to reduce use of wood.

? *Livestock sector*-promote and advocate zero grazing.

? *Water sector* -protection of water catchments, rainwater harvesting, recycling and reuse facilities in industrial sector and in households.

? *Human settlement sector* - regularization and upgrading of unplanned settlements, sensitize communities on the climate change related hazards, zoning planning, improve building codes, relocation of vulnerable communities to other areas, establish good land tenure system and facilitate sustainable human settlement.

? *Tourism sector* - establish alternative source of income for the community in the areas with tourism potentials, implement sustainable tourism activities.

National Five-Year Development Plan (2021/22 - 2025/26)

Environmental and Natural Resources Management of the NFYDP advocates land, forests, rivers and valleys as among key areas for sustainable use, protection and well-being. The DP has the following specific interventions geared towards the realization of its targets: i) promote renewable green energy technologies (biogas, LPG, Solar Energy), and Climate change adaptation; ii) strengthen the national capacity for addressing climate change Adaptation and mitigation measures; iii) reduced land degradation; iv) minimize environmental pollution and resultant adverse effects on the environment and human health; v) enforce Environmental Management Act, 2004; and vi) increase contribution of Beekeeping sub sector in the economy.

On the intervention to Reduce Land Degradation [17][16], the FYDP III sets targets on reduction of land degradation of 16% by 2019/2020, and 14% by 2025/2026. The targets are expected to be realized through the allocation of resources and implementation of national strategy on land degradation and water catchments (2019-2024), reversing land degradation trend and increasing food security in degraded ecosystems in semi-arid areas in Tanzania and projects on sustainable land use management.

National climate change strategies

The national climate change strategy (2012) has the overall goal to enable Tanzania to effectively adapt to climate change and participate in global efforts to mitigate climate change with a view to achieving sustainable development in the context of the Tanzania Development Vision 2025, Five Years National Development plan, as well as national cross sectoral and sectoral policies in line with agreed international frameworks. It put forward strategies to adapt and mitigate to climate change for various climate change vulnerable sectors. The strategy provides a framework for preparation of sector specific National Adaptation Plans (NAPs). The Water Resource Management Strategic Intervention and Action Plan for Climate Change Adaptation (2012) and Climate Change Adaptation Plan for Agriculture are some of the examples of NAPs.

To effectively participate in the climate change mitigation strategies, the country has already developed the National Framework for Reducing Emissions from Deforestation and Forest Degradation (REDD) (2009) and National REDD strategy (2012). REDD framework and strategy aims at ensuring natural resources are conserved and benefits communities through sustainable natural resource use and added benefits associated with increased carbon stock in conserved forests.

Other strategies and guidelines

Tanzania ratified the United Nations Convention to Combat Desertification (UNCCD) in 1997. Since ratification, several national efforts to address the impacts of Desertification, Land Degradation and Drought (DLDD), have been undertaken. The efforts include development of Strategy for Urgent Actions on Land Degradation and Water Catchment (2006) and the National Strategy on Conservation of Coastal and Marine Environment, Lakes, Dams and Rivers (2010). The Government has also developed a National Action Programme to combat DLDD (2014) that has been aligned to the Ten year Strategy of the UNCCD (2008 ? 2018); Status of Land Degradation (2014); and Compendium of Best Practices for Sustainable Land Management (2014).

Implementation of climate change issues in Tanzania is undertaken within the context of the National Environmental Policy of 1997 and the Environmental management Act (EMA Cap. 191) and other related policies and legislations. At national level, the Vice President?s Office, Division of Environment (DoE) is responsible for all climate related activities. DoE is both the National Climate Change Focal Point (NCCFP) and Designated National Authority (DNA) for clean development mechanism under the Kyoto Protocol. In terms of implementation DOE links to Regional and Local Government Authorities (City Councils, Municipal Councils, Towns and District Councils) through the Regional Secretariat. DOE have direct links with Sector Environmental Sections of the Ministries.

Water Resources Management and Use

Water supply, sanitation and water resource management are key ingredients of Tanzania?s Development Vision 2025 that aims at achieving an absence of abject poverty and attaining a high quality of life for all people by 2025. This vision is pursued through ?National Strategy for Growth and Reduction of Poverty (NSGRP), 2005 popularly known as MKUKUTA (Mkakati wa Kukuza Uchumi na Kupunguza Umasikini Tanzania).

The MKUKUTA targets for Water Resources Management (WRM) include among others to reduce water-related environmental pollution; and making integrated water resources management operational, increase proportions of the rural population with access to safe water to 90% by 2025 and urban population to 100% by 2025. To that effect, this project contributes to MKUKUTA through the different interventions under project output 3.3 and 3.6.

National Water Policy (NAWAPO, 2002) spells out the principle that catchment basins should be the planning and management units for water resources rather than regions, or indeed any administrative unit. The main levels of water resources management planning are national, basin, catchment sub catchment and water user associations. Therefore, preparation of the Catchment Management Plans as one of the interventions under project output 3.3 is in conformity with/ pursuit of the NAWAPO. The MKUKUTA operationalised the policy through the National Water Sector Development Strategy (NWSDS) of 2006. The NWSDS facilitates realignment of the water resources related aspects of other key sector policies like such as agriculture, energy, industry, livestock, mining, environment, tourism, and fisheries as well as for domestic use with NAWAPO, and focus on specific roles of various actors through clearly defining roles and responsibilities, enhancing coordination and hence the removal of duplications and omissions. The above water resources related sectors alluded to above are impacted upon by GEF Project through interventions under the different project outputs especially output 3.5 Demonstrate nature-based solutions for improved urban resilience and alternative livelihood creation through community-based enterprises.

The NWSDS set out the strategy for NAWAPO implementation and in turn guided the formulation of the Water Sector Development Program (WSDP). To give effect to NAWAPO and NWSDS, the Water Resources Management Act No 11 of 2009 and the Water Supply and Sanitation Act No 12 of 2009 were enacted by the National Assembly. The former provides the institutional and legal framework for the management and development of water resources from the lowest to the highest level. The main provisions of this Act among other things include establishing a Catchment and Sub Catchment Water Committees to coordinate and harmonize catchment/sub catchment integrated water resource management plans and to perform other functions as delegated by Basin Water Board(s).

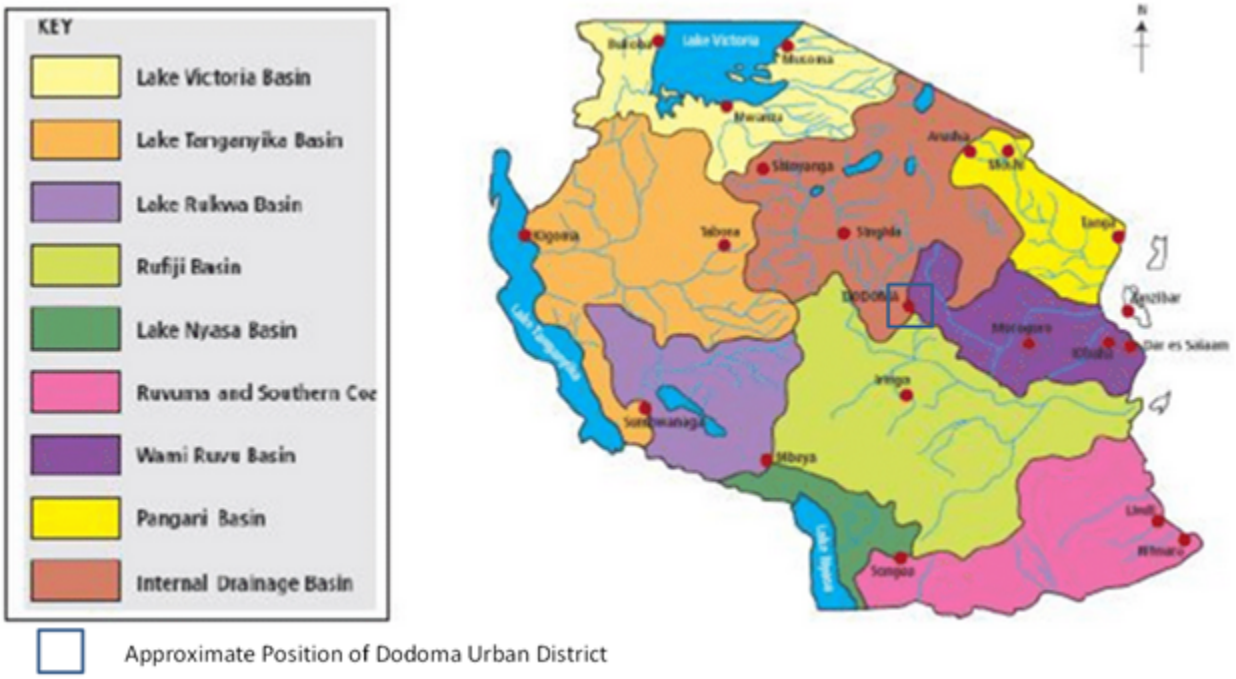

Figure 4. Map of Nine Basins of Tanzania Showing the Approximate Location of Dodoma Urban District. It is located across (i) Kinyasungwa Catchment located in Wami/Ruvu Basin, (ii) Bali/ Manyoni Catchment in the Internal Drainage Basin and (iii) Great Ruaha Catch.[18][17]

As the major source of water is groundwater from the Makutupora well field approximately 40 km out of Dodoma, maintenance of this source requires a dedicated catchment plan, where the aim is to improve infiltration from heavy rainstorms. In general, this is best achieved by maintenance of appropriate tree cover and, where necessary, installation of leaky dams that will hold up water flow and allow infiltration.

According to Dodoma Master Plan Report, 2019, Dodoma City is supplied by the Dodoma Urban Water and Sanitation Authority (DUWASA) which depends on groundwater source of Makutupora well fields for domestic, industrial, commercial, and institutional uses.

The Makutupora artesian basin located in the Kinyasungwe sub basin/ catchment is the main source of water for Dodoma City. This source is part of the famous Great Rift Valley basin extending eastwards and connected to the Wami/Ruvu water basin. The current production of water from Makutupora well field stands at 61,560m3 /day which is by far less than the current average daily demand for the entire City of 104,000m3 /day. With the increased population occasioned by shifting of capital city from Dar Es Salaam to Dodoma, coupled with improved infrastructure, notable among which in the Outer Ring Road, the water supply situation will definitely worsen. While a Situational analysis report is available for the WAMI water Basin[19][18] the Catchment Management Plan will be prepared for the Kinyasungwe sub-basin / catchment where Dodoma City is located to enhance integrated water resources management for the benefit of the city. Though DMA is located in the Kinyasungwe Catchment which is part of Wami Ruvu Basin (at the peripheral) some of its effects will definitely spill into the adjacent Bali (Manyoni) Catchment located in the Internal Drainage Basin. It would thus be most appropriate to consider preparation of the Bali (Manyoni) Catchment Management Plan as well.

Typical barriers preventing the sustainable urban development in Tanzania include[20][19]:

A series of institutional, technological and information barriers have been identified which may prevent an alternative and more preferable scenario to take place. These barriers are presented here below.

Inability to adequately anticipate future climate risk events:

The two main climatic risks are too much rain and too little rain, or flash floods and drought. Flash-floods are typically the result of local, high intensity storms, which affect relatively small catchments. They are short duration and difficult to predict. Loss of life and damage to buildings is best mitigated by identification of at risk areas and preventing construction in these areas. However, low lying lands often contain better soils and are therefore more suitable for agriculture. The risk that crops may be lost to flooding is something that may have to be accepted. Ideally these risks could be mitigated by insurance systems. However, the damage caused by flash floods can also be reduced by land use that minimizes runoff and slows down the flow of water.

Identification of flood risk areas requires the mapping of terrain and soils, but also information on rainfall, and in particular rainfall intensity. Areas at risk can be identified, but most importantly is effective development control to prevent construction in the at risk areas. This needs to be supported by political will, as large, flat areas especially near the centre of cities may appear to be suitable sites for new construction.

Draught is a more gradual process, which takes days or weeks, to take effect, depending on the crop or type of livestock, but the consequences can affect much wider areas. Traditional farming systems reduced the risks caused by drought by planning a range of crops inducing draught resistant crops such as cassava, sweet potatoes, sorghum and millet. More modern farming using maize is more at risk, both from a loss of crop, but also a loss on their investment on the purchase of improved seed and fertilizer. Mitigation measures include selection of appropriate crops and varieties, increasing available water by maximising infiltration, improving soil structure and condition (including maximising organic carbon), and planting at the most suitable time. But if there is a sever draught then mitigation requires the import of food. As with most things, it?s the poor that suffer the most,

Early warning of the risk of draught can allow for planning and mobilisation of mitigation measures. This includes meteorological (rainfall) recordings, but also observation of crop conditions. An appropriate system of recording rainfall and crop conditions is needed, but equally important is a system to take action is the risk of draught becomes significant and appropriate measures to mitigate the risks.

Policy related barriers:

? Governance challenges that impede Tanzania?s ability to integrate its responses to climate-related issues into national and sectoral policies, and to design, implement and enforce policies; Weak coordination between peers and levels of government, limited scientific and policy information, and insufficient capacity and resources;

? The ability to systematically address climate change to Tanzania?s elaborate institutional policy infrastructure (e.g. governance fragmentation, poor coordination, and under-resourcing to fulfil institutional functions for climate change mitigation and adaptation) ;

? A lack of credible, timely information to support decision making is another major limitation for policymakers (e.g. scientific information such as on water levels, rainfall patterns, agricultural output levels) and policy options and recommendations;

? Insufficient capacity and limited resources for collaboration and learning impede all actors? ability to carry out their functions efficiently and effectively. Budgetary constraints impact on the ability to host and participate in meetings and workshops, thereby reducing opportunities for collaboration and learning.

Environmental / Climate barriers:

? Dodoma region has a semi-arid climate. Historically it has had only one rain season in the year (December ? March). With climate change, however, Dodoma is increasingly experiencing unpredictable rains and flash floods leading to soil erosion in many parts of the city;

? A growing industrial sector coupled with a lack of environmental enforcement will decrease air quality and increase GHG emissions;

? An overall weak environmental management system could jeopardize national and city efforts for greening the DMA.

One of the major causes of land degradation is the fact that the majority of the population, but especially members of the rural disadvantaged majority rely on subsistence farming for their livelihoods. They have no, or very limited security of tenure, are unable to invest in soil and crop improvement, and do not have sufficient land to allow it to fallow and improve fertility and soil structure.

In Europe and North America, agriculture is almost exclusively managed by a small number of large, specialist farmers, who can invest in crop and animal production, producing high yields while preventing land degradation. This radical option of rural depopulation is not considered an option in Tanzania.

Dodoma along with most of the world is using more water than can be reliably provided. One of the main reasons is the use of WCs which use vast amounts of water and require extensive treatment of sewage. However, 80% of Dodoma?s population, in common with much of the world?s poorest, use pit latrines, septic tanks, or have no system for disposal of human waste, all of which can result in disease and pollution problems. Conversion to waterless or low water use toilets has social barriers, mainly for the rich, and economic barriers for the poor.

The majority of the population, both urban and rural, use charcoal for cooking. Charcoal requires the unsustainable destruction of woodlands, which further contributes to land degradation and reduces infiltration of rainwater. In addition, the removal of woodland and the production and use of charcoal increases emissions of CO_2. The opportunities exist to use low-cost, biogas generators to use for ?waste? products of urine and faecal matter by anaerobic digestion to produce gas for cooking and solid and liquid products which can be used as fertilizer and soil conditioners, which will support the restoration of degraded lands.

National Strategic Objectives

Tanzania developed the NAPA in 2007 in line with the UNFCCC which commit Parties of the Convention to develop national programmes and measures to respond to climate change. The NAPA document was informed by the aspirations of the National Development Vision 2025 for high and shared growth, quality livelihood, peace, stability and unity, good governance, high quality education and international competitiveness. It identified climate change related vulnerabilities of the following key economic sectors: agriculture, water, health, forestry and wetlands, energy, coastal and marine resources, wildlife, tourism and industry. The vulnerability assessment during NAPA preparation identified droughts, pests, epidemics and floods as the top four hazards in the country. NAPA further identified 14 priority actions of climate change adaptation for priority sectors. Eight out of the 14 priority actions are aligned to the proposed project ?Building resilience through sustainable land management and climate change adaptation in Dodoma?. The actions include: alternative farming systems and water harvesting (priority action 2), develop alternative water storage programs and technology for communities(priority action 3), community based catchments conservation and management programs (priority action 4), afforestation programmes in degraded lands using more adaptive and fast growing tree species (priority action 7), establishing and strengthening community awareness programmes on preventable major health hazards (priority action 9), implement sustainable tourism activities in the coastal areas and relocation of vulnerable communities from low-lying areas

(priority action 10), water harvesting and recycling (priority action 12) and establish good land tenure system and facilitate sustainable human settlements (priority action 14). The implementation of NAPA is therefore linked to various sectoral policies and strategies. The policies include Agriculture Policy (2013), Livestock Policy (2006), Water Policy (2002), National Environmental Policy (1997), Disaster Management Policy (2008), Forest policy (1998), Land Policy (1997), Human Settlement Development Policy (2000). The Agriculture Sector Development Strategy (2013), Water Sector Development Strategy (2005), National Climate Change Strategy (2012), and National Disaster Management Policy Implementation Strategy (2011) are some of the relevant strategies which are aligned with NAPA. The policies and strategies eventually links to the National Strategy for Growth and Reduction of Poverty which was implemented as NSGRP I (2010) and NSGRP II (2015) or MKUKUTA I and MKUKUTA II and the current National Five Year Development Plan (2021/2022 ? 2025/2026).

Baseline: Root causes and systemic drivers of land degradation and linkages with climate change adaptation

The city of Dodoma is located in a mostly arid to semi-arid area that is characterized by a dry season which extends from late April to early December and a single wet season from late December to early April. With this savannah type of climate, rainfall is the single most determining meteorological factor which, according to fluctuations, can severely impact people and their livelihoods. Average rainfall patterns range from 550 to 600 millimetres per year whereas the temperature averages ranging from as low as 10 degrees Celsius in July to a maximum of 37 degrees Celsius in November. Rainfall patterns notably affect the availability and accessibility of waters resources which are highly critical to Tanzania?s economy. Moreover, river basins, which contribute to the replenishment of underground aquifers and groundwater resources, provide drinking water for major urban centres in Tanzania, including for Dodoma where there is intense industrial activity. In the region of Dodoma, groundwater is mostly used to meet the requirements of urban households whereas water run-off is left for the adequate growing of grasslands and forests which are critical for the adequate delivery of ecosystem services including fuelwood, timber, climate regulation and water purification. In the specific case of Dodoma, the city is located right between the Rufiji and Wami-Ruvu basins from which water is piped and carried to Dodoma, Morogoro, Coast region and Dar es Salam.

Given its location in a semi-arid agro-ecological zone, Dodoma region (including the capital city of Dodoma) exhibits clear symptoms of land degradation due to a number of biophysical and socioeconomic factors. These drivers significantly affect the social-environmental connections behind the provision of adequate ecosystem services to support communities? livelihoods and, by extension, the country?s economy. Systemic drivers thus cause changes that may end up negatively and/or positively pressure the balance by the environment and society. A number of such direct and indirect drivers (Table 1) were identified as part of the Land Degradation Neutrality Target Setting Programme exercise which took place in 2018.

Table 2. Direct and indirect drivers of land degradation

Direct drivers of land degradation	Indirect drivers of land degradation
Improper management of the soil	Population pressure
Improper management of annual, perennial, scrub and tree crops	Migration
Deforestation and removal of natural vegetation	Poverty/wealth
Over-exploitation of vegetation for domestic use	Education and training
Industrial activities, waste deposition	Access to knowledge and support services
Urbanization and infrastructure development	Governance, institutional settings and policies (including taxes, subsidies, incentives)
Disturbance of the water cycle	Inadequate awareness and lack of appropriate information
Over-abstraction of water	Poor technology
Natural causes (flood, earthquakes, landslides)	Lack of commitment

Source: PIF as adapted from ?Land Degradation Neutrality Target Setting Programme Report? (2018)

Relevant drivers identified for the Dodoma region according to the above table include direct drivers such as mismanagement of the soil, activities that remove natural vegetation (including deforestation), urbanization and infrastructure development as well as the disturbance of the water cycle due to climate change related risks (floods, droughts, etc.). Indirect drivers are related to demographic growth, rural exodus of households to cities (including the capital city of Dodoma), institutional challenges and the lack of adequate information and awareness for decision-making. The combination of these factors has led to a significant decline in the productivity of the land, high soil erosion and alarming signs of desertification exemplified by the increasing cover of bare lands in and around Dodoma city and the region.

Speedy urbanization process along with the construction of infrastructure, housing and industrial activities which encroach on the surrounding productive agricultural and/or pastoral lands through the clearing of vegetation for Dodoma city and its peri-urban areas have been raised by the regional and district officials as among the contributing factors to the problem. As an after-effect, this may trigger the need to open new areas for agricultural production which will further contribute vegetation clearing. As a result, there is a real need to promote an integrated approach taking into account sustainable land management for the improvement and production practices across the rural-urban

landscape to contribute to arresting and reversing land degradation, and promote or increase the diversification of the urban food system. In addition, as part of this process, climate risks will also need to be considered to ensure that urban assets and productive landscapes are well adapted. Further it is planned that 25% of degraded hotspots in Dodoma will have improved by 2030 as compared to 2010.

Policy Framework and Institutional Structure

The policy framework for the proposed Building resilience through sustainable land management and climate change adaptation in Dodoma is guided by national sectoral policies, environmental and climate change strategies, the FYNDP III as well as other agreements and protocols which Tanzania has signed.

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Degradation and Water Catchment (2006) and the National Strategy on Conservation of Coastal and Marine Environment, Lakes, Dams and Rivers (2010). The Government has also developed a National Action Programme to combat DLDD (2014) that has been aligned to the Ten year Strategy of the UNCCD (2008 ? 2018); Status of Land Degradation (2014); and Compendium of Best Practices for Sustainable Land Management (2014).

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Baseline and Associated projects

The construction of a new dual-carriage way, the Dodoma City Outer Ring Road of 110.2 km around the capital city financed by AfDB loan of USD 138 million is identified by PIF as the baseline project. The baseline project will improve the mobility of goods and services within Dodoma as well as in the Eastern and Southern Africa regional economic blocs by providing key road transportation links transiting through and around Dodoma. It is expected that, the baseline project will foster regional co-operation and integration within the Eastern and Southern Africa regions and beyond.

The overall goal of the road investment is to support Tanzania?s economic growth through development of transport infrastructure that contributes to its poverty reduction strategy; and to provide efficient road transport access to Dodoma City and by extension to the rest of the country and other countries in the EAC Region. The project will support integrated urban planning in the DMA to foster sustainable socio-economic growth and development of Dodoma city and the surrounding regions, improve accessibility and mobility to a growing and strategically located city in the center of the country. It will improve food security within the DMA. It will also contribute to reduction of Greenhouse Gas (GHG) emissions within the Dodoma city center as heavy traffic would bypass the city. The baseline project is aligned with the AfDB?s corporate objectives of assisting Regional Member Countries transition towards more inclusive and green growth. Similarly, the project is aligned to the new Dodoma City Master Plan aimed at improving urban mobility while reducing GHG emissions in the city. It is also aligned to the Sustainable Cities Impact Program (SCIP) in GEF-7 (2018-2022) which advances the integrated approach of urban planning and implementation. The proposed project also aligns with various projects funded under GEF Trust Fund and Least Developed

Countries Fund. The projects are focusing on biodiversity, climate change, land degradation and water (Table 2).

Table 3. GEF Trust Fund and Least Developed Countries Fund projects in Tanzania.

Project Name	GEF Project ID	Project Type	Status	Country	Focal Areas	Funding Source	Implementing Agencies	Executing Agencies	GEF Period:
Supporting the implementation of integrated ecosystem management approach for landscape restoration and biodiversity conservation in Tanzania	9524	Full-size Project	Project Approved	Tanzania	Biodiversity, Climate Change, Land Degradation	GEF Trust Fund	United Nations Environment Programme	Vice Presidents Office (VPO), United Republic of Tanzania; The National Environment Management Council (NEMC); Center for International Forestry Research (CIFOR)	GEF - 6
Integrated Landscape Management in Dry Miombo Woodlands of Tanzania	10250	Full-size Project	Project Approved	Tanzania	Land Degradation, Biodiversity	GEF Trust Fund	Food and Agriculture Organization	The Tanzania Forest Services Agency	GEF - 7
Enhancing Conjunctive Management of Surface and Groundwater Resources in Selected Transboundary Aquifers: Case Study for Selected Shared Groundwater Bodies in the Nile Basin	9912	Full-size Project	Project Approved	Regional	International Waters	GEF Trust Fund	United Nations Development Programme	Nile Basin Initiative (NBI)	GEF - 6
Food-IAP: Reversing Land Degradation Trends and Increasing Food Security in Degraded Ecosystems of Semi-arid Areas of Central Tanzania	9132	Full-size Project	Project Approved	Tanzania	Biodiversity, Land Degradation, Climate Change	GEF Trust Fund	International Fund for Agricultural Development	Vice President Office (VPO)	GEF - 6
Sustainable Land Management of Lake Nyasa Catchment in Tanzania	5691	Medium-size Project	Project Approved	Tanzania	Land Degradation	GEF Trust Fund	United Nations Environment Programme	Vice President's Office, Ministry of Agriculture	GEF - 6

Ecosystem-Based Adaptation for Rural Resilience	5695	Full-size Project	Project Approved	Tanzania	Climate Change	Least Developed Countries Fund	United Nations Environment Programme	VPO-DOE with Ministry of Agriculture, Livestock and Fisheries (MALF)	GEF - 5	
Securing Watershed Services through Sustainable Land Management in the Ruvu and Zigi Catchments, Eastern Arc Region, Tanzania	5463	Full-size Project	Project Approved	Tanzania	Land Degradation	GEF Trust Fund	United Nations Development Programme	Ministry of Water	GEF - 5	
LGGE Promoting Energy Efficiency in Buildings in Eastern Africa	3788	Full-size Project	Project Approved	Regional	Climate Change	GEF Trust Fund	United Nations Environment Programme	UN-HABITAT in association with the National Ministries of Housing in the five partner countries	GEF - 5	

Other baseline projects which are aligned to the proposed Building resilience through sustainable land management and climate change adaptation include:

? **The Global Climate Change Alliance Program (2015?2019), USD 2.58 million:** Implemented five (5) climate change adaptation projects in different agro-ecological zones in Tanzania in the period 2015 to 2019 with funding from the European Union (EU) Global Climate Change Alliance. The implemented projects were: - Scalable Resilience: Outspreading Islands of Adaptation project (CF PEMBA), - Eco-Village Adaptation to Climate Change in Central Tanzania (EcoACT), A Climate Resilient Model for Maasai Steppe Pastoralists, Igunga Eco-village (IGUNGA) and - The Integrated Approaches for Climate Change Adaptation in the East Usambara Mountains (EAST USAMBARA).

? **Simiyu Climate Resilience Project in Tanzania (2017 -2024), USD 201.9million**: The Project is funded by KfW with financing from the Green Climate Fund (GCF) promotes clean water supply, access to sanitation and climate-smart agriculture. The aim is to strengthen the resilience of the population in the Simiyu Region in northern Tanzania with respect to the impacts of climate change. The Ministry of Water and the Regional Secretariat in Simiyu are the Project Executing Agency and responsible for coordination and monitoring of the Project. However, the Municipal and District Water and Sanitation Authorities, Rural Water Supply and Sanitation Agency and Community Water and Community Owned Water Supply Organisations are responsible for coordination of the project during the operation.

? **Tanzania Urban Resilience Program -TURP (2017-2021)**: The Tanzania Urban Resilience Programme, funded by the World Bank, employs coordinated and strategic action to improve Tanzania?s ability to prepare for, respond to, and adapt to a changing climate, as well as to withstand and rapidly recover from shock. The project addresses three major challenges which contribute to increasing vulnerability of Tanzanian cites: lacking data and information, inadequate urban and land use planning system in Tanzania and significant and widening infrastructure gap. The Resiliency Academy is one of the components of TURP which aims at collecting and disseminating core digital assets and skills obtained in TURP into the research, teaching and community cooperation activities at Tanzanian universities. Lead and Coordinated by Turku University (Finland), it bring together collaboration with four Tanzanian Universities (Ardhi University, University of Dar es Salaam, Sokoine University of Agriculture and State University of Zanzibar). The Resilience Academy has included curriculum and capacity development in local universities, the development of university resilience labs and equipment, short-course training and workshops, and promoting research activities in urban resilience.

3) the proposed alternative scenario with a brief description of expected outcomes and components of the project

The objective of the project is to demonstrate an integrated approach for reducing pressures on the city?s critical infrastructure, environmental and urban assets and increasing the city?s climate resilience through integrated urban development planning for climate change adaptation and sustainable land management. In this regard, the GEF project will contribute to delivering efficient, integrated, and sustainable development solutions all the while strengthening urban resilience (in particular infrastructure and livelihoods) in the face of climate change and variability. This will be supported through integrated urban management and by improving local urban planning for the municipality of Dodoma and the region. Given the land degradation and climate related challenges which characterize Dodoma city and its region, there is a need for an integrated approach that takes into account the nexus between land degradation drivers and climate risks. In particular the project will support the development of a vitues circle of nature based solutions, whereby excreta and garbage, which currently contribute to land degradation, climate change and disease, will be converted into soil conditioners and animal feeds. These products will then be used to reduced land degradation of rural lands by improving soil condition and providing alternative feeds for animals, hence taking pressure off grazing lands.

In this regard, the LDCF resources of this project will contribute to supporting adaptation to climate change, along with improved resilience in the face of climate variability and long-term change in climatic means during the urbanization process of the city of Dodoma. Such support includes a better

early warning system, measures to reduce flood impacts, increasing the availability of safe and accessible groundwater for the water supply in the city. The climate risk mapping will notably be important especially for parts of the inner city and its peri-urban areas where there housing and other developments in flood-risk areas. Land degradation on the other hand will target systemic drivers that contribute to the lack of resilience in the face of climate change. This includes land management practices that will maintain soil conditions and reduce or prevent soil erosion, cropping systems that are less vulnerable to drought and floods, including development of tree crops, as well as improving the urban environment by tree planing, especially near houses and in public open spaces.

The GEF project will seek to reduce the pressures of rapid urbanization on the vital systems of the ecosystem that the city depends on, through efficient land use planning and integration of all informal settlements within the city of Dodoma through the following four components and their outputs, further details of which are given in Annex A.

A summary of the components and outputs are provided below.

Component 1. Policy and institutional framework for sustainable urban and regional development.

? Output 1.1 Climate Risk and vulnerability mapping for Dodoma City and recommendations for re-zoning, where necessary.

? Output 1.2 Strengthen the implementation of the new Dodoma City Master Plan by developing integrated sectors plans and supporting effective development control

? Output 1.3 Institutional capacity developed to adequately address climate vulnerabilities in communities of the DMA

Component 2. Reversing and managing the negative impacts of the urban footprint on land

? Output 2.1 Sustainable land development and management plan

? Output 2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship

? Output 2.3 Rehabilitation of brownfields and degraded land under sustainable land management practices

Component 3. Urban Resilience to Climate change

? Output 3.1 Updating building standards and codes to mitigate effects of climate related risks with enforcement of these standards

? Output 3.2 Flood risk and sustainable water, groundwater and drainage management

? Output 3.3 Early warning system for extreme climatic, weather and other natural disasters

? Output 3.4 Demonstrate nature based solutions for improved urban resilience and alternative livelihood creation through community based enterprises

Component 4. Knowledge Management, Monitoring and evaluation (M&E)

? Output 4.1 Strengthening linkages with universities, other research institutions, other cities and relevant platforms to support sustainability and scale-up research on best practices for resilient urban development.

? Output 4.2 Data collection and M&E

Detailed description of Project Components

Component 1. Policy and institutional framework for sustainable urban and regional development.

Outcome 1: Climate change resilience is integrated into policies, regulations and urban planning and land development

Output 1.1 Climate Risk and vulnerability mapping for Dodoma City and recommendations for re-zoning, where necessary

1.1.1 Produce Flood Risk Map

The project will produce map showing the areas at risk from a one in one-hundred-year flood, based on current and predicted rainfall intensity estimates and current land cover. Based on digital terrain models that are based on high resolution satellite images and/or orthophoto maps, plus realistic estimates of rainfall intensity this should be achievable and realistic by end of year one.

1.1.2 Produce Fault Zone Map

The project will produce map showing the location of significant fault lines. The Ministry of Minerals and Energy will be consulted, to develop the necessary shapefiles. To be done by end of year one.

1.1.3 Produce current and future Land Use Maps

The project will produce a map and GIS shapefiles showing current land use / land cover differentiating the different types of urban development, including the different standards of housing and commercial development. Care will be taken to locate developments where flooding or earthquake damage could result in loss of life, environmental issues, or significant commercial loss, for example: hospitals, sewerage treatment plants, power stations etc. Assuming recent (no more than two years old) high resolution satellite images and/or orthophoto maps, mapping of current land use, this can be achieved by the end of year one. Maps of proposed land use should be available from the most up to date master plans.

1.1.4 At risk areas and properties identified and recommendations made

This activity will produce a map showing current and planned developments that are inside the one in one-hundred-year flood risk areas. Current and planned locations for significant developments (e.g., buildings) within 100 metres of known fault lines will be identified. GIS shapefiles showing current and planned developments at risk of flooding or earthquake damage will be produced. This activity will build on the maps on flood risks and fault lines, as well as current and planned developments. This is achievable within 18 months.

1.1.5 Climate risk and vulnerability mapping for women, men and youth and recommendation to address the gender gap

This activity will analyse the risk and impact of flood for women, men and youth to determine effects and vulnerability of different groups in the city and establish appropriate measures to address the identified gender gaps in respect to land use allocations such as dispensaries, hospitals, girls boarding schools.

Output 1.2 Supporting the implementation of the 2018 City of Dodoma Master Plan by developing individual sector plans.

1.2.1 Evaluate individual sector plans through a climate lens

All sectors of the Dodoma Master Plan to be reviewed by looking at how each sector is impacted and may be further impacted by climate change, but also evaluating how the sector could reduce, or help reverse climate change, to guide future planning and enable prioritization of investments in the Dodoma Municipal Authority (DMA). Sectors include water, sanitation (including ?waste? recycling), drainage, electricity, transport (cycleways and footpaths, public transport), housing, energy and neighbourhood planning with emphasis on the disadvantaged urban majority. A report will be produced for each sector. The evaluation of each sector in relation to climate change will be helped by information from other cities in the Sustainable Cities Impact Program. The evaluation should be completed by the end of Year 1.

1.2.2 Modify the Dodoma Master Plan to mitigate effects of climate change and to minimise or reverse its contribution to climate change.

For all relevant areas, the Dodoma Master Plan will be amended to include measures to mitigate the effects of predicted climate change on the city and to identify means of reducing or reversing the city?s image on global climate change. This will require investments in the future and also understanding and support of local communities. A modified Dodoma Master Plan will be produced and endorsed by the City Council after public consultation. To be completed by the end of Year 2.

1.2.3 Produce implementation plan for modified Dodoma Master Plan, with special reference to climate change

An implementation plan to support the investments and changes needed to the Dodoma Master Plan will be develped. To be completed and made operational before the end of Year 3.

1.2.4 Modify the Dodoma Master Plan to mainstream gender and integrate measures to address gender inequalities and gender gaps

This activity will review the Dodoma Master Plan and individual sector plans therein with a gender lens; mainstream gender in order to set measures and strategies to address gender inequalities and gender gaps with special reference to climate change vulnerability to women, youth and the community at larger.

Output 1.3 Institutional Capacity developed to adequately address climate vulnerabilities in communities

1.3.1 Draft Climate Vulnerability / Climate Change Adaptation Strategy for Dodoma

1.3.1.1 Identify Climate risks for Dodoma

The risks from climatic events, include flooding, death, or illness due to high temperatures and crop loss due to drought, flooding (1 in 100-hundred-year flood), or hail will be identified. Land uses that would be adversely affected by flooding will be mapped. Buildings, where temperatures will rise to a level that will cause death or ill health, especially to the elderly and other vulnerable groups, will be identified as will, reductions in yields of crops due to adverse climatic events.

Shapefiles of areas at risk from flooding, land use maps of buildings/Composite map showing buildings at risk of flooding, maps of buildings in which temperatures will rise to dangerous levels as well as predicted yields of crops under climate change impacts, will be produced.

Areas liable to flooding will be determined from terrain analysis and modelling of catchments. Buildings at risk of excessive temperatures will be estimated from materials, construction type and proximity to other buildings. Land use mapping will identify buildings in flood risk areas. The impact of climate change on yields of crops will be estimated based on regional and global climate change models.

Digital terrain maps can be produced from high resolution satellite images or orthophotos. Flood risk can be calculated for catchments based on the terrain maps and reasonable assumptions. Temperatures within buildings can be measured for different building types and construction methods. Buildings at risk can be mapped using remote sensing and external evaluations. Current land use maps can be produced from recent imagery, supported by ground truthing. Available and accessible climate change models can predict impact of climate change based on existing and available data for temperature, rainfall and crop yield.

The project will include the determination of the effects of climate risks to different groups of communities in the city (e.g., women and children, youth, disabled people, farmers, livestock keepers,

etc.). The cost of climate risk for both women and men will be determined separately; and on different measures to alleviate the risks financially, socially and environmentally will consider the relevance of different groups in the city, including the women, men and youth. Selection of risk adaptation strategy will as well consider women, men and other vulnerable groups. Relevant data in this aspect will be disaggregated by gender.

Climate risks will be assessed in year 1 of the project. Terrain maps can be produced from imagery obtained in the last ten years. Land use maps will be produced from imagery that is no more than two years old, preferably less than a year old.

1.3.1.2 Evaluate cost-benefits of adopting different Climate Risk Adaption Strategies

Climate risks will result in costs to individuals, corporations and the State. Measures to alleviate these risks will also come at a cost. The different options will be evaluated, financially, socially and environmentally. The report of economic, social and environmental costs and benefits of climatic risks adaptation strategies (identified in 1.3.1.1) over time spans covering 2050 and 2100 serves as the basis.

The costs of climate adaption will be expressed in US$ both initial costs and ongoing costs. The benefits in terms of not having to rebuild after flooding can be estimated from the replacement costs of structures that would have been destroyed or damaged by flooding. The benefits to health will be measured by the number of people who will not die because buildings have been adapted to cope with increasing temperatures and the numbers of people whose health has not been affected by excessive temperatures. There will be little problem in developing cost-benefit models, but it is not realistic to reduce all benefits to monetary terms. The Evaluation of cost-benefits is realistic and should be made by the end of year 2.

1.3.1.3 Select Climate Risk Adaption Strategies to Implement

Having evaluated the cost-benefits of different Climate Risk Adaption Strategies, decisions will be made on which ones to adopt. While for structures the selection process can compare the costs of making adaptions against the cost of damage caused by adverse climatic events, such as floods, determining which strategies to adopt to prevent death or disease are not so simple. A clear plan for adoption will be produced. All possible adoption strategies will be listed and classed as being adopted or not. Although selecting which strategies to adopt may be difficult, especially when it requires balancing costs against human lives and health, it is achievable. Although decision making may be

difficult, it is achievable. The process will be kept as transparent as possible. The selection will be completed by year 3 of the project.

1.3.2 Train staff of ministries, departments and public enterprises on climate vulnerability risks

1.3.2.1 Conduct training needs assessments on climate vulnerability risks (capacity needs assessment on institutional coordination among key stakeholders)

The themes/topics required for training by sectors and technical expertise of potential trainees/staff, type/nature of training (physical contact or online short course) duration (between one to four weeks, more than one month) and location of training will be listed. The topics for training, type of training, duration and location of training (inhouse, designated training centre or institute) will be determined during a stakeholder consultation for needs assessment and analysis for reporting. The topics, type, duration and location of training identified from different stakeholders can be combined or merged to produce recommended topics, type, duration, location and duration for the different group of stakeholders. The needs assessment report will be produced during the first six months of the project.

1.3.2.2 Develop training modules and materials and conduct training for stakeholders on climate vulnerability risks

Modules, outlines and training plans will be developed for every identified training type. Modules and materials will be used as input to offer training on areas identified as needed by key stakeholders. Training modules, outlines and materials are realistic to be completed by month nine of the project.

Participants and affiliation for each type of training, specific training program/timetable, training materials will be established. Trainings will be held and training evaluation reports produced and submitted at the end of each training. All trainings will be completed by month 13 of the project.

1.3.2.3 Gender mainstreaming in training

Gender mainstreaming on climate vulnerability risks will be among the training topics; gender mainstreaming topic to be delivered by a gender expert. Women, youth and other vulnerable groups will be among the participants in training needs assessment to in order to collect their view and

preference. Gender aspects will as well be integrated in training modules. Wherever possible the trainings will also consider equal participation of women, men and youth.

1.3.3 Climate risk vulnerability integrated into ministry and department processes

1.3.3.1 Engage Stakeholders and select the ministry and department processes to be assessed and review processes

Engaged stakeholders, stakeholder meetings, Ministerial and departmental processes will be selected for integration. Stakeholders? meeting participants lists are easily documentable; types and list of processes will be selected during the engagement meetings and will be documented in the engagement reports. The indicators are realistically achievable to be realised within in month.

A review of the identified processes will be conducted. This will involve consultation meetings, options/recommendations for integration and a timeline for integration. A list of the stakeholders consulted, type and number of processes reviewed, integration recommendations, plan and timeline of integration, will be developed. Engagement meetings will be held to support the integration of climate risk vulnerability into different ministerial and departmental processes.

?

Component 2. Reversing and managing the negative impacts of the urban footprint on land

Outcome 2: Sustainable land management and reversing land degradation through city-level and community-based actions

Output 2.1 Sustainable land development and management plans

2.1.0 Collect existing geospatial baseline datasets

Data collection of existing geospatial baseline datasets will be carried out. This can be achieved using mapathons and massive data collection methods for updating number of building footprint available, collecting types of buildings materials, road conditions, level and condition of existing mass transit systems, drainage and flood hotspots as well as land degradation. Analysed Geospatial data for number

of buildings footprint available in Dodoma, collected types of buildings materials, road conditions, level and condition of existing mass transit systems, drainage and flood hotspots as well as land degradation, will be collected.

2.1.1 Produce land capability and carrying capacity assessment maps for main land uses

Maps of land capability for the main crops, cropping systems and land uses, based on the FAO S1, S2, S3, N1 and N2 classification system will produced with a resolution of 10 m or better. Crops to be considered include maize, sorghum, groundnuts, tobacco, grapes, citrus, mangos. The farming systems to include are subsistence dryland agriculture, commercial dryland agriculture and irrigated vegetable production. Land uses include grazing for cattle, firewood production, and housing development. Maps will over the whole of the project area with one map for each crop, farming system and land use will be produced as shapefiles.

Land capability maps can be produced by combining information from soil, slope, land degradation and rainfall maps, information on local growing conditions from agricultural research establishments and local farmers, cross referenced against current land use maps. Land capability maps have been produced in Tanzania for over 40 years. However, the accuracy of such maps depends on having accurate soil maps and up to date information on land degradation, farming systems, including yields, and accurate climatic data. First drafts will be ready by the end of Year 2, after which they can be further cross referenced against recent land use data and farmer interviews.

2.1.2 Produce maps of current land uses

Maps will identify the significant land uses, both rural and urban. This will include arable lands, tree crops, grazing lands, natural woodland, villages, and housing: differentiating between housing of different densities and standards, including squatter settlements, other urban land uses, and protected areas. Maps covering the whole project area will be produced as shapefiles, with summaries of the area of each land use type. Mapping of land use types is a standard technique using a combination of remote sensing (high resolution satellite images or recent orthophoto maps) and ground truthing. This is a standard system and should present no major difficulties. To be produced by the end of Year 1.

2.1.3 Produce maps of current level of land degradation

This activity will involve the mapping of the level of land degradation to identify:

? Land with no signs of degradation

? Land showing limited degradation, where productivity is not currently seriously affected

? Land with severe degradation, where productivity is seriously affected

? Land that is very severely degraded to the extent that it is incapable of productive use.

Lands classified into the four classes above will be mapped with shapefiles produced and the areas under each level of degradation will be calculated. The identification of severe and very severe degradation will be possible from a combination of remote sensing and ground truthing. Differentiation between no degradation and limited degradation may be more difficult and may require ground truthing. Mapping of severe and very severe degradation is very realistic to be achieved by the end of Year 1.

The data for land uses include agriculture, grazing of cattle, firewood production and housing development will be disaggregated by gender, gender differentiated ownership in squatter settlements and other urban uses.

2.1.4 Determine areas with capacity for further development or that are over utilised

Maps showing the classes outlined above, as GIS shapefiles to cover the whole project area will be produced for each major land use type showing:

? Land that is suitable for that use and has capacity to accept further development

? Land that is suitable for that use, which has little if any capacity to accept further development

? Land that is suitable for that use, but where current practices are causing the land to degrade but uses could continue if appropriate steps were taken limit or reverse degradation.

? Land that is degraded but it can be put to productive uses if treated.

? Land that is suitable for that use but is already overused and there is a need to decrease use or develop alternative uses.

? Land that is unsuitable for this use where there is no existing use.

? Land unsuitable for this use, where the use should cease (for example, housing built in flood risk or landslip risk areas).

Current land use and land capability will already have been captured. This task mainly requires combining what will be existing data. The production of existing land use and land capability maps will be completed within the first six months.

Gender of the main actors in the areas with the capacity for further development and/or the areas that over utilized will be determine. Main actors of the current practices, who are causing the land to degrade and who will be the participants and beneficiaries of the appropriate steps to reverse the situation, such as the degraded land that is put into productive uses. Much emphasis will be on involvement of women and youth as beneficiaries.

2.1.5 Produce sustainable land management plans

The sustainable land management plans will be produced in a participatory process with the stakeholders. The project will provide information on current land suitability, degradation, capacity for development and need for actions to treat existing degradation. Options for the future will be presented, including predicted consequences if there are no changes, and the costs, both monetary and in changes to behaviour of interventions and their expected results. Plans will be produced for possible futures, based on different interventions, including no change and possible interventions. Stakeholder awareness workshops will be held, and preferred sustainable land management plan or plans agreed. Measurement through copies of alternative plans, minutes of stakeholder workshop meetings and confirmed copy or copies of agreed plan or plans. This will be completed six months before the end of the project.

The preparation of sustainable land management plans will involve active participation of stakeholders including the vulnerable groups in communities such as women, youth and other disadvantaged. Gender issues will be considered in land suitability, capacity development and need for action to treat existing degradation; predicted consequence for the communities and vulnerable groups such as women, and youth will also be presented. Stakeholders? awareness workshops will involve local communities and ensure equal representation of women, men and youth.

Output 2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship

2.2.1 Establish green spaces, tree growing and planting on hill ranges, within the city of Dodoma (Dodoma (At least 10 green spaces covering 200 Ha for recreational activities & conservation within the city; and 1,120 Ha of a greenbelt along the entire stretch of the Dodoma City Outer Ring Road)

Ten green spaces covering 200 ha for both recreational activities and conservation will be established. This activity will involve the determination of the tree species to plant, testing of soils and ensuring the soils would carry the selected species sustainably, and the introduction of irrigation water to support tree growing in the first few years. The number and area of green spaces and tree plantings will be confirmed. Open spaces around Dodoma may be reserved as green spaces, although there is a need prevent them being used for other activities such as informal housing. Hill ranges may be planted to trees, but these will require protection from grazing while the trees are being established. Open spaces in Dodoma have been established over years, protecting them will be a challenge. Planting and protecting tree plantings will require the cooperation of local land uses and livestock holders. The first draft of plans will be ready by end year 2.

Women, men and youth at community levels will be actively involved planting of trees, recreation and conservation businesses in green space. Local land users and livestock keepers will be advised on alternate area demarcated for livestock feeding and other respective uses. Women in particular will be involved in nursery and tree seedling business and also in tree planting and conservation.

2.2.2 Establish and expand Beekeeping Enterprises

This activity will establish 100 beekeepers to be operating in the project area producing at least 100 kg of honey per year, plus other products, from sustainable beehives, as an alternative livelihood for selected beneficiaries. Records from beekeeping cooperatives of beekeepers and honey will be produced. There are existing beekeeper and honey cutters. It should be possible to upgrade these to commercial beekeepers. Equipment for beekeeping and training will be provided by the project. This activity will be completed by the second year of the project.

This activity will also involve the identification and capitalization of strategic points where women and youth will have an added advantage.

Output 2.3 Rehabilitation of brownfields and degraded land under sustainable land management practices

There are very different degrees of land degradation, from relatively minor loss of topsoil and or loss of soil structure, through complete loss of topsoil and erosion of subsoil, to excavation of rocks and minerals, or pollution of the soil or ground, by industrial waste. Rehabilitation can vary from following good farm practices, including crop rotation and basic soil conservation, through taking land out of production, or rewilding, to complete change of use and major restoration. Section 2.1 has already dealt with identification of land suitability for different uses, and development of management plans, which will cover the control of low levels of soil erosion and degradation. This section will therefore deal with the rehabilitation brownfield sites and areas of severe soil erosion.

2.3.1 Rehabilitation and restoration of lands degraded by informal mining

Informal mining may result in small individual extraction sites, but where several miners work in close proximity, they can cover significant areas. Spoil from mining is haphazardly places and land and groundwater can be polluted by dangerous chemicals. Before any restoration can take place an Environmental and Social Impact Assessment (ESIA) is needed to determine the level of pollution and the work needed to mitigate problems. An ESIA will be conducted to determine risks and possible means of restoration. Making ESIA is achievable, but development of viable restoration plan depends on the problems encountered and the costs of restoration. In some cases, it may be impractical to do anything more than restrict access to the area and allow it to rewild naturally. All informal mining sites should be identified, and plans produced by Year 3.

2.3.2 Rehabilitation of degraded agricultural and wooded areas

Lands in need of rehabilitation will be confirmed and detailed plans for restoration and preventing further degradation will be produced and implemented. Copies of plans, shapefiles of areas to be rehabilitated and details of protection measures will support this activity. Former agricultural lands and lands that had been under woodland will be treated so that further degradation is prevented and in the very long term, productive use can be restored. However, by appropriate treatment these lands can contribute to carbon capture and improving water balance, thus contributing to reversal of adverse climate change. The selected treatments will depend on whether the degraded land is dryland or wetland.

Women are the main actors in agriculture and horticultural farming, any mitigation measure to restore degraded land will also address the possible effects on their households? income and livelihoods.

Even badly degraded lands can be subject to further degradation, in particular as a result of continued tree cutting, often for charcoal, and overgrazing. Rehabilitation is only possible if these lands are protected from further degradation.

Rehabilitation will be difficult is there are no foreseeable advantages to the local community, especially as rehabilitation of badly degraded sites can take many years. Developing benefits within a reasonable time is therefore important (Output 3.4). Possible options include planting species that will support beekeeping, developing areas for wildlife tourism, planting species that can be harvested as fruit or fuelwood on a sustainable basis. These opportunities will require careful management to ensure that the area is protected from adverse uses that can further degrade the land. The selection and development will start during Year 2.

Component 3. Urban Resilience to Climate change

Outcome 3: Sustainable urban planning and land management to improve urban resilience to climatic change and variability

Output 3.1 Updating building standards and codes to mitigate effects of climate related risks with enforcement of these standards

Climate change may make existing buildings unsuitable for human habitation, in addition existing building standards may contribute to climate change, by using excessive resources, or not conserving potential resources. For example, poor insulation and lack of ventilation may make buildings too hot. Excessive use of cement adds to CO2 production. Not using passive ventilation results in excessive use of electricity for air-conditioning. While failure to capture rain produces added burdens on water distribution.

To update building standards the following activities will be carried out:

? Evaluate problems with current building standards in the face of likely climate change

? Identify changes needed to make future buildings more suitable for human habitation, to conserve resources and to reduce impact on climate change.

? Draft new building standards and codes

? Produce public awareness, in particular for architects, developers and builders.

? Train building inspectors on enforcement of the new codes.

3.1.1 Evaluate problems with current building standards in the face of likely climate change

Predict likely future climate events, including temperature, winds and precipitation. Model risks to life and health in buildings with current building standards. Evaluate contribution to global warming of current building standards. Evaluate resources used or not conserved by following current building standards.

Measurement through reports, detailing risks to health, contribution to global warming, and unnecessary use of resources by following current building standards. By developing inventories of existing building conditions and modelling likely changes to climate, this can be achieved. If there are reasonable inventories of current conditions this is realistic by end of Year 1.

3.1.2 Identify changes needed to make future homes habitable while conserving resources and reducing impact on climate change.

Based on evaluation of current building standards, above, evaluation of changes needed should be made by reference to new building standards in other, related, countries. Measured through a report detailing changes to standards needed to bring about better health, reduced contribution to climate change, and reduced use of resources. As long as information from other, related, countries is available, this is achievable and realistic one year after evaluation of current building standards.

3.1.3 Draft new building standards and codes

New building standards and codes drafted to ensure that buildings are suitable for future climatic conditions and minimise contribution to global warming. Specifically, buildings should meet minimum standards of insulation, to limit solar gain, use passive ventilation systems, maximise rainwater capture while minimising waste discharges. Standards and codes be available as printed and digital copies. New codes to be in place by the end of Year 3.

3.1.4 Produce public awareness, in particular for architects, developers and builders

During the development of new standards and codes a comprehensive public awareness exercise will be conducted involving architects, developers, builders and the general public. This will increase awareness of the need for new standards to improve living conditions for all, to reduce pollution and adverse effects on climate, while being realistic and affordable. Architects, developers and builders will be made aware of the need to comply with new standards and codes.

Public awareness will take place while the standards and codes are being developed and once when they are completed.

3.1.5 Train building inspectors on enforcement of the new codes

New standards and codes will only be effective if they are followed and, where necessary, enforced. Building Inspectors must be trained to understand the new codes, to keep architects, developers and builders aware for the new standards and codes and be able to take action if there are breaches of the new standards and codes. Training will ensure that building inspectors understand the new standards and codes and how to enforce them. Part of the training will be a comprehensive manual for all building inspectors, tests to ensure that the standards and codes are understood, and an effective monitoring and evaluation system to ensure that the standards and codes are being followed and, where necessary, enforced. Building Inspectors will be trained by the end of Year 3.

Output 3.2 Flood risk and sustainable water, groundwater and drainage management

This output consists of three key activities:

? A flood management plan and recommendations for improved drainage systems

? A water management action plan (including integration of best practices for water conservation, reuse, recovery and recycling systems) for the DMA

? The demonstration of low-cost measures to protect groundwater aquifers from land contamination sources

3.2.1 Flood management plan and recommendations for improved drainage systems

This activity will produce a flood management plan for the DMA to mitigate the effects of flooding, drainage issues, potential landslides and other flooding related events, such naturally occurring land degradation. The output will also support the DMA in identifying financing for implementing the recommendations and upgrading the existing drainage systems, where necessary. Concrete adaptation actions to be considered as part of the designs can be either nature-based or engineering based.

Adaptation actions include increasing the roadside drainage capacity, culvert dimensions and road surface management, planting of trees along road slopes and other ecosystem-based land management techniques.

3.2.1.1 Develop a flood management plan

A flood management plan detailing how to mitigate the effects of flooding, drainage issues, potential landslides and other flooding related events will be prepared. Copies of the flood management will be published.

Developing a flood management plan to mitigate risk is achievable. Measures to reduce flooding and to limit development in flood prone areas are realistic. A draft flood management plan should be presented to the competent authorities during the first year of the project. Adequate management and contingency plans should be evidenced before the project ends.

3.2.1.2 Make an inventory of the existing drainage systems

A detailed inventory of the drainage system identifying needs for implementing and/or upgrading the drainage systems will be completed. A shapefile and database of DMA?s drainage system will be produced. A database of the condition of existing drainage system is achievable. The inventory will be available during the first year of the project.

3.2.2 Water management action plan (including integration of best practices for water conservation, reuse, recovery and recycling systems) for the DMA

Women particularly are the main users of water for domestic purposes, agricultural and horticultural practices, the course for water efficiency improvement, conservation activities and water reduction goal will therefore pay special attention to women views, needs and preference.

The Water Management Action Plan requires understanding current and possible future water balances, as well as identifying and mitigating likely sources of pollution. The objective is to develop a plan that will ensure sufficient, clean water for Dodoma for the foreseeable future. The Water Management Action Plan can best be pursued through Catchment Management Plan which is part and part of the paradigm of integrated water resources management which at the water supply system level is pursued

through water source protection plan. To that effect, catchment management plan for the respective catchment where the aquifers that feed DMA are located and water source protection plan for the DMA water supply system are included among the indicators of the output. The water management action plan will provide information about current water uses and charts a course for water efficiency improvements, conservation activities, and water-reduction goals as well as establishes the priorities and help DMA to allocate resources (funding and manpower) for water-efficiency projects that provides the biggest impact.

3.2.2.1 Develop current and future Water Balances and accounting natural capital

The project will identify current metered water consumption and flows from the Tanzanian Water Authority. The following water uses will be estimated:

? The existing water needs from households, industry and agriculture

? The future water demands for years 2050 and 2100

? The current water supply from surface water, ground water and rain capture, and possible future supplies assuming improved water capture

? Current water balance (demand versus supply) and predicted future water balances.

Demand and supply will be measured in m3 per day broken down by location and type of use. Estimating current and future water balances should be achievable, given reasonable assumptions and acceptable levels of error. Estimation of future water balances will require making many assumptions, but a best estimate should be made. Current water balances should be realistic. Future, especially for year 2100, will be far more uncertain, but predictions are needed to understand the likely future problems. This activity will be completed by the end of year one.

The second part of this activity will perform a broader natural capital accounting assessment for Dodoma to measure the changes in the stock of natural capital at a variety of scales and to integrate the value of ecosystem services into accounting and reporting systems of the Ministry of Environment. The assessment will be made publicly available to national authorities and research centres and which can be. This is an important activity to account for the range of ecosystems and their services and demonstrate in monetary terms the benefits of investing in nature and the sustainable management of resources

3.2.2.2 Identify current and possible sources of pollution

Sources of pollution to groundwater can be industrial waste, pesticides, fertilizers waste leachate from landfills and septic tank/ faecal disposal. Source for each of these can be identified by locating where related activities take place. A pollution source map will be produced for the location of identified sources and types of pollution.

The levels of pollution can be measured using selected parameters in weight per volume or molecule per volume or parts per millions using different probes. The commonly used parameters include Electric conductivity (EC) in mS/cm, Total Dissolved Solids in Mg/l and TOD in g/l.

Levels of pollution can easily be measured by water agencies or environment monitoring agencies with available instruments. While location of the pollution sources can be mapped in GIS layers. Water pollution will be measured by water quality laboratory that is part of water supply agency like DUWASA (Dodoma City Water and sewerage Authority) and respective national environmental management agency. This activity will be completed by end of year two.

3.2.2.3 Identify means of reducing water pollution risks - Water pollution occurs when harmful substances often chemicals or microorganisms?contaminate a stream, river, lake, ocean, aquifer, or other body of water, degrading water quality and rendering it toxic to humans or the environment. A pollution risk is a situation or event that exposures water source to pollution danger. Current and potential pollution risks should be identified and, where possible, eliminated. Ccurrent and potential point and non-point sources of water pollution in the DMA area will be identified as well as actions or interventions to reduce existing water pollution and to prevent future water pollution. A review and documentation ofbest practices in water use, in industries/ areas or sectors that reduce water pollution will be undertaken.

Water pollution will be measured by sampling and monitoring in the water quality laboratory of DUWASA. Once sources of pollution are identified measures will bebe taken to eliminate or remove them. The identification of means of reducing pollution risks of pollution is realistic to the extent of there being a viable alternative to the individual or community livelihood activity that contributes to the risk of pollution. This activity will be completed by end of year three.

3.2.2.4 Cost alternative options

The project will determine the cost of actions to improve water balances and increase water supply/ capture. These will be compared with the costs of not taking action and the consequences of water shortage on people, industry and agriculture. The costs of taking action are measurable. The costs of not taking action requires will be estimated. The cost of actions to reduce demand, increase supply and reduce pollutions will be realistically determined in currency equivalent.

Cost of not taking action and consequences of water shortage on women and girls in particular will also be calculated.

This activity will be completed by end of year three.

3.2.2.5 Set an Overarching Policy and Goals

Specific water use reduction targets (in percentages) will be set. These targets will be checked against the targets from existing national water efficiency policy to ensure conformity. A written policy statement that ties water efficiency to the long-term operating objective of DMA, will be prepared

The conformity to the national policies and laws will be ascertained through the review of the target against the policy/ legal provision. This activity will be completed by end of year one.

3.2.2.6 Develop an Implementation Plan

A plan is a list of steps with details of timing and resources, used to achieve an objective to do something. It is a temporal set of intended actions through which one expects to achieve a goal. The plan entails what needs to be done, by who, when, how, where the needed resources and how the execution will be organized. The intention of the plan is known, the nine interventions above that need to be undertaken are known, the institutions with the respective execution mandates are known, the timeframe within they are to be implemented are known together with the needed resources and necessary organization. To that effect, the development and implementation of the Action Plan is specific. The nine interventions that are needed to constitute the water management actions plan are clearly outlined above. The sequence, manner and organization their execution constitute the plan. The interventions outlined above are within the mandate of different government, private, non-government and civil organization. Such organizations have the capacity to undertake the different aspects of the development and implementation of the plan which makes it achievable. The nine activities outlined above that are needed for the development and implementation of the plan are within jurisdiction of their existing mandates which makes it realistic. This activity will be completed by end of year three.

The specific activities and interventions set in the implementation plan will consider gender sensitive indicators at different results chain such as outcome, output and inputs.

3.2.2.7 Develop a Catchment Management Plan

A Catchment Management Plan is tool for promoting integrated planning, development and management of water resources so as to create synergy among various sectors, promote efficiency in utilization of available resources, reduce water and environmental degradation and ensure more efficient utilization of water resources to meet various social and economic demands. Catchment Management Planning is in line with the Integrated Water Resources Management (IWRM) paradigm, which ensures that land, water, and related resources are developed and managed in a coordinated manner without compromising sustainability of vital ecosystems.

The sub-components (activities) under this output include:

- Define the hydrologic/ spatial extent/ boundaries of the catchment
- Analyse the Situation the catchment
- Engage key stakeholders
- Assess the priority social and environmental issues/problems
- Identify Problem, their analyse their impact and location
- Identify Solutions to identified problem
- Prepare a catchment management plan
- Define arrangements for implementation
- Develop a Monitoring and Evaluation arrangement - development for monitoring and evaluation

Water sources protection plans will actively involve women because are the main users of water for domestic purposes and agricultural activities.

3.2.2.8 Develop a Water Source Protection Plan

A Water Source Protection Plan for a water supply system aims at improved water quality and reliable water quantity for the water supply system as well as better livelihood opportunities for the surrounding communities. The objective of is to prepare the water source protection plan for DMA water supply system. The sub-components (activities) under this output include:

- Identify the relevant water supply system
- Undertake Technical Analysis
- Engage with Stakeholders
- Compile Water Source Protection Plan
- Implement the water source plan
- Monitor and Evaluate
- Review/ Update the Water Source Protection Plan

3.2.3 Demonstration of low-cost measures to protect groundwater aquifers from land contamination sources

Water supply of Dodoma Metropolitan area depends on groundwater resources for all her water needs. Since groundwater is located deep in the aquifers, ground water pollution is generally difficult and expensive to clean up. Besides, its contamination can go on for a while (until it is too late) before it is detected. It is therefore important, much easier and less expensive to protect aquifers from pollution and harmful development than to find new water supplies or restore ground water quality after it has been contaminated. This requires the collective effort and cooperation of different stakeholders including governments institutions, industries, businesses (private sector), and individual community members to work together to protect this invaluable resource at the lowest possible cost. The objective is to demonstrate low-cost measures to protect groundwater aquifers from land contamination sources.

Women will take part and be trained on the relevant low-cost measures to protect the ground water aquifers because they are among actors of practices that can pollute and contaminate the groundwater the quality of ground water.

3.2.3.1 Mobilize community

Community living and working in DMA will be identified. The community will be classified based on dependence and/or impact on the groundwater. Other stakeholder with interest in groundwater or whose activities are related to aquifer will also be identified. The community will be mobilized through community leaders and actors, media and community meetings.

The categories of community members and stakeholders will be listed. The number of each will be derived from the ward registers. The number and type of stakeholders like NGOs will be obtained from the appropriate office of registry. Community mobilization events will be listed and counted.

Mobilizing the Community will be done through established and/or community, public and community and administrative structures. Mobilizing community on an issue of community interest like protecting water against pollution is realistic. This activity will be completed by end of year two.

3.2.3.2 Collect Information about Groundwater Resources

Topographic maps will be prepared for the DMA. Geological maps and soil maps will also be prepared. Wetland inventory maps and natural resources maps will be prepared. Recharge and discharge location in the aquifer will be identified. Contamination sources in the recharge zones will be identified. Pollution Sources will be identified and located. Groundwater protection areas will be zoned. The position and extent of the different formations and feature of will be located and determined using GIS tools.

Topographic, geological and soil maps of DMA area will be derived from the existing maps of small scale. Wetland maps and other natural resources maps will be prepared from satellite image; depending on the scale and age needed, these images will be obtained from open source or procured. The images are geo-referenced, classified and ground truthed. Through GIS operations like overlaying of recharge ?discharge map over map of pollution sources will produce a map of pollution sites.

3.2.3.3 Identify groundwater that need protection

Surface watershed/ Catchment will be delineated using Digital Elevation Model to understand the extent of the relevant surface water of interest. The sources of the smaller drainage channels will also be identified. The aerial extent of aquifer that is tapped by the well field that supplies DMA will be determined and delineated. Aquifer upstream of well impacted by the borehole pumping to well head protection area will be identified and delineated. Maps of aquifers will be produced from the aforementioned activities.

The position and extent of the aquifer of will be located and determined using GIS facilities.

Through different operations and spatial analysis from shape files generated from earlier activities, groundwater that need protection can be identified. Overlay of map of pollution source overs map of recharge areas gives a map of areas where pollution can occur. Overlay of geological map/ soil map over map of pollution source gives a map of areas where pollution can enter the ground.

GIS software have standard operations and spatial analysis through which different maps can be generated once the appropriate source shape files or input data is available. This activity will be completed by end of year two.

3.2.3.4 Map groundwater resource protection areas

Existing data will be compiled. Data gaps will be identified data gaps. Data will then be generated to fill the identified data gaps. With the aid of GIS tools, the aquifer maps will be prepared using the processed data aquifer maps. The aquifer protection areas and the water source area will be prepared from aquifer maps.

The vertical and horizontal extension of the aquifer will be measured in meters. The aquifer parameters will also be derived from test pumping data and other data from existing well field.

The horizontal extent of aquifers can be measured using GIS tools. Vertical extent can be derived from a combination of drilling log data and modelling technics. Analysis of test pumping wells can be used to ascertain the required aquifer parameters. Preparing maps of groundwater resources protection areas using GIS tools when data is availed is realistic. This activity will be completed by end of year two.

3.2.3.5 Make Inventory Existing and Potential Pollution Threats to Ground Water Protection Areas

Source of pollution to groundwater can be from industrial waste , pesticides and fertilizers , waste leachate from landfills and sewerage for septic tank and faecal disposal . Source for each of these will be identified and listed by locating where related activities take place. A pollution source map will be produced for the location of identified sources and types of pollution.

The levels of pollution will be measured using selected parameters in weight per volume or molecule per volume or parts per millions using different probes. The commonly used parameters include Electric conductivity (EC) in mS/cm, Total Dissolved Solids in Mg/l and TOD in g/l.

Types and levels of pollution can easily be measured by water agencies or environment monitoring agencies with available instruments while location of the pollution sources can be mapped in GIS layers.

Water pollution will be measured by water quality laboratory that is part of water supply agency like DUWASA (Dodoma City Water and sewerage Authority), and respective national environmental management agency and water resources management department of the ministry of water. This activity will be completed by end of year two.

3.2.3.6 Identify ways of protecting water quality

Water pollution occurs when harmful substances often chemicals or microorganisms?contaminate a stream, river, lake, ocean, aquifer, or other body of water, degrading water quality and rendering it toxic to humans or the environment. A pollution risk is a situation or event that exposures water source to pollution danger.

Point and non-point sources of water pollution in DMA area will be identified. A Review literature to identify and Document Best practices in water use, in industries/ areas or sectors that reduce water pollution, will be undertaken. The reduction in pollution is measured by ascertaining selected parameters before and after execution of the identified interventions. The different quality parameters are measured using instruments that should be available in the water quality laboratory of DUWASA, water resources management department of Ministry of Water.

The identification of means of reducing pollution will be achieved once actions to address the causes of pollutions are identified. This is realistic to the extent of there being a viable alternative to the individual or community livelihood activity that contributes to the risk of pollution. This activity will be completed by end of year two.

3.2.3.7 Costing ways of protecting groundwater against pollution and demonstrating low-cost options and popularizing them

This activity will determine cost of actions to reduce pollution and compare these with the costs of the respective inactions to reduce water pollution. The individual costs can be measured in different currency equivalent by different approaches. The determination of the costs of respective actions can be achieved. The cost of actions to reduce pollutions can be realistically determined in currency equivalent. However, for the future, especially for year 2100 the cost of inaction may be difficult to determine. This activity will be completed by end of year two.

Five low-cost actions for reducing costs will be chosen and their demonstrations of will be set up at a number of different locations / demonstration sites. To demonstrate the ways of protecting the water against pollution, the water quality is ascertained before and after the intervention. Information on the chosen low-cost options will be disseminated to sensitize community accordingly. Awareness raising channels will be chosen based on the information to be disseminated and the intended audience of the information.

The levels of pollution will be measured using selected parameters in weight per volume or molecule per volume or parts per millions using different probe before and after the actions. The commonly used parameters include Electric conductivity (EC) in mS/cm, Total Dissolved Solids in Mg/l and TOD in g/l. The improvement water quality or reduction in pollution is ascertained in percentage reduction in pollutants determined by chosen quality parameters. The demonstration sites will be counted. The type, number of communication channels as well as communication events will be counted.

The space or venues will be determined and secured with the help of local administration (wards etc). Setting up the demonstration will be done by the DUWASA with the help of water resource management department of the ministry of water. Media houses and communication companies as well as local NGOs/ CBOs will support awareness raising of the method amongst DMA community.

3.2.3.8 Establish trials of zero water toilets (Sanergy model)

Cities are growing faster than ever. Currently, 60 million new residents move to urban areas every year. 25% live in slums, amounting to 1 billion people with inadequate housing and limited access to basic services. This number is expected to double to 2 billion by 2030. Sanergy model build affordable sanitation products for communities in urban slums, collect sanitation waste, and convert the waste into valuable end-products (e.g.: organic fertilizers). Zero water toilets will be demonstrated in communities and individual homes as a trials in Dodoma (US$350 installation fee, annual US$70 renewal fee and US$10 monthly collection fee. Assuming a trial of 100 households)

Output 3.4 Early warning system for extreme climatic, weather and other natural disasters

This output will build on and improve the existing early warning system (EWS) for the DMA to predict extreme weather events with more certainty and with seasonal lead times to help communities and industries to better cope with related climate threats. This will include addressing gaps for effective operationalization of the EWS including usable and interactive information on predicted risks, the setting-up of adequate communication channels to key decision-makers. Combined with efficient resource use and safe wastewater reuse, communities and industries of the DMA can better adapt to the more severe and frequent droughts, floods, heatwaves, earthquakes and other threats.

The adequate management of severe weather-related disasters which after impacts on agricultural production, water resources and ultimately on food security in the face of climate risks, it is critical to strengthen the capacity of hydro-meteorological services and networks in Dodoma to adequately predict extreme climate events. Moreover, it will be complemented with actions to put in place and/or improve communication channels for early warning information to eventually support well-informed preparedness and response measures in light of forecasted climate risks and identified vulnerability profiles. In combination with water resource use efficiency and safe wastewater reuse, urban communities of Dodoma city will be in a better position to adapt to severe droughts and floods.

3.4.1 Minimize impacts related to weather-related disasters

Existence of adequate management and contingency plans for weather-related disasters.

Adequate management of severe weather-related disasters (both mitigation and contingency plans) produced detailing how to reduce, avoid and/or manage impacts on agricultural production, water resources and ultimately on food security. Copies of the management and contingency plans will be published.

Developing management and contingency plans for Dodoma before the project is achievable. Guidelines to act upon weather-related disasters in Dodoma are realistic. Adequate management and contingency plans will be evidenced before the project.

The gender differentiated adverse impacts of weather-related disasters on agricultural production, water sources and food security for women, youth and men will be predicted and appropriate measures to revert the impacts will be formulated.

3.4.2 Strengthen the capacity of hydro-meteorological services and networks in Dodoma

Completion of a training workshop to Dodoma?s hydro-meteorological services? staff, related to prediction and modelling of extreme weather events will be undertaken during Year 1.

An extreme weather prediction training event produced to strengthen capacity of hydro-meteorological services in Dodoma. Measured through copies of the training curricula and attendance lists. A training workshop to the hydro-meteorological services? staff is achievable and realistic. The training should take place during the first year of the project.

3.4.3 Improve communication channels for early warning information

A dissemination workshop regarding advances of the early warning system should be conducted, proven through copies of the dissemination workshop?s attendance lists. Conducting a dissemination workshop is achievable and improving communication channels through a dissemination workshop is realistic. The dissemination workshop should take place during the first year of the project.

Output 3.4 Demonstrate nature-based solutions for improved urban resilience and alternative livelihood creation through community-based enterprises

3.5.1 Develop Community Based Entrepreneurship initiatives for women and youth

Business opportunities developed that reduce the use of non-renewable resources, recycle resources, or use fully renewable and sustainable resources. These opportunities should involve communities, women and youth, wherever possible. Options include, but are not limited to:

? Development of low carbon building materials (as cement is a major cause of C02 pollution reducing the use of cement is a major benefit.

? Recycling of materials, including glass, plastic, metals and fabrics.

? Creation of sustainable products using renewable materials, or energy. Including development of clothes from cotton and wool, development of solar and wind power systems.

? Number and types of community livelihoods initiatives established should be recorded as well as number of women, men and youths involved recorded.

Development of community-based enterprises targeted at women and youths will be achieved, with support in the form of training and seed capital. The development of community-based enterprises will be realistic only if they can compete successfully with commercial alternatives. This will be conducted progressively from the first year of project intervention.

3.5.2 Establish nurseries and tree planting projects

The development of nurseries and tree planning schemes is linked to Community Based Entrepreneurship initiatives for women and youth.

Nurseries will be developed for the production and sale of 100,000 seedlings per year for food, fuelwood, construction materials and amenity planting.

Three tree planting campaigns will be undertaken to provide individual households with trees for food, shade and amenity, farmers with trees for crops, the protection of watershed and vulnerable soils as well as amenity planting in and around Dodoma

The number of seedlings produced and the amount of food and firewood harvests -in long run, harvest of constructions materials in long run, increase per capita green space will be estimated. The number and area of projects to be developed each year will still be established. The development of nurseries and tree planning schemes will be linked to Community Based Entrepreneurship initiatives for women and youth, above.

The production of seedlings will require basic equipment, including planting bags, soil, nutrients, seeds, watering equipment and shade. Training will also be provided. The viability depends on being able to sell seedlings for more than cost of production, which will form a key parameter in the approach taken to establish the nurseries and tree planting projects.

This activity will be completed by the second year of the project.

3.5.3 Manage open spaces by community members

Community projects established with emphasis on women and youths to provide both the improvement of local areas and develop small scale commercial opportunities will be undertaken by the project in a manner to also provide benefits towards the restoration or rehabilitation of degraded lands and development of local tourism. This will also include the provision of relevant trainings to beneficiaries ? women, youth and men.

Land demarcated for open space needs to exist as well as opportunities for small scale business. Provision of relevant trainings to beneficiaries ? women, youth, and men will be provided. This activity will start from the first year of the project implementation

Component 4. Knowledge Management, Monitoring and evaluation (M&E)

Outcome 4: Effectiveness of the outputs assessed, experience documented, and knowledge Management

Output 4.1 Strengthening linkages with universities, other research institutions, other cities and relevant platforms to support sustainability and scale-up research on best practices for resilient urban development.

4.1.1 Participation of the DMA in the Global Platform for Sustainable Cities (GPSC) and exchange of experiences with other cities

4.1.1.1 Become a member city of the GPSC and participate in events organized by the GPSC or similar platforms

The objective of this intervention is to ensure that the Dodoma Metropolitan Area (DMA) is successfully and effectively participating in the Global Platform for Sustainable Cities (GPSC) and is exchanging experiences with other cities.

The DMA will join and participate in the (GPSC). Dodoma will be listed as participating city on the GPSC website (https://www.thegpsc.org/city-dashboard). This can realistically be achieved within the first six months of the project.

Staff of the Dodoma City Authority, ministries within the Tanzanian government as well as public enterprises will participate in events and/or other activities that are organized by the GPSC to exchange experiences with other cities on urban planning and climate resilience. Staff will also participate in activities organized by other reputable platforms focusing on similar topics. The relevant group of relevant stuff builds upon those identified in Outcome 1. Minutes, summaries and/or presentations of the meetings will be archived to document this activity. This activity will start as soon as participants from Dodoma are eligible to participate and will continue throughout the duration of the project and after it has been completed.

Gender consideration will be included to determine the government staff and other representatives from Tanzania to participate in events and or activities organised by GPSC.

4.1.1.2 Organize study tour to another city

A study tour will be organized to another city to learn from this city. The city selected for the study tour will be chosen based on the following criteria: (i) located in Africa, (ii) similar geographic/climatic characteristics, (iii) facing similar challenges, (iv) advanced stage of development, i.e., the city for the study should already have made progress in overcoming some of the challenges at hand. Study tours are a well-established instrument to facilitate learning and building networks between organizations facing similar challenges. The study tour will be conducted within the second year of the project.

Equal gender representation will be aimed for the study tour to include the participation of women, men and youth.

4.1.2 Strengthening linkages with universities and other research institutions to support sustainability and scale-up research on best practices for resilient urban development and developing a climate resilience program.

This activity will strengthen the information, knowledge base and M&E system for all relevant stakeholders. Opportunities will be explored and pursued to strengthen accessibility to and use of information, and to identify research gaps, and possibly creating an open database or using other tools.

This will include available research and information on climate-related issues into which academics, policy researchers and CSOs (local and international) could feed relevant research. Policymakers will use this platform to publish their information needs. This will be led by one of the leading universities in Tanzania in collaboration with the VPO. Tanzania would also benefit from: creating regular, topical, cross-ministerial forums; strengthening formal and informal low cost? channels of communication; strengthening flows of information upwards, potentially facilitated by civil society organizations; and creating an open database of available research and experts, mapping responsibilities and expertise.

A database of relevant academic institutions will be produced. This will enable strengthening linkages in terms of climate change and urban development. A database of relevant academic institutions system is achievable and realistic. The database will be made available at the beginning of the project.

A climate-related training program amongst the potential academic institutions will be developed. The training curricula will be developed during the first year of the project.

4.1.3. Project related publications and information dissemination materials

The project will produce and disseminate materials explaining about the project and in particular how to mitigate against the expected impacts of climate change.

The production of a publication and information dissemination materials will inform about the project and project progress, including documents explaining about climate change in general, but specifically about climate adaptation and resilience. Quarterly reports which inform about the information dissemination activities.

Documentation of best practices and experiences, preparation of project results, experiences gained, and lessons learnt will be possible through the implementation of other projects components. These activities will start as from the first year of the project implementation.

Output 4.2 Data Collection, Regular Progress Reports, Mid-term Review and Terminal Evaluation reports prepared

Where relevant, all data will be disaggregated by sex and gender. Gender responsive evaluations techniques will be considered in the implementation of mid-term reviews, the terminal evaluation and the production of other reports, as

4.2.1. Baseline and mid-term data collection

4.2.1.1 Select criteria for Monitoring and Evaluation of the Project

The criteria for M&E should measure changes that can be attributed to the impact of the project. It is understood that external factors may also cause changes. Clearly defined, measurable criteria, will be disaggregated by age and gender where appropriate. Criteria are quantifiable and can be triangulated to check information provided. The criteria selection will be made in the first six months of project.

4.2.1.2 Establish systems of data collection, collect and collate data

The data collection system must be statistically viable and must allow household members, irrespective of age and gender to answer without being influenced by others. Means of collection will provide a permanent record (digital or physical) and allow for data to be collated and interrogated quickly and accurately. The system will be designed and evaluated in the first six months of the project.

Data will be collected from agreed sample size and distribution, archived and analysed. The baseline survey will start as soon as the criteria and survey data system is agreed and tested. Mid Term and Terminal Surveys are to be completed six months prior to the Mid Term and End of Project Reviews.

The data will be collected and compiled to evaluate progress against the logframe performance indicators. The data needed to compile the logframes is specified, collected and compiled each month. Data entered into a dedicated database and changes against targets and previous month?s results reported. The data will be quantifiable, and the collection of data will not require significant additional activities. The data will be collected, collated and reported each month.

4.2.2 Regular progress reports, PIRs and mid-term review

4.2.2.1 Produce monthly progress reports and a yearly Project Implementation Reports (PIRs)

Monthly progress reports will be produced stating achievements for the previous month, challenges in meeting targets, and objectives for the next month. Data required will be available to all relevant implementation and executing entities.

PIRs will be produced yearly in the prescribed GEF template. It is essential to align M&E activities with the M&E activities of the AfDB financed ring-road project.

4.2.2.2 Produce Mid-term review

The mid-term review (MTR) will measure performance against targets against mid-term and end of project objectives. Reasons for deviation from planned objectives will be understood. The need to amend objectives other parameters, and any recommendations for modifications to the project will be reported. The MTR will be made available as physical and electronic documents, with summary versions made available to all stakeholders. MTR should be conducted by independent third party. The MTR will take place between one third and halfway through the project, with initial findings produced, ideally, immediately at end of MTR, and final report two weeks after end of MTR. The project will ensure that M&E activities are aligned with the M&E activities of the AfDB financed ring-road project and GEF requirements for the MTR.

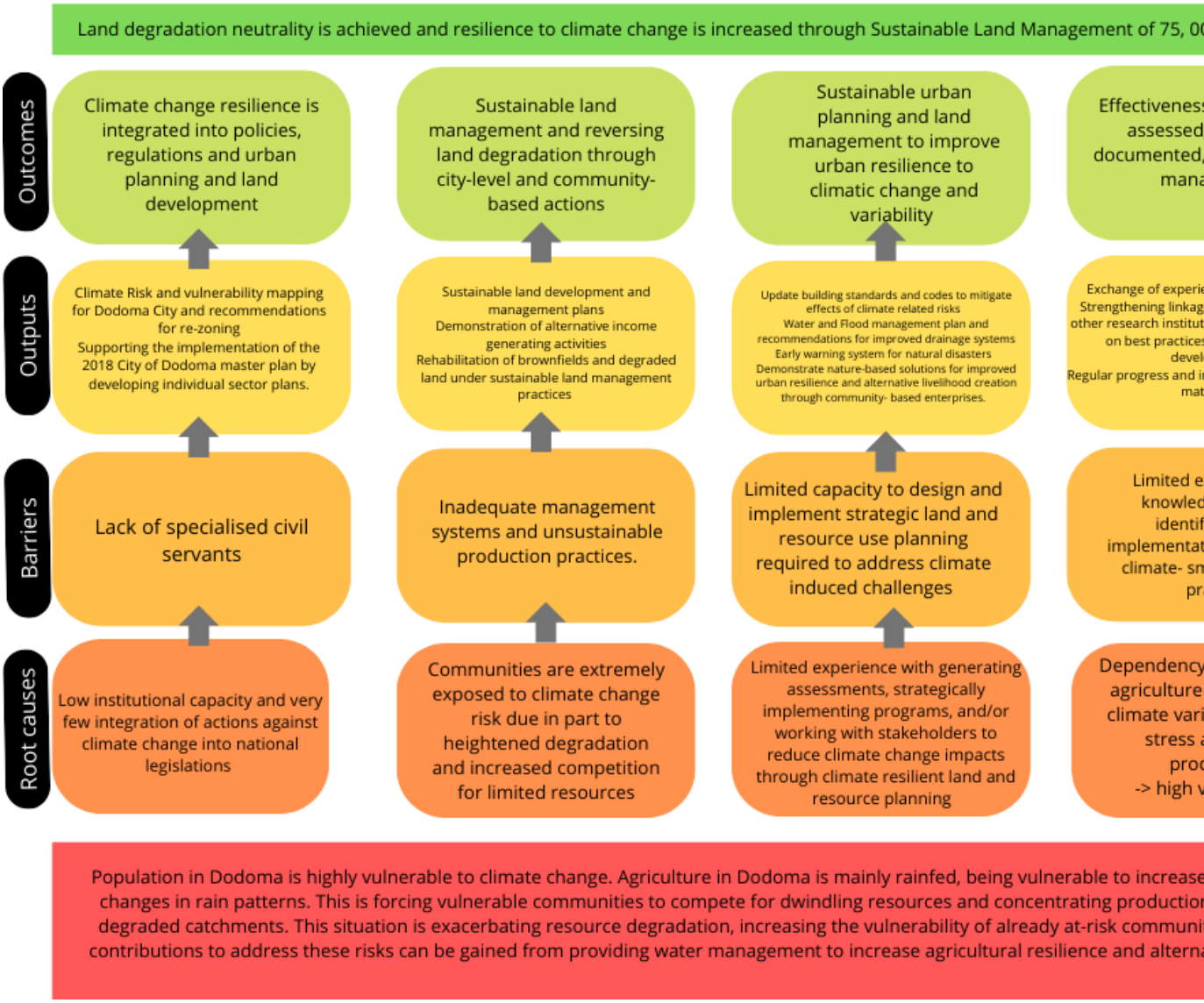
4.2.2.3 Produce Terminal Evaluation Report

The Terminal Evaluation Report (TER) will report on the achievements of the project against the planned objectives, challenges faced during in project, modifications to project design and implementation made during in the project. It will also make recommendations for follow-on or related projects, both in country and elsewhere. The TER will follow the GEF and AfDB guidelines.

The TER will be made available as a physical and electronic document, with a summary version made available to all stakeholders including other development partners. TER are / should be standard for all projects. The TER will be produced by independent evaluators and will be a critical evaluation of the whole project process. The TER will be produced before the project ends, so that the development partners, consultants and stakeholders can learn lessons from the evaluation. It is understood that this

may be difficult, and therefore an interim report will be produced before the last month of the project, with a final report being produced within two months of the end of the project.

The Theory of Change for this project is presented below (added 22 November 2022):



The Theory of Change will be regularly revisited and adjusted to monitor the outcomes for achieving the goals set under this project. As such, the project will treat the TOC as an ongoing exercise.

4) Alignment with GEF focal area and/or Impact Program strategies

An Annex N has been added.

The main alignment is with the GEF 7 Land Degradation Focal Area, nevertheless some components and activities are also linked to climate change, biodiversity and chemicals and waste. Annex N shows the GEF-7 Focal Area elements as well as some non-focal area elements and their applicability to the project. The funding accessed for the project?s Land Degradation (LD) reaches 1.4 million USD and 3.7 million USD for Climate Change Adaptation (CCA).

Table 4. Project?s GEF Focal and Non-Focal Objectives

Focal / Non-focal Area	Area	Objectives
Focal	Land Degradation (LD)	LD-1-4: Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape
Non-Focal	Climate Change Adaptation (CCA)	CCA-1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation
		CCA-2: Mainstream climate change adaptation and resilience for systemic impact

The overall goal being to contribute to arresting and reversing current global trends in land degradation, specifically desertification and deforestation. This is mainly to be achieved by preventing further land degradation and restoring land already degraded, including agricultural land and woodlands, but also brownfield sites, such as old mineral workings and abandoned industrial areas. For agricultural land work will include improving farming practices, but also protecting cut woodlands to allow natural regeneration and to protect new planting.

Improved planning and building control aim to develop communities better adapted to changing climates, hence lowering carbon consumption, both from energy, used for cooling and cooking, and from construction. Improved land rights also support the conversion of land into its highest and best use, through the development of higher density developments towards the centre of the city. Better transportation links, including the new ring road, will reduce congestion, reduce fuel consumption, and hence lower carbon release.

There are also linkages to other GEF-7 Focal Areas:

? **Biodiversity**: Restoration of degraded lands will improve habitats and increase biodiversity. The project is expected to put 75000 ha of landscapes under sustainable management. Some management practices include increasing soil organic carbon (soc) on agricultural areas, increasing forest cover in deforested areas and stablishing forest plantations (see Annex M). Increasing forest cover offers habitat, shelter and food resources for species, which is linked to improved biodiversity status and ecosystem services.

? **Chemicals and waste:** Disposal of waste in landfill sites needs to be monitored to prevent contamination. Restoration will depend on the contamination levels. The use of pit latrines and soakaways presents problems of groundwater pollution, but also surface water pollution if they are inundated during flash floods. Sewage systems may also lead to pollution if effluent is not treated properly or if the treatment sites are inundated during flash floods. A viable solution to improve urban sanitation is the implementation of container-based sanitation (CBS) approach and Free Life Toilets (FLTs) which has been succefuslly implemented in Nairobi, Kenya (Word Bank, 2019).

The contributions of the project to GEF strategies are indicated in Table 5 below.

GEF Focal Area Objectives	GEF Program	GEF Indicators / Outcomes	Project Contribution

LD-1-4: Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape	1. Policy and institutional framework for sustainable urban and regional development	1. Sustainable land management and reversing land degradation through city-level and community-based actions	1.1. Climate Risk and vulnerability mapping for Dodoma City and recommendations for re-zoning, where necessary 1.2 Supporting the implementation of the 2018 City of Dodoma master plan by developing individual sector plans. 1.3 Institutional Capacity developed to adequately address climate vulnerabilities in communities of the DMA
	2. Reversing and managing the negative impacts of growth of the urban footprint on land	2. Climate change resilience is integrated into policies, regulations and urban planning and land development	2.1 Sustainable land development and management plans 2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship 2.3 Rehabilitation of brown field sites and degraded land under sustainable land management practices

CCA-1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation	3. Urban Resilience to Climate change	3. Sustainable urban planning and land management to improve urban resilience to climatic change and variability	3.1 Updating building standards and codes to mitigate effects of climate related risks 3.2 Flood management plan and recommendations for improved drainage systems 3.3 Water management action plan (including integration of best practices for water conservation, re-use, recovery, and recycling systems) for the DMA 3.4 Early warning system for extreme climatic, weather, and other natural disasters 3.5 Demonstrate nature-based solutions [A1] for improved urban resilience and alternative livelihood creation through community-based enterprises. 3.6 Demonstration of low-cost measures to protect groundwater aquifers from land contamination sources

CCA-2: Mainstream climate change adaptation and resilience for systemic impact	4. Knowledge Management, Monitoring and evaluation (M&E)	4. Effectiveness of the outputs assessed, experience documented, and knowledge management	4.1 Participation of the DMA in the Global Platform for Sustainable Cities (GPSC) and exchange of experiences with other cities. Best practices in how to build urban resilience to climate change and climate change adaptation in Dodoma will be identified and documented during implementation of respective project interventions in pursuit of different outputs. Under the outcomes. Besides, lessons learned in execution of different project interevents will also be documented. These will constitutes experiences this project will share with the GPSC. 4.2 Strengthening linkages with universities and other research institutions to support sustainability and scale-up research on best practices for resilient urban development 4.3 Regular progress, Mid-term Review and Terminal Evaluation reports prepared 4.4 Project related publications and information dissemination materials

[A1]What are the nature-based solutions? Is this described in the alternative scenario?

Table 5. Project Contribution to GEF Indicators and Outcomes.

GEF Focal Area Objectives	GEF Program	GEF Indicators / Outcomes	Project Contribution

LD-1-4: Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape	1. Policy and institutional framework for sustainable urban and regional development	1. Sustainable land management and reversing land degradation through city-level and community-based actions	1.1. Climate Risk and vulnerability mapping for Dodoma City and recommendations for re-zoning, where necessary 1.2 Supporting the implementation of the 2018 City of Dodoma master plan by developing individual sector plans. 1.3 Institutional Capacity developed to adequately address climate vulnerabilities in communities of the DMA
	2. Reversing and managing the negative impacts of growth of the urban footprint on land	2. Climate change resilience is integrated into policies, regulations and urban planning and land development	2.1 Sustainable land development and management plans 2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship 2.3 Rehabilitation of brown field sites and degraded land under sustainable land management practices

CCA-1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation	3. Urban Resilience to Climate change	3. Sustainable urban planning and land management to improve urban resilience to climatic change and variability	3.1 Updating building standards and codes to mitigate effects of climate related risks 3.2 Flood management plan and recommendations for improved drainage systems 3.3 Water management action plan (including integration of best practices for water conservation, re-use, recovery, and recycling systems) for the DMA 3.4 Early warning system for extreme climatic, weather, and other natural disasters 3.5 Demonstrate nature-based solutions [A1] for improved urban resilience and alternative livelihood creation through community-based enterprises. 3.6 Demonstration of low-cost measures to protect groundwater aquifers from land contamination sources

CCA-2: Mainstream climate change adaptation and resilience for systemic impact	4. Knowledge Management, Monitoring and evaluation (M&E)	4. Effectiveness of the outputs assessed, experience documented, and knowledge management	4.1 Participation of the DMA in the Global Platform for Sustainable Cities (GPSC) and exchange of experiences with other cities. Best practices in how to build urban resilience to climate change and climate change adaptation in Dodoma will be identified and documented during implementation of respective project interventions in pursuit of different outputs. Under the outcomes. Besides, lessons learned in execution of different project interevents will also be documented. These will constitutes experiences this project will share with the GPSC. 4.2 Strengthening linkages with universities and other research institutions to support sustainability and scale-up research on best practices for resilient urban development 4.3 Regular progress, Mid-term Review and Terminal Evaluation reports prepared 4.4 Project related publications and information dissemination materials

5) Additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCF/SCCF, CBIT and co-financing

1) The GEF Alternative builds on the baseline scenario (Outer Ring Road - AGTF) and makes possible activities that would not otherwise be undertaken under that scenario. The objective of the GEF component is to demonstrate an integrated approach for reducing pressures on the city?s critical

infrastructure, environmental and urban assets and increasing the city?s climate resilience through integrated urban development planning for climate change adaptation and sustainable land management

2) Activities will aim to promote a cross-sectoral approach to local economic development, environmental management, and resilience that simultaneously addresses climatic challenges. These interventions are aimedat critically complementing the Outer ring road project.

3) The project is in line with the targeted GEF-7 focal area strategies (LD, CCA) and contributes directly to objective LD-1-4: Reduce pressures on natural resources from competing land uses and increase resilience in the wider landscape; CCA-1: Reduce vulnerability and increase resilience through innovation and technology transfer for climate change adaptation; and CCA-2: Mainstream climate change adaptation and resilience for systemic impact.

4) The GEF project?s development objective is to demonstrate an integrated approach for reducing pressures on the city?s critical infrastructure, environmental and urban assets and increasing the city?s climate resilience through integrated urban development planning for climate change adaptation and sustainable land management. The project will generate improve Dodoma?s Climate Change Adaption and reduce Land Degradation benefits through several GEF focal areas while simultaneously advancing the Government?s main development objectives and its commitments under environmental conventions and poverty reduction strategies.

5) At the local level there will be a number of expected positive socio-economic impacts and numerousimpacts on the biophysical and human environment, including: (i) improved availability of water for industries, domestic use, crops, livestock and environment; (iii) reduced vulnerability to climatic and other shocks; (iv) diversification of activities, income generation and job creation; (v) preservation of natural resources and improved resource management; (vi) better access to basicsocio-economic services; and (vii) dissemination of best practices in integrated urban planning. The project aims to strengthen a trend towards sustainable urban management of Dodoma City.

6) In terms of quantifiable global environmental benefits, the project will specifically result in 75,000 haArea of landscapes under improved practices (hectares; excluding protected areas).

7) With reference to the two important areas of land degradation and climate change adaption,the alternative scenario with the benefits of incremental GEF funding is expected to be USD 215,218,000.

8) Finally, the project will promote a crosscutting capacity development and M&E strategy through which lessons learned will be captured and knowledge disseminated, and the project activities effectively monitored and evaluated. These will be achieved participation of the DMA in the Global Platform for Sustainable Cities (GPSC) and exchange of experiences with other cities, Strengthening linkages with universities and other research institutions to support sustainability and scale-up research on best practices for resilient urban development, Regular progress, preparation of Mid-term Review and Terminal Evaluation reports, and preparing and disseminating project related publications and information dissemination materials.

Incremental Cost Reasoning:

1) Overall, the key value-addition of the GEF contribution is to shape the project with respect to land degradation, urban planning, environment, and climate change multi-focal initiative, ensuring environmental sustainability and enhanced resilience through conservation, adaptation, and mitigation. The GEF incremental value will enhance climate change resilience, promote integrated urban land management, improve the social economic status of the population through sustainable livelihood opportunities which will deliver global environmental benefits that would not normally have been the primary focus of a solely AfDB-financed project

2) **Without GEF:** There is weak institutional and technical capacity to plan and implement informed climate change adaptation (CCA) actions at the local level in Dodoma. In addition to the severe lack of climate sensitive urban plans and policies, there is not enough coordination and integration between various sectoral policies and adaptation initiatives for sound urban planning. Rapid, unplanned and uncontrolled urban development has resulted in a city being developed without adequate infrastructure planning and building standards. The lack of infrastructure includes inadequate sewerage, garbage collection, water supply, electricity, schools, health centres and public open space. With planning and building standards, there is a lack of adequate plans a lack of affordable, registered parcels, but also a lack of development and building control. Resulting in informal settlements, where people have no registered land rights and where construction does not meet even the most basic needs, never mind the providing shelter that can provide safe accommodation in the face of climate change.

3) Poor levels of sanitation, including the use of pit latrines results in contamination of the groundwater, release of methane and spread of disease. Disease being a particular problem when intense rains result in flooding which causes the pit latrines to fill and faecal matter being washed downstream, leading to diseases including cholera and dysentery. The lack of adequate garbage collection and treatment, leads to problems with vermin, which in turn spread disease. The lack of proper treatment of effluent and garbage also results in production of methane, which is a more potent climate change gas than CO_2.

4) In peri-urban and rural areas, too many people are trying to sustain livelihoods on land that was already degraded without taking into consideration the effects of climate change. Subsistence agriculture, with low levels of inputs and continuous mono-cropping has resulted in soils being depleted of nutrients and organic matter, leading to reduced yields, land degradation, soil erosion and release of CO_2. Overgrazing has further exacerbated the problem. Cutting of woodlands for fuelwood and charcoal production, without any plans for restoration, has increased land degradation, but has also resulted in increased runoff and hence reduced infiltration and replenishment of groundwater.

5) Without the GEF project Dodoma risks catastrophic failure, probably triggered by an extreme climatic event. As mentioned above, severe flooding could result in pit latrines and garbage dumps being inundated resulting in lift threatening diseases. Droughts could result in the already limited water supply being reduced further, leaving people, especially the poor without adequate water supplies. And extreme heat could result in death, especially from vulnerable people in informal settlements (On Tanzania?s Precipitation Climatology, Variability, and Future Projection? by Krishna Borhara, Binod Pokharel, Brennan Bean, Liping Deng and S.-Y. Simon Wang).

6) The GEF Project provides an opportunity to mainstream Climate Change Adaption and interventions for reduction of land degradation in the Baseline Project. There is some data about environmental degradation from a variety of sources. GEF Project facilitates integration of this information to form a basis for sound and resilient urban development planning at the local and national levels. Without the GEF Project, this may not happen. Although there are water projects that promote water resource management in Tanzania, there is a need to invest in the protection and conservation of water, including the sustainable use of groundwater resources to balance the annual recharge rates with the evolving consumption needs of urban dwellers. This would be missed out without the GEF Project, which has outputs dealing with land use planning and flood risk mapping. The projected growth of the City of Dodoma also needs to provide for climate-sensitive human settlements development. Firstly, the city needs to be equipped with the means to monitor and predict potential high intensity rainfall which might result in flash floods that would affect human dwelling. This is currently not provided for in the Baseline Project and is to be addressed through GEF Project. There is substantial lack of coordination and communication between sectoral ministries and agencies for adequate knowledge generation and management. The GEF Project will demonstrate an integrated approach for reducing pressures on the city?s critical infrastructure, environmental and urban assets and increasing the city?s climate resilience through integrated urban development planning for climate change adaptation and sustainable land management. Without the GEF Project Dodoma will be vulnerable to climate change challenges and land degradation together with the associated impacts.

7) **Incremental Costs Analysis.** The Program of Building resilience through sustainable land management and climate change adaptation in Dodoma to demonstrate an integrated approach for reducing pressures on the city?s critical infrastructure, environmental and urban assets and increasing the city?s climate resilience through integrated urban development planning for climate change adaptation and sustainable land management. The Objective of the baseline project to GEF Project is to

support Tanzania?s economic growth through development of transport infrastructure that contributes to its poverty reduction strategy. The baseline project concerns Dodoma City, Tanzania, and the neighbouring countries with which Tanzania trades. The AfDB baseline project seeks to eliminate structural impediment to local, regional, national, and international trade. The GEF grant is USD 5.117,100 million to complement the AfDB project and strengthen on-the-ground activities in target regions based on Climate change resilience/ climate change adaption and integrated urban planning. GEF funding will be multi-focal from the integrated land management, water resources management, capacity building, flood mapping, climate Risk and vulnerability mapping, institutional Capacity, Sustainable land development and management planning, poverty reduction, sustainable land management planning, policy review, Flood management, integrated water management, urban resilience and alternative livelihood creation water and land management, sustainable forest management and knowledge management. The difference between the GEF alternative and the GEF contribution represents the incremental cost of the project.

Table 6. Incremental Assessment Summary of the GEF Component within the Outer Ring Road Project.

Baseline (Outer Ring Road Project)	GEF Alternative	Incremental activity

Baseline (Outer Ring Road Project)	GEF Alternative	Incremental activity
Component 1: Road Construction Civil Works 1.1 Road Construction of: (i) Nala ? Veyula - Ihumwa (50.2km) (ii) Ihumwa-Matumbulu-Nala (60.0km) and Works Supervision services for (i) and ii. (iii) Community awareness-raising (iv) Sensitization environment protection HIV, Road Safety, Gender) (v) ESMP and RAP implementation.	GEF grants and assistance focused on enhanced climate change resilience and improved urban planning to reduce land degradation. Support will be provided to subsistence farmers to implement low-tech enterprise that diversify livelihood opportunities beyond just agriculture. GEF Projects increases the benefits accruing from the Outer Ring Road (Baseline) project by contributing to the reduction of the negative impacts of baseline project and contributing to the enhancement of the positive impacts (benefits) of baseline project.	Interventions under GEF Project Output 4.4 - Project related publications and information dissemination materials can incrementally be used to contribute to the dissemination of information on the dangers of HIV/ Aids, sexually transmitted diseases, and other viral disease such as COVID-19 and consequently suppress their incidences. The stakeholders? analysis and engagements that are part and partial of the interventions under GEF Project Outputs 3.3 and 3.6 can contribute towards mitigation against incidences of HIV/AIDS, COVID-19 and infection related diseases. The GEF Project should be able to advise on restoration plans for quarries used in development of the ring road. Interventions under GEF Project Outputs 2.1 Sustainable land development and management plans; and 2.3 Rehabilitation of brown fields and degraded land under sustainable land management practices will contribute to the mitigation of the respective impacts. Interventions under GEF Project Output 3.6 - Demonstration of low-cost measures to protect groundwater aquifers from land contamination sources will contribute the mitigation against the risk of water and land pollution. Interventions under GEF Project Output 3.2 Flood management plan and recommendations for improved drainage systems will contribute to incremental benefits to the baseline project through contributing to the mitigation against soil erosion and instability of slopes. Interventions under GEF Project Outputs 2.1 Sustainable land development and management plans; and 2.3 Rehabilitation of brown fields and degraded land under sustainable land management practices will contribute to the mitigation of the respective impacts. Interventions under GEF Project Output 3.6 - Demonstration of low-cost measures to protect groundwater aquifers from land contamination sources will contribute the mitigation against the risk of water and land pollution. Interventions under GEF Project Output 3.2 Flood management plan and recommendations for improved drainage systems will contribute to

Baseline (Outer Ring Road Project)	GEF Alternative	Incremental activity
		incremental benefits to the baseline project through contributing to the mitigation against soil erosion, instability of slopes, and improved recharge of the aquifer.

Baseline (Outer Ring Road Project)	GEF Alternative	Incremental activity
Component 2: Related Facilities 2.1 Development of related urban/rural roads leading to key social services 2.2 Markets, Roadside Stops; Community Water Sources, Strengthening of health Centres 2.3 Provide Enterprise Development Assistance to women and youth	Grant support will develop alternative livelihood opportunities for the residents of Dodoma, including women, youths, and people with special needs. Eco-friendly livelihood opportunities will be demonstrated and promoted through interventions under the GEF funded project outputs. The GEF support will contribute to the sustainable land management and reversal of land degradation which contributes to the sustainability of road infrastructure. The grand will also mitigate against effects of floods and improve on drainage system both of which will increase the lifespan of the road infrastructure. The GEF Project will contribute to the protection of water quality and conservation of water quantities for different social-economic and environmental uses through demonstration of low-cost measures to protect groundwater aquifers from land contamination Sources and developing Water management action plan (including integration of best practices for water conservation, re-use, recovery and recycling systems) for the DMA to improve water balances of the area. This will be vital in the sustainable	The GEF Grant through 1.3 Institutional Capacity developed to adequately address climate vulnerabilities in communities of the DMA will provide institutions with the much-needed capacity to develop and maintain roads to support key social services. The project through output 1.2 Supporting the implementation of the 2018 City of Dodoma master plan by developing individual sector plans will help to ensure that urban and rural roads in the DMA are developed according to the set master plan. Further, GEF Project through Output 2.1 Sustainable land development and management plans and output 2.3 Rehabilitation of brownfields and degraded land under sustainable land management practices as well as output 3.2 Flood management plan and recommendations for improved drainage systems will contribute to the sustainable land management, reversal of land degradation, mitigation against effects of floods and improve on drainage system all of which will increase the lifespan of the road infrastructure. The GEF Project through interventions under project output 3.5 - Demonstrate nature-based solutions for improved urban resilience and alternative livelihood creation through community-based enterprises, and project out 2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship will enhance the positive benefits of the baseline project of providing enterprise development assistance to women and youths. Through different interventions under project outputs 3.6 Demonstration of low-cost measures to protect groundwater aquifers from land contamination Sources and output 3.3 Water management action plan (including integration of best practices for water conservation, re-use, recovery and recycling systems) for the DMA, the availability of water resources (in terms of quality and quantity) for different social economic and environmental uses will be secured on a sustainable basis.

Baseline (Outer Ring Road Project)	GEF Alternative	Incremental activity
	construction, management, operation and maintenance of community water supply sources.	
Component 3: Institutional Support and Capacity Building 3.1 Training of TANROADS and TARURA Staff, Studies for Pipeline Development	GEF grant will support targeted environmental knowledge focused on enhancing integrated urban planning inclusive of Climate Change and Integrated Urban Land Planning. Project will help to raise awareness of and promote mainstreaming climate change adaption and land management in urban infrastructure planning and management. Inter-sectoral collaborations and capacities to maintain, restore and revitalize environment and promote livelihood opportunities will be undertaken. GEF Grant will help to Implement Multi-sector stakeholder engagement at DMA, regional and national levels on mainstreaming in the project area.	Under GEF Project output 1.3 Institutional Capacity developed to adequately address climate vulnerabilities in communities of the DMA. Through trainings, TANROADS and TARURA staff should be equipped with Climate Resilience skills as well as sustainable land management.

Baseline (Outer Ring Road Project)	GEF Alternative	Incremental activity
Component 4: Project Management Program Management: aims to define and implement an institutional structure for management and coordination of all aspects of the project, including procurement, monitoring and evaluation, and communication. Limited technical and training content, and scope for influencing stakeholders to mainstream and improve sustainable landscape and biodiversity management. 4.1 Socio-economic impact monitoring/evaluation of the Project 4.2 Financial and accounting audit of the Project. 4.3 Technical and Road Safety audit of the Project.	GEF support will enhance the involvement of different stakeholders in the governance affairs of DMA in general and the baseline project in particular. Through interventions under different GEF project output, information and knowledge related to the state of affairs of the projects will be generated and disseminated among different stakeholders, locally, nationally, regionally and internationally. This will promote transparency of the management of the DMA affairs and consequently enhance governance. It will also enable the identification, documentation and dissemination of best practises.	Interventions under GEF Project Output 4.4 - Project related publications and information dissemination materials can incrementally be used to contribute to the dissemination of information on the dangers of HIV/ Aids, sexually transmitted diseases, and other viral disease such as COVID-19 and consequently suppress their incidences. The stakeholders? analysis and engagements that are part and partial of the interventions under GEF Project Outputs 3.3 and 3.6 can guide on the stakeholders with whom information should be shared. Communication of project. The same stakeholders can be influenced to mainstream and improve sustainable landscape and biodiversity management. Outcome 4: Effectiveness of the outputs assessed, experience documented, and knowledge management, the outputs especially output 4.3 and related interventions can contribute monitoring and evaluation as well as financial and accounting audits.
Global Environmental Benefits		

Baseline (Outer Ring Road Project)	GEF Alternative	Incremental activity
On-the-ground impacts, as well as uptake of lessons learned and best practice from integrated urban land management. Ensuring that increased urbanization and related urban infrastructure management can be done will ensuring climate change resilience and integrated urban land planning to avoid land degradation and the related effects. Knowledge capture and generation is constrained by limited strategic and analytical frameworks and resources, which affect efforts to build capacity and foster collaboration.	Demonstrated roles and values of integrated urban planning, climate change resilience in conservation and development strategies Improved knowledge products and management based on global learning through exchange visits and benchmarking. Increased capacities and intersectoral collaboration for mainstreaming climate change adaption, land management and integrated water resources management.	Degraded land up to 75,000 ha will be rehabilitated. Degradated land include areas that have lost soil organic carbon (soc) as well as areas that have lost forest cover. Hence, part of the focal degrated areas are expected to be reforested. The quality and quantity of water resources will be managed to ensure sustainable availability of water for different sectors of economy. Contributions to achieving Dodoma Land Rehabilitation Targets. Institutional Capacity of DMA will be developed to adequately address climate vulnerabilities in communities of the DMA

Regarding nature-based solutions, the project is also intending to increase forest cover, as part of the 75000 ha under sustainable management. Forest cover and forest plantations are a clear example of how to use nature for mitigating the project?s emissions. Additionally, systems similar to that developed by Sanergy in Kenya (World Bank, 2019) , where human excreta is collected and converted into soil conditioner, while waste organic matter (mainly waste food) is converted into animal feed, would result in the creation of a virtues circle whereby currently waste materials are converted into useful products that help to reduce land degradation.

Depending on the degree of degradation and the opportunities for future use a range of nature based solution are available for degraded lands that are not urbanised. Where lands can be used for productive agriculture soil conservation methods may be employed. The aim being to improve land cover, which reduces the impact of high intensity rains. Improve soil structure, to make soils less likely to cap, while improving infiltration, thus reducing runoff. Reduce the length of slopes, especially on bare ground, thus reducing accumulation of erosive runoff. On annual crops consider the use of no-till and minimum-till cultivation methods, and the use of intercropping, to give improved ground cover. Where possible, and especially on steeper slopes, consider using perennial crops, including trees and vines. Making maximum use of mulch, to protect the soil and improve production.

On lands that are unsuitable for crop production, consider planting trees to develop sustainable plantations. Species selected and planting regimes should avoid mono-cropping, which may, in the future lead to clear felling. But rather use a range of varieties, which can be sustainably crops, while also providing additional incomes, such as from beekeeping and other forest products: insects, medicines and cut fodder.

In urban areas interventions should reduce excessive and damaging runoff, stop the pollution of soils and groundwater and improve human habitation. Excessive runoff results from hard (impermeable) surfaces and drainage systems that concentrate water. Although much of the time, this approach works, when there is high intensity rainfall, it results in flooding. Reducing the size of catchments, using leaky dams, and soakaways will reduce flooding and help recharge groundwater. Most housing in Dodoma have metal roofs, which when it rains, results in excessive runoff and contributes to flooding. The same houses also suffer from water shortage. By collecting the water from roofs and storing the runoff is reduced and families have a backup water source. The planting of trees around houses further reduces runoff, while providing shade and produce, if the correct species are planted.

The majority of properties are not connected to sewerage networks. Many properties use septic tanks, which should be emptied regularly and the effluent disposed of safely. In informal settlements pit latrines are the norm, but some households have no toilets at all. Septic tanks often leak and pit latrines pollute the groundwater nearby. In times of flood pit latrines can be flooded and the effluent is washed downstream to other properties and into water courses. Linking all properties in Dodoma to a piped, water borne sewerage system is not an option. The costs are prohibitive and there is insufficient water to operate such a system; Dodoma already has a water shortage, with water being rationed in some areas.

A possible approach is to use the waterless toilets similar to that developed by Sanergy in Kenya. Fresh Life Toilets ? can be provided to individual households or to communities. The excreta is collected and processed into soil improver, which will reduce land degradation in agricultural areas. The system is economically viable, providing a service to users, an income to those employed to operate the system, while at the same time preventing the land and water degradation from existing systems, or the lack of them.

The lack of proper systems for the collection and disposal of garbage also results in land degradation. Much of the inorganic waste, such as plastics and metals, have a value and can be recycled, organic waste has traditionally either been burnt or goes into landfill. Sanergy, again has developed a value chain model for the collection of organic waste and its treatment into animal

feedstuffs. The system uses Black Soldier Flies, which eat the organic material. The larvae are then dried and converted to animal feed, which in turn reduces pressure on land from over grazing.

Human wellbeing can be further improved by adopting improved building standards and materials, to ameliorate the effects of climate change. One simple measure being to paint the roofs with high emissivity paint, which reflects solar radiation, rather than absorbs it.

6) Global environmental benefits (GEFTF) and/or adaptation benefits (LDCF/SCCF)[A2] [A3]

This project will address CCA1 - LDCF-Objective 1: Reduce Vulnerability and Increase Resilience through Innovation and Technology Transfer for Climate Change Adaptation, CCA2 -_LDCF - Objective 2: Mainstream Climate Change Adaptation and Resilience for Systemic Impact and LD-1-4 Land Degradation Focal Area? Restoration of degraded urban land and sustainable land management.

LDCF-Objective 1: Reduce Vulnerability and Increase Resilience through Innovation and Technology Transfer for Climate Change Adaptation, CCA2 - LDCF - Objective 2: Mainstream Climate Change Adaptation and Resilience for Systemic Impact

In the project area, most of the population is rural and largely depends on rain-fed agriculture in a context of climate change. Droughts and floods are recurrent. These phenomena are increasing in frequency and intensity and are causing food insecurity and economic shocks with an accentuation of poverty and food insecurity.

The project will support the development of clean and climate smart technologies in the following areas: i) rural and urban water supply; ii) water management; natural resource management including forests and water bodies; agricultural value chains. The project will therefore ultimately build and increase the resilience of Dodoma urban and rural communities to climate change.

Through the promotion of improved climate smart practices, particularly for vulnerable populations including farmer communities, the project supports the creation of climate-resilient food systems that generate climate adaptation, sustainable land management and biodiversity benefits while addressing the root causes of degradation and vulnerability.

Considering the reliance of communities in Dodoma on agriculture for their livelihood and subsistence, the project will significantly reduce the risks from climate change on food security.

The project, by supporting surrounding key ecosystems such as forests, will have long term adaptation benefits for the population surrounding these ecosystems. Farming livelihoods will be protected from droughts and floods, as well as properties and other resources. By supporting the understanding of local communities on the importance to maintain these ecosystems, the project is expected to have positive impacts beyond the project area and incentivize its replication.

The new practices introduced will also provide direct adaptive benefits, by reducing the pressure on inputs through a better management of resources. In particular, water resources and their access are expected to be significantly impacted by the impacts of climate change. Introducing practices such as efficient irrigation systems will reduce the reliance on increasingly irregular rainfalls.

Finally, through promoting entrepreneurship including for youth, women in vulnerable communities, the project will create additional income diversification effects and off-farm employment opportunities especially important among rural communities. The development of the private sector and value chains will increase the resilience of local communities by diversifying the sources of livelihoods and thereby the vulnerability to climate shocks.

These results are directly aligned with the objective of the LDCF to strengthen resilience and reduce vulnerability to the adverse impacts of climate change in developing countries, and support their efforts to enhance adaptive capacity.

Land Degradation Focal Area? Restoration of degraded urban land and sustainable land management

According to the core indicator 4, 75,000 hectares of landscapes, excluding protected areas, will be placed under sustainable land management in production systems. Annex M provides a preliminary identification of degraded areas in Dodoma Urban District, done using coarse resolution freely available layers. Degraded lands include areas that have lost soil organic carbon (soc) as well as areas that have lost forest cover and areas that have shifted land cover. Management practices will include reforesting those areas that have lost forest cover within Dodoma Urban District, and stablishing forest plantations in other degraded areas. Reforestation and forest plantations will provide several environmental benefits and ecosystem services. Ecosystem services are the multitude of benefits that nature brings to society. Biodiversity is the diversity among living organisms, which is essential for the function of ecosystems and for them to provide their services. According to the Food and Agriculture Organization of the United Nations (FAO), ecosystems provide four types of services to the world: provisioning services, regulating services, supporting services and cultural services. The following table shows the types of ecosystem services and biodiversity according to FAO and the ecosystems services and benefits the 75,000 hectares could provide.

Table 7. Types of ecosystem services.

Services	**Type**	**Core Indicator 4***
(A) Providing services	Food (A1)	
	Raw materials (A2)	?

	Freshwater (A3)	
	Medicinal resources (A3)	
(B) Regulating Services	Local climate air quality (B1)	?
	Carbon sequestration and storage (B2)	?
	Moderation of extreme events (B3)	
	Waste-water treatment (B4)	
	Erosion prevention and maintenance of soil fertility (B5)	?
	Pollination (B6)	?
	Biological control (B7)	
	Regulation of water flow (B8)	
(C) Supporting Services	Habitat for species (C1)	?
	Maintenance of genetic diversity (C2)	
(D) Cultural Services	Recreation and mental and physical health (D1)	?
	Tourism (D2)	?
	Aesthetic appreciation and inspiration for culture, art and design (D3)	
	Spiritual experience and sense of place (D4)	

(*) the specific ecosystem services and benefits of the 75,000 hectares will depend on the type of land management system and practices the area will be under.

The ecosystem services and environmental benefits that will be provided by the 75,0000 hectares under sustainable land management in production systems, include but are not limited to: raw materials (A1) such as wood, local climate air quality (B1), carbon sequestration and storage (B2), erosion prevention (B5), pollination (B6), habitat of species (C1), recreation (D1) and tourism (D2). It not possible to estimate and quantify all of these benefits, since the location, specific land management systems and practices, as well as the species to use, have not been defined at this stage. Nevertheless, the following sub-sections try to quantify some of these benefits based on several assumptions stated in each.

Capturing CO_2 through forest plantations

A co-benefit of the project would be to capture CO2 through forest plantations. Indeed, tree plantations in Sub-Saharan region have reported varied biomass and carbon sequestration rates. For instance, tree plantations can produce 2-30 m3 biomass per hectare per year[1]. According to the core indicator 4 of the Project Information Form (PIF), 75,000 hectares of landscapes, excluding protected areas, are expected to be under sustainable land management in production systems. Assuming all these would be degraded areas potential for forest plantations, then the project could capture 84 375 - 168 750 tC year-1 or 312 187 - 624 375 tCO2 year-1.

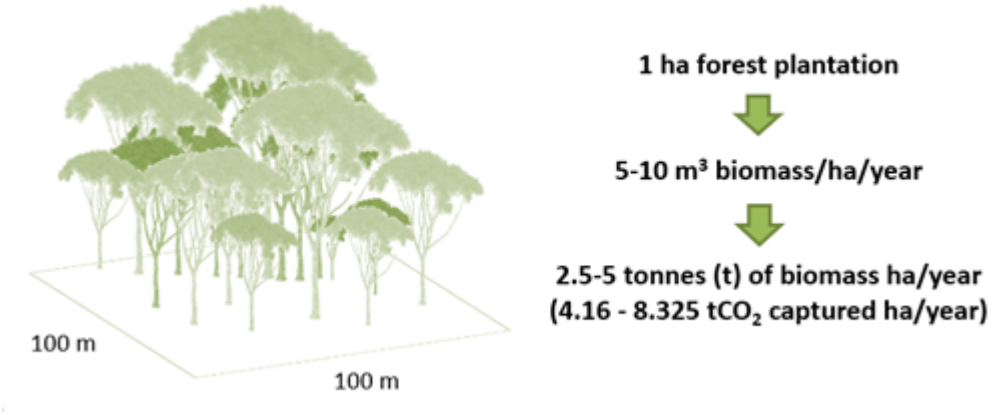


Figure 5. Scheme of CO2 capture through forest plantations.

Land cover change emissions

The land cover maps of Copernicus Moderate Dynamic Land Cover project[3] were accessed and extracted for Dodoma region and Dodoma Urban District for the years 2015 and 2019 (Figure 6). In the 5-year period (2015-2019) forested areas remained unchanged in Dodoma Urban District (Table 6). Urban areas, permanent water bodies and herbaceous wetlands increased, whereas shrubland, herbaceous vegetation and sparse vegetation decreased (Table 6).

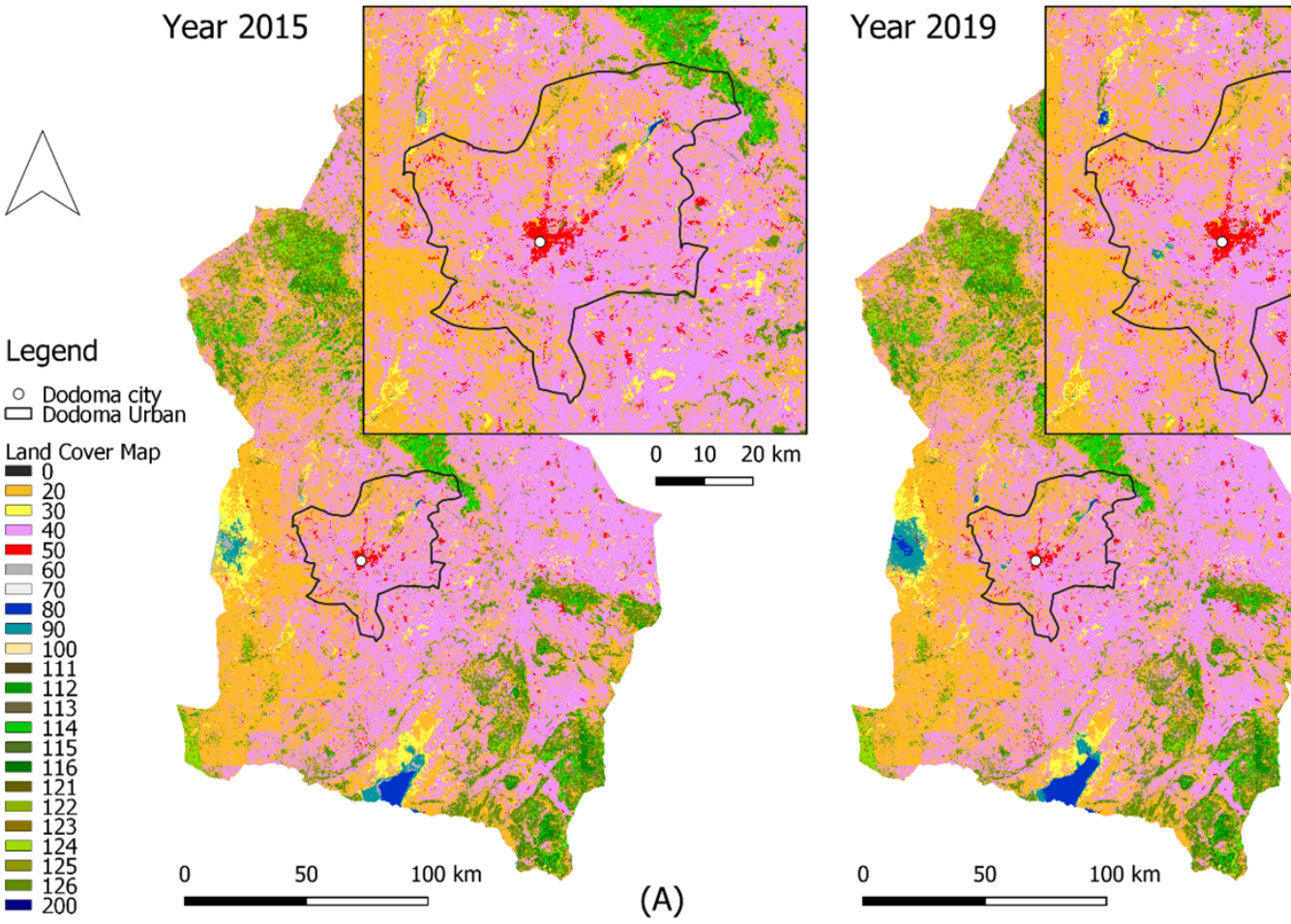


Figure 6. Land cover maps for Dodoma region and Dodoma Urban District in (A) 2015[4][20] and in (B) 2019[5].

Table 6. Land cover dynamics in Dodoma Urban District between 2015 and 2019.

Code	Land cover	Area (ha) in 2015	Area (ha) in 2019	Difference (ha)
20	Shrubland	64876	64454	-422
30	Herbaceous vegetation	3694	3076	-618
40	Cropland	126431	126353	-78

50	Urban areas	10303	10339	36
60	Sparse vegetation	74	2	-72
80	Permanent water bodies	223	445	222
90	Herbaceous wetland	171	1103	932
114	Closed forest, deciduous broad leaf	1049	1049	0
116	Closed forest, unknown	273	273	0
124	Open forest, deciduous broad leaf	755	755	0
126	Open forest, unknown	5795	5795	0

The land cover classes, and carbon stocks provided[6] where assigned to the Copernicus Land cover classes (Table 7). The following table shows the difference in area between 2015 and 2019 in Dodoma Urban Capital per land cover class and the assigned carbon stock value assigned per each. Between 2015 and 2019 there is negative carbon balance of 3185 tC due to land cover dynamics, which represent approximately 11785 tCO_2 emitted.

Table 7. Land cover dynamics and carbon stocks in Dodoma Urban District between 2015 and 2019.

Land cover	**Total carbon (t C ha?1)**	**Are difference (ha)**	**Carbon balance (t C)**
Shrubland	13.5	-422	-5697
Herbaceous vegetation	3.4	-618	-2101.2
Cropland	4.13	-78	-322.14
Urban areas	0	36	0
Sparse vegetation	3.7	-72	-266.4
Permanent water bodies	7.9	222	1753.8
Herbaceous wetland	3.7	932	3448.4
Closed forest, deciduous broad leaf	47.8	0	0
Closed forest, unknown	47.8	0	0
Open forest, deciduous broad leaf	29.9	0	0

Open forest, unknown	20.9	0	0
Total			-3184.54

Defining areas to compensate

To calculate if the 75,000 hectares to be allocated for sustainable land management production systems are enough to compensate for environmental benefits and emissions, it is important to identify where they will be located (e.g.: in degraded lands only, within forest areas, etc). A preliminary identification of degraded areas in Dodoma Urban District is attached in Annex M. Nevertheless, only after a final identification of those locations, including field-work, it would be possible to quantify more accurately the potential emission to be compensated by such initiative. Another important aspect to consider in the future is whether the area to be compensated resembles the initial local conditions to be affected. As in any compensation scheme and mitigation hierarchy, offsetting should be the last effort (before, avoiding, reducing, and rehabilitating) and the selected area for compensation should follow certain minimum requirements, such as:

? The area should be preferably within the project study area and if not,

? The area should be as similar as the area to be affected by the project (the so called ?like-for-like? compensation)

For this to be assessed, additional information would be required such as high-resolution satellite imagery, digital elevation models and field data to characterize the environmental conditions of the project area and the potential compensation area). The following figure shows an example suggested approach for assessing these issues.

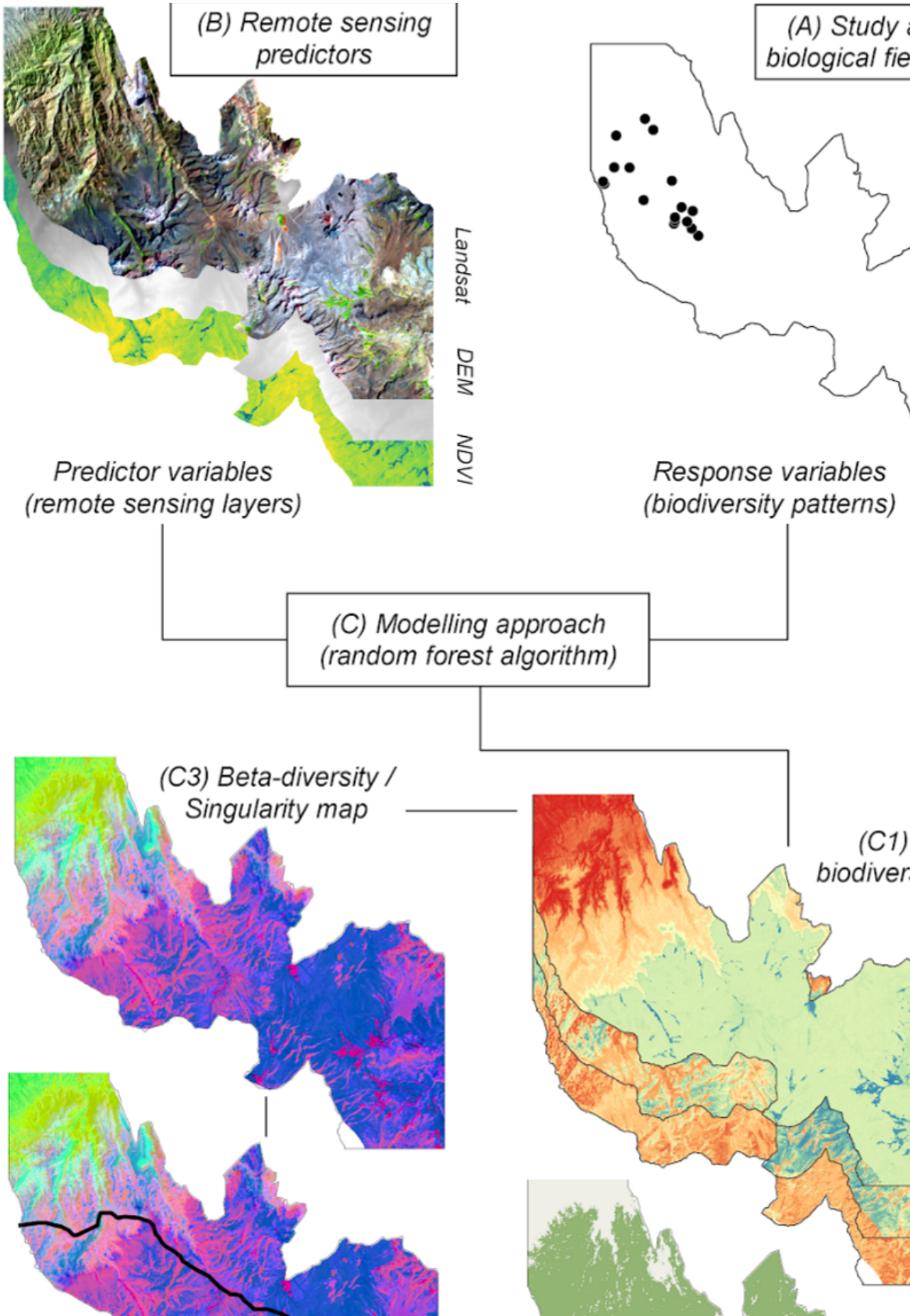

(B) Remote sensing predictors
Landsat
DEM
NDVI
Predictor variables (remote sensing layers)
(A) Study a biological fie
Response variables (biodiversity patterns)
(C) Modelling approach (random forest algorithm)
(C3) Beta-diversity / Singularity map
(C1) biodiver

Figure 7. Available biological information (A) is often scattered and only covers focalized locations. By combining field-data with freely available remote sensing predictors (B), it is possible to predict and map environmental patterns in areas where field-data is yet missing (C). Therefore, we can properly estimate the impacts of planned infrastructure projects on the environmental at local scales (D)[7].

The assessment should be referred to the ensuing project Consultant.

7) Innovativeness, sustainability and potential for scaling up

Innovativeness

As mentioned in the PIF the project is innovative because it takes an integrated approach to treating land degradation and the effects of climate change within the region, and this would not be taking place without the initiatives from GEF and the application of GEF resources. The proposed project is multi-focal and will identify and implement integrated solutions to mainstreams adaptation with land degradation and urban development policies. The project is demonstrating nature-based solutions and integration approach for urban planning and urban resilience, such as GIS and remote sensing for holistic climate vulnerability mapping. The project is also developing multiple plans (inclusive of financial strategies) to support the greening, sustainability and resilience of the DMA. Regarding nature-based solutions, the project is also intending to increase forest cover, as part of the 75000 ha under sustainable management. Forest cover and forest plantations are a clear example of how to use nature for mitigating the project?s emissions. Additionally, systems similar to that developed by Sanergy in Kenya (World Bank, 2019) , where human excreta is collected and converted into soil conditioner, while waste organic matter (mainly waste food) is converted into animal feed, would result in the creation of a virtues circle whereby currently waste materials are converted into useful products that help to reduce land degradation.

The project will introduce innovative alternative livelihoods for communities (Annex P.1-Stakeholders and Annex P.4 ? Communities include more detailed information) [A4] as described in output 2.3. as a strategy to support the sustainability and climate resilience of the DMA. As Tanzania has banned the use of plastic bags, the production of alternatives (such as hand-woven bags) might have commercial relevance and could be demonstrated during the project.

The success of the project is made more likely because many of the interventions proposed already have been tested before in Tanzania. These include: measures for restoring degraded lands and

preventing further degradation, by participatory land use planning, improving water harvesting using low flushing water toilets and develing alternative fuels for cooking to reduce the cutting of vulnerable woodlands. The pressures on agricultural land have increased because the population has continued to grow at around 3% per year. While there has been some migration to the cities, which has exacerbated the problems in informal settlement, there has been no commensurate increase in yields. In fact, over use of land, lack of soil improvements, and climate change all have contributed to reduced yields, increased land degradation and risk of crop failure and famine. The continued cutting of woodlands for fuelwood and charcoal is because no alternative fuels have been accepted especially by the urban poor, who make up the majority of the population. Both electricity and gas have significant upfront costs for purchase of stoves, gas bottles and electricity connections. Gas has to be purchased in bulk, a bottle at a time, and electricity is expensive and often unreliable. In contrast charcoal, can be purchased daily, the costs of stoves is low and supply is reliable, at least for now. In addition, traditional cooking is adapted to charcoal and wood, rather than gas or electricity. With the treatment of waste, there are cultural problems in using human waste, but also up till now there has been no successful business model for provision of suitable toilets, collection of waste, processing and then sale and use of the treated product. Sanergy in Kenya appears to have developed a sustainable business model which may be replicated in Tanzania. There is a similar issue with garbage collection and treatment.

In most countries the provision of services, such as sewerage and garbage collection is paid for out of charges on each household, in the form of property taxes. In Tanzania the payment of property taxes is linked to the occupants holding registered title to the land, but as very few households have registered title, the amount of money raised is very low. And as the very definition of informal settlements is that the occupants do not have registered title, no land taxes are collected on informal settlements. As there is no income to the city from informal settlements, it follows that Dodoma is reluctant to provide any services to these areas. While it is perfectly possible to develop systems for collection of charges based on occupancy rather than registered title, to implement such systems requires changes in the law.

Within DMA the success of the project relies on both good land use planning, with the identification of high risk areas, particularly from flooding, but at least as important is effective development control to prevent inappropriate developments in these high risk areas. This in turn requires planning for and provision of appropriate sites for the increasing population, due both to natural growth, but also net inward migration. Rather than people being accommodated in informal settlements, where there are inadequate services, the expanding population should be accommodated in planned areas where basic services are already provided.

Sustainability requires that there is an increased understanding of the effects of climate change and the actions required to combat it, This is particularly true for officials working in planning and building control. It is also necessary that livelihoods will adapt to the effects of climate change. Within

agriculture farming systems must adopt to increase risks of drought and flooding, but also reverse and prevent land degradation.

In conjunction with building of the Dodoma Ring Road, relocation of households ? living on land needed for the road itself and its reserves, or on environmentally or otherwise unsuitable land ? may be necessary. This offers an opportunity for further technological and other innovativeness, including to arrange for innovative relocation of road affected households to socio-economic and land use-wise incrementally mixed neighbourhoods with shorter walking, cycling and motoring distances and greater access to economic, social, and physical infrastructure.

A multifamily housing typology, with potential also for innovation, is referred to under ?B Sustain-ability?, below.

Sustainability

There will be sufficient national and local political commitment to maximize the project?s impact and replication potential within the country. The National Government?s commitment to decentralization of political and scale governance ensures greater independence of local governments, particularly in the new capital city, but also in other regional municipalities. To further strengthen decentralization efforts, the GoT has embarked on construction of regional airports, expansion of the road and railway network to improve transport mobility not only within cities but also across the regions and the country. Besides, GoT has set up Basin Water Boards offices to oversee the planning and management of water resources at Basin Level as opposed to administrative boundaries. This project has strong national and local government support as its key objectives have already been integrated in the new Dodoma city master plan. Further the project also has strong component of catchment based integrated water resources catchment management approach in conformity with the National Water Policy (NAWAPO), 2009.

The Government of Tanzania (GoT) is already committed to developing Dodoma as an inclusive and sustainable city. Thus, the project will support Dodoma city management by strengthening its capacity to effectively deliver on its mandate to implement the new City Master Plan. The project will provide technical assistance for innovative planning of the Central Business District (CBD) and the Government City, and existing informal and unplanned neighbourhoods within the DMA, with the aim of managing urban growth, improving service delivery and reducing environmental vulnerability of the city. City authorities have emphasized the need for integrated land use planning, and zoning to mitigate sprawling of informal settlements, and redevelopment of brown fields in the city for sustainable uses.

To further support the sustainability of the project, the project will execute public awareness campaigns with different stakeholders (e.g., communities, households, street vendors, sub-ward, and ward levels). The community-based enterprises will be supported in terms of market entry for their alternative services and products. Alternative income generating activities, we will support the micro enterprises to achieve entry to markets and diversity livelihood opportunities to enhance social economic development.

Another aspect to ensure the sustainability is to maximize the national ownership of the project. Examples include, awareness raising among government, update existing city bylaws, laws on environmental conservation activities and strongly involve the city in the project formulation and development phase. Involvement of local communities is also critical, as is the provision some of incentives (e.g., recognitions) for the different community groups that perform well within the project, e.g., bee keeping activities and alternative bags weaving.

The main objective of this project is restoring degraded lands. Sustainability requires that not only will the restored lands not revert back to their degraded state, but also that no further degradation should take place. This is also the objective of the Land Degradation Neutrality (LDN) Target Setting Programme Report, 2018 by the Vice President?s Division of Environment. The target being land degradation neutrality by 2030, less than ten years from now. And specifically, ?LDN is achieved in the following land degradation hotspots: Dodoma, Singida, Tabora, Shinyanga and Manyara regions by 2030 as compared to 2010 additional 25% of the degraded hotspot regions has improved (net gain).? In Dodoma, LDN not only requires that the 75,000 ha degraded land set as the target in the PIF is restored, but also that no further degradation takes place. This requires addressing and managing the current causes of land degraded. These have been identified as including:

? Urbanisation

? Inappropriate farming systems

? Over grazing

? Charcoal production

? Cutting of firewood

Which are themselves exacerbated by ever increasing populations and the lack of alternatives livelihoods to farming. Ultimately sustainable LDN requires the development of alternative livelihoods that will reduce the pressure on land from unsustainable practices.

The approaches to restoring degraded lands depends on the level of degradation and the underlying land suitability. Where there is only moderate degradation on land which, after treatment, would be

suitable for crop production, then land can be retained in productive use. However, this will require appropriate soil conservation works and farming systems. Typically, selection of appropriate crops, and maintenance of good ground cover. Soil condition needs to be maintained or improved using crops rotations, fallows, and fertilizers, as well as appropriate farming skills. In practice this will probably result in some people becoming sustainable farmers, while others have to develop alternative livelihoods. Where land degradation is more sever, land will have to be taken out of farming, at least of annual crops, to allow for conservation works and time (often considerable) for the land to recover. It may be possible to develop tree crops and woodlots on these lands, but long-term management will be required, and it can take many years before any income can be derived from these lands, other than from beekeeping and foraging. On very degraded lands, restoration may require substantial engineering works, to control gully erosion, for example. Restoration may require rewilding of these lands, allowing them to go back to woodlands. Such lands will need to be protected from any form of exploitation, except for beekeeping and foraging.

Restoration of lands where mining and quarrying has been conducted is not realistic, but these lands can be put to alternative uses. Quarrying in Dodoma appears to be limited to extraction of building materials, including sand and gravel. Depending on the size and location of the quarries, these sites may be used for construction of buildings, they can also be used for disposal of solid wastes, recreation, or rewilding.

Urbanisation takes land out of agricultural production and is essentially irreversible. It is therefore important that, where possible the best agricultural lands are retained. This requires careful planning, but more importantly effective development control, to stop informal encroachment on land designated for agriculture and forestry.

Over 80% of families in Tanzania use charcoal for cooking. Charcoal production is causing land degradation and releases CO2, from burning, production and the loss of organic matter as soils degraded when trees are cut down. The use of charcoal for cooking is unsustainable is land degradation is to be prevented. The realistic alternatives to charcoal are gas, both natural and biogas and electricity. Natural or bottled gas is the most realistic alternative in the medium term for most people. In the longer-term biogas may provide some with sufficient energy for cooking, while electricity, especially if produced from net zero carbon sources may be the solution. The main problem to moving from charcoal is that the most likely sustainable alternative cooking systems at present require significant upfront costs for purchase of items like stoves and gas bottles. In addition, for charcoal there is a well-established supply chain, from the woodcutters right through to the neighbourhood charcoal seller. Alternative fuels would require similar supply chains and to be available at a comparable price to charcoal. Charcoal can be purchased each day, while other fuels need to be purchased in bulk or require credit agreements with the supplier.

Innovative, climate appropriate ? and thus sustainable ? building typologies, materials, and technologies with a potential for scaling up may incur higher initial costs but should improve future use of and/or reduce running costs. Some typologies ? like multi-family residential buildings with upstairs double-storey single family ?maisonette? with apartment internal staircase to its second floor ? may also lower initial and running costs. Such residential typologies can enable four-storey apartment blocks with a maximum of two staircases to reach the top maisonette apartment. Space for a possible future lift could be provided for in each stairwell serving the apartment block. On a slope, five storeys are possible with only three staircases, one downwards to the lowermost apartment, none to the ground floor apartment, one upwards to the first floor on top of the ground floor apartment, two upwards to the second floor above the ground floor apartment and/or maisonette.

An appropriate building typology for multifamily housing in relation to the Dodoma ring road may be modelled on The Byker Redevelopment ?Byker Wall?. A wall typology multifamily residential building development along the Dodoma ring road could include other for residential use non-disturbing land uses like commercial, civic and community and light industrial. It can provide shade and view. It can also be subject to a multi-stakeholder and inclusive development process to contribute towards inclusive partnership, and, thus, sustainability and potential for scaling-up. Enforcing introduction of innovative multi-family typology may result in opposition, so a more sustainable approach may be a dedicated publicity campaign and possibly subsidised trial constructions. Multi-storey, multi-family residential development (also on slopes) and suitable tree planting can contribute to innovative and sustainable development with potential for scaling up, through: a) reducing distances to other land uses in incrementally mixed land uses; b) rightly orientated buildings and trees, providing shade to reduce heat gain from sun; and, c) contributing towards cost-wise efficient land use, and, physical infrastructure use of water, drainage, sanitation, power and construction materials. Sensitively designed, laid out and built, multi-family housing ? ideally in conjunction with other non-disturbing land uses like that of civic and community, recreation, commerce, and light industry ? can reduce walking, cycling and motorised transport, and, thus, contribute towards innovative, sustainable, and up-scalable development.

The sustainability of land use planning and building control depends on the enforcement of planning rules (Development Control) and building control measures. The main pressure on development control is informal settlement. The fact that informal settlements make up the majority of housing in Dodoma, as in most of Tanzania, means that a radical new approach is needed. Not only is action needed to stop informal settlement, but viable alternatives are needed. Similarly with building control, new construction should be built to required standards, but the cost of building to these standards is too high for most of new urban dwellers.

The use of water-based toilets and water based effluent disposal for the entire population of an expanding Dodoma is not a sustainable option. Dodoma already has a water shortage. Most informal residents are not connected to mains sewerage, as they use pit latrines, which have significant health risks including contamination of the aquifer. Low or no water toilets are the only viable alternative for the ever-expanding population of Dodoma. They use no or little water, and if properly made and installed have no health risks and no odour problems. An added benefit is that the treated effluent can be used to produce soil improvers or fertiliser and is therefore an asset not a liability. The current water problem also means that sustainable solutions must look at local capture and storage in addition to piped water as well as reuse of grey water. Because Dodoma has a long dry season and the rainfall is low, capture of water from roofs and micro catchments cannot fully replace piped water, but it can provide a buffer for the times when piped water is in short supply.

Potential for scaling up

The Capital City vision aims to make Dodoma a recreational, an eco-friendly and green, smart, transit oriented and an inclusive city to meet expectations of its citizens and to serve the rest of the Republic of Tanzania and the wider region. The Master Plan is informed by integrated land use planning including rapid transport systems and utilities, commercial, residential, institutions, urban agriculture/farming, and mining. This project will modify the Dodoma Master Plan to mitigate effects of climate change and to minimise or reverse its contribution to climate change. The main project element to facilitate the scale-up of the project interventions for sustainable land management and climate resilience is linked to the updating of the Dodoma City Master Plan which aims to transform Dodoma into a sustainable city, an economic growth pole, academic city, and tourist destination, for which the GoT is investing efforts towards raising the necessary financing and investments to achieve that. All sectors of the Dodoma Master Plan will be reviewed by looking at how each sector is impacted and may be further impacted by climate change, but also evaluating how the sector could reduce, or help reverse climate change, to guide future planning and enable prioritization of investments in the Dodoma Municipal Authority (DMA). Individual sector plans will be developed, which will lay the foundation for future scale-up after the project is completed.

[1] Chamshama, S.A.O., & Nwonwu, F.O.C. 2004. Forest plantations in Sub-Saharan Africa.

[2] Ibid.

[3] Marcel Buchhorn, Bruno Smets, Luc Bertels, Bert De Roo, Myroslava Lesiv, Nandin-Erdene Tsendbazar, Linlin Li, & Agnieszka Tarko. 2021. *Copernicus Global Land Service: Land Cover 100m: version 3 Globe 2015-2019: Product User Manual*. Zenodo.

[4] Marcel Buchhorn, Bruno Smets, Luc Bertels, Bert De Roo, Myroslava Lesiv, Nandin-Erdene Tsendbazar, Martin Herold, & Steffen Fritz. 2020a. Copernicus Global Land Service: Land Cover 100m: collection 3: epoch 2015: Globe.

[5] Marcel Buchhorn, Bruno Smets, Luc Bertels, Bert De Roo, Myroslava Lesiv, Nandin-Erdene Tsendbazar, Martin Herold, & Steffen Fritz. 2020b. Copernicus Global Land Service: Land Cover 100m: collection 3: epoch 2019: Globe.

[6] Mauya, E.W., Mugasha, W.A., Njana, M.A., Zahabu, E., & Malimbwi, R. 2019. Carbon stocks for different land cover types in Mainland Tanzania. Carbon Balance and Management 14: 4.

[7] Chaves, P.P. 2021. Using remote sensing to predict biodiversity patterns for EIAs.

[A1]What are the nature-based solutions? Is this described in the alternative scenario?

[A2]Important to refer to GEBs and Adaptation Benefits in the context of the GEF Results Framework. All additional benefits outside of this framework to fall under ?co-benefits?, e.g. GHG mitigation

[A3]FinnOC: please specify what change is needed in the text

[A4]Are the alternative livelihoods described somewhere?

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[1] Other types of stakeholders like private sector players may be got from registrar of businesses/ companies

[2] From industrial activities

[3] From agricultural activities

[4] Seepage of faecal matter into aquifers

[5] Professional journals, subject textbooks, open source

[1] Urbanisation in Developing Economies: Building cities that work, A Venables 2018

[2] Corker Human Carrying Capacity Assessment Model, 1982

[3] Mogi, Addressing Land Degradation in Tanzania: Contemporary issues related to policies and strategies. 2019

[4] Urban population growth (annual %) - Sub-Saharan Africa | Data (worldbank.org)

[5] National Five Year Development Plan 2016-2021 pg 47

[6] Vice President?s Office Division of Environment, October, 2018, Land Degradation Neutrality Target Setting Programme Report, United Republic of Tanzania; Vice President?s Office Division of Environment, 2014, State of the Environment Report, United Republic of Tanzania

[7] Corker, 1982, Human Carrying Capacity Assessment Model

[8] Mongi, 2012, Addressing Land Degradation in Tanzania: Contemporary issues related to policies and strategies

[9] Mongi, 2012, Addressing Land Degradation in Tanzania: Contemporary issues related to policies and strategies

[10] Annex K, The City Council of Dodoma (CCD), 2021. Based on growth estimates from the 2012 Census, but there is no information on the net migration into DMA. The next census is in 2022.

[11] Tanzania: Floods - Jan 2020 | ReliefWeb

[12] Vice President?s Office Division of Environment, October, 2018, Land Degradation Neutrality Target Setting Programme Report, United Republic of Tanzania

[13] https://www.worldweatheronline.com/dodoma-weather/dodoma/tz.aspx, https://www.average-weather.com/en/africa/tanzania/dodoma/?unit=metric

[14] Universal Soil Loss Equation | Land & Water | Food and Agriculture Organization of the United Nations | Land & Water | Food and Agriculture Organization of the United Nations (fao.org)

[15] Soil Degradation-Induced Decline in Productivity of Sub-Saharan African Soils: The Prospects of Looking Downwards the Lowlands with the Sawah Ecotechnology (hindawi.com)

[16] Venables 2018

[17] Remote Sensing | Free Full-Text | Assessment of Land Degradation in Semiarid Tanzania?Using Multiscale Remote Sensing Datasets to Support Sustainable Development Goal 15.3 | HTML (mdpi.com)

[18] Mdee, AL. (2017). Disaggregating Orders of Water Scarcity - The Politics of Nexus in the Wami-Ruvu River Basin, Tanzania. Water Alternatives. 10. https://www.researchgate.net/figure/Map-of-the-nine-River-Basin-Offices-in-Tanzania_fig1_312373453

[19] Report for the Wami/Ruvu Basin Water Office Supported by IUCN, 2010

[20] Policy brief Climate change governance in Tanzania: challenges and opportunities, Michal Nachman, Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, 2018

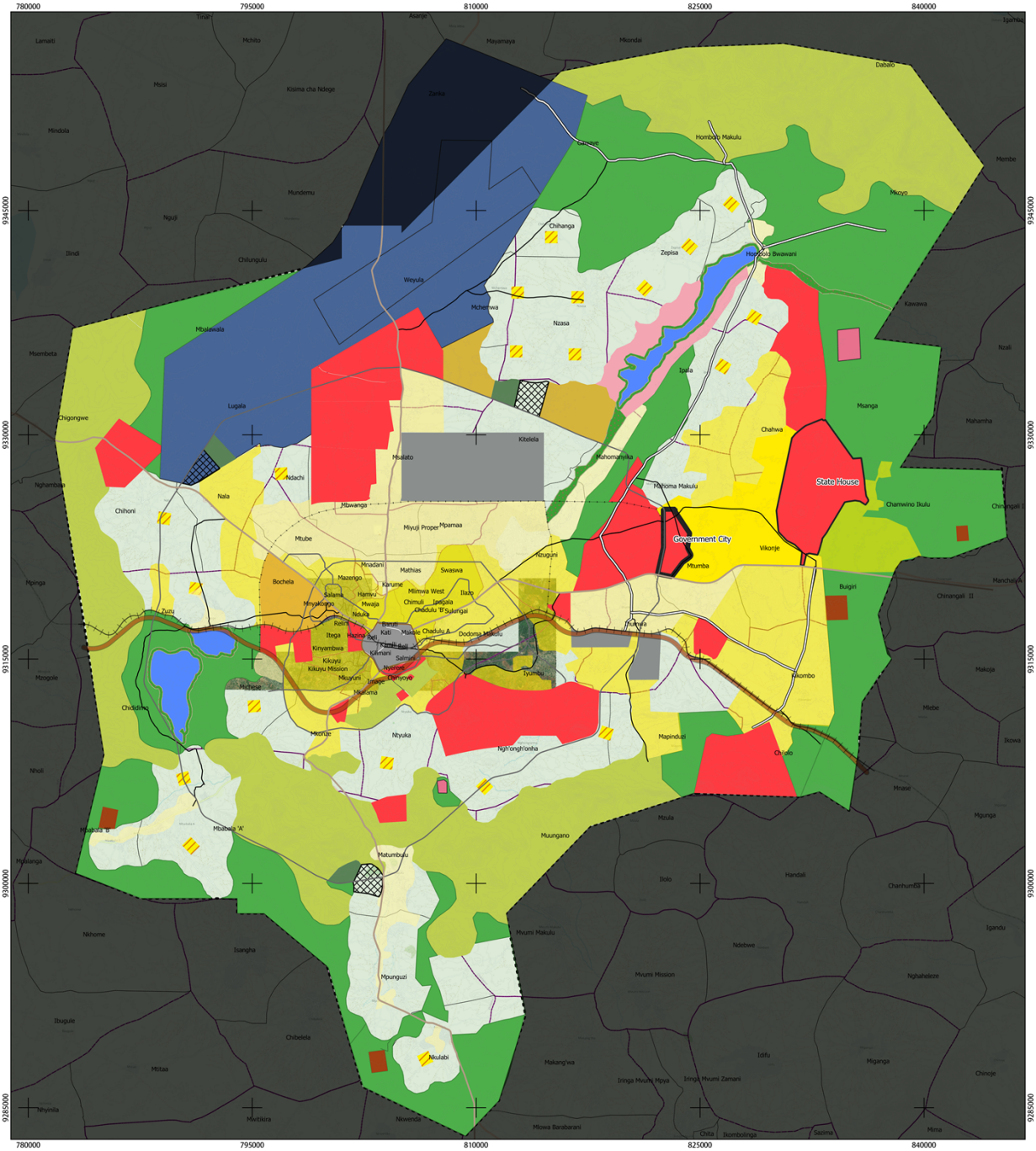
[A1]Full meaning please

[A2]FinnOC: added

1b. Project Map and Coordinates

Please provide geo-referenced information and map where the project interventions will take place.

DODOMA NATIONAL CAPITAL CITY
EXISTING LAND USE



Legend

Master Plan georeferenced maps
Ward Boundary
Dodoma Boundary
ROAD
Inner Most Ring
Regional Road
Inner Ring Road
Outer Ring Road
Collector Road

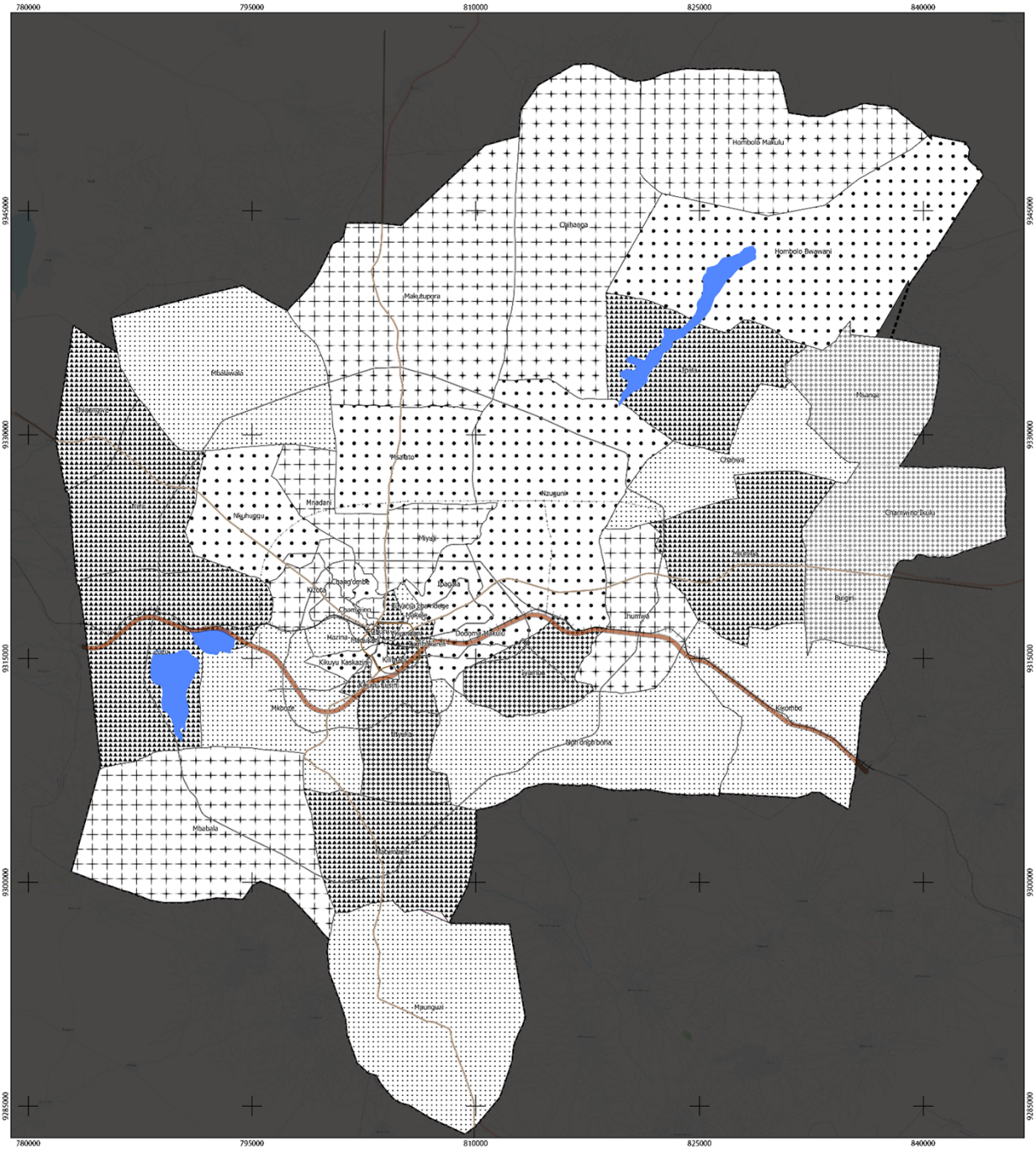
Railway
Standard Gauge Railway
Contours
Sanitary Landfill
Dodoma CBD
Government Institution
Hotel Site
District Centre
Water Body Conservation

Planned Settlement
Informal Settlement
Regularization Area
Building
Water Body
Waste Water Treatment Plant
Transportation
Sub_District_Centre
Sport Centre
Nature Reserve

Well
Water Source
Housing Estate
Kerbside Collection System
Industrial Area
Sanitary Landfill
Proposed Urban Agriculture
Proposed Residential Area

0 100 200 km

DODOMA NATIONAL CAPITAL CITY
WARD POPULATION



Legend

- Ward Boundary
- Dodoma Urban District Boundary
- Railway
- Dodoma Roads
- Standard Gauge Railway
- Water Bodies

Population 2015

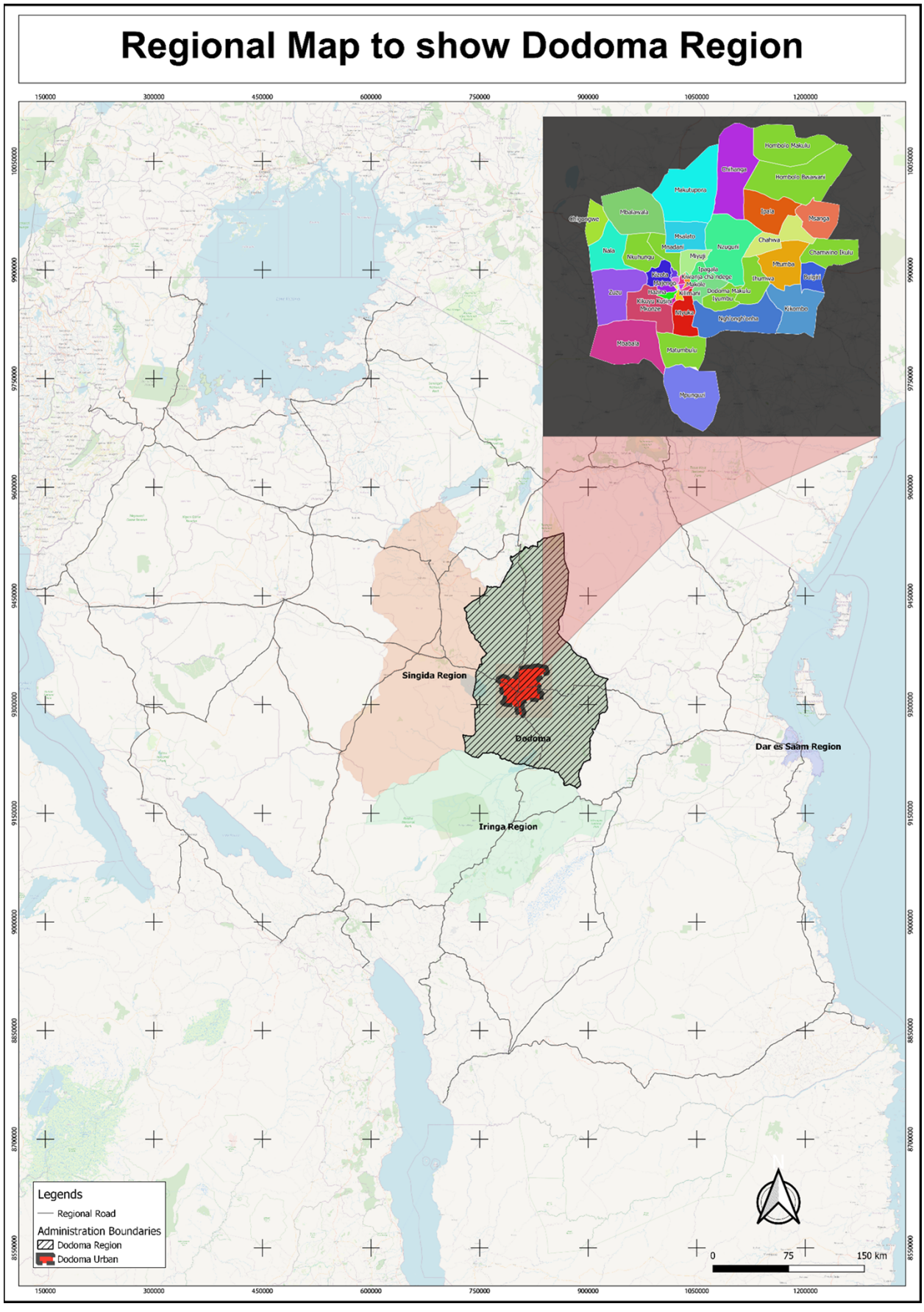
- 0 - 7636
- 7636 - 10796
- 10796 - 15361
- 15361 - 19843
- 19843 - 119249

Coordinates: Latitudes 6°00", 6°30" South and Longitudes 35°30", 36°02" East

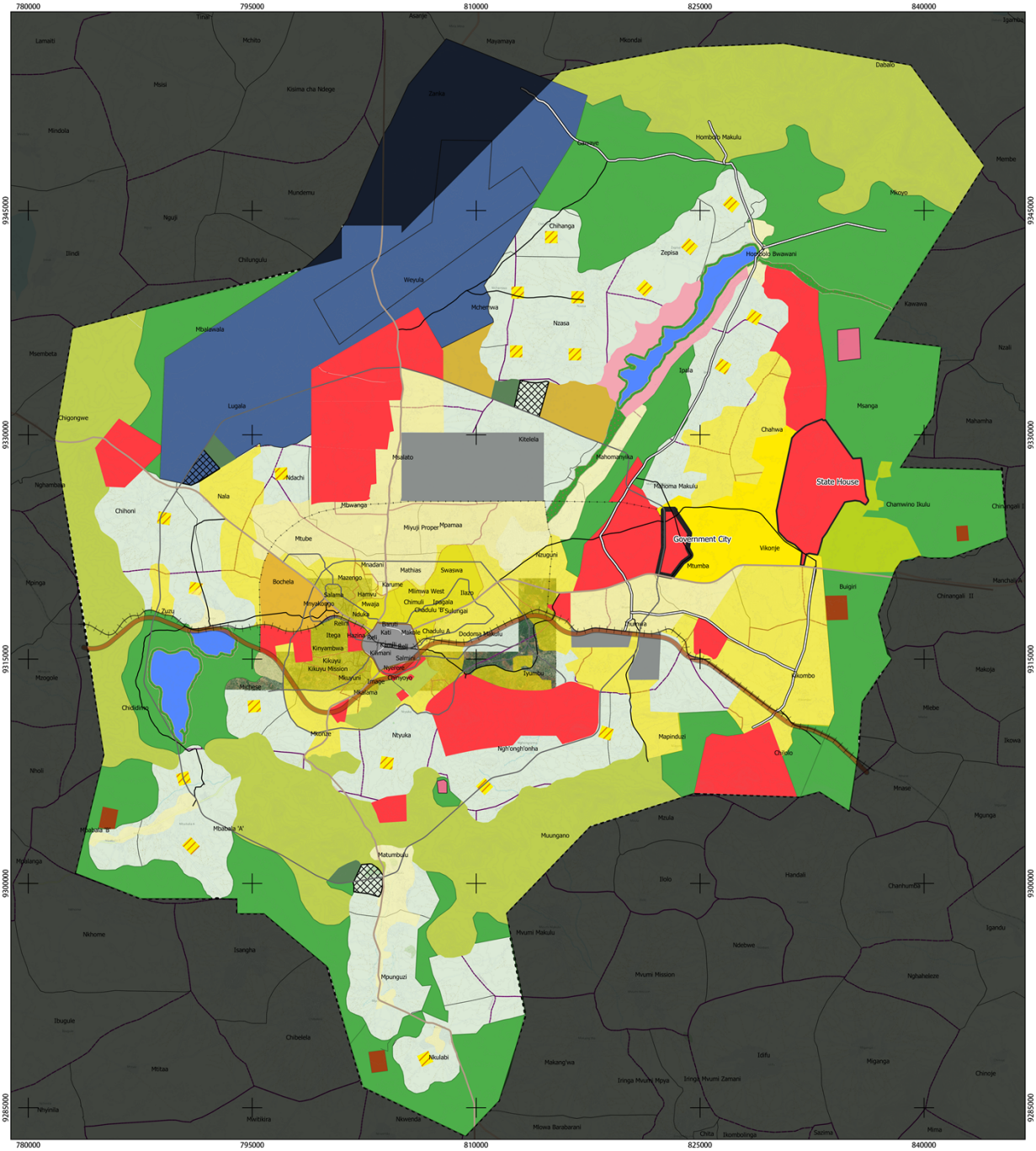
0 100 200 km

Dodoma, is one of the region in Tanzania with 7 Districts namely Bahi district, Chamwino district, Dodoma Urban district, Kongwa district, Kondoa district, Chembe district and Mpwapwa district. The Dodoma as a region lies in the heart of Tanzania in the eastern-central part of the country. The region, which is primarily semi-arid, covers an area of 41,311 square kilometres (15,950 sq. mi). The region is bordered by the Manyara Region to the north, the Singida Region to the west, the Iringa Region to the south, and the Morogoro Region to the southeast. Dodoma urban Municipal which is the case study for this project is one of the seven districts of the Dodoma Region of Tanzania. It is bordered to the west by Bahi District and to the east by Chamwino District. Its administrative seat is the city of Dodoma. It lies between Latitudes 6.00o and 6.30o south, and Longitude 35.30o and 36.02o East. It is 456 kms to Dar es Salaam and 426 kms to Arusha.

Regional Map to show Dodoma Region



DODOMA NATIONAL CAPITAL CITY
EXISTING LAND USE



Legend

Master Plan georeferenced maps
Ward Boundary
Dodoma Boundary
ROAD
Inner Most Ring
Regional Road
Inner Ring Road
Outer Ring Road
Collector Road

Railway
Standard Gauge Railway
Contours
Sanitary Landfill
Dodoma CBD
Government Institution
Hotel Site
District Centre
Water Body Conservation

Planned Settlement
Informal Settlement
Regularization Area
Building
Water Body
Waste Water Treatment Plant
Transportation
Sub_District_Centre
Sport Centre
Nature Reserve

Well
Water Source
Housing Estate
Kerbside Collection System
Industrial Area
Sanitary Landfill
Proposed Urban Agriculture
Proposed Residential Area

0 100 200 km

1c. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

2. Stakeholders

Select the stakeholders that have participated in consultations during the project identification phase:

Civil Society Organizations Yes

Indigenous Peoples and Local Communities Yes

Private Sector Entities Yes

If none of the above, please explain why:

Please provide the Stakeholder Engagement Plan or equivalent assessment.

A range of key stakeholders were involved in the development of the CEO Endorsement package at various stages of the PPG including the data gathering process, the formulation of objectives, the definition of activities and results framework as well as the validation of the project documentation prior to submission to the GEF. Apart from the bilateral consultations, the stakeholder engagement process also included the organization of an inception and validation workshops to ensure ownership of the project by the country.

Several visits to the project area permitted to consult with 12 government institutional stakeholders and one non-government institution, namely: the Dodoma City Authority, the Vice president Office (VPO), the Tanzania Bureau of Statistics, the DUWASA ? Dodoma Water Supply and Sanitation Authority, the Ministry of Water, the Dodoma TANROADS, the President's Office, the Regional Administration and Local Government, TANESCO, Tanzania Building Agency (TBA), the Ministry of Livestock and Fisheries, the Ministry of Minerals, the Ministry of Agriculture, and the NGO named WOWAP (Women Wake Up). These engagements were complemented by community level consultations which helped conduct a baseline survey on current household socioeconomic vulnerability.

The stakeholder consultations have been severely affected by the COVID pandemic related restrictions. Nevertheless, key consultations were held. The consultations helped further discuss the various components of the GEF project and assess the implementation arrangements in tandem with the AfDB co-financed Dodoma City Outer Ring Road project.

Stakeholders consulted include the City Council of Dodoma, key Ministries and Authorities and other key community stakeholders in selected towns and villages, and various Development Partners. During these meetings, the Bank team was able to receive feedback on the receptiveness of the Project and validate measures proposed for to ensure sustainable land management and climate adaptation measures are well mainstreamed and implemented. Some of the key issues discussed included: the need to document lessons learnt to inform planned projects, the opportunity to complement ongoing interventions in the Dodoma Master Plan (under preparation), water supply systems and climate change initiatives. Consultations will also continue during project implementation.

A more detailed stakeholder analysis is attached.

In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement

Stakeholder engagement plan

The project will effectively engage the stakeholders involved in the project to get their support and guide the project implementation to achieve higher results.

? Project outreach proposed includes project website, media (print/audio-visual), workshops, trainings, publications, etc.

? The PCU and the Project Steering Committee (PSC) will ensure that the Gender Action Plan (GAP) and Environmental and Social Safeguards Plan (ESSP) recommended by the project is pursued and implemented. The various groups especially women and youth will be engaged during the consultation meetings, prioritized to avail the program and be included in the different capacity building programs. The project will also ensure that it is in line with all national policies and strategies/programs and be as inclusive as possible.

? Meetings, monitoring visits, surveys and written communications will be used to receive feedback to continue the ongoing dialogue as well as during implementation.

? The project will follow a participatory approach in decision making by engaging all the relevant stakeholders. The Government agencies and the private sector will be actively involved during the project implementation.

Indicative timelines:

All stakeholder engagement activities, including consultation, disclosure, and partnerships ? by when they will take place and the date by which such activities will be undertaken ? will be defined in detail during the Project Inception stage (to be summarized in the Inception Report).

Resources and Responsibilities

1. The PCU is primarily responsible for carrying out the specified stakeholder engagement activities.

2. The stakeholders will be engaged while carrying out various consultation rounds (e.g. thematic working groups, regular meetings, workshops, training), during specific project assessments and studies (feasibility studies, planning and design of pilot project activities/investments).

Monitoring and Reporting

1. The project stakeholders will be engaged at various levels to carry out the monitoring activities. The PCU will involve relevant experts and liaise with partners from public government agencies and the private sector to provide inputs on the indicators and benchmarks required to assess targets; feedback on the performance will be provided in regular intervals and suggestions for further improvement if necessary.

2. The PCU will report back the results to the stakeholders at the earliest through reports, website and/or other forms of publications (e.g., lessons learnt report), and conduct meetings both individually as well as through engagement of all relevant agencies and private sector stakeholders.

The project will consolidate the different stakeholder roles during the initial implementation phase. The main stakeholders and roles are described in the Stakeholder Engagement Plan in the section below (prepared as attachment).

The extent to which different stakeholders were consulted during the project development is shown in the stakeholder report, which has been provided as a separate document.

Overview of the Stakeholder Engagement Plan

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
1	Ministry of Finance and Planning	To provide overall oversight of the GEF financing	PSC	Y0 and thereafter once yearly	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
2	Tanzania National Roads Agency (TANROADS) under the Ministry of Works and Transport (MoWT)	Lead Executing Agency. TANROADS is a non-revenue generating agency with mandate to implement infrastructure projects. They are the Executing Agency of the Dodoma Outer Ring Road, the anchor for the GEF project. They will assume all responsibility for the receipt and utilization of the GEF grant at the level of national execution and consequently, shall ensure compliance with the reporting, financial management, technical, fiduciary, safeguards, monitoring and evaluation requirements applicable to the Project.	PSC, PMU, Technical Committee	All	Yes

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
3	Dodoma City Council (DCC)	the City Council of Dodoma that has the mandate for the sustainable urban development of Dodoma. The city?s new Master Plan shall provide key baseline data for the project including on zoning, land use and other planning aspects. The DCC and TANROADS will involve and collaborate with all relevant Government Ministries / Agencies. They will engage with the project on relevant policy and technical intervention of the project and will assume relevant responsibilities for ensuring that project outcomes and results and upheld after project closure. Their roles and responsibilities for building climate resilience and sustainable land management in Dodoma will be further detailed and enshrined during the key milestones in the project	PSC, PMU, Technical Committee	All	Yes
4	Regional Administration and Local Government (PORALG).	PORALG is the parent ministry for the city of Dodoma and oversees Dodoma administratively.	PSC	Y0 and thereafter once yearly	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
5	Vice-President?s Office ? Division of Environment (VPO ? DOE)	VPO-DOE leads the ?Greening Dodoma? Movement and will provide administrative support including hosting the Project?s Steering Committee. The VPO is also the GEF Operations Focal Point. They will engage with the project on relevant policy and technical intervention of the project and will assume relevant responsibilities for ensuring that project outcomes and results and upheld after project closure. Their roles and responsibilities for building climate resilience and sustainable land management in Dodoma will be further detailed and enshrined during the key milestones in the project	PSC	Component 1, 2, 3, 4 (particularly, Output 2.2 and 3.4).	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
6	Department of Water Resource Management (DWRM) in the Ministry of Water, and the Dodoma Urban Water Supply and Sewerage Authority (DUWASA)	The DWRM is responsible for monitoring aquifers and catchment areas for water quality and for water recharge and protecting the wellfields in the region. The DUWASA is in charge of water supply to customers, managing current and future water balances, recovery and recycling water systems and contributing to making Dodoma green. They will engage with the project on relevant policy and technical intervention of the project and will assume relevant responsibilities for ensuring that project outcomes and results and upheld after project closure. Their roles and responsibilities for building climate resilience and sustainable land management in Dodoma will be further detailed and enshrined during the key milestones in the project	PSC, Technical Committee	Component 1, 2, 3, 4 (specifically, Output 3.2).	Yes

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
7	Ministry of Agriculture Livestock and Fisheries	Responsible for delivering quality agricultural and cooperative services, provide conducive environment to stakeholders, build capacity of local Government Authorities and facilitate the private sector to contribute effectively to sustainable agricultural production, productivity and cooperative development. They will engage with the project on relevant policy and technical intervention of the project and will assume relevant responsibilities for ensuring that project outcomes and results and upheld after project closure. Their roles and responsibilities for building climate resilience and sustainable land management in Dodoma will be further detailed and enshrined during the key milestones in the project	PSC	All components, but particularly component 2	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
8	The Tanzania Forest Service (TFS) and the Tanzania Forest Research Institute (TAFORI)	Two critical entities for supporting ?greening Dodoma? including providing technical advice on the DCORR greenbelt and addressing land degradation particularly in the *Mtumba, Chang?ombe, Nala, Zuzu, Nzuguni, Ntyuka, Ihumwa, Makutopora, Kikombo, Chihanga, Ipala, and Chahwa* wards of the City of Dodoma. The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Output 2.2 and 3.4	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
9	The Tanzania Meteorological Authority (TMA), under the Ministry of Works and Transport	The TMA is the designated authority mandated for the provision, coordination and regulation of meteorological activities in Tanzania and for provision of the full value chain of climate services, a necessary pre-requisite for underpinning effective climate change adaptation. TMA will lead the enhancement of early warning systems and strengthening of systematic climate observations. They will engage with the project on relevant policy and technical intervention of the project and will assume relevant responsibilities for ensuring that project outcomes and results and upheld after project closure. Their roles and responsibilities for building climate resilience and sustainable land management in Dodoma will be further detailed and enshrined during the key milestones in the project	PSC	All components, particularly component 3	Yes

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
10	Tanzania National Bureau of Statistics (NBS)	The NBS will be a critical partner particularly with respect to knowledge management, M & E of the GEF Project outcomes and outputs. NBS will also provide significant baseline and mid-term review data. The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Component 4, particularly Output 4.2	No
11	University of Dodoma and other academic and research institutional	Dodoma University provides comprehensive, gender sensitive and quality education to a broad segment of the population through teaching, research, and public services in the fields of education, health and allied sciences, natural sciences, earth sciences, information and communication technologies, business, humanities and social sciences The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Component 4, particularly Output 4.1	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
12	Community Development, Gender, Elderly and Children (MoHCDEC)	To promote community development, gender equality, equity and children rights through formulation of policies, strategies and guidelines in collaboration with stakeholders active in the country. The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	All components, particularly Outputs 2.2 and 3.4	No
13	Ministry of Minerals	They are responsible for facilitating the development of the mining sector. They are an important national entity to help reduce unsustainable artisanal mineral extraction activities that contribute to land degradation The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Output 2.3	No
14	Ministry of Natural Resources and Tourism	They are responsible for the management of natural resources and cultural resources and for the development of the tourism industry. It has a wide range of investments in various tourist resources and tourism industry projects. The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Output 2.3	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
15	Ministry of Education and Vocational Training	They are responsible for ensuring equitable access, quality education and promoting life-long learning The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Outputs 2.2, 3.4 and 4.1	No
16	Tanzania Building Agency	The main role of TBA is to provide accomodation for the government and public servants as well as building consultancy services to the government. Specifically the agency is charged with the following functions: i) construction of new government buildings, ii) Maintainance of government buildings; iii) To advice the Governmet on policy and legal matters pertaining to the building subsector, among other The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Output 3.1	No
17	The National Environment Management Council (NEMC)	NEMC is responsible for undertaking environmental enforcement, compliance, review and monitor environmental impact statements, research and awareness raising. The project will also engage these stakeholders on their roles and responsibilities to support the sustainability of project outcomes and results	PMU	Component 4	No

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed from the GEF grant
18	Representatives of other on-going related projects, e.g., FAO, WWF, UNEP, UNDP	Orientation/consultation about ongoing related projects in Dodoma	PMU, Project Steering Committee (Observer)	Y0, y2 and y4	No

Special note on NGOs and CSOs

CSOs and CBOs will support the implementation of the GEF project at the community and grassroot level. In Tanzania, the civil society has played a significant role in promoting gender equality and women?s empowerment through the implementation of advocacy and service delivery. The NGO community has also been vocal on the critical gaps in policymaking and in legal reforms. It is expected that the NGOs and CSOs will play a significant role in the planned project, including at the level of the Project Steering Committee. Several NGOs/CSOs have been identified and are presented in the table below.

No.	Name of Institution	Reason for involvement	Engagement method	Project cycle stage	Resources needed
1	Lead Foundation	They promote best principles and practices of leadership, environmental conservation and community development, within and outside Tanzania, including low-cost, sustainable land restoration technique used to combat poverty and hunger. They are currently working with more than 400 communities in Dodoma Region They will be engaged for stronger community-based outcomes and results	PMU	Outputs 2.2 and 3.4	No

2	Dodoma Environmental Network (DONET)	Their work involves sensitizing, educating and liaising with individual people, organizations, institutions, community groups, government institutions and NGOs in the conservation of the environment and in ensuring sustainable management of natural resources of Tanzania in general through coordinated community plans of environmental management and conservation. They will be engaged for stronger community-based environmental outcomes and results	PMU	Outputs 2.2 and 3.4	No
3	Action for Community Care	The organisation supports vulnerable groups to access their needs and have good life by focusing on four thematic areas which are Health, Education, Livelihood as well as Social Protection. They will be engaged for stronger community-based outcomes and results	PMU	Outputs 2.2 and 3.4	No
4	Women Wake Up	Their work involves supporting Tanzanian Women artisans and handmade brands to grow their business and expand their presence in the global markets They will be engaged for stronger community-based outcomes and results	PMU	Output 2.2	No

Select what role civil society will play in the project:

Consulted only;

Member of Advisory Body; Contractor;

Co-financier;

Member of project steering committee or equivalent decision-making body; Yes

Executor or co-executor;

Other (Please explain)

3. Gender Equality and Women's Empowerment

Provide the gender analysis or equivalent socio-economic assesment.

A gender report developed in alignment with the GEF Gender Strategy 2020 -2025, the GEF Gender Equality Policy and GEF Gender Equality Guideline; the Tanzania legal requirements frameworks and AfDB?s guidelines on gender issues.

Gender analysis

The commitment to gender equality is reflected in national strategies, plans and policies such as the Tanzania Development Vision 2025, National Five-Year Development Plan2011/12?2015/16, National Strategy for Growth and Reduction of Poverty (NSGR) and Women and Gender Development Policy of 2000. The Government has also ratified regional and international commitments on gender equality and women empowerment and established the Ministry of Health, Community Development, Gender, Elderly and Children as a national gender machinery.

One key challenge pertains to the inadequate implementation of laws and policies that uphold and protect women?s rights and gender equality. At the same time, it remains the case that there is inadequate sex- and gender-disaggregated data that would facilitate a better understanding of women?s issues and processes of gender inequality in Tanzania, provide the foundation for the development of evidence-based policies, programmes and projects, as well as underpin a rigorous monitoring and evaluation framework capable of demonstrating the results that are necessary to argue the case for the inclusion of gender-responsive planning, budgeting and implementation.

An examination of secondary data shows that while male-headed households are more likely to be poorer than female-headed households, the extent of poverty experienced by female-headed households is greater than that experienced by male-headed households. In addition, female-headed households have a higher dependency ratio than male-headed households. The implication is that the impact of climate change, which is affecting the performance of the rural economy, is experienced to a greater extent by women, in that they constitute a disproportionate share of the rural poor and have a greater role to play with respect to total rural work.

As a consequence of climate change women may have to walk longer distances for water and firewood, limiting their time for agricultural and food production; and men may have to go further away to look for pasture for their livestock. Though Natural Resources Conservation and Management interventions aimed to preserve water sources and the environment in order to facilitate easy accessibility of water, firewood and reduction of workload to women are designed, there is still inadequate representation of gender in environmental conservation and management structures such as in Village Natural Resource Committees (VNRC) and Village Environmental Committees which implement and manage the projects.

Coping and adaptation strategies can also be gendered, due to unequal bargaining power within households, men are more likely to influence the coping and adaptation strategies adopted within male-headed farming households. Thus, as a result of frequent and prolonged dry periods arising from climate change, households may increasingly move away from growing traditional cash toward more reliable, drought resistant, early maturing food crops that can be sold for cash. Conversely, it cannot be assumed

that the benefits of increased agricultural productivity, economic growth and poverty reduction are equitably shared between women and men.

In that respect, this gender analysis has resulted in the production of a gender action which can be found as an attachment to this section.

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

Closing gender gaps in access to and control over natural resources; Yes

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women Yes

Does the project?s results framework or logical framework include gender-sensitive indicators?

Yes

4. Private sector engagement

Elaborate on the private sector's engagement in the project, if any.

Private sector have significant role as a driver for degradation in urban landscape and also as enablers in moving towards a more sustainable and resilient urban development pathway. The private sector will identify different bussiness opportunities during and after the lifespan of the project. Besides, the private sector can contribute towards financing for different project output interventions as part of their respective corperate responsibilities. Further, the private sector can also provide financing as a bussiness if community members or other private sector stakeholders bussiness opportunities that would promote building resilience to climate change as well as enhance climate change adaptation in Dodoma.

There will be private sector engagement in the project by working with community-based enterprises to establish alternative livelihood activities that will alleviate pressures on land and increase climate resilience of communities in the DMA. Successful ventures will be documented and publicized to the communities of Dodoma Metropolitan Area. Access to finance is a major barrier to investments in greener practices, which is why this project will support national stakeholders, particularly community-led enterprises and SMEs in their efforts to make the business case and create the opportunity for sustainable and climate resilient investments for community-led enterprises and SME?s, with the aspirations to overcome the barriers to investment in sustainable and climate resilient initiatives that support the sustainable development objectives of the DMA.

The Synergy model developed in Kenya demonstrates that private sector involvement in thr collection and treatement of both excreta and garbage and their conversion into soil conditioners and animal feed, makes commercial sense and is a viable alternative to public sector provision of services.

In addition to working with community-based enterprises and SME?s, additional private sector involvement in ~~for~~ this project includes the building and construction sector. The artisanal small-scale mining activities that are contributing to the degradation of the agricultural land in the DMA are responding to the growing city?s demand for building and construction material (e.g. aggregates, sand, clay, etc). Furthermore, the project focuses on building standards, which is relevant to the building and construction center. There are numerous projects underway to expand the DMA?s road network and infrastructure assets which have an impact on land degradation. During the PPG the project has undertaken a detailed stakeholder analysis to determine the relevant stakeholders, including, private sector entities in relation to the objectives and scope of the project. The project will seek to engage all relevant private sector entities to leverage existing resources and support the impact potential, sustainability and scale-up potential of the project

This project will be implementated using in a participatory and consultative process where the entire spectrum of stakeholders will be involved as in an appropriete as and where necessary. Such areas will be refined further after consultation between the funder and the client. In the interim how the private sector will participate and/or contribute to making changes that are required and facilitated as a result of the project are summarized in the table below

Table 10. Role of the private sector

Changes that are required and facilitated	**Possible Role of Private Sector**
Development of private sector systems for collection and treatement of exreta.	Installation of toilets, similar to the Fresh Life Toilets in informal settlements in Nairobi. Collection and treatement of excreta to produce soil condition
Development of private sector systems for collection and treatement of garbage.	? Collection of organic garbage and conversion to animal feed.

Sustainable land management, by ensuring that cropping and animal management maintains or improves land quality and prevents soil erosion and soil degradation	Adopt crop and animal husbandry practices that enhance climate change resilience like growing crops with little water demands or drought resistant crop varieties; and Provide funding to CBO or NGOs to promote Sustainable land management as part of corporate social responsibility
Where degraded lands are being restored, the use of these lands supports the restoration efforts.	Adopt organizational policies to fight land degradations; and Provide funding to CBO or NGOs to promote Sustainable land management as part of corporate social responsibility
New buildings conform to the building codes that are appropriate for mitigating the adverse effects of climate change	Adopt organizational policies to conform to the building codes; Promote conformity to the building codes that are appropriate to mitigate adverse effects of climate change.
No new building takes place in areas subject to flooding, earthquake risk or other environmental hazards.	Adopt organizational policies to conform to suitable building locations - out of flooding prone areas; Adherence to developed climate resilient building standards; and Promote/ popularize coordinated integrated land use as part of corporate social responsibility
Environmentally sensitive building materials and construction methods are adopted.	? Adherence to developed climate resilient building standards.
Beekeeping enterprises are development	Invest in Bee enterprise and Bee Products supply chains; and Promote community participation in apiculture enterprises as part of social corporate responsibility.
Eco tourism is developed.	Invest in Eco Tourism; and Promote community tourism to encourage community involvement in tourism activities

Alternative cooking systems to charcoal are developed.	Invest in production of energy serving cooking stove/ equipment; and Provide funding to CBO or NGOs to promote energy saving stoves of means as part of corporate social responsibility

5. Risks to Achieving Project Objectives

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.(table format acceptable):

A climate risks report has been added.

Table 11. Risks and Mitigation.

Risk	Likelihood	Impact	Mitigation
The possibility of limited capacity to implement the project due to the lack of financial and adequately skilled human resources	L	H	The size of the baseline investment is substantial and will address some of the capacity issues within the executing agencies. Knowledge management will increase skill base.
The inability of the executing agencies to properly monitor progress of the project	L	M	The AfDB has overall oversight of the project and will undertake supervision missions to the project throughout the project lifecycle. Implementing consultancy company will produce monthly progress reports.
Delays in implementation start	M	L	The project will set implementation benchmarks in addition to the ones provided by the GEF. Furthermore, the AfDB baseline investment has already been approved and the loan agreement signed by the Government. During the PPG phase the project team will work closer with the baseline project to allow an early approval of GEF resources by the AfDB?s Board of Directors.

Risk	Likelihood	Impact	Mitigation
Delays during the implementation of the project	M	M	The consultants will produce monthly reports, which will set objectives for the following month and the results of the past month. Any slippage will be identified quickly, and interventions put in place to bring the project back on track. An effective and fully staffed and resourced Project Management Unit is required to ensure that the project remains on track and any slippages are dealt with quickly and effectively.
Lack of engagement of sub-national stakeholders in the project activities	M	H	Given that this project will focus on the capital city of Dodoma with the involvement of both national and sub-national (e.g. municipal, local authorities), the design phase of the project will involve a stakeholder analysis and participatory approach for multi-stakeholder engagement including local government authorities and CSOs.
Political willingness	M	H	Willingness of political leaders may not want to accept the project when they feel that their ward (there are 43 may not profit as much from the project as other wards. Each leader wants the project in their ward. The project will provide sufficient awareness to the leaders and explain why the project will be more active in some wards than others. The project will clearly communicate the selection of the areas where the interventions will take place (e.g. where severe degradation is taking place and climate related risks. Additionally, the project will clearly communicate the benefits for the whole city.

Risk	Likelihood	Impact	Mitigation
Limited ownership in the city to sustain project results and to implement a sustainability strategy	M	H	The project will utilize its resources strategically to the build the capacities and plan a roadmap for how the city can take on the challenges after project completion. In order to ensure the sustainability, the project will ensure that stakeholders take ownership from the beginning, including the PPG phase. The roles and responsibilities for all stakeholders will be clearly identified and confirmed from the beginning so that all stakeholders are operating within their function in relation to the project and then follow a natural continuation of their functions, post project implementation.
Pandemics, including COVID, AIDs etc. result in key people being incapacitated or~~f~~ dying	M	M	Ensure that sufficient people are trained and have experience to fill any posts that are left vacant due to panamics or other reasons. Ensure that organisations are ISO 9001 certified.
Uncontrolled influx of people into Dodoma may result in unplanned developments taking place in unsuitable areas (at risk of flooding, earthquakes, or pollution problems)	H	H	Ensure that areas for settlement are identified and available before settlement takes place. Monitor development, especially in high-risk areas and take immediate action to relocate inappropriate development.
Failure to follow planning and building control measures results in development in unsuitable areas and / buildings that do not meet the problems of climate change	H	H	Strengthen development control and building regulations control. Monitor the control systems. Take enforcement action if there are breaches of planning or building regulations.

Risk	Likelihood	Impact	Mitigation
Lack of land leads to overuse and overgrazing, which leads to further land degradation.	H	H	Monitor land needed to provide households with food and income, using sustainable farming practices. Identify and support alternative livelihood opportunities to relieve pressure on land to generate an income. Develop more sustainable farming practices. Identify alternatives to cattle as means of holding wealth. Limit livestock numbers.
Continued use of charcoal and fuelwood results in destruction of woodlands and prevents regrowth.	H	H	Develop and support alternative methods of cooking. Develop community woodlots where only sustainable cutting of trees is permitted.
Risk of groundwater pollution from untreated sewerage and other contamination.	M	H	Develop and require alternatives to use of pit latrines, that provide adequate treatment of sewerage. Identify all potential pollution sources, such as abattoirs and industrial sites using chemicals. Make appropriate plans for management. Inspect sites and enforce plans.

COVID context, risk and green/resilient recovery analysis

With regards to benefits generated in the context of the COVID-19 pandemic, the project will firstly contribute towards climate risk and vulnerability mapping for Dodoma city and sustainable land management plans with the incorporation of social and environmental dimensions into recovery actions. This will reduce the cost of future crises, whether they are health-related or not. Indeed, the mainstreaming of climate change adaptation and sustainable land management practices will climate-proof agricultural and water management infrastructure, thus minimizing post-harvest losses and improving long term and safe storage of food.

Secondly, given the existing inequalities exacerbated by COVID-19, the project seeks to provide risk reduction solutions that are inclusive to help offset the negative impacts of the pandemic, climate change and other hazards on households, communities and by extension, the wider economy. Moreover, this is

complemented with trainings and the demonstration of low-cost measures to protect ground water aquifers from land contamination sources to help communities durably adopt climate-friendly/resilient technologies and practices.

Thirdly, the project will contribute to green recovery from the COVID-19 pandemic through the promotion of nature-based solutions to improve urban resilience to various risks (including pandemics such as COVID19). The COVID-19 pandemic is an opportunity for Dodoma city to re-examine and integrate sustainable solutions for a transition towards resource-efficient and climate resilient development pathways. In this regard, the project intends to develop individual sector plans to help sustainably implement the 2018 City of Dodoma master plan and ensure that the financial and operational sustainability of hydro-meteorological monitoring (through a reinforced early warning system) and a water management action plan (including integration of best practices for water conservation, reuse, recovery and recycling systems) to further preserve climate-proofed water supply infrastructure.

6. Institutional Arrangement and Coordination

Describe the institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

The implementation of this project over a 48 month-period will require the set-up of an effective multi-sectoral approach in close collaboration and coordination with relevant sectoral government ministries and departments both at national and sub-national levels. In addition, interventions and actions will be coordinated in cooperation between government and development partners, the private sector and civil society organizations (CSOs) and community groups. The GEF project will be anchored on the Dodoma City Outer Ring Road Project implementation scheduled from September 2021 to December 2024.

Implementing Agency

The African Development Bank is the GEF Implementing Agency for this project. The AfDB through its country Office in Tanzania will have overall oversight of the project. Functions supportive of project coordination, management and implementation including among others procurement, financial management and implementation of environment and social safeguards in this project will be done according to AfDB policies, procedures, practices, and guidelines as set out in the relevant manuals. The Bank?s Urban Development Division will provide the technical oversight for implementation of the project.

To ensure gender equality and women?s empowerment throughout the project implementation, the GEF project will be categorize according to the African Development Bank's Gender Marker System (GMS), signifying its contribution to gender equality and women's empowerment and visibility of women in certain specific activities. The project will be implemented in line with Pillar 3 of the Bank?s gender strategy to facilitate equal access of women and men to social services through infrastructure in use, service delivery and participation. Gender equality will be ensured across all 4 components of the project.

Executing Agency

Tanzania National Roads Agency (TANROADS) under the Ministry of Works and Transport (MoWT) will be the Executing Agency for the Project. TANROADS is a non-revenue generating agency with mandate to implement road and more recently other infrastructure projects in the Country on behalf of the Government of the United Republic of Tanzania. TANROADS has acquired substantial experience in managing Bank-funded projects. TANROADS is the Executing Agency of the Dodoma Outer Ring Road, the anchor for the GEF project. It will assume all responsibility for the receipt and utilization of the GEF grant at the level of national execution and consequently, shall ensure compliance with the reporting, financial management, technical, fiduciary, safeguards, monitoring and evaluation requirements applicable to the Project. TANROADS will support the Bank to undertake the supervision missions. All project outputs directly executed by TANROADS will be handed over to the DCC upon completion for maintenance, ensuring full ownership by the city of Dodoma.

While TANROADS is the national executing agency of the AfDB financed Dodoma City Outer Ring Road Project, which this GEF project builds on, including the implementation arrangements, it is the City Council of Dodoma that has the mandate for the sustainable urban development of Dodoma. For this reason, it is imperative that the City Council of Dodoma is actively engaged in all project activities. TANROADs will be working in close cooperation with the Dodoma City Council (DCC) through a MOU establishing the various areas of intervention. The city?s new Master Plan shall provide key baseline data for the project including on zoning, land use and other planning aspects. The supervision missions will be undertaken by the Bank at least twice a year, in close coordination with the DCC and TANROADS. The two implementing Agencies will involve and collaborate with all relevant Government Ministries/Agencies.

TANROADS will be responsible for the procurement of international and national experts as demanded by the project.

This project is expected to strengthen the DCC capacity for climate change adaptation and resilience. The Bank through its other interventions in the city of Dodoma will build in capacity reinforcement on project and fiduciary management to ensure the city is better positioned to carry out similar and larger value projects on its own, with or without sovereign guarantee.

National execution partners

Due to the integrated nature of the project, this project has several national execution partners that will need to be fully engaged in the activities relevant to their institutional mandates. These include the Dodoma City Council (DCC), the Vice President?s Office (Environment Directorate), Dodoma City Urban Water & Sewerage Authority (DUWASA), the Ministry of Water through the Water Resource Management Directorate and the Ministry of Agriculture Livestock and Fisheries. The Tanzania Forest Service (TFS) and the Tanzania Forest Research Institute (TAFORI) are both critical entities for ?greening Dodoma.?. Other national partners include President?s Office Regional Administration and Local Government (PORALG) (the parent ministry for local governments including the city of Dodoma), the Dodoma Regional Government, the private sector, academic institutions such as the University of Dodoma, CSOs and community-based groups (CBOs).

Vice President?s Office (VPO)

The office of the Vice President is coordinating the implementation of respective national environmental programs and to ensure effective implementation of government policies and programs; and to foster socio-economic development. The VPO has a lead role in coordinating the planning process, supervision, and implementation of all government development activities, on issues related to the preservation and protection of the environment in Tanzania. The VPO is also coordinating the movement for ?greening of Dodoma.? The VPO will work in close collaboration with the DCC with support from the TANROADS.

Project Technical Committee

A Project Technical Committee which will comprise representatives from the VPO, DCC, AfDB, and local CSO/NGO, will meet after production of the Project Inception Report, after the Mid Term Review, and after the Project Completion Report. The Technical Committee will review progress at the Mid-term review and determine whether satisfactory progress is being made towards achieving the project?s outcomes and outputs. Where necessary it may request modification to the project including changes to the Log-frame and the inputs needed. The Terminal Review will take place one month before the end of the project and will evaluate whether the project has, or is likely to achieve its objectives, whether there should be a further project, and what lessons have been learnt.

Project Steering Committee

To ensure that there is broad participation from a variety of actors, a Project Steering Committee will be established to advise on the implementation of project activities to guarantee the sustainability and resilience of implemented actions during and beyond the life of the project. The committee will also ensure that there is harmonization with other similar national and regional undertakings to enhance synergy and avoid duplication. TANROADS will submit a formal request to the VPO Permanent Secretary to establish the Steering Committee. The Steering Committee will comprise representatives from: the DCC,

TANROADS, the Vice President?s Office (VPO), Ministry of Agriculture, Dodoma Urban Water & Sewerage Authority (DUWASA) Ministry of Water, Tanzania Forest Service (TFS) and Tanzania Forest Research Institute (TAFORI) , and two local and national CSO/NGOs.

The Tanzania Meteorological Authority (TMA) is a key coordinating entity in Tanzania on all issues pertaining to the climate, climate change and particularly climate information and early warning systems. Its involvement in the project at the level of the Project Steering Committee is imperative for the successful advancement of sustainable land management and building climate resilience.

To strengthen gender equality and women?s empowerment in the project, at least two members at each meeting should be women. The project will be monitored by the Steering Committee, which will meet on or before the 5th working day of every quarter. The Steering Committee will review the Quarterly reports and either accept them, or request review and / or clarification including instructions to the consultants on actions to be taken in the upcoming quarter.

Additional national agencies that will be included to participate in selected meetings of the Project Steering Committee include the Ministry of Health; Community Development, Gender, Elderly and Children (MoHCDEC);; Ministry of Minerals; Ministry of Energy; Ministry of Agriculture Livestock and Fisheries; Ministry of Natural Resources and Tourism, Ministry of Education and Vocational Training, Ministry of Works and Transport; Tanzania Building Agency; The National Environment Management Council (NEMC);

Project Management Unit (PMU)

A PMU will be established to among others, execute the day-to-day activities. The PMU will be supported by the PMU of the AfDB Ring Road project. The PMU will also support and monitor the progress of the project, ensuring that the deliverables are provided on time and to agreed standards. The PMU will comprise an expert on land degradation, an Environment and Social Safeguards expert, a Gender Mainstreaming expert, an expert on project management, an expert on financial management, an expert on procurement, a Climate expert, an M & E expert and an office manager. Working with the main consultants the PMU will identify risks that may put the successful completion of the project at risk and provide advice and, where necessary, interventions to put the project back on track.

The PMU will produce monthly reports within three working days of the end of month and this will be emailed to the members of the Steering Committee and the Technical Committee immediately after production. A quarterly report would be made available in advance of the quarterly Steering Committee meetings. Where members of the Steering Committee do not have email, a printed version will be delivered immediately after production. These reports will include objectives for the following month, based on the logframe and detailed project plans. They will also report on whether the objectives for the previous month have been met. If they have not, then the reasons why and what actions are needed to bring the project back on track would be provided by the PMU. The PMU will also act as the secretariat for the Steering Committee and the Technical Committee and should support the production of the Mid-term and terminal reports.

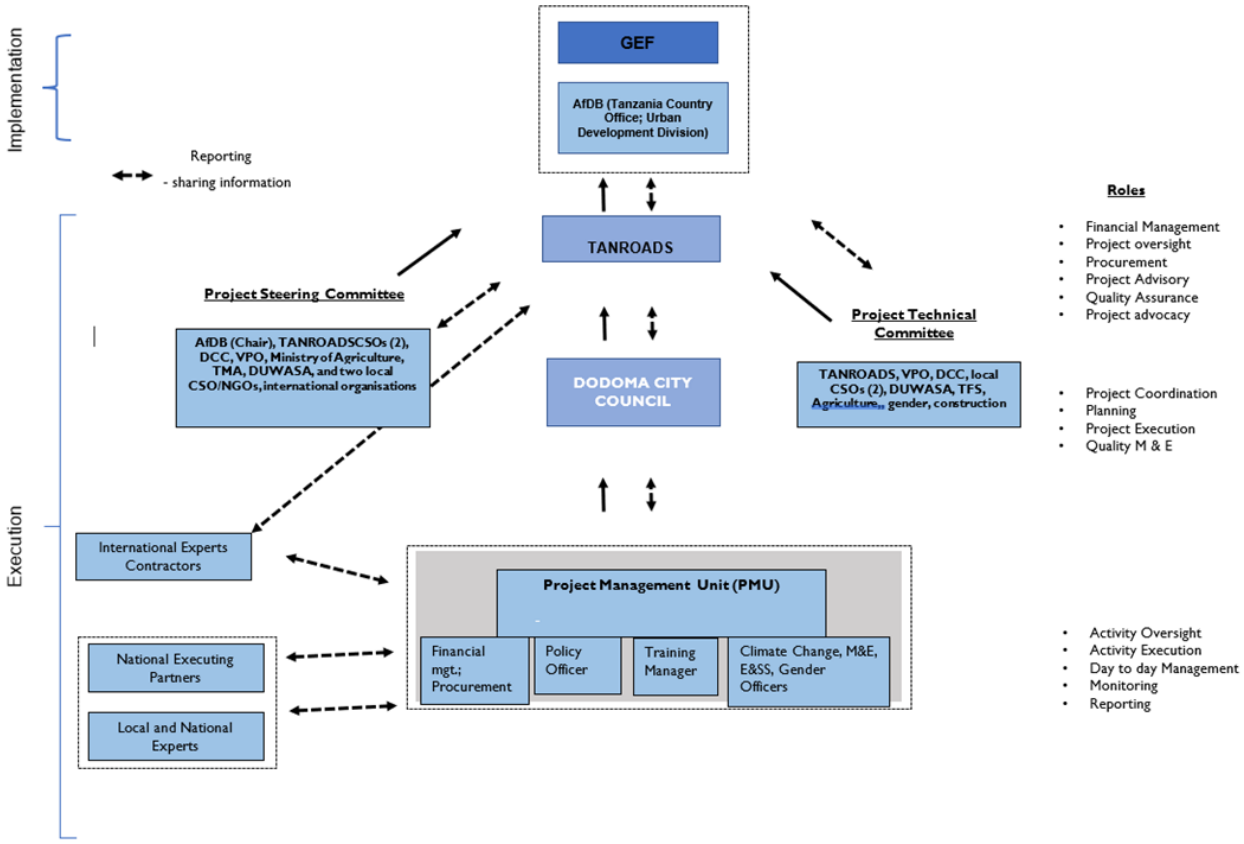
International partners

International project partners are considered all those agencies that have relevant ongoing or planned projects in Tanzania, and particularly in Dodoma, as presented in the table below.

Currently there are six GEF-7 projects at national level in Tanzania. The projects? information is listed in the following table. Of all of those GEF-7 projects, only one is within Dodoma region.

Title	Focal Areas	Implementing Agencies	Status	Coordination with the project
GEF Projects				Representatives of the implementation agencies will be engaged during the project's inception phase and the areas for cooperation will be decided on. Interested parties will be invited to participate in meetings of the project's steering committee to maintain the effectiveness of coordination between the various ongoing projects in Dodoma.
Food Systems, Land Use and Restoration in Tanzanian Forest Landscapes (GEF ID 10262)	Biodiversity, Land Degradation	WWF	Project Approved	
Tanzania Climate Enhanced Transparency Framework (ETF) (GEF ID 10668)	Climate Change	UNEP	Concept Approved	
Integrated Landscape Management in Dry Miombo Woodlands of Tanzania (GEF ID 10250)	Land Degradation, Biodiversity	FAO	Project Approved	
Building the resilience of forest biodiversity to the threats of climate change in Tanzania's Nature Forest Reserves (GEF ID 10690)	Biodiversity	UNDP	Concept Approved	
Building resilience through sustainable land management and climate change adaptation in Dodoma (GEF ID 10418)	Land Degradation, Climate Change	AfDB	Concept Approved	
Integrated Adaptation Program to enhance resilience of communities and ecosystems in the dry Miombo Woodlands of Tanzania Mainland and Dryland of Zanzibar (GEF ID 10364)	Climate Change	FAO	Concept Approved	

Non-GEF projects				
Dodoma City DiagnosticStudy and Action Plan	Sustainable Urban Development & prioritization of investments	The AfDB Urban and Municipal Development Fund	Completed	
The Dodoma Resilient and Sustainable Water and Sanitation Program in Tanzania	Improve water supply for multi-purpose use by developing water resources for Dodoma City and the towns of Bahi, Chemba and Chamwino.	AFDB	Ongoing	
The Msalato International Airport Construction Project	Economic growth, and promote regional/international integration.	AFDB	Ongoing	



7. Consistency with National Priorities

Describe the consistency of the project with national strategies and plans or reports and assesments under relevant conventions from below:

NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

National Action Plan for Adaptation (NAPA) under LDCF/UNFCCC

The project is aligned with the country?s NAPA which lays out a series of activities addressing (e.g. (i) Alternative farming systems and water harvesting, (ii) Afforestation programmes in degraded lands using more adaptive and fast growing tree species, (iii) Establishing and Strengthening community awareness programmes on preventable major health hazards) the adaptive capacity of the country to climate risks, including risks associated with extreme rainfall and flooding. In particular, it alludes to the risks posed by unplanned settlements, especially in low lying flood prone areas, wetlands and hilly areas such as in certain parts of the city of Dodoma and its surroundings. This includes **strategies** to reduce the country?s vulnerability to meteorological hazards in various productive sectors such as the

agricultural, energy, health, forestry and water sectors. Furthermore, the activities proposed also align with the NCCS priorities regarding the impact of floods on people, livelihoods and infrastructure, often due to prolonged heavy rainfall which can lead to water erosion and waterborne diseases often affecting the most vulnerable sections of the population including the elderly, pregnant women and children. *The GEF project outcome 3 on sustainable urban planning and land management to improve urban resilience to climate change and variability; output 3:2 on flood management plan and recommendation for improved drainage systems align well with the* Tanzania National Adaptation Program of Action (NAPA)

The project shall thus contribute accordingly and as relevant to building on the outcomes obtained from the implementation of a number of past land and city related plans and policies such as the National Land Policy (1997), the National Human Settlements Development Policy (2000), the Land Acts No.4 and 5 (1999) and the Town and Country Planning Act (2004). The overall aim of *a National Land Policy (1997*) For instance, is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment; among the specific objective of the policy is to protect land resources from degradation for sustainable development which align with the *GEF project Focal Area Outcome on restoration of degraded urban land and sustainable land management;* and for the *National Human Settlement Development Policy (2000*) overall goals is to promote development of human settlements that are sustainable; and among the specific objectives include to protect the environment of human settlement and of ecosystems from pollution, degradation and destruction in order to attain sustainable development; and to promote the use of and production of local building materials that are affordable which is in line with the *GEF project outcome 3: on sustainable land planning and land management to improve urban resilience to resilience to climatic change and variability particularly project output 3:1 on updating building standards and codes to mitigate effects of climate related risks.*

Tanzania's Nationally Determined Contribution (NDC) from 2021, provides a set of interventions on adaptation and mitigation, which are expected to build country resilience to the impacts of climate change and contribute to the global effort of reducing greenhouse gases (GHG) emission. This project will support Tanzania in improving the following adaptation measures outlined as part of their NDCs:

Agriculture

1. Upscaling the level of improvement of agricultural land and water resources management
2. Strengthening knowledge systems, extension services and agricultural infrastructure to target climate actions, including using climate services and local knowledge.

Water, Sanitation, and Hygiene

1. Promoting climate-smart integrated water resources management

Land Use and Human Settlements Development

1. Promoting resilient land use planning and management.

2. Promoting climate resilient human settlements development.

Infrastructure

1. Promoting climate proofing of existing and new critical infrastructure for energy, transport, water supply, health, and other relevant sectors.
2. Promoting the use of climate service during the designing and development of new infrastructure.
3. Mainstreaming of climate change in the engineering and architecture curricula.
4. Strengthening early warning system and weather forecasting and dissemination infrastructure

Disaster Risk Reduction

1. Strengthening early warning systems for extreme weather events and other climate-related hazards

Gender Mainstreaming

1. Enhancing gender equity in climate change adaptation actions.
2. Promoting measures to address negative impacts of climate change on young people, women, old and other groups facing inequality, including people with disabilities

National Communications (NC) under UNFCCC

The second National Communication (2014) to UNFCCC identifies establishment of protected areas, restoration of degraded habitats, erosion control and line structures among the recommended adaptation options to projected water stress and scarcity due to climate change; *these adaptation measures align well with the first GEF focal area outcome on restoration of land urban land and sustainable land management.* The project is expected toput 75000 ha of landscapes under sustainable management. Some management practices include increasing soil organic carbon (soc) on agricultural areas, increasing forest cover in deforested areas and stablishing forest plantations. Forest plantations can produce 2-30 m^3 of biomass per hectare per year (Chamshama & Nwonwu 2004). Assuming a conservative scenario of 5-10 m^3 ha^{-1} $year^{-1}$ and the use of a medium density tree species (density of 500 kg m^{-3}), it would be possible to capture 2.5-5 tones (t) of biomass ha^{-1} $year^{-1}$ representing approximately 1.125 - 2.25 tC ha^{-1} $year^{-1}$ or 4.16 - 8.325 tCO_2 captured ha^{-1} $year^{-1}$. In Annex M and Annex O, sustainable management practices to tackle loss of soil quality, soil erosion, deforestation and forest degradation, which all contribute to mitigating green house gases (GHGs) emissions.

Poverty Reduction Strategy Paper (PRSP)

Proposed technical interventions aligns with goal No.4 of the NPRS which partly aims to ensure environmental sustainability and climate change adaptation and mitigation. One of the operational targets of this goal (operational target 4) strengthens the coordination framework for natural disaster response. The awareness on climate change and adaptation strategies and technologies for climate change mitigation and adaptation in rural and urban areas to ensure food security are addressed under this goal.

National Biodiversity Strategies and Action Plan (NBSAP) under UNCBD

The overall objective of the NBSAP is to reduce loss of biodiversity, promote the value of biodiversity and improve community livelihoods. *This aligns with GEP project outcome 3 on sustainable urban planning and land management to improve urban resilience to climate change and vulnerability; and output 3:5 on demonstration of nature based solutions for improved urban resilience and alternative livelihood creation through community based enterprises.* The project is expected to achieve reaching 75000 ha of landscapes under sustainable management. Some management practices include increasing soil organic carbon (soc) on agricultural areas, increasing forest cover in deforested areas and stablishing forest plantations. Increasing forest cover offers habitat, shelter and food resources for species, which is linked to improved biodiversity status and ecosystem services.

National Capacity Self-Assessment (NCSA) under UNCBD, UNFCCC, UNCCD

The primary goal of the NCSA is to identify, through a country-driven consultative process, priorities and needs for capacity building to contribute towards the protection of the global environment through the implementation of Post Rio Conventions. This goal aligns with the *GEP project outcome 1 on integration of climate change resilience into police regulations and urban planning and land development specifically on project output 1:3 institutional capacity developed to adequately address climate vulnerabilities in communities if DMA*

National voluntary Land Degrdation Neutrality (LDN) targets under the United Nations Convention to Combat Desertification (UNCCD)

LDN target at the national level: LDN is achieved by year 2030 as compared to year 2010 and an additional 25% of the forest has improved (net gain). LDN targets at the sub-national scale: LDN is achieved in the following land degradation hotspots: Dodoma, Singida, Tabora, Shinyanga and Manyara regions by 2030 as compared to 2010 additional 25% of the degraded hotspot regions has improved (net gain). Specific LDN targets and measures based on targets to avoid, minimize and reverse land degradation:

- Restore 11,011,950 ha of forests through sustainable forest management;
- Prevent and avoid decline of land productivity of forests on 2,640,600 ha by 2030;
- Improve land productivity of shrub and grassland on 1,714,500 ha by 2030;

- ? Improve land productivity of croplands on 8,462,500.5 ha by 2025;
- ? Improve land productivity of wetlands on 361,275 ha by 2030;
- ? Increase soil organic carbon in cropland to 54.5tons/ha by 2030;
- ? Reduce soil erosion (loss of top soils) by 19tons/ha.

National Portfolio Formulation Exercise (NPFE) under GEFSEC /

Provisions on Tanzania National portfolio formulation document aligns well with the GEP project outcome 1 on integration of climate change resilience into police regulations and urban planning and land development specifically on project output 1:3 institutional capacity developed to adequately address climate vulnerabilities in communities; Project Outcome 3 on Sustainable urban planning and land management to improve urban resilience to climatic change and variability particularly project output 3:4 Early warning system for extreme climatic, weather and other natural disasters; and Project output 4:1 on Effectiveness of the outputs assessed, Experience documented, and knowledge management; and output 4.5 on Baseline and mid-term data collection for efficient M & E The document in particular highlights activities such as development of specialized skills and expertise on Post Rio Conventions issues through, inter alia, mainstreaming climate change, biodiversity and desertification into school curricular; assessment and implementation of adaptation and mitigation options to address climate change, biodiversity loss and desertification; strengthen adaptive research programme with regards to climate change, biodiversity conservation and land degradation; strengthen systematic observations and early warning systems; strengthen national database, information dissemination systems and networking; and strengthen national coordination, monitoring and evaluation systems.

According to the National Five Year Development Plan (FYDP) 2021/22 - 2025/26 (*Realising Competitiveness and Industrialisation for Human Development)*

The FYDP (2021/22 - 2025/26) lays out that the environment and natural resources are a national asset and the basis for sustainable development. Through the plan government aims to continue strengthening the systems of environmental protection and sustainable use of natural resources for the benefit of present and future generations. Sustainable use, protection and well-being of wildlife, forests, rivers, lakes, oceans, valleys, mountains, habitats, land, minerals and precious stones are among the key areas considered in the Plan. The plan also integrate a number of key interventions which align with the GEF project Focal Area Outcomes ?*LDCF Objective 1: Reduce Vulnerability and Increase Resilience through innovation and technology transfer for climate change adaptation; in particular outcome 3; output 3.5 on demonstration of nature based solution for improved urban resilience and alternative livelihood creation through community based enterprises*; such as specific interventions geared towards the realization of the targets on promote renewable green energy technologies (biogas, LPG, Solar Energy), and Climate change adaptation; deterioration of aquatic systems; Biodiversity conservation; strengthen the national capacity for

addressing climate change Adaptation and mitigation measures; reduced land degradation; improve institution coordination; increase contribution of Beekeeping sub sector in the economy, to mention but few.

According to the plan the performance Indicators and targets for natural resources and environment protection and indicated in the table below

- Others:
    - ? ASGM NAP (Artisanal and Small-scale Gold Mining) under Mercury
    - ? Technology Needs Assessment (TNA) under UNFCCC
    - ? National Implementation Plan (NIP) under POPs
    - ? Biennial Update Report (BUR) under UNFCCC

All in all, the project will contribute to attaining the objectives laid out in Tanzania?s NDC by embarking on a development pathway that is climate resilient by reducing climate related disasters from 70% to 50% on productive sectors and ecosystems. In addition, the project will contribute to the goal of increasing access to clean and safe water from 60% to 75% based on conservative estimates as laid out in the NDC.

8. Knowledge Management

Elaborate the "Knowledge Management Approach" for the project, including a budget, key deliverables and a timeline, and explain how it will contribute to the project's overall impact.

Lack of information and sharing of knowledge, especially information and knowledge that can easily translate into policy action was flagged as a barrier to sustainable and resilient urban development for Dodoma, and Tanzania more generally. Component 4 of the project is designed to address this barrier. Through the various outputs, the project will strengthen the integration between various stakeholder groups at the national and local levels to inform urban development policies.

Under this component there is one output addressing knowledge management.

Output 4.1: Strengthening linkages with universities, other research institutions, other cities and relevant platforms to support sustainability and scale-up research on best practices for resilient urban development.

4.1.1 Participation of the DMA in the Global Platform for Sustainable Cities (GPSC) and exchange of experiences with other cities

4.1.1.1 Become a member city of the GPSC and participate in events organized by the GPSC or similar platforms

The objective of this intervention is to ensure that the Dodoma Metropolitan Area (DMA) is successfully and effectively participating in the Global Platform for Sustainable Cities (GPSC) and is exchanging experiences with other cities.

The DMA will join and participate in the (GPSC). Dodoma will be listed as participating city on the GPSC website (https://www.thegpsc.org/city-dashboard). This can realistically be achieved within the first six months of the project.

Staff of the Dodoma City Authority, ministries within the Tanzanian government as well as public enterprises will participate in events and/or other activities that are organized by the GPSC to exchange experiences with other cities on urban planning and climate resilience. Staff will also participate in activities organized by other reputable platforms focusing on similar topics. The relevant group of relevant stuff builds upon those identified in Outcome 1. Minutes, summaries and/or presentations of the meetings will be archived to document this activity. This activity will start as soon as participants from Dodoma are eligible to participate and will continue throughout the duration of the project and after it has been completed.

4.1.1.2 Organize study tour to another city

A study tour will be organized to another city to learn from this city. The city selected for the study tour will be chosen based on the following criteria: (i) located in Africa, (ii) similar geographic/climatic characteristics, (iii) facing similar challenges, (iv) advanced stage of development, i.e., the city for the study should already have made progress in overcoming some of the challenges at hand. Study tours are a

well-established instrument to facilitate learning and building networks between organizations facing similar challenges. The study tour will be conducted within the second year of the project.

4.1.2 Strengthening linkages with universities and other research institutions to support sustainability and scale-up research on best practices for resilient urban development and developing a climate resilience program.

This activity will strengthen the information, knowledge base and M&E system for all relevant stakeholders. Opportunities will be explored and pursued to strengthen accessibility to and use of information, and to identify research gaps, and possibly creating an open database or using other tools. This will include available research and information on climate-related issues into which academics, policy researchers and CSOs (local and international) could feed relevant research. Policymakers will use this platform to publish their information needs. This will be led by one of the leading universities in Tanzania in collaboration with the VPO. Tanzania would also benefit from: creating regular, topical, cross-ministerial forums; strengthening formal and informal low cost? channels of communication; strengthening flows of information upwards, potentially facilitated by civil society organizations; and creating an open database of available research and experts, mapping responsibilities and expertise. It will be developed to be taught in academic institutions, thus helping to mainstream climate change in urban settings into the academic education.

A database of relevant academic institutions will be produced. This will enable strengthening linkages in terms of climate change and urban development. A database of relevant academic institutions system is achievable and realistic. The database will be made available at the beginning of the project.

A climate-related training program amongst the potential academic institutions will be developed. The training curricula will be developed during the first year of the project.

4.1.3. Project related publications and information dissemination materials

The project will produce and disseminate materials explaining about the project and in particular how to mitigate against the expected impacts of climate change.

The production of a publication and information dissemination materials will inform about the project and project progress, including documents explaining about climate change in general, but specifically about climate adaptation and resilience. Quarterly reports which inform about the information dissemination activities.

Documentation of best practices and experiences, preparation of project results, experiences gained, and lessons learnt will be possible through the implementation of other projects components. These activities will start as from the first year of the project implementation

Under output 4.1, the green city objectives of Dodoma will not only benefit from the GPSC but also inform and enrich the platform with on-the-ground results and exchange of experiences with other cities. The project will promote experiences and lessons learnt on approaches to integrated sustainability planning that will influence a much wider array of cities in their respective countries. To ensure that there is exchange of lessons learnt, targeted capacity building, knowledge sharing tools (such as publications, power point presentations and short outreach videos) along with global outreach at the program level notably through the GPSC will ensure that results from this project will be of bene t to a much broader audience of cities in Africa and beyond.

The publications relating to the project and information materials for dissemination will inform all relevant stakeholders about the progress, findings and results of the project and thus also contribute to gathering their support for all project related activities.

Component 4 will help the learning process by drawing lessons and making them available for future use. Knowledge and experience of the technologies and approaches applied in the project will help the country better cope with similar urbanization challenges in the future.

The knowledge management activities are expected to begin with the start of the project and should accompany the project throughout its whole duration. The key milestones are the following, which are expected to strengthen linkages between differente institutions as well as increase capacity in terms of climate-related issues:

- Database of relevant academic institutions? Month 3
- Participating city in the GPSC ? Month 6
- Climate-related training program ? Month 12
- Study tour to another city ? Month 18

Other activities such as participation in GPSC events and activities or production of publication and dissemination materials will take place throughout the whole duration of the project.

The expected total budget for the knowledge management activities is $220,000. The table below shows a breakdown of the costs according to each output.

Activity	**Sub-activites**	**Cost**
4.1.1 Participation of the DMA in the Global Platform for Sustainable Cities (GPSC) and exchange of experiences with other cities	4.1.1.1Become a member city of the Global Platform for Sustainable Cities and participate in events organized by the GPSC or similar platforms	USD 90,000
	4.1.1.2 Organize study tour to another city	
4.1.2 Strengthening linkages with universities and other research institutions to support sustainability and scale-up research on best practices for resilient urban development	Identify and integrate potential partners including universities, research institutions, lead ministries, NGOs, CBOs, Religious institutions and International Organizations.	USD 130,000
	Develop climate-related training program amongst the potential academic institutions	

9. Monitoring and Evaluation

Describe the budgeted M and E plan

A household data collection survey was conducted at the end of May 2021, and this provides socio-economic data, including information on housing prior to the start of the project. Conducting similar surveys at the Mid-term and completion of the project will allow for an evaluation of its effectiveness.

A Project Management Unit (PMU) will be established to monitor the progress of the project, ensure that the deliverables (performance indicators) are provided on time and to agreed standards. Working with the main consultants the PMU should identify risks that may put the successful completion of the project at risk and provide advice and, where necessary, actions to put the project back on track.

There will be a Steering Committee and Supervisory Committee. The project will be monitored by a local Steering Committee, which will meet on or before the 5th working day of every month. A Supervisory Committee will meet after production of the Project Inception Report, after the Mid Term Review, and after the Final Report. The PMU should act as the secretariat for the Steering Committee and the Supervisory Committee and should support the production of the Mid-term and terminal reports.

The project Logframe provides a summary of the Outcomes expected for each of the four project components, the outputs that will contribute to the outcomes, the Activities that should be undertaken to achieve the outputs and Performance Indicators, which will determine whether the activities have been conducted successfully. For the outputs, assumptions have been made, many about the performance of important stakeholders, which should be met if the project is to be successful.

The consultants managing the project will produce monthly reports within three working days of the end of month and will be emailed to the members of the Steering Committee and the Supervisory Committee immediately after production. Where members of the Steering Committee do not have email, a printed version will be delivered immediately after production. These reports will include objectives for the following month, based on the Logframe and detailed project plans. They will also report on whether the objectives for the previous month have been met. If they have not, then the reasons why and what actions are needed to bring the project back on track.

The Steering Committee will review the monthly reports and either accept them, or request review and / or clarification including instructions to the consultants on actions to be taken in the upcoming month.

The Supervisory Committee will review progress at the Mid-term review and determine whether satisfactory progress is being made towards achieving the projects outcomes. Where necessary it may request modification to the project including changes to the Logframe and the inputs needed.

The Terminal Review will take place one month before the end of the project and will evaluate whether the project has, or is likely to achieve its objectives, whether there should be a further project, and what lessons have been learnt.

Table 13. Monitoring and Evaluation Plan.

Type of monitoring and evaluation activity	**Responsible parties**	**Time frame**	**Budget (USD)**
Kick off Meeting	AfDB Project Manager, local stakeholders and contractors.	With first month of project starting	$3,000
Baseline Study	Independent assessors	Within first two months of project starting	$50,000
Inception Report	Project Manager with inputs from project partners. Cleared by AfDB and the Project Management Unit	Within first two months of project starting	
Monthly Progress Reports & Meetings of the Steering Committee and Supervisory Committee	Project Manager with inputs from project partners. Cleared by AfDB and the Project Management Unit	Within three working days of end of previous month, with objectives for upcoming month.	$7,000
Midterm Evaluation	Independent assessors	After at least 22 months but no more than 25 months of project starting	$30,000
Supervisory Mission	AfDB Project Manager, local stakeholders and contractors.	Within one month of production of Midterm evaluation report.	$20,000
End of Project Evaluation	Independent assessors	Two months before end of project.	$60,000
Terminal Report	AfDB Project Manager and local stakeholders	One month before end of project	$10,000

10. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels, as appropriate. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptation benefits (LDCF/SCCF)?

The total cost of the project is $143,117,100 comprising GEF funding of $ 5,117,100 and co-financing of $138,000,000. The population of Dodoma City is in excess of 800,000[1] and with an average household size of 4.4. The average per capita income for Tanzania being $985[2] in 2019.

No estimate of the increase in income the project would bring, or the decrease in income, if the project does not happen have been provided in the PIF. However, the project will provide the following benefits, many of which are very long-lasting and without which there would be irreversible damage to the environment and a loss of habitat. In particular if soils continue to be lost through unstainable farming practices and the destruction of forests and woodlands for charcoal and fuelwood, the consequences will be irreversible, ultimately resulting in further local climate change and loss of livelihoods.

The proposed project will:

? Reduce the risk of death and ill health from excessive heat.

? Reduce the risk of death and loss of property from flooding

? Reduce CO_2 emissions and improve in house air quality by the development of alternatives to charcoal and wood for cooking. Currently the use of charcoal for cooking generates 3 million tons of CO_2 per year, not including the loss of CO_2 capture from trees that are destroyed. With further reductions in CO_2 emissions by development of solar lighting and solar heating for hot water.

? Reduce CO_2 emissions from vehicles by reducing congestion through the city centre a result of vehicles using the ring road

? Maintain and improve access to potable water supplies. Thus, reducing the time spent on collecting water, particularly by women. Also reducing illness and death resulting from contaminated water.

? Reduce CO_2 emissions from degraded lands and support CO_2 capture by growth of trees and improved soil structure, by maintaining or improving crop production as a result of preventing land degradation and restoration of already degraded lands

? Increase CO_2 capture and storage, improve rainwater infiltration and increase biodiversity through rewilding and environmental improvements to quarries and other brownfield sites.

? Reduce methane escape to the atmosphere by improved management of waste disposal sites and the use of biogas collectors for the treatment of effluent within local areas.

? Improve ground water recharge, through reduced runoff, as a result of improved watershed management, including planting and conservation of trees and other permanent ground cover, and soil and water conservation.

? Prevent ground water contamination by development of appropriate, low water use, sanitation systems.

? Improve habitation of buildings through the introduction of improved building standards and the development of appropriate building materials

? Improve neighbourhoods through environmentally sensitive plans and developments

? Develop alternative livelihoods through the introduction of environmentally sustainable and friendly enterprises and the maintenance of sustainable farming systems.

? By testing and developing land management and development options to improve the sustainability of Dodoma caused by and causing climate change, Dodoma can provide role model to the rest of Tanzania and other countries and act a hub for the dissemination of knowledge on climate change and the means of adopting to it and also limiting it.

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[1] PIF p. 29

[2] Trading Economics (2021): Tanzania GDP per capita, https://tradingeconomics.com/tanzania/gdp-per-capita.

11. Environmental and Social Safeguard (ESS) Risks

Provide information on the identified environmental and social risks and potential impacts associated with the project/program based on your organization's ESS systems and procedures

Overall Project/Program Risk Classification*

PIF	CEO Endorsement/Approval	MTR	TE
	Medium/Moderate		

Measures to address identified risks and impacts

Elaborate on the types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation.

The types and risk classifications/ratings of any identified environmental and social risks and impacts (considering the GEF ESS Minimum Standards) and any measures undertaken as well as planned management measures to address these risks during implementation are presented in the attached Environment & Social report. A climate risk screening was also undertaken to complement the climate risk report.

Project Documents ? Building Resilience Through Sustainable Land Management and Climate Change Adaptation in the City of Dodoma, Republic of Tanzania ? GEFID 10418

Country: Tanzania

Revision history:

Version	Date	Prepared by	Endorsed by

Draft Environment & Social Report	7 May 2021	Dr Makarius Mdemu Ian Corker Immakulata Menas Komba Isah Nabide Dr Nils Viking Msilanga Msilikale Dr Pablo P?rez Chaves	Petri Jusi
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? Establish and expand Beekeeping Enterprises

? Implement measures for sustainable excavation of building materials and construction practices

? Rehabilitation and restoration of lands degraded by informal mining

? Draft new building standards and codes

? Develop a flood management plan

1.1 Component 1. Policy and institutional framework for sustainable urban and regional development

Outcome 1: Climate change resilience is integrated into policies, regulations and urban planning and land development

Output 1.2. Supporting the implementation of the 2019 City of Dodoma master plan by developing individual sector plans

Activity 1.2.3: Implementation of revised Dodoma City Master Plan

Table 1. Potential environmental and social impacts for the implementation of revised Dodoma National Capital City Master Plan.

Description / proposed technical intervention	**Air**	**Water**	**Soil**	**Biodiversity**	**Social economic**	**Cultural**

Areas for recreation, sports and tourism with water bodies	Decreased air pollution, low dust emission & suspended solids Better city environment	Decreased flooding (improved drainage and water collection)	reduced excessive soil heating (-1) and improved soil formation and weathering processes	increased plant biodiversity and greenery scenery	Job creation and incomes from recreational activities	Opportunities for aesthetic relaxation zones
Zone for planting forest and ecological restoration	Air cleansing from pollutant emission (transport and economic activities), noise protection	improved water infiltration and purification	improved soil characteristics and processes	increased plant biodiversity and greenery scenery	City enhancement and attractiveness for socio-economic activities	more areas for cultural and educational activities

1.2 Component 2. Reversing and managing the negative impacts of the urban footprint on land

Outcome 2. Sustainable land management and reversing land degradation through city-level and community-based actions

Output 2.1: Sustainable land development and management

Activity: 2.1.5 Implementation of sustainable land management plan

Table 2. Potential environmental and social impacts for the implementation of sustainable land management plan.

Description / proposed technical intervention	**Air**	**Water**	**Soil**	**Biodiversity**	**Social economic**	**Cultural**

Integrated soil and fertility management	improved air quality from increased vegetation species and varieties	increase infiltration, improves excess water drainage, increase rainwater productivity	increase ground and soil cover improves soil structure and increase organic matter contents reduce runoff/erosion reduce soil salinity	increase vegetation species and varieties increase plant, animal and habitat biodiversity reduces exposure of plants to droughts increase biodiversity	increases production/yield and farm income reduces costs for purchasing fertilizers increases fodder and quality improves food security, livelihood and wellbeing reduces risk of crop failure	sustained cultural knowledge and education on soil & fertility management increased locations for cultural activities
Conservation agriculture (incl. climate smart agriculture)	improved air quality from increased vegetation species and varieties and low emission due to less input use	increased infiltration and water holding capacity	reduce runoff/erosion reduce compaction and improve soil structure increase ground cover, biomass and soil organic matter	increased plant, animal and habitat diversity	increase crop production/yield and farm income reduce production costs, workload and energy reduce downstream flooding improve food security	Increased locations for cultural and educational activities
Structural and vegetative measures (e.g., bench terrace, woven wood fences, vegetated earth-banked terraces, gully control by planting of trees)	improved air quality from increased vegetation species and varieties and low emission due to less input use	increase infiltration and groundwater level increase water supply through water harvesting	reduce soil erosion/runoff increase groundcover and improve soil structure increase biomass, SOM/nutrient cycling and soil moisture increase water availability and water quality	increase plant, animal and habitat diversity promote vegetation species and varieties	increase crop production/yield, farm income and improves food security reduced downstream flooding	improves erosion knowledge and conservation reduce downstream flooding improve food security

Output 2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship

Activity 2.2.1: Establish green spaces, tree growing and planting on hill ranges, around the city of Dodoma & Activity 2.2.2: Establish and expand Beekeeping Enterprises

Table 3. Potential environmental and social impacts for greening of the city and Beekeeping enterprises.

Description / proposed technical intervention	Air	Water	Soil	Biodiversity	Social economic	Cultural
Establishment of green spaces, tree growing and planting on hill ranges around the city of Dodoma	Protection against noise and improved city air quality	improved filtration and water purification low ground water contribution due to increased evaporation reduced storm water and flooding	improved soil condition and characteristics, reduced soil erosion & land slides	increased plant biodiversity and greenery scenery improved habitat for birds, animals and other organisms	more job and income opportunities from green spaces and tree planting and management activities, City enhancement & attractiveness	more areas for cultural and educational activities
Establishment and expansion of Beekeeping enterprises	reduced CO2 emission from avoided land degradation activities reduced air pollution from forest fires and pesticides application	improved infiltration, drainage condition, water quality	increase ground and soil cover improves soil structure and increase organic matter contents reduce runoff/erosion reduce soil salinity	improved conservation of biodiversity	Increased productivity of crops sustainable source of income (small holder farmers, young entrepreneurs) improved health and education opportunities improved food and nutrition security of the poor	improved community knowledge base on ecological processes cultural uses of multiple of bee products (honey, wax, pollen) for nourishment, traditional medicine, handcrafting and polish for building and furniture components

Output 2.3 Rehabilitation of brownfields and degraded land under sustainable land management practices

Activity 2.3.1. Implement measures for sustainable excavation of building materials and construction practices & Activity 2.3.2. Rehabilitation and restoration of lands degraded by informal mining

Table 4. Potential environmental and social impacts of measures for sustainable excavation of building materials and rehabilitation of degraded lands.

Description / proposed technical intervention	**Air**	**Water**	**Soil**	**Biodiversity**	**Social economic**	**Cultural**
Sustainable excavation of building materials/sustainable construction practices Number and areas of approved quarries with approved restoration plans	Low dust and air particulate matter pollution	Low level of water pollution Potential risk of children drowning in inundated open excavation pits	Low soil erosion Low level of land degradation potential landslides of excavation areas	Loss of vegetation and soil microorganisms from clearance of land for excavation	Potential of occupational health and safety risks new short-term jobs and incomes	loss of cultural sites (only if excavation takes place on cultural sites)
Rehabilitation and restoration of degraded lands	improved air quality protection for destructive wind	increased infiltration and water quality improved water availability increased stream flow in dry season	improved land productivity wind erosion control, improvement of soil and biomass conditions	improved biodiversity promotion of vegetation species and variety	improved wood, fodder and mulch production increased recreational activities	Increased number of locations for cultural and educational activities

1.3 Component 3. Urban Resilience to Climate change

Outcome 3. Sustainable urban planning and land management to improve urban resilience to climatic change and variability

Output 3.1 Updating building standards and codes to mitigate effects of climate related risks

Activity 3.1.3. Draft new building standards and codes

Table 5. Potential environmental and social impacts of new building standards and codes.

Description / proposed technical intervention	Air	Water	Soil	Biodiversity	Social economic	Cultural
Introduction of new building standards and codes	reduced CO2 emission due to use of efficient technologies cool indoor environment during hot weather	increased efficiency of water use (domestic, industrial, urban agriculture) reduced storm water due to rainwater harvesting increased infiltration due to compliance of built/open space ratio in residential settlements low risk of flooding urban residential settlements	improved soil characteristics on unbuilt area of the residential plot through planting for shade	Improved habitats for biodiversity (birds, insects such as bees, flowers, microorganisms)	economically affordable housing (less energy use for cooling, heating, pumping) new jobs in clean sustainable building technologies	potential behaviour change towards sustainable building materials, technologies and increased urban densities and mixed urban land use

Output 3.2. Flood management plan and recommendations for improved drainage systems

Activity 3.2.1. Develop a flood management plan

Table 6. Potential environmental and social impacts for flood management plan.

Description / proposed technical intervention	Air	Water	Soil	Biodiversity	Social economic	Cultural

Implementation of flood management plan	noise pollution during construction of physical infrastructures for flood control potential improved air quality and increased CO2 sequestration from riparian vegetation during operation of the project	reduced flood risks for human settlements, urban infrastructures, and farms increased potential risks for water borne diseases (e.g., malaria, bilharzia) increased potential risks for drowning of children into water retention ponds or micro dams	improved soil characteristics along the flood protection buffer zones reduced soil erosion along the main drainage systems	increased plant biodiversity and green scenery along flood buffer zones improved habitat for birds, animals and other organisms along flood buffer zones (+2 impact)	Potential loss of livelihoods opportunity for new income activities from recreation and fish farming activities	more areas for cultural and educational activities

2 Relevant ongoing baseline activities and interventions in Tanzania (Dodoma)

2.1 Overview

This section assesses ongoing and planned activities and interventions with particular focus to Dodoma National Capital City. Major activities/intervention which have relevance to the Developing Project Documents ? Building Resilience Through Sustainable Land Management and Climate Change Adaptation in the City of Dodoma, Republic of Tanzania are described and their environmental, economic, gender, social and health impacts are summarized in Table 7.

2.2 Dodoma National Capital City Master Plan (2019-2039)

The Vision of Dodoma National Capital City Master Plan is to develop Dodoma as a National Capital City that is economically competitive, socially inclusive, environmentally sustainable, vibrant, safe, and convenient. The master plan proposals provide recommendations on several plans including:

i. Land uses: development of 114 residential communities, regularization of 21 inner city informal settlements, allocating 9,712ha for industrial use, 540.90ha for Government City at Mtumba area, designation of three categories of commercial centres ? 2,940ha for three district centres, 3,190ha for 22 sub-district centres and 2,188.8ha for community centres. Redevelopment of the existing CBD covering 894ha, Mtumba special planning area covering 4,289ha to be used for residential, government institutions, universities, urban farming, recreational and commercial uses, infrastructure corridors, other land uses including airport (4,389ha), dry port and marshalling yard (1,036ha), water bodies (2,869ha), Mzakwe water source and its catchment (38,622ha), waste water treatment areas (642ha), sites for sanitary landfills (359ha), urban farming and broad acre areas (59,187ha), nature reserve and conservation (48,661ha).

ii. Infrastructure plan: construction of the Farkwa water dam-120,000 cubic meters per day and boreholes on medium term and a long term plan to take water from Lake Victoria, construction of six new waste water treatment plants, extension of sewerage network to new planning areas, construction of 152.66 km of storm water drainage system, opening of new landfill sites, construction of four electricity sub-stations, construction of underground fibre cable network, construction of 1,953.5kilometers of transport network, construction of Msalato Airport-phase I.

iii. Community facilities: provision of community facilities in 114 communities earmarked for development in the planning horizon of the master plan and land acquisition, planning, surveying, and development of Mtumba Special Planning area.

iv. Landscape improvement plan: greening and bluing the landscapes of the semi-arid Capital City of Dodoma through planting of trees, shrubs, grasses within residential plots, along transport corridors, continuous walkways, open spaces, school and college sites and all parcels of land surrounding water bodies, creation and expansion of water bodies depending on landscape topography.

v. Government city: Detailed proposal for the Government city covering 540.90ha. The southern land of the city accommodates plots for government ministries, Diplomatic mission and Embassies, international organisations, Government institutions, commercial uses, city park, parking facilities, road network, waste treatment, open spaces, and government quarters while the northern parcel is mainly Mahoma Makulu settlement.

A Strategic Environmental Assessment (SEA) was developed for the Master plan During the Master planning process consistent with the requirements of the Environmental Policy (1997) and the National Environmental Act of 2004. Potential negative environmental impacts for the proposed developments were identified by the Master Planning Team as summarized in Table 7.

Table 7. Relevant ongoing and planned baseline activities and interventions in Dodoma.

No	Baseline activities and interventions	Environmental	Economic	Social and gender	Health

1	Dodoma Master Plan	Potential for increased risk of noise and air pollution Potential for increased land conflicts Potential changes of soil composition and structure Potential for increased solid and liquid waste generation Impairment of the flow of water and the functioning of floodplains, water quality and increased water demands Increased GHG emission during construction and operation of constructed infrastructures	More opportunities to economic investments leading to new employment and income sources	introduction of foreign culture and deterioration of African culture due to high influx of people and access to modern lifestyles Potential growth of crime and accidents? Displacement of communities Encroached on public facilities and due to land use changes Increased land use conflicts	Potential risk of spread of communicable diseases
2	Construction of Government City and other government infrastructures/buildings	Part of No.1 above			
3	Standard Gauge Railway (SGR)	Loss of vegetation along the route (negative, permanent, not significant) Reduced CO2 emission (cut down number of trucks playing the road Dar)	Reduced transportation cost for people and goods Long term positive impacts to the national economy (Improved economy)	New jobs and incomes for males and females (positive, permanent)	Risk of HIV/AIDS due to population influx, occupational health, and safety risks (temporary-during construction)

4	New Dodoma Airport (Msalato)	Loss of vegetation within the approximate 45 km2 of the proposed airport (negative, permanent, not significant) Noise pollution during take-off and landing of planes (permanent, not significant) Potential air pollution from gases and particulate air materials emission that are harmful to human health (e.g., lead, CO, N2O, silicon tetrafluoride, heavy metals, ash and dust)	Promote economic development of the region and neighbouring regions Long term positive impacts to the national economy (Improved economy)	Opportunity to men and women for new income sources to small scale farmers, service providers	Risk of HIV/AIDS due to population influx, occupational health, and safety risks (temporary-during construction)

5	Dodoma outer ring road	Some limited negative environmental implications (vegetation loss, noise pollution, scenery loss, generation of solid waste), Soil erosion and instability of slopes Increased noise, vibration, and air pollution Increased waste Loss of Scenic Quality Loss of vegetation Interference to local hydrology Loss of Definite Materials & Land Degradation Reduced pollution and risk of accidents due to low traffic	Employment Opportunities Improved Transport and economy in Dodoma suburbs Decongestion of Dodoma main roads Improved community life and services	Opportunity for employment and improved income Less time for accessing social services Potential for child labour-negative (temp.) Destruction of public utilities Improved community life and services Increased accidents	Risk of HIV/AIDS due to population influx, occupational health, and safety risks (temporary-during construction)

6	Construction of service infrastructures (markets, bus stand roads, hospital)	Loss of vegetation (temporary in the designated sites for infrastructure construction) Source of noise pollution during construction and operation (permanent but controllable?) Potential source for solid and liquid waste pollution for bus stand and markets-under poor management (operation) Improved city-scape aesthetics (city environment)	Sources of revenue to the government and city authorities Market outlet/point in the region and neighbouring regions with increased backward and forward linkages	New jobs and source of income during construction and operation Improved access to social services Source of reliable markets to farmers within and in neighbouring regions Reduced cost and time for mobility within the Dodoma Metropolitan Area	Decency condition for service provision (market, bus stand, roads) Risk of HIV/AIDS due to population influx during construction (temporary) and operation of bus stand and markets, Occupational health and safety risks (temporary-during construction) Potential risk for communicable and sanitary related diseases under poor management (operation)

2.3 Standard Gauge Railway (SGR)

The total length of Standard Gauge Railway (SGR) passing through the Capital City District is 90.6 kilometres. The SGR traverses through the southern part of the present built up area of Dodoma city with a recommended reserve of 30 metres wide either side of the railway line in which no building will be permitted. An Environmental and Social Impact Assessment (ESIA) and its associated plans (Environmental and social management plan, environmental and social monitoring plan, community engagement plan) were developed to facilitate effective and sustainable implementation of the project. Potential major environmental and social issues raised by communities during the undertaking of ESIA included drainage, flooding and sedimentation, solid and liquid waste management during construction and operation, increased traffic, employment, land take and compensation, removal of infrastructure

and utilities within the right of way, spread of HIV/AIDs and other sexually transmitted diseases and provision of service ducts.

2.4 New Dodoma Airport

The new Dodoma International airport is planned to be constructed at Msalato area covering 4,389.23 hectares. The feasibility and designs including ESIA studies are yet to be concluded. However, potential negative impacts typical for airports expected during construction and operation will include loss of vegetation, noise pollution, air pollution from gases and emission of harmful particulate air materials, increased generation of storm water and risks of flooding, generation of liquid waste, risks of HIV/AIDS due to population influx, risk of occupational health and safety. Expected positive impacts includes promotion of economic development to the region and neighbouring regions, new opportunities for employment and businesses, and long-term impacts to the national economy. The preparation of project components under the *Developing Project Documents ? Building Resilience through Sustainable Land Management and Climate Change Adaptation in the City of Dodoma, Republic of Tanzania ? GEFID 10418* will need to take into consideration the planned new airport project.

2.5 Dodoma City outer ring road

The upgrading of the Dodoma outer ring road (110.2 km) by the Government of Tanzania with assistance from AfDB aims to allow traffic not destined for Dodoma City to bypass the City along several high-speed freeways in a quick and easy fashion. The upgrading will involve construction of new road, rehabilitation and or replacement of existing and construction of new drainage infrastructures. The environmental and social assessment for the proposed outer ring road identified positive and negative impacts during the project phases. Positive impacts included employment opportunities, improved transport and economy in Dodoma suburbs, decongestion of Dodoma main roads and improved community life and services. Identified negative impacts included land expropriation, destruction of public utilities, soil erosion and instability of slopes, increased noise, vibration and air pollution, occupational safety and health risks, increased accidents, increased waste, loss of scenic quality, loss of vegetation, interference to local hydrology, loss of definite materials and land degradation and increased HIV. Both the ESIA and related studies does provide baseline data and information for contextualizing and referencing the GEFID 10418 project.

2.6 Tanzania Strategic cities Program

The Government of Tanzania implemented the Strategic Cities in eight selected urban Local Government Authorities (LGA) with funding from the World Bank. The objective of the project was to

improve the quality of and access to basic urban services in participating LGAs through the rehabilitation and expansion of urban infrastructure and institutional strengthening activities aimed at improving the fiscal and management capacities of the participating LGAs. The Sanitary Landfill was constructed at Chidaya for Dodoma as part of the urban infrastructure and services started to operate in 2016. A review on the sanitary operation by the Dodoma City Master Planning Team identified several operational challenges including (i) lack of systematic operation for the landfill leading to ineffective and inefficient compaction of waste, (ii) lack of facilities (e.g., drop off, material recovery, compositing, and waste to energy facilities) to enable the landfill to become fully functioning and (iii) lack of sorting of waste at the source. Sorting of solid waste and the introduction of waste-to-energy project if implemented both will contribute to mitigation of methane emissions. However, effective sorting should be performed at source.

3 Environmental and Social Management Framework (ESMF)

3.1 Introduction

The objective of the GEF-funded project ?*Building Resilience through Sustainable Land Management and Climate Change Adaptation in the City of Dodoma, Republic of Tanzania*? is to demonstrate an integrated approach for reducing pressures on the city?s environment and to increase the city?s resilience to climate change and land degradation. The global environmental problem to be addressed concerns the systemic degradation of land and environmental assets of the semi-arid region, caused by rapid and unsustainable urban development pathways. The project is based on four components: (i) Policy and institutional framework for sustainable urban and regional development; (ii) Reversing and managing the negative impacts of the urban footprint on land; (iii) Urban Resilience to Climate change; and (iv) Knowledge Management, Monitoring and Evaluation (M&E).

3.2 Project description and justification

Tanzania has one of the highest urban population growth rates in the region, with cities such as Dar es Salaam growing at a rate of more than 5% per year. Tanzania?s landscape is endowed with natural resources, including forest and productive agricultural land, which community livelihoods and the economy of the country largely depend on. Urban landscapes in the region face increasing sustainability challenges in sectors such as transportation, affordable housing, water and sanitation, solid waste management, energy, and healthcare services, having not been able to keep up with rapid urbanization and population growth. In response, the Government of Tanzania has embarked on the development of a new master plan to transform Dodoma into a sustainable city, an economic growth pole and a tourist destination.

The Dodoma Metropolitan Area (DMA) is strategically situated in the centre of Tanzania and at the cross-roads of two major road corridors, including the Central corridor, which connects Dar es Salaam to the interior of Tanzania and the city of Mwanza, as well as neighbouring countries such as Uganda, Rwanda, Burundi and the Eastern part of the Democratic Republic of Congo. Dodoma is also situated on the Trans-African Highway connecting Cape Town in South Africa to Cairo in Egypt and serves as a busy transit route for traffic coming through from the different directions. Whilst the Government?s decision to move its core functions to Dodoma has provided an economic boost to the city, it has resulted in several challenges that are also commonly found amongst other neighbouring countries. As a result, systemic environmental pressures affect the DMA, which include:

i. **Access to potable water** - underground aquifers are the main source of water and water availability will be a challenge as the city grows; A serious threat to underground water sources is the increasing risk of contamination from human and industrial activity.

ii. **Erratic weather events** ? The DMA is increasingly experiencing flash floods and long dry spells leading to soil erosion.

iii. **Drought** ? brought about by decreasing rainfall.

iv. **Seismic activity** ? Earthquakes remain a threat to the built environment.

v. **Land degradation** ? Artisanal extraction of construction material and conflicting environmental and mining policies.

vi. Deforestation - Resulting from the growing population, rapid expansion of informal settlements and the increased demand for agricultural land.

vii. Contamination of land, water, and air - open burning of waste; inappropriate dumping of waste; inadequate public awareness of best practices for waste disposal.

viii. Unplanned/informal settlements

The speedy urbanization process along with the construction of infrastructure, housing and industrial activities contribute to the encroachment of the surrounding productive agricultural and/or pastoral lands through the clearing of vegetation. As an after-effect, this may trigger the need to open new areas for agricultural production which will further contribute vegetation clearing. As a result, there a real need to promote an integrated approach taking into account sustainable land management for the improvement and production practices across the rural-urban landscape to contribute to arresting and reversing land degradation and promote or increase the diversification of the urban food system. In addition, as part of this process, climate risks will also need to be considered to ensure that urban assets and productive landscapes are well adapted.

3.3 Procedures for Environmental and Social Impact Assessment of Subprojects

The procedure for Environmental Impact Assessment in Tanzania consists of ten stages which include registration, screening, scoping, impact assessment, reviewing, permitting, decision, monitoring, auditing, and decommissioning. This procedure is in accordance with the Environmental Management Act (2004), the Environmental Impact and Audit Regulation and Guidelines (2005) (revised edition of 2018).

The screening determines the level at which the environmental and social assessment is to be carried out based on the registration and proposal of the project or project component. The screening procedure by NEMC conducted according to the second schedule of the Environmental Impact and Audit Regulations shall arrive to one of the following decisions:

? Environment Impact Assessment is required where the project is known to have significant adverse environmental impacts (Type A project-EIA mandatory).

? Preliminary environmental assessment is required where the project (Type B1 project-medium to high impact)

? Environmental Impact Assessment is not necessary where the project is unlikely to cause significant environmental impacts (Type B2 project-small-scale activities and enterprises).

? Special project- projects where potential risks are uncertain and requires detail specialized study prior to EIA. They shall be treated as Type "A" projects

The rest of the EIA procedure are triggered as illustrated in Figure 1 for Category A to B1 projects. The list of Category A-B2 projects is provided in the EIA Regulations and Guidelines.

Figure 1. Procedure for EIA in Tanzania (URT 2005).

3.4 Policy, Legal and Administrative Framework for Environment Management

The implementation of development projects in Tanzania is bounded by the National Environment Policy (1997) and project specific as well as sectoral cross-cutting policies, environmental and sectoral legislation, and regulations. AfDB and GEF. Policies relevant to the proposed project and project components includes:

? National Environmental Policy - NEP, 1997 (provides a framework for environmental conservation in the country and requires development be implemented without compromising environmental integrity;

? National Investment Promotion Policy - 1996 (encourages protection of environment in line with the countries socio-economic policies and requires investors to undertake activities in a manner that best contributes to consumer and environmental protection);

? Tanzania Wildlife Policy - 1998 (ensures conservation of biological resources and the sustainable utilization of wildlife resources in order to contribute to poverty alleviation and improving the quality of life of Tanzanians);

? National Forest Policy ? 1998 (enhance the contribution of the forest sector for sustainable development of Tanzania and the conservation and management of natural resources for the benefit of present and future generations);

? National Water Policy, 2002 (develops a comprehensive framework for sustainable development and management of the nation's water resources and putting in place an effective legal and institutional framework for its implementation);

? National Transport Policy - 2003 (serves as a catalyst in production, by facilitating movement of inputs to production points and also serves to evacuate products to storage or to marketplaces. National transport policy, aims at enhancing transport safety and environmental protection, through taking steps to review and update national legislation in transport operations and safety requirements);

? National Land Policy (1999), (advocates for the protection of land resources from degradation for sustainable development);

? The Tourism Policy of 1999 (cope with the dynamism of the tourism industry);

? National Mining Policy, 2009 (addresses activities regarding extraction of minerals from the ground, including minerals and material used for construction);

- ? Agriculture Policy ? 2013 (recognizes the dependence of agriculture on environmental resources, hence the need for environmental protection. It identifies the need for developing mechanism for linking agricultural sector in protecting and enhancing the environment);
- ? Livestock Policy ? 2006 (recognize the effects that the livestock sector can have on land, water and forage and that such effects can have a bearing on social and economic factors influencing the lives of livestock farmers)
- ? Fishery Policy ? 2015 (promote fisheries and aquaculture practices that sustain environment); and

? Tanzania Development Vision ? 2025 (development blueprint that outlines broad national long-term goals, perspectives and aspirations).

Relevant environmental and sectoral legislation and regulations include:

The following Legislations and Regulations will support the implementation of the project:

? The Environment Management Act, No. 20 of 2004 (enforce environmental management in Tanzania to protect human health and the quality of water, land, and air). Relevant regulations for the Act include:

- o EIA and Audit regulations, 2005 and 2018 Amendment (provide three categories of project with respect to Environmental Impact Assessment);
- o Environmental Management (Air Quality Standards) Regulations, 2007;
- o Environmental Management (Soil Quality Standards) Regulations, 2007;
- o Environmental Management (Water Quality Standards) Regulations, 2007.

? The National Land Act No.4 (1999) and its Amendment (2004) (Provides important fundamental principles for the registration of land right, the occupying and using the land and ensures that land is used productively and that any such use complies with the principles of sustainable development);

? Village Land Act No. 5 of 1999 (provides for legal framework for the management and administration of land in villages including the registration of land rights);

? Land Acquisition Act (1967) (gives the power to the President to acquire any land for any estate or term where such land is acquired for any public purpose);

? The land Use Planning Act, 2007 (provides for the orderly and sustainable development of land in urban areas to preserve and improve amenities);

? Local Government (Urban Development Control and Regulations), 2008 (provides for detailed responsibility for urban development and control of municipal councils in the administration of their day-to-day activities);

? The Local Government Laws (Miscellaneous Amendment) Act, 2006 (established the local governments and urban authorities with mandates to spearhead developments in districts and urban centres for cities and municipalities);

? The Forest Act, 2002 (provides for the management of forests);

? The Mining Act No. 5 (1998) (provides for prospecting of minerals, mining and dealing in minerals and construction and building materials that will be used during construction.

? Mining Act (Principal Legislation) No. 14, Revised Edition 2019 (Provides for local content, corporate social responsibility and integrity pledge as well as provision for environmental principles and liabilities);

? The Land Disputes Court Act. No.2 (2002) (guide in dispute or complainants concerning land grievances);

? The Water Resources Management Act, 2009 (prioritize water uses and attach an economic value to water to ensure sustainable use);

? The Water Supply and Sanitation Act No. 12 of 2009 (provides for sustainable management and regulation of water supply and sanitation services);

? Occupational Health and Safety Act No. 5 of 2003 (provide for the safety; health and welfare of persons);

? Public Health Act 2009 (provides for the promotion, preservation and maintenance of public health with the view to ensuring the provision of comprehensive, functional and sustainable public health services to the general public);

? The Urban Planning Act, 2007 (provides for the orderly and sustainable development of land in urban areas);

? The HIV and AIDS (Prevention and Control) Act of 2008 (provide for public education and programmes on HIV and AIDS to support the prevention of new HIV infections); and

? The Workers Compensation Act, 2008 (provide for adequate and equitable compensation for employees who suffer occupational injuries or contract occupational diseases arising out of occupational hazards).

Tanzania is a signatory to several multilateral environmental agreements. Agreements which may have relevance to proposed project include the Convention on Biological Diversity (CBD), UNESCO Convention for the Protection of World Cultural and Natural Heritage, Convention on the Conservation of Migratory Species of Wild Animals, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the African-Eurasia Migratory Water bird Agreement (AEWA), African Convention on the Conservation of Nature and Natural Resources, the United Nations Framework Convention on Climate Change (UNFCCC), United Nation Convention on Combating Desertification (UNCCD), RAMSAR Convention, Sendai Framework for Disaster Risk Reduction (2015-2030), SADC Protocol on Wildlife Conservation and Law Enforcement, Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Stockholm Convention on Persistent Organic Pollutants, the Cartagena Protocol on Biosafety.

As part of current and future efforts to address climate change adaptation, as well as participation in the global efforts to reduce greenhouse gas emissions in the context of sustainable development, Tanzania has developed a National Climate Change Strategy (2012), National REDD Strategy (2013) and the National Adaptation Programme of Action (NAPA -2007).

AfDB Safeguard Policies

? Operational Safeguard 1: Environmental and social assessment ? Proposed technical interventions may fall into different project categories with those under Category 1 requiring a full environmental and social assessment.

? ? Operational Safeguard 2: Biodiversity and ecosystem services ? The project technical interventions such as greening of the City, Beekeeping enterprises, sustainable land management/land reclamation etc. whose implementation will require the application of the mitigation hierarchy to ensure the sustainability of the project.

? Operational Safeguard 3: Pollution prevention and control, hazardous materials, and resource efficiency ? The project will handle hazardous waste that has to handled well in order to minimize pollution.

? Operational Safeguard 4: Labour conditions, health, and safety ? Some of the project technical intervention will be is implemented through a contract while others might be implemented by the City Municipal Authority and Development organisations. The workers welfare and safety will be key to the successful implementation process.

The administrative and institutional arrangements for environmental management for all sectors in Tanzania are stipulated in the Environmental Management Act No. 20 of 2004. There are seven (7) institutions mentioned by the act, of which the Minister Responsible for Environment is the overall in-charge for administration of all matters related to the environment. The legal institutions for environmental management include the National Environmental Advisory committee, the Minister responsible for Environment, VP Office, The Director of Environment, National Environment Management Council (NEMC) and Sector Ministries. The Regional Administration Act No. 9 of 1997 provides for Regional Commissioners to oversee Regional Secretariats, with District Commissioners directly supervising the District Councils. Local authorities oversee the local planning processes, including establishing environmental bylaws.

3.5 Project Environment

3.5.1 Background

The project, in particular the proposed technical intervention under the ?*Building Resilience through Sustainable Land Management and Climate Change Adaptation in the City of Dodoma, Republic of Tanzania*? will have impacts on the physical environment, biophysical environment and socio-economic environment of the project area. The biophysical, social and economic environment potentially could be affected affect the by the technical interventions. The proposed areas for development of recreation, sports and tourism with water bodies, sustainable land management, hill ranges for tree growing and planting, beekeeping enterprises and flood management measures will have direct and indirect influence on the people, communities and the city ecosystems.

3.5.2 Physical Environment

3.5.2.1 Climate

Dodoma City falls within the dry Savannah climate. It is characterized by unimodal rainfall pattern, low and unpredictable rainfall. It receives an average annual rainfall of 550-600 mm from late November to the end of April with large amount of rain being received from December to March. The annual mean maximum temperature varies between 26.6 ?C and 31.7 ?C while the mean minimum temperature varies between 12.7 ?C and 18 ?C. The city has a variable wind direction with wind speed in the range of 4.3 km/h to 14.3 km/h. However, high wind speed of up to 28 km/h can be recorded in the months of September, October and November. The city has low relative humidity varying between 45 and 65 percent.

3.5.2.2 Topography and soils

The city is characterized by upland plains which are part of the East Africa's plateau. The plains slope gently to low land areas and swamps punctuated by inselbergs and prominent rock outcrops. The soils

are mainly sand clay, sandy loam and clay which are reddish-brown or dark loam. The soils are characterized with relatively low organic matter and fertility, moderate to poor permeability and shallow soil depth. The soils are moderately drained while in drainage is high in cultivated soils.

3.5.2.3 Water resources and hydrology

Dodoma does not have reliable perennial surface water sources making the city to rely on underground water sources of Mzakwe, Makutopora well fields, Chamwino and Mtumba boreholes. The existing surface water sources of Mkalama, Biringi and Hombolo dams have small volume of water and inadequate to sustain the growing water demand for the city. Groundwater dependence in Dodoma City is however challenged by drying of large number of water wells while other wells do not have sufficient water.

3.5.3 Biological environment

3.5.3.1 Flora

Sickle bush (*Dichrostachys Cineria*) are the main types of vegetation cover for Dodoma with Solitary trees being located along the mountain slopes. Baobab and Cactus which characterize the semi-arid conditions are found in isolated locations. Grass is sparsely located and subject to fire during the dry season due to unreliable nature of rains and strong radiant energy from the sun. Ground cover is mainly bare and dominated by baobab trees during the dry season. During rainy season, the scenery changes to brilliant green with trees dominant on most of the hills and mountains.

3.5.3.2 Fauna

The area provides habitats that do harbour some wild animals including some small mammals such as hare, mice and shrews and some reptiles such as snakes, lizards and skinks. The bushes and a few tall trees provide habitats for some birds. The small mammals are preyed by large birds such as buzzards.

3.5.3.3 Ecosystems

Dodoma city has ecosystem elements including existing water bodies such as the Hombolo dam and Zuzu pond, water catchment areas, mountains and hills as well as swamps. These ecosystems have been recommended for nature conservation and water source protection in the Dodoma City Master Plan.

3.5.4 Livelihood environment

Agriculture and animal husbandry provide the source of income to 75% of the population in Dodoma Municipal. The remaining population is engaged in small businesses such as retail shops, carpentry and food venders, bee keeping enterprises, small and medium industries and construction activities.

3.6 Project alternatives

Project alternatives will be considered when each of the technical intervention if fully developed before the implementation. Technical interventions requiring development of physical infrastructures such as flood control structures or building for settlements will need consideration of alternatives in terms technologies, construction materials and energy requirement and use during construction and operation. Wider alternative options will also need to be considered for other technical intervention that requires biophysical measures such as sustainable land management and conservation. The following are some of the relevant options to be considered in the analysis of alternatives for the proposed technical interventions.

Areas for recreation, sports, and tourism with water bodies

? Alternatives in terms of packages of recreation and sports, types of tourism, technology and materials for development of recreation and sports facilities, potential positive and negative impacts of the recreation, sports and tourism facilities.

Sustainable land management

? Alternatives in terms of types of sustainable land management practices per targeted location/area, options of products which can be produced, preferences by local users, inputs requirements (labour and finance), initial capital investments requirements, maintenance costs, income levels targeted by SLM practice, support or extension services required, long term benefits to people and ecosystem.

Establishment of green spaces, tree growing and planting on hill ranges around the city of Dodoma

? Green spaces: alternatives in terms of types of green spaces in relation to urban landscapes, potential greenspace connectivity and networks, ecosystem function of green spaces, cost of establishment and maintenance.

? Tree growing and planting on hill ranges: alternatives in terms of types of trees, water requirement of the trees, impact on local hydrology, management requirements, functional use, other environmental and socio-economic and cultural benefits, cost of growing planting and maintaining.

Beekeeping enterprises

? Alternatives in terms of location and technology for beekeeping, types of products from beekeeping enterprises, value chains along beekeeping enterprises within the city, Dodoma districts and nearby regions, Beekeeping enterprises market outlets (local consumption, export, or both).

Introduction of new building standards

? To consider alternatives in terms of settlement/building designs which are efficient for energy use, water use, and types of construction materials and technology.

? Alternative sites for sources of borrow pits for construction materials, alternative technologies for rehabilitation of degraded land (biophysical measures, types of vegetation materials, intended ecosystem functions of the rehabilitated lands),

Flood management plan/measures

? Where physical flood infrastructures: alternative technologies and materials for flood control, flood monitoring and flood warning; alternatives flood management designs (e.g., design that include storm capture and retention for slow release and use, storm water routing, storm capture to recharge groundwater acquirers, storm capture treatment and storage for domestic, green landscape irrigation and construction uses.

3.7 Potential impacts and mitigation or enhancement measures

Most of the identified technical interventions will lead to positive impacts to the environment, socio-economic and culturally. These positive impacts presented in Tables 1-6 will be enhanced during the implementation and operation of the project. There is a limited number of negative impacts for some of the strategic interventions. Mitigation measures are proposed to minimize the consequences of those negative impacts to the environment, people, and ecosystem.

Table 8. Mitigation measures of negative impacts.

Technical intervention	Potential negative impact	Mitigation measures
Areas for recreation, sports and tourism with water bodies	increased demand for water during construction and operation	Investment in efficient technologies for water use, awareness and behaviour change towards efficient water use, use recycled water for gardening and other non-basic uses

	habitat for carriers of vector borne disease, e.g. mosquitos	? maintain cleanness of the environment (pruning grasses and trees, removal of empty cans and containers) ? adapting biological control of the carriers
Zone for planting forest and ecological restoration/establishment of green spaces &tree growing	reduced groundwater recharge due to increased evaporation from trees	? planting water friendly trees ? Soil conservation to reduce runoff. ? selection tree with multiple benefits (e.g., fruits, forage for small ruminants) for planting
	creation of habitats for dangerous animals and organisms, e.g. snakes	? awareness creation to communities and users of the zones, ? installation of warning signs
	use of forested zone as hiding areas for thieves/thugs/arm robbers	? implement patrols by security officers
	Pollution from pesticides and herbicides due to their increased use in city green spaces establishment	? Introduce and build capacity on Integrated Pesticide Management (IPM) to minimize the impact of pesticide use
Integrated soil and fertility management/conservation agriculture	reduced crop yields on short term	? maintain investment consistency on practices to realise long term benefits
	increased labour demand and competition with other family labour demanding activities	? adopt staggered approach to make investment on sustainable farming and land management practices
Potential environmental and social impacts of measures for sustainable excavation of building materials and rehabilitation of degraded lands	dust and air particulate matter pollution	? restrict excavation of construction materials from approved sites, ? ensure earth and other construction materials are covered when transported by tracks to the construction sites
	risk of occupational health and safety risks to workers	? ensure workers use dust protective masks
	Potential risk of children drowning in inundated open excavation pits	? enforcement proper closure and restoration of construction materials borrow pits including planting of trees, ? installation of danger warning signs around the borrow pits, ? awareness to communities surrounding the borrow-pit areas
	loss of cultural sites	? restricting permits for borrow sites to location which are used for cultural activities

	potential landslides of excavation areas	? restricted permit to avoid excavation during heavy rain periods ? restriction of human labour excavation for structurally unstable sites
Potential environmental and social impacts for flood management plan	noise pollution during construction of flood control structures	? provide PPE to personnel working when exposed to excessive noise levels ? avoid construction activities during the night

3.8 Reporting arrangements

Technical interventions which fall under Type A and B1 project for which environmental and social impact assessment is mandatory (e.g., flood control, dams, afforestation, and reforestation for the purposed of carbon sequestration, construction for tourism and recreational activities, major construction works for sporting purposes, solid waste-to-energy conversion plants, mining etc.) will produce Environmental and Social Impact Reports. The reports will include an environmental and social management and monitoring plan. The monitoring plans will be reported by the implementers or engaged consultants to the GEFID 10418 Project Coordination Unit and the Dodoma City Council Environmental Officer. The implementation of the ESMP for all technical interventions that have ESIA will be reported on quarterly basis. The reports will include details on the extent of implementation of mitigation measures and monitoring of the ESIA identified performance indicators against determined baseline conditions. ESMP implementation reports will be submitted to the Dodoma City Council Environmental Officer.

3.9 Monitoring and sub-project supervision

The monitoring and evaluation of the environmental and social indicators will form part of the M&E plan of the project. The M&E plan Selection of criteria for monitoring and evaluation of the project, establishment of systems of data collection and collection of the data. Day to day monitoring will be performed by the environmental and social/community officers supervising the implementation and operation of the project. The routine monitoring will be by the project supervisors will be combined with field supervision missions conducted on regular basis (quarterly). A project mid-term review planned half-way of the project will collect data and assess the progress in realizing the output of the project. It will also provide corrective measures for the remaining period of the project to ensure the objectives and impacts of the project are realized.

3.10 Requirements for Training and Capacity Building

Environmental and social officers from Dodoma City Council, Government Departments participating in the GEF project and other development organisations involved in the implementation of the project would need to undergo short training (one to two weeks or on-job training) to build their capacity on implementation and monitoring of social safeguards. Areas of training important to the implementation of the safeguards will include: preparation of an effective project environmental and social management plan (ESMP), environmental monitoring plans (EMP), environmental and social performance indicators (quantitative and qualitative) for ESMP, tools and equipment for determining and monitoring the environmental performance indicators (e.g., equipment for water quality monitoring, air quality monitoring, noise pollution monitoring), templates/tools for reporting implementation progress of ESMPs, compliance audits for the implementation of ESMP.

3.11 Implementation arrangements

The Vice President?s Office is the Project Coordination Unit and will lead the execution the GEF-LDCF project in close collaboration with the Tanzania Roads Authority (TANROADS) and the City Council of Dodoma. TANROAD is the executing agency for the AfDB ring-road baseline project. The Ministry of Water supported by DUWASA, Environmental NGOs, Community-based enterprises, and the private sector (tourism and recreation) are other important implementers of the project. The City Council of Dodoma will be responsible for implementation, administration and enforcement of the mitigation measures recommended in ESIA for technical interventions that have ESIA requirements. With support of the project coordination unit, the environmental staff, and environmental experts (in case consultants are engaged through the project coordination unit) will supervise the implementation of ESMPs and ensure that performance of environment al controls and proposed mitigation measures are implemented. NEMC is the main agency responsible for oversight and ensuring that development projects carried out in Tanzania adequately address environmental and social issues during the lifetime of the project. The project coordination unit will engage with NEMC to ensure that there will be an independent evaluator to carry out compliance monitoring to address any claims raised by members of the community, Community Based Organizations, or Non-Governmental Organizations on the negative aspects of the project. The cost of the ESMPs and schedule for implementation will be determined once the technical interventions with potential negative impacts are confirmed by the project formulation process.

Supporting Documents

Upload available ESS supporting documents.

Title	Module	Submitted
CSS Climate Screening	**CEO Endorsement ESS**	

Title	Module	Submitted
ENVIRONMENT & SOCIAL REPORT	**CEO Endorsement ESS**	

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

Core Indicators: The targets for core indicators are still missing in the results framework (annex A).

Narrative Summary	Output	Components/Activities	Performance Indicators	Important Assumptions	TOR No	Project costs
Component 1. Policy and institutional framework for sustainable urban and regional development						593,324,00
Development Objectives and Outcomes						
Development Objective: To demonstrate an integrated approach for reducing pressures on the city?s critical infrastructure, environmental and urban assets and increasing the city?s climate resilience through integrated urban development planning for climate change adaptation and sustainable land management.				Government will continue with support to project. Co-financing will be provided on time.		
Outcome 1:. Climate change resilience is integrated into policies, regulations and urban planning and land development	1.1. Climate Risk and vulnerability mapping for Dodoma City and recommendations for re-zoning, where necessary	1.1.1 Flood Risk Map	Map of flood risk areas as GIS Layer	Government will prioritize the project activities. Government institutions make relevant data available. DMA allocates space, time, staff and time to implement the project	1	
		1.1.2 Fault Zone Map	Map of properties within 100 m of fault lines			
		1.1.3 Current and future land use maps	Maps of current and planned future land use			
		1.1.4 At risk areas and properties identified and recommendations made	Map of properties at risk from flood and fault lines and recommendations for relocation			
		1.1.5 Rank wards according to vulnerability index and recommendations	Vulnerability and risks maps by ward (for 408,000 beneficiaries)			
	1.2 Supporting the implementation of the 2018	1.2.1 Evaluation of 9 individual sector plans through a climate lens	Copies of reports on individual sector plan reports.	Any changes to the Master Plan are reported to		

	City of Dodoma master plan by developing individual sector plans.	1.2.2 Develop/review guidelines to support integration of climate change adaption and mitigation into existing Dodoma Master Plan	Copy of modified guidelines	the project and take into account current information on climate		
		1.2.3 Modify the Dodoma Master Plan to mitigate effects of climate change and to minimise or reverse it?s contribution to climate change.	Copy of modified Dodoma Master Plan to meet challenges of climate change			
		1.2.4 Produce implementation plan for modified Dodoma Master Plan, with special reference to climate change	Copy of Implementation Plan			
		1.2.5 Capacity building and awareness creation on reviewed/developed guideline for stakeholders	Number of awareness/sensitization programs and meetings organized			
	1.3 Institutional Capacity developed to adequately address climate vulnerabilities in communities of the Dodoma Metropolitan Area (DMA)	1.3.1 Draft Climate Vulnerability / Climate Change Adaptation Strategy for Dodoma	Copy of Strategy to adapt to predicted Climate Change	Institutions support work on climate change, assign key staff members to training and incorporate findings in future plans.		
		1.3.2 Train 570 staff of ministries, departments and public enterprises on climate vulnerability risks	Copy of training material, list of participants disaggregated by gender and age, with dates of training courses.			
		1.3.3 Climate risk vulnerability integrated into ministry and department processes	Copies of processes where climate risk vulnerability has been incorporated and acted upon			
Component 2. Reversing and managing the negative impacts of the urban footprint on land						1,293,429.00

Outcome 2. Sustainable land management and reversing land degradation through city-level and community based actions	2.1 Sustainable land development and management plans	2.1.1 Produce land capability and carrying capacity assessment maps for main land uses	Land capability and carrying capacity maps produced	Background information is provided to the project and findings are incorporated in future planning	2	
		2.1.2 Produce maps of current land use and production of crops/livestock/timber	Current land use and production maps produced			
		2.1.3 Produce maps of current level of land degradation	Land degradation maps produced			
		2.1.4 Determine areas with capacity for further development or that are over utilised	Maps of areas with over use or spare capacity produced			
		2.1.5 Produce sustainable land management plans	Sustainable land management plans drafted and approved			
	2.2 Demonstration of alternative income generating activities to alleviate pressures on land and adding to the climate resilience of communities the DMA, through community-based entrepreneurship	2.2.1 Establish green spaces, tree growing and planting on hill ranges, around the city of Dodoma	Number and area of spaces established and maintained. Location of plots, with at least one per division.	Land is allocated to provided green spaces withing communities	3	
		2.2.2 Establish and expand nature-based enterprises e.g beekeeping	Number of beekeepers producing more than 500kg of honey per year. Disaggregated by gender and age.			
	2.3 Rehabilitation of brownfields and degraded land under sustainable land management practices	2.3.1 Implement measures for sustainable excavation of building materials and construction practices.	Number and areas of formal quarries with approved restoration plans	Resources are made available to restore brownfield and degraded lands. Current and future formal extraction	4	
		2.3.2 Rehabilitation and restoration of degraded land by informal mining	Number and area of informal mining sites with restoration plans			

		2.3.3 Rehabilitation of degraded agricultural and wooded areas	Number and area of degraded agricultural lands and woodlands with approved restoration plans (75,000 ha rehabilitated)	sites should pay a leavy to fund future restoration.		
Component 3. Urban Resilience to Climate change						1,293,429.00
Outcome 3. Sustainable urban planning and land management to improve urban resilience to climatic change and variability	3.1 Updating building standards and codes to mitigate effects of climate related risks	3.1.1 Evaluate problems with current building standards in the face of likely climate change	Report detailing how consequences of following current building standards on: environment withing buildings, contribution of construction and use to climate change.	New building codes are enforced and action taken where developments occur in breach of new codes.	5	
		3.1.2 Identify changes needed to make future buildings more suitable for human habitation, to conserve resources and to reduce impact on climate change	Report detailing changes needed to building standards to provide safe conditions within buildings, while minimising adverse impact on climate through construction and use.			
		3.1.3 Draft new building standards and codes	Copies of new building standards and codes			
		3.1.4 Produce public awareness, in particular for architects, developers and builders	Copies of public awareness materials and details of meetings with attendance lists.			
		3.1.5 Train 30 building inspectors on enforcement of the new codes	Copies of training materials, attendance lists at courses and results of tests to evaluate understanding of new codes.			

	3.2 Flood management plan and recommendations for improved drainage systems	3.2.1 Develop a flood management plan	Plan of flood management drafted and approved by relevant authority benefitting 408,000 beneficiaries	Development control is enforced to ensure compliance with flood management plans	
		3.2.2 Make an inventory of the existing drainage systems.	Detailed inventory and shapefiles produced		
	3.3 Water management action plan (including integration of best practices for water conservation, reuse, recovery and recycling systems) for the DMA	3.3.1 Assess current and future water uses and costs.	Tables showing current and future water uses and costs	Government will prioritize the project activities. Government institutions make relevant data available. DMA allocates space, time, staff and time to implement the project	6
		3.3.2 Identify current and possible future sources of water	Shapefiles and tables showing current and possible sources of water and sustainable yields		
		3.3.3 Develop current and future water balances	Copy of report on current and future water balances		
		3.3.4 Assess opportunities to reduce future water demands	Copy of report on opportunities to reduce future water demand.		
		3.3.5 Assess opportunities to increase future water supply or capture	Copy of report on opportunities to increase future water supply or capture.		
		3.3.6 Identify current and possible sources of pollution	Shapefile and report on current and possible sources of pollution.		
		3.3.7 Identify means of reducing water pollution risks	Report and shapefiles identifying means of reducing water pollution risks		
		3.3.8 Cost alternative options to improve water balances and reduce risks.	Report showing costings for different alternatives		
		3.3.9 Set an Overarching Policy and Goals	Copy of approved policy and goals		

		3.3.10 Develop a Water Action Implementation Plan	Copy of Implementation Plan			
		3.3.11 Develop a Catchment Management Plan	Copy of Catchment Management Plan			
		3.3.12 Development of a Water Source Protection Plan	Copy of Water Source Protection Plan			
		3.3.13 Develop guidelines and bye law of water recycling techniques, water harvesting technologies, energy efficiency and energy saving technologies in the city building standards and codes for community, private enterprises, and public institutions.	Copy of guidelines, bye laws and standards			
	3.4 Early warning system for extreme climatic, weather and other natural disasters	3.4.1 Minimize impacts related to weather-related disasters	Copy of management and contingency plans for weather related disasters		7	
		3.4.2 Strengthen the capacity of hydro-meteorological services and networks in Dodoma	Copy of training documents on early warning systems.			
		3.4.3 Improve communication channels for early warning information	Copy of training documents on improving communications.			
	3.5 Demonstrate nature based solutions for improved urban resilience and	3.5.1 Develop Community Based Entrepreneurship initiatives women and youth.	Report of number and type of initiatives developed. 208, 000 beneficiaries disaggregated by gender and age.	Communities support climate based initiatives.	8	

	alternative livelihood cre ation through community based enterpri ses.	3.5.2 Establish nurseries and tree planting projects	Report on number and type of projects established. 200,000 beneficiaries disaggregated by gender and age.			
		3.5.3 Manage open spaces by community members	Report on open spaces managed and shapefile showing location.			
	3.6 Demonstration of low-cost measures to protect groundwater aquifers from land contamination sources	3.6.1 Mobilize community	Community Mobilization Report	Government will prioritize the project activities. Government institutions have relevant data and equipment to implement the necessary interventions.	*6	
		3.6.2 Collect Information About Ground Water Resources	Shapefile showing groundwater resources, with details of water quality and sustainable yields			
		3.6.3 Identify Groundwater that needs protection	Shapefile and report on current and possible sources of pollution			
		3.6.4 Map groundwater resource protection areas	Shapefile and Report on Groundwater Resource Protection area.			
		3.6.5 Make Inventory Existing and Potential Pollution Threats to Ground Water Protection Areas	Inventory of Pollution Sources			
		3.6.6 Identify ways of protecting water quality	Report and shapefiles identifying means of reducing water pollution risks			
		3.6.7 Cost ways of protecting groundwater against pollution	Report showing costings for different Interventions to protect ground water			
		3.6.8 Demonstrate low cost options and popularizing them	Report on Low Cost Measures to Protect Groundwater aquifers			
4. Knowledge Management, Monitoring and evaluation (M&E)						570,000

4 Effectiveness of the outputs assessed, experience documented, and knowledge management	4.1 Participation of the DMA in the Global Platform for Sustainable Cities (GPSC) and exchange of experiences with other cities	4.1.1 Become a member city of the Global Platform for Sustainable Cities	Listed as participating country on the GPSC website	Government supports participation in international climate based initiatives	9	
		4.1.2 Participate in events organized by the GPSC or similar platforms	X GPSC publications or events participated			
		4.1.3 Organize study tour to another city	Copy of study tour report			
	4.2 Strengthening linkages with universities and other research institutions to support sustainability and scale-up research on best practices for resilient urban development	4.2. 1 Identify and integrate potential partners including universities, research institutions, lead ministries, NGOs, CBOs, Religious institutions and International Organizations.	Database of partners and linkages to Dodoma listed as participating country, number of research published, number of local communities and indicators supported.			
		4.2.2. Develop climate-related training program amongst the potential academic institutions	Copy of curriculum at different institutions			
	4.3 Regular progress, Mid-term Review and Terminal Evaluation reports prepared	4.3.1 Collect and compile data required to evaluate progress against logframe performance indicators	Copies of M&E data	Relevant departments cooperate by providing necessary data.	10	
		4.3.2 Produce monthly progress reports. Stating achievements for previous month, challenges in meeting targets, and objectives for next month	Copies of month progress reports			
		4.3.3 Produce Mid-term review	Copy of Mid-term review			
		4.3.4 Produce Terminal Evaluation Report	Copy of Terminal Evaluation Report			

	4.4 Project related publications and information dissemination materials	4.4.1 Produce publication and dissemination materials	X publications and dissemination materials produced		*9	
	4.5 Baseline and mid-term data collection for efficient M & E.	4.5.1 Select criteria for Monitoring and Evaluation of the Project	Report on M&E criteria produced and approved.	Relevant departments cooperate by providing necessary data.	*10	
		4.5.2 Establish systems of data collection	Data collection system, designed, tested and approved			
		4.5.3 Collect and collate data	Copies of data collected and collated.			
				Overarching role of Communications specialist / Public awareness specialist	11	
				TOTAL COSTS		**$4,873,429**

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

Part of document	GEF Comment	AfDB?s first answer

Co-financing 3. Are the indicative expected amounts, sources and types of co-financing adequately documented and consistent with the requirements of the Co-Financing Policy and Guidelines, with a description on how the breakdown of co-financing was identified and meets the definition of investment mobilized?	Ver 1.0- The co-financing is adequately documented and relevant for the project. It is in line with GEF co-financing policy and guidelines. Ver 2.0- The co-financing is on a very higher side nearly 1:40. The agency is requested to review the co-financing number and include only relevant co-financing with this project. Nov 8: No more comments	**AfDB first reply, 8 November 2019:** The co-financing number was reviewed and it was found that it would be difficult to reduce this number. A sizeable portion of the AfDB investment will cover Component 1 related activities (construction works for the ring-road) for a total amount of 165million USD while a lesser amount will cover Component 2 (Development of related urban/rural roads leading to key social services, markets, Road-Side Stops; Community Water Sources, Strengthening of health Centres, Provide Enterprise Development Assistance to women and youth), Component 3 (Institutional Support and Capacity Building for 8.2 million USD) and Component 4 (Project Management for 3 million USD) All these components will benefit from the GEF co-financed activities. This number will be refined during the PPG phase.

3. Does the proposed alternative scenario describe the expected outcomes and components of the project/program?	Ver 1.0: Output 1.1. It is not clear what is meant by Environmental Assets of the city? Will the project support resilience of environmental assets only and not other built infrastructure such as buildings, roads, etc. The components talk about building standards and drainage systems also and therefore it seems the project?s focus is beyond environmental assets. It would be good to assess the vulnerability in a more holistic and integrated perspective covering the entire city by mapping flood plains, settlements, green spaces, water bodies, etc. We suggest to do geo-spatial mapping of the city based on which vulnerability could be assessed and which can inform zoning policies and climate resilience investments as needed.	**AfDB Reply: 05/11/2019** Component 1 Output 1.1. has been revised to the following: Output 1.1. Climate Risk and vulnerability mapping for Dodoma City and recommendations for re-zoning, where necessary ?A holistic climate risk and vulnerability mapping for the city will be undertaken in the very early stages of project implementation. The vulnerability mapping will include flood plains, settlements, green spaces, water bodies, etc.). ?The results from the mapping will help to identify the vulnerabilities to critical infrastructure, environmental and urban assets s of the city and produce an integrated perspective for identifying urban development policies and areas for future investments to strengthen the sustainability and climate resilience of the DMA. As per the recommendations of the GEF, the project will undertake a geo-spatial mappingof the city using GIS or drones (the selection of technology will be determined during the PPG), upon which the vulnerabilities will beassessed and information used to inform zoning policies and climate resilient investments. Output 2.2- This section has been revised to among other include the following: Examples of activities that the project and the DMA can engage in to minimize groundwater contamination and pollution could include: i)ensuring that land use plans and regulations protect important water supply aquifers and well ??elds; ii)

		support protection legislation and programs; iii) inform and educate residents and businesses about groundwater; iv) consider important aquifers when acquiring open space ;v) monitor and inspect important well ??elds and recharge areas; vi) conduct household hazardous waste collections, and vii) ensure that town facilities practice good pollution prevention. These activities will further be defined during the PPG phase. Output 2.3 has been revised to more broadly capture the possible activities that could take place under this output. Community consultations will be undertaken during the PPG and possible business opportunities assessed to determine the most suitable activities for community-based enterprise to engage in activities that will support the objectives of the LD targets of the project. Similarly, community-based entrepreneurship activities to support the climate resilience of communities in the DMA to be undertaken under component 3 (output3.5) will also be more closely assessed during the PPG. The output on groundwater contamination is not meant to be part of Component 2, but rather contribute to Component 3 ?Urban Resilience to Climate Change?. The DMA is solely depended on its groundwater resources (which is described in the PIF) and therefore, as part of the DMA?s climate resilience response, needs to ensure that these water resources are protected from contamination and pollution. It is estimated that 30% of the degraded land in the DMA is from artisanal small-scale mining for building and construction material. As the city is expanding rapidly and the demand for building and contribution

		material high, communities, particularly woman and youths, are engaging in these small-scale mining activities as a source of livelihood. These practices are ongoing and will continue until those involved in the practice are provided with alternative income generating opportunities. The impacts of these mining activities are evident and have also been witnessed by the project formulation team. During the PPG the project will be able to assess the full footprint of these activities on the land in the DMA. This assessment will also strengthen the target estimates on GEBs.

Gender Equality and Women?s Empowerment Is the articulation of gender context and indicative information on the importance and need to promote gender equality and the empowerment of women, adequate?	Secretariat Comment at PIF/Work Program Inclusion Ver 1.0 The proposed activities do not link with the components proposed in the PIF e.g. reduction in energy demand and renewable energy; low emissions zone, green mobility, etc. No reference of these in the PIF. Need to improve the section. Also need to elaborate how? Just intent will not be sufficient in the PIF. Ver 2.0 Women as beneficiary is elaborate better now. Please also add if women will benefit from integrated land use planning and nature-based solutions that the project will focus on. Also, will women be involved in decision making and planning and any other capacity building activities of the project. Please add a bit more details on these lines. Nov 8: No more comments	**AfDB Reply, 08/11/2019**: The project interventions will be designed to promote gender equality throughout the scope of the project. Woman and youth will be promoted to strongly benefit from integrated land use planning and the nature-based solutions promoted by this project. This includes the involvement of woman in decision-making and planning, as well as, any other capacity building activities of the project. During the PPG a detailed gender assessment will be carried out to determine how best the project can promote gender equality. The full project document will contain a comprehensive action plan to promote gender equality within integrated land-use planning and the identified opportunities for nature-based solutions to strengthen the DMA?s sustainability and resilience to climate change. Equal opportunity to participate in project activities (including as members of the National Project Coordination) and decision-making at all levels will be ensured. For project-based recruitments, the project will also encourage female applicants. The gender element of the project will be very significant since several associations and other community-based enterprises in the field often include women. For the PPG, women's groups and associations will be consulted in order to gather their opinions and take into account their concerns in the preparation of the full project proposal. During the implementation, programmes to strengthen capacities and mechanisms for support to community-based enterprises will particularly target women.

Private Sector Engagement Is the case made for private sector engagement consistent with the proposed approach?	Ver 2.0: The revised version is better. However it is not clear what is meant by "....create the opportunity for low-carbon and to develop an overarching investment framework that overcomes the barriers to investment". What is the low ca-carbon element here? How will the project engage with the private sector for resilience and sustainable land management in the city and surrounding region. The project has a distinct focus on building standards which will largely be complied by the private sector. It is important to engage private sector effectively in this regard in terms of their capacity building and to seek their views regarding the standards. Similarly, the project could explore PPP models for sustainable and resilient infrastructure development under the project. Please consider these suggestions in the project design to add value. Nov 8: No more comments	**AfDB Reply, 05/11/2019:** The project is mainly going to work with community-based enterprises to alternative livelihood activities that alleviate pressures on land and increase climate vulnerability. Successful ventures will be documented and publicized to the communities of Dodoma and Tabora. Access to finance is a major barrier to private sector investment in greener practices, which is why this project will support national stakeholders, particularly SMEs and community-led enterprises in their efforts to make the business case and create the opportunity for low-carbon and to develop an overarching investment framework that overcomes the barriers to investment in initiatives that support the sustainable development objectives of the DMA. Groundwater is the only source of water in the city and it is not enough to accommodate the expected influx of people in the coming years. The project is going to work with communities, government and the private sector to protect groundwater aquifers from land contamination sources. During the PPG the project will assess the impacts of industries and SMEs on land degradation and increasing vulnerabilities to climatechange. Should the impact be significant then the project will engage the private sector, as relevant. AfDB, 08/11/2019: This section of the PIF has been revised to more accurately reflect

		the components and scope of the project. Apart from engaging with the community-based enterprises and SME?s, the most relevant private sector in regard to this project is the building and construction sector. The artisanal small-scale mining activities that are contributing to the degradation of the agricultural land in the DMA are responding to the growing city?s demand for building and construction material (e.g. aggregates, sand, clay, etc). Furthermore, the project focuses on building standards, which is relevant to the building and construction sector. There are numerous projects underway to expand the DMA?s road network and infrastructure assets. During the PPG the project will undertake a detailed stakeholder analysis to determine the relevant stakeholders, including, private sector entities in relation to the objectives and scope of the project. The project will seek to engage all relevant private sector entities to leverage existing resources and support the impact potential, sustainability and scale-up potential of the project

[1] http://www.lse.ac.uk/GranthamInstitute/wp-content/uploads/2018/10/Climate-change-governance-in-Tanzania-challenges-and-opportunities.pdf

[2] http://documents.worldbank.org/curated/en/300731546897829355/Translating-Plans-to-Development-Impact-and-Effectiveness-of-Urban-Planning-in-Tanzania-Secondary-Cities.pdf

AfDB Response to STAP comments

STAP Comments addressed	AfDB Response

Minor issues on during project design ?As the project is designed, STAP recommends that the project proponents rely on climate data, risks and vulnerability information and assessments to design interventions?[GEF4]	Thank you for the recommendation. As recommended, climate risk (along with COVID-19 related risks), vulnerability and land degradation related data were gathered during the PPG phase to inform the appropriateness and adequacy of the activities proposed as part of this project. A climate risk report along with a climate screening was also completed and is included as part of the CEO Endorsement package.
?Additionally, STAP queries whether the GEF-funded activities could have a more significant impact on how the $138m of co-investment is deployed to construct the new ring road?[GEF5]	The GEF-funded activities will complement the AfDB financed ring-road project in Dodoma City. Given this anchor, consultations were undertaken to further explore the complementarity and incremental cost reasoning of the climate change adaptation and sustainable land management activities to come up with a more holistic approach to the construction of ring-road. For instance, flood risk and sustainable water, groundwater and drainage management funded by the GEF will contribute to the sustainability and resilience of the road financed by AfDB.
?When designing the project, STAP recommends to add the climate data projections for temperature and precipitation for Tanzania, or the for the target area if this information is available. The time frame for the climate projections should also be added: this should be used to create some simple scenarios that encompass uncertainty in how the future will unfold (probably also with rates of population change, which may themselves be affected by feedbacks from the levels of economic success that the development of Dodoma achieves) so that the robustness to this future uncertainty of all the interventions in the proposal can be appraised. ?[GEF6]	Thank you for the suggestion. As part of the PPG phase, the climate data projection for temperature and precipitation has been collected and used as part of the development of the CEO Endorsement package. References have been made to the current projections for temperature and precipitation in Tanzania. They are, however, not available for Dodoma.

Partly. Projects are listed and used for the baseline narrative. However, there is minimal information on the(emerging) lessons from these projects, and how they will be used to design the GEF-LDCF initiative. STAP suggests providing this information.[GEF7]	We have taken into account the PIRs from following GEF projects: - The GEF IAP titled ?Fostering sustainability and resilience for food security? under which the Tanzanian child project titled ?Reversing Land Degradation trends and increasing Food Security in degraded ecosystems of semi-arid areas of central Tanzania? ProjectImplementationReportPIR_GEF91322022PIRIFADTanzaniafinal.doc (live.com) - The GEF-LDCF Project titled ?Ecosystem-Based Adaptation for Rural Resilience in Tanzania? ProjectImplementationReportPIR_56952021PIRUNEPTanzania.doc (live.com) We have learned from these two projects that : group of beneficiaries such as Farmers Field School, Income Generating Groups and Champion farmers has a multiplier impact in speeding up the rate of adopting appropriate technologies/best practices in the implementation of project activities to yields good quality work compared to engaging only individual model farmers or private firms in achieving project goal and objectives. Furthermore, the second project proved that the development and completion of the Basic Structure of the Adaptation Knowledge Management System contributed to improve access to all stakeholders to national adaptation knowledge, tools, best practices and case studies. There have been consultations with the entities implementing the two projects Agricultural Sector Development Programme (ASDP) is funded by the International Fund for Agricultural Development (IFAD) and the The Global Climate Change Alliance Program (second phase, 2015?2020), and some of the emerging lessons will be taken into account at the implementation stage.
No. However, if a theory of change is developed, and revisited as necessary, it will identify what adaptations may be necessary to reach the project objective. STAP's primer on the theory of change (http://www.stapgef.org/publications) can assist with developing a theory of change.[GEF8] [WA9]	A theory of change has been developed and attached.

?. The global environmental benefits (e.g. soil organic carbon) were not defined. STAP recommends for the global environmetnal benefits to be defined. Additionally, STAP recommends applying UNCCD's Scientific Conceptual Framework for Land Degradation Neutrality" and STAP's guidelines on LDN to measure and monitor the LDN baseline using the three indicators (land cover, land productivity, and soil organic carbon)?[GEF10]	The Global Environmental Benefits have been defined in detail in the CEO Endorsement document. For Land Degradation, the benefits correlated to Core Indicator: LD-1-4 Land Degradation Focal Area? Restoration of degraded urban land and sustainable land management. 75,000 hectares of landscapes, excluding protected areas, will be placed under sustainable land management in production systems. Degraded lands include areas that have lost soil organic carbon (soc) as well as areas that have lost forest cover and areas that have shifted land cover. Tanzania conduct the LDN target setting process, with support from the UNCCD, which was used to inform the baseline for this project. The report contains an analysis of LDN related data sets, i.e., national data on land use cover/change and global default data on land productivity and soil organic Carbon provided by the UNCCD secretariat. All the LDN targets are measurable according to the LDN indicator framework that have been endorsed at national and global levels. In alignment with the STAP?s guidelines on LDN, the indicators land cover, land productivity and soil organic carbon, are to be used in measuring and monitoring the LDN baseline in Dodoma under this project.
?STAP recommends, however, identifying indicators for each of the adaptation benefits listed on page 45 (e.g. strengthen institutional capacities to mainstream climate resilient measures, etc.). Currently, it is unclear what are the indicators, and how the benefits will be measured and tracked?.[GEF11]	Indicators have been identified and included in the submission and correspond to: -75,000 ha of rehabilitated land (landscape under improved practices) -9 policies/plans that will mainstream climate resilience -600 people who have a new livelihood activity (away from water-intensive agriculture) -numerous infrastructures protected from extreme weather conditions or rehabilitated

STAP recommends articulating innovation to be scaled, which may include, technological, financial, business model, policy, and institutional innovations.[GEF12]	The innovation for this project is mainly at the level of technology (in terms of engineering design), business models (for communities to adopt alternative livelihoods to minimize drivers for land degradation), policy (integrating urban development with sustainable land management and climate resilience) and institutional (strengthening collaboration between different institutional processes to achieve benefits that are integrated in nature, ore require an integrated approach to achieve multifocal areas benefits (e.g. climate resilience and reversing the land degradation).
STAP recommends developing the project by applying STAP's recommendations on durability. [GEF13]	The project adheres to the STAP principles for securing durability in project and program outcomes and impacts, in terms of (i) engaging the right stakeholders, (ii) building the incentives for these key actors to act, (iii) incorporating adequate diversity and flexibility into project design and implementation, and (iv) underpinning it all with a systems-thinking approach. The right stakeholders are being engaged in the project and there is strong national ownership with major incentives for key actors to execute their roles and responsibilities as the country is committed to grow Dodoma into a central and sustainable city of Tanzania. The application of a systems-thinking approach is evitable to achieve the implementation of this very integrated approach to lead Dodoma along the path of LDN and climate resilience.
Partly. During the project design, STAP recommends to think carefully about the gender differentiated risks and opportunities, and their response measures. Additionally, STAP recommends looking into Tanzania's gender and climate change strategy, and applying it in the project design. It appears the strategy was developed in 2011, although possibly it has been updated. See: https://www.climatelinks.org/resources/tanzania-climate-change-genderaction-pla[GEF14]	As of today, gender equality is part of the Constitution (1977 and its revision in 2001) and the Bill of Rights (1984) in Tanzania. The commitment to gender equality is also reflected in national strategies, plans and policies such as the Tanzania Development Vision 2025, , National Five-Year Development Plan2011/12?2015/16, National Strategy for Growth and Reduction of Poverty (NSGR), the Tanzania National Strategy on Gender and Climate Change (2013) and the Women and Gender Development Policy of 2000. The Government has also ratified regional and international commitments on gender equality and women empowerment and established the Ministry of Health, Community Development, Gender, Elderly and Children as a national gender machinery. Gender : A gender report was developed in alignment with the GEF Gender Strategy 2020 -2025, the GEF Gender Equality Policy and GEF Gender Equality Guideline; the Tanzania legal requirements frameworks and AfDB?s guidelines on gender issues.

Uncertain. STAP recommends considering whether gender considerations hindered the full participation of an important stakeholder group, and if so, how were these obstacles addressed.[GEF15]	The stakeholder engagement and related stakeholder analysis has been guided by the GEF?s Policy on Environmental and Social Safeguards as well as its Policy on Gender Equality and Guidelines on Gender Equality. As part of the inception and stakeholder validation workshops along with the bilateral consultations, a stakeholder engagement and analysis was conducted in an inclusive and gender sensitive manner so that the rights of women and men were recognized and addressed across project components. Hence, it is believed that gender considerations did not hinder the participation of both gender groups in the discussions held.?
STAP recommends performing a climate risk assesment, annexing the results of this assessment to the project, and developing the project based on this risk assessment.[GEF16]	Thank you for the recommendation. Climate risk and land related data was collected during the PPG phase to inform the interventions presented in the CEO Endorsement package. The climate risk report includes a climate risk assessment, modelling outputs, hazards and vulnerabilities (especially in relation to droughts and floods) and an examination of Tanzania?s overall disaster risk profile. A climate screening of the project?s main interventions using the AfDB?s climate safeguards system has also been completed.
STAP recommends revisiting the theory of change to monitor outcomes - or the pathway to achieve the desired change. This process will generate learning and knowledge which can then be used to confirm, or readjust the theory of change.[GEF17]	This recommendation is acknowledged, and the project TOC will be revisited and adjusted to monitor the outcomes for achieving the goals set under this project. The project will treat the TOC as an ongoing exercise.

GEF Council Comments

GEF Council Comments	AfDB Response
France Comments Interesting project, in that it deals jointly with several causes of land degradation, in particular: urban sprawl, mining, deforestation and water contamination.	Thank you, this is well-noted.
It could be interesting in the context of the restoration of rural or peri-urban land, to promote agroecological approaches as a means to achieve improved and resilient land management, while creating new job opportunities and economic alternatives to mining. [GEF18] The civil society and Tanzanian authorities expressed their desire to integrate agroecological practices into policies as a result of the national conference on agroecology that was held in Dodoma in November 2019. The creation of a dedicated department within the Ministry of Agriculture has been discussed.	Thank you for the suggestion with regards to restauration or rural and peri-urban land. The integration of agroecological practices into policies as a mean to achieve prevention was taken into account.

Germany Comments Germany welcomes the integrated and holistic approach of the project, given that many different sectors need to be involved in urban management plans in order to create climate-resilient and sustainable cities. Germany also welcomes that the project aims to integrate women and vulnerable groups into decision-making bodies and to consider gender-sensitive approaches in the design and implementation of the project. Suggestions for improvements to be made during the drafting of the final project proposal:	Thank you, this is well-noted.
Germany appreciates that the project will be based on an assessment of urban resilience challenges in the city using publicly available global datasets. Germany suggests to perform this analysis in even more detail, given that it is important to base the project on solid risk assessments and predictions data. In this framework, the climate risk profiles established under the AGRICA project (commissioned by the BMZ and conducted by GIZ and Potsdam Institute for Climate Impact Research (PIK)) could be used as a valuable resource. The Tanzania risk profile is currently under construction and will be published soon.	Thank you for the recommendation. In addition to collecting information from secondary sources such as the climate risk profiles established under the AGRICA project (commissioned by the BMZ and conducted by GIZ and Potsdam Institute for Climate Impact Research (PIK)), climate risk and land related data was collected during the PPG phase to inform the interventions presented in the CEO Endorsement package. The climate risk report includes a climate risk assessment, modelling outputs, hazards and vulnerabilities (especially in relation to droughts and floods) and an examination of Tanzania?s overall disaster risk profile. A climate screening of the project?s main interventions using the AfDB?s climate safeguards system has also been completed.
Germany recommends measuring the projects contribution to the NDC/NAP process in more detail. An assessment of how project components, outcomes and indicators relate to the different processes would be helpful.[GEF19]	The has been undertaken for the CEO Endorsement document and can be seen in section 7. Consistency with National Priorities of the CEO Endorsement document.
Norway/Denmark Comments The project is relevant to the challenges that Tanzania faces in general and Dodoma in particular as a semi-arid area.	Thank you, this is well-noted.

The proposal states that there is lack of research and data. The main challenges however are the uptake of research data and advice and the integration of these in policymaking. Utilisation of available data and advocacy work should be better described in the PFD.[GEF20]	To prepare the following policy: - Climate Risk and vulnerability mapping for Dodoma City - Individual sector plans for the City of Dodoma master plan - To update building standards and codes to mitigate effects of climate related risks Various research data will be used and integrated -Flood management plan and recommendations for improved drainage systems -Water management action plan -Early warning system for extreme climatic, weather and other natural disasters research data will be extracted from the work of various universities and other research institutions such as the University of Dodoma (UDOM), the Institute for Rural Development Planning, St John University of Tanzania and the University of Dar es Salaam and will be integrated into policy making. Consultations with actors such as research and training institutions, SMEs, associations, community and informal sector groups will generate information that will feed into the final full project document.
The proposal describes options for policy dialogue and cooperation between institutions and between government and NGOs in such a way that it is hard to understand whether a proper context analysis has been made. These are general and we suggest a real assessment of the current institutional landscape, as there is limited consultation between government and NGOs.[GEF21]	Elaborate consultation have taken place with the lead executing agency, key national execution partners and relevant stakeholders. An assessment of the institutional landscape has been undertaken. This has been elaborated in the CEO Endorsement document.

How will coordination and project management be carried out? [GEF22] The proposal would benefit from more information on the cooperation and coordination between the Ministries related to the work proposed. There are statements made that VPO will coordinate the project. Has a partner assessment on project implementation been made by AfDB?	A partner assessment has been carried out. The GEF project will be anchored on the Dodoma City Outer Ring Road Project implementation scheduled from September 2021 to December 2024. Tanzania National Roads Agency (TANROADS) under the Ministry of Works and Transport (MoWT) will be the Executing Agency for the Project. TANROADS has acquired substantial experience in managing Bank-funded projects. TANROADS is the Executing Agency of the Dodoma Outer Ring Road, the anchor for the GEF project. It will assume all responsibility for the receipt and utilization of the GEF grant at the level of national execution and consequently, shall ensure compliance with the reporting, financial management, technical, fiduciary, safeguards, monitoring and evaluation requirements applicable to the Project T]he City Council of Dodoma that has the mandate for the sustainable urban development of Dodoma. TANROADs will be working in close cooperation with the Dodoma City Council (DCC) through a MOU establishing the various areas of intervention. To ensure that there is broad participation from a variety of actors, a Project Steering Committee will be established to advise on the implementation of project activities to guarantee the sustainability and resilience of implemented actions during and beyond the life of the project. There will be a Project Technical Committee which will comprise representatives from the VPO, DCC, AfDB, and local CSOs/NGOs that will have the oversight on technical issues of the project. A PMU will execute day-to-day activities and is supported by the PMU of the AfDB Ring Road project. The PMU will comprise an expert on land degradation, an Environment and Social Safeguards expert, a Gender Mainstreaming expert, an expert on project management, an expert on

	financial management, an expert on procurement, a Climate expert, an M & E expert and an office manager. These arrangements are further elaborated in the institutional arrangements section of the CEO Endorsement document.
In Tanzania, the department of environment under the Vice presidents? Office (VPO) is mandated with the responsibility of climate change as stated in the proposal. It is mandated to have a role in policymaking and coordination whereas other institutions have mandate for implementation. ?The focal point for climate change is the Division of Environment in the Vice President?s Office (VPO), which is a prominent ministry reporting directly to the Vice-President. The VPO coordinates climate policy and handles Tanzania?s international climate engagement, including responsibility for the formulation and implementation of the Nationally Determined Contribution (NDC). However, the VPO has a small climate team as part of the Division of Environment. It is common for the responsibility for climate change to be bound together with other environmental issues: environmental units in the line ministries are in charge of multiple environmental issues, including climate change, but none is designated solely as climate change-specific.?4The proposal should include information on the role of VPO. The proposal should also include information on the role of line ministries with responsibility for water (Ministry of Water and Irrigation), and main sectors that use water as this is listed as one of the main components in the proposal; [GEF23] agriculture (Ministry of Agriculture and Ministry of Livestock and Fisheries), and the Ministry of Energy. Tanroads is listed as a main partner, which is under the Ministry of Transport.	The role of the VPO and other major national actors have been elaborated in the CEO Endorsement document. The nature of the integrated approach taken in this project requires that multiple line ministries come together to evaluate, apprehend and adopt the processes needed to establish sustainable city systems, such the urban, water, agricultural, climate and environmental sectors, as in this project. The key stakeholders are further elaborated in CEO Endorsement document and the stakeholder report.
There are some factual issues that we would like raise:	

The information provided that the University of Dodoma currently has 40.000 students is not correct[GEF24] . UDSM currently has a student population of less than 15.000. The university is designed to have the capacity to house 40.000, but not is fully utilised. Furthermore, some buildings of the university are currently used by government institutions as there is lack of sufficient office space for government institutions that have moved to Dodoma during the past year.	Thank you for the correction. This is well-noted and was included.
Page 60: ?The Environmental Management Act (2004) was finalized and enacted by Parliament in November 2004 for use to address land degradation challenges. EMA established the National Environment Trust Fund (NETF) of which the National Development Fund (NDF) is a subset. Once the Act became law, the NETF-NDF was registered and used to implement activities to combat land degradation and desertification.? The National environmental trust fund (NETF) has to date not been materialised based on our knowledge, and there are attempts from the GoT (VPO) to revitalise this. However, there are concerns as to whether revenue collected for trust funds will be redistributed to the activities as it was set out for.[GEF25]	This project will not establish a trust fund, nor collect or support the collection for any revenue for trust funds.
Over the last years, it has been our experience that in the present political /economic context it has been difficult to achieve results in development of policy frameworks, capacity building and strengthening of institutions. We find the outputs rather vague and it is not clear what the project will actually deliver. [GEF26] For example: ?This output will address key barriers to the government?s ability to integrate climate-related issues into national and sectoral policies, and to design, implement and enforce policies. This will also strengthen the ability of government institutions to systematically address climate change and land degradation within Tanzania?s elaborate institutional policy framework.?	Thank you for your comment. The outputs have been revised for clarity and elaborated in detail in the CEO Endorsement document.

For community income generating initiatives the proposal lists beekeeping and making of handwoven bags. For a proposal aiming at Dodoma being a climate resilient city and an engine of growth, we would expect that activities focusing on income generation would be somewhat more innovative and at a larger scale. It is questionable how sustainable these activities will be in the long- term.[GEF27]	The communities around Dodoma are mainly engaged in subsistence agriculture. The region is also lacking advanced infrastructure and industrial services to support more advanced livelihood operations. Beekeeping and handweaving of bags are examples of operations that can be adopted at the community-enterprise level, providing services such as jobs and products that are more aligned with the principles of environment sustainability and conservation. The proposed community income generating activities were determined based on consultations held with communities in Dodoma about the type of small-scale industries and businesses they would like support on. Community engagement will continue throughout project implementation and this project will ensure that the most profitable and sustainable community-based income generating activities are implemented that support the objectives of this project. A final assessment of the precise community-based interventions needs to be carried out at the time of implementation to ensure that the solutions to be provided by the project maximize the GEBs to be achieved and the sustainability of the positive outcomes. Beekeeping and handweaving are examples of innovate vocations for the region.

We are aware that AfDB has additional projects focusing on the development of Dodoma, such as the transport plan. What is the implementation rate and success rate in current projects of similar nature in Tanzania by AfDB as of today and which government institutions they have a confirmed cooperation with? [GEF28] There has been improved coordination from AfDB locally after feedback on lack of such being raised in board meetings. However, lack of coordination remains in some sectors, for example AfDB does not participate in Donor Group on environment and climate. The project could benefit from coordination with initiatives such as Tanzania Strategic Cities. The World Bank has produced a report on the Impact and Effectiveness of Urban Planning in Tanzanian secondary cities,5 as part of this project.[GEF29]	The AfDB commenced operations in Tanzania in 1971, and to date has financed operations in the transport sector totaling over a USD 1 billion, with over 1,200km of roads paved or rehabilitated. The bulk of these projects were funded with funds from the African Development Fund (ADF). The projects financed by the AfDB Group have made a significant impact on mobility and access to socio-economic opportunities for several millions of people in addition to promoting regional integration. Four road transport projects are currently ongoing, in addition to two Projects completed at the end of 2018. Currently, the performance of the Bank financed transport portfolio in Tanzania is rated satisfactory. Lessons learnt from the implementation of previous and on-going roads sub-sector interventions have been incorporated in the project design. In addition, adequate contingencies to cater for cost escalations have been included in the budget for this project. In addition, the urban integrated approach for implementation of the Outer Ring Road is expected to yield positive results.
The proposal refers to the Dodoma city master plan which has yet not been approved. Through the Tanzania Strategic Cities Program (TSCP), the World Bank has been supporting the preparation of the Dodoma Master Plan, which is pending approval, and construction of roads, bus stands, markets, and landfill.	Coordination with other initiatives such as the Tanzania Strategic Cities and other projects undertaken by development partners will be undertaken in this project, particularly under Output 4.1: Strengthening linkages with universities, other research institutions, other cities and relevant platforms to support sustainability and scale-up research on best practices for resilient urban development.

As there seems to be co-financing from loans by People?s Bank of China, conditions for this loan ? i.e. whether this is a commercial loan or a credit with soft terms. The conditions of other financing sources should be clear so as to assure whether the GEF funds will be used for repayment of a commercial loan or for project costs.	In terms of co-financing, the African Development Bank (?AfDB?) and the People?s Bank of China (?PBOC?) have set-up the Africa Growing Together Fund (?AGTF?) as an internal trust fund which is providing a USD 42 million loan to the ring-road project. In addition, the ADB window of the AfDB is providing a USD 138 million loan in contribution to the construction of the ring-road. The GEF funds will therefore not be used to repay any commercial loan or cover project costs for the ring-road.
United States Comments We are generally supportive of this project but would like to see the following concerns and comments addressed. One of the main concerns is the absence of key coordinating entities, in particular the Tanzania Meteorological Authority (TMA) and the Ministry of Agriculture (MoA) given their activities on early warning systems and alternative livelihood development[GEF30] . The FAO and the Ministry of Agriculture Early Warning Unit also have activities in Dodoma, and engaging them will enhance project awareness of available resources and gaps to assess climate risk events and dissemination channels for related information. Given the prominence of agricultural based livelihoods, it is surprising not to see MoA or the Agriculture Research Institutes (TARIs) included in the proposal. The MoA Environmental Management Unit addresses integration of climate resilience and the TARIs have data on various sustainable land management practices. Additionally, livestock is only peripherally discussed, and consultations with the Ministry of Livestock would support assessments of the importance of livestock grazing in sustainable land management options. Coordination with City of Dodoma specific sector officials, the World Agroforestry (ICRAF), CGIAR Climate Change, Agriculture, and Food Security research program (CCAFS) East Africa office could be beneficial to implementation.[GEF31]	The implementation arrangements have been elaborated in detail in the CEO Endorsement document. For example, the Tanzania Meteorological Authority (TMA) is a key coordinating entity in Tanzania on all issues pertaining to the climate, climate change and particularly climate information and early warning systems. Their involvement in the project at the level of the Project Steering Committee is imperative for the successful advancement of sustainable land management and building climate resilience. We appreciate the guidance to the additional important nationally active institutions and the project has made provisions for engaging the broadest range of stakeholders, considering its very integrated approach, necessary for achieving a reversal of land degradation in and expanding city and building resilience to climate change in a region subject to dangerous climate change risks.

Another concern relates to the alternative livelihoods of farmers to minimize agriculture expansion. Bee keeping and woven bag enterprises may be viewed as disconnected to the core objectives of the program when compared to initiatives which establish urban jobs across skills levels from the sustainability programs or job training [GEF32] programs, however these or similar urban-rural linkages could align with other projects that aim to address land degradation.	The communities around Dodoma are contributors to land degradation in the region. As described in detail in the CEO Endorsement document, alternative income generating activities needs to exist to ensure that unstainable agricultural and other practices can be reduced. The region lack access to advanced infrastructure and services (including industrial) to support more advanced livelihood operations. Beekeeping and handweaving of bags are examples of operations that can be adopted at the community-enterprise level, providing services such as jobs and products that are more aligned with the principles of environment sustainability and conservation. The proposed community income generating activities were determined based on consultations held with communities in Dodoma about the type of small-scale industries and businesses they would like support on. Community engagement will continue throughout project implementation and this project will ensure that the most profitable and sustainable community-based income generating activities are implemented that support the objectives of this project. A final assessment of the precise community-based interventions needs to be carried out at the time of implementation to ensure that the solutions to be provided by the project maximize the GEBs to be achieved and the sustainability of the positive outcomes. Beekeeping and handweaving are examples of innovate vocations for the region.

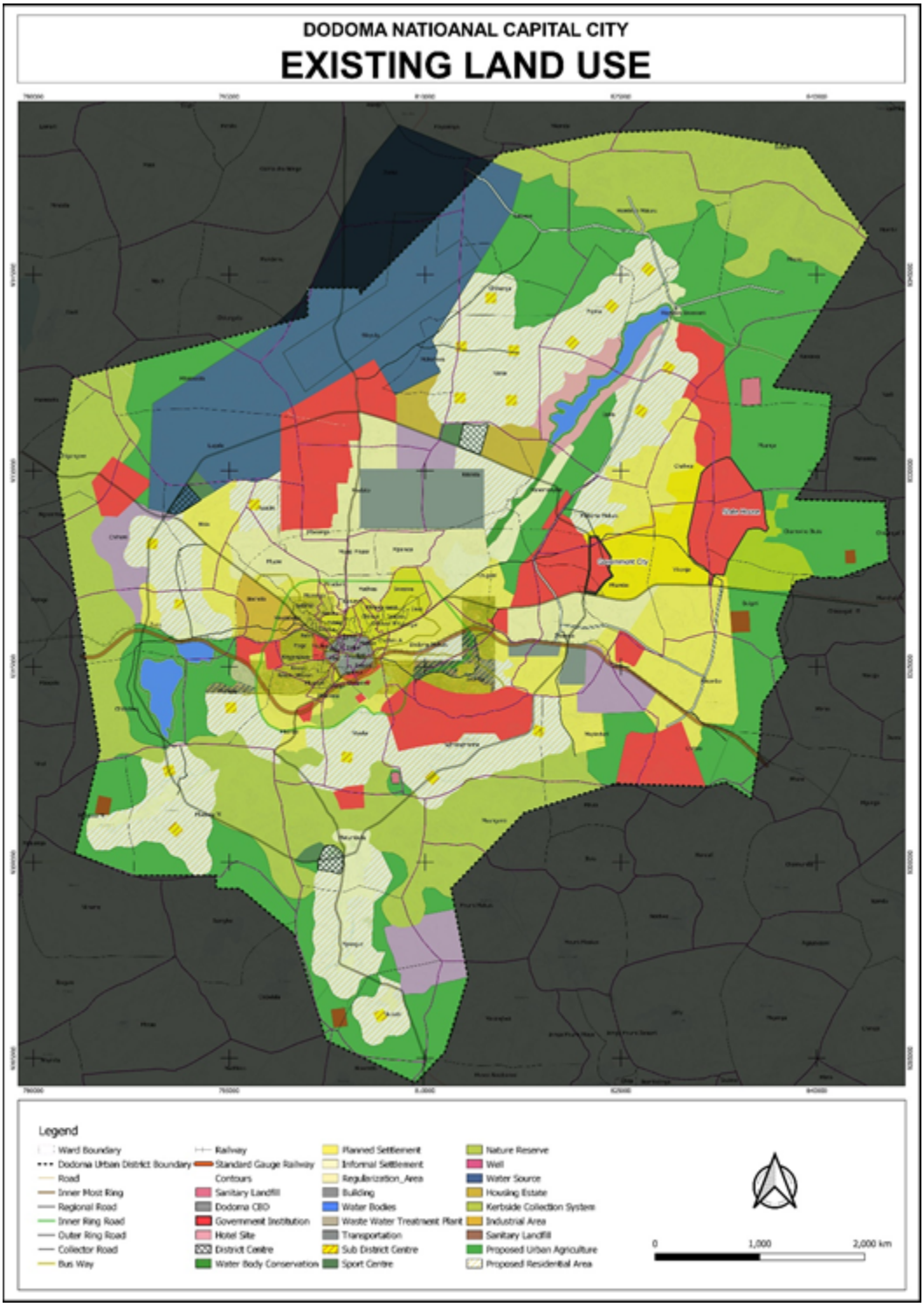
ANNEX C: Status of Utilization of Project Preparation Grant (PPG). (Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PIF:			$150,000
Project Preparation Activities Implemented	GETF/LDCF Amount ($)		
	Budgeted Amount	Amount Spent To date	Amount Committed
Reimbursables (Local Transport and Accommodation Field Mission)	31,766	31,766	0
Stakeholder Workshops (Inception & Validation)	8,234	7,234	0

Consultancy Preparation Contract	110,000	110,000	0
Total	**150,000**	**150,000**	**0**

ANNEX D: Project Map(s) and Coordinates

Please attach the geographical location of the project area, if possible.



ANNEX E: Project Budget Table

Please attach a project budget table.

Expenditure Category	Detailed Description	Component (USDeq.)						Total (USDeq.)	Responsible Entity
		Component 1: Policy and institutional framework for sustainable urban and regional development	Component 2: Reversing and managing the negative impacts of the urban footprint on land	Component 3: Urban Resilience to Climate change on	Component 4: Knowledge Management	M&E : Effectiveness of the outputs assessed, experience documented, and M&E reports prepared	PMC		(Executing Entity receiving funds from the GEF Agency)[1]
		Outcome 1.1: Climate change resilience is integrated into policies, regulations and urban planning and future land development	Outcome 2.1: Sustainable land management and reversing land degradation through inclusive city-level and community based actions	Outcome 3.1: Sustainable urban planning and land management to improve urban resilience to climatic change and variability	Outcome 4.1: Knowledge management				
Works			853,429	1,226,676				2,080,105	Tanroads
Goods	Equipment- Computers, Printers, Scanners, Office Space						30,000	30,000	Tanroads
Sub-contract to executing partner/ entity		303,324	150,000	500,000				953,324	Tanroads
International Consultants	Int'l consultants	180,000	140,000	350,000	80,000			750,000	Tanroads
Local Consultants		55,000	50,000	240,000	40,000			385,000	Tanroads
Communications & Awareness, research support					100,000			100,000	Tanroads
Trainings, Workshops, Meetings	e.g. Inception Workshop	15,000	50,000	60,000	60,000			185,000	Tanroads
Publications/Dissemination					60,000			60,000	Tanroads
Travel		40,000	50,000	40,000	50,000			180,000	Tanroads
Salary and benefits / Staff costs	e.g. Technical Coordinator, Project Manager, Other Project Staff and administrative						163,671	163,671	Tanroads
Other Operating Costs	Audit						50,000	50,000	Tanroads
	M&E and reporting					180,000		180,000	Tanroads
Grand Total		593,324	1,293,429	2,416,676	390,000	180,000	243,671	5,117,100	

[1] In exceptional cases where GEF Agency receives funds for execution. Terms of Reference for specific activities are reviewed by GEF Secretariat

(2) As a way of trying to mainstream the GEF at the lowest level, there is need to cascade the GEF to the City and local authorities at the Ward level.

ANNEX F: (For NGI only) Termsheet

Instructions. Please submit an finalized termsheet in this section. The NGI Program Call for Proposals provided a template in Annex A of the Call for Proposals that can be used by the Agency. Agencies can use their own termsheets but must add sections on Currency Risk, Co-financing Ratio and Financial Additionality as defined in the template provided in Annex A of the Call for proposals. Termsheets submitted at CEO endorsement stage should include final terms and conditions of the financing.

ANNEX G: (For NGI only) Reflows

Instructions. Please submit a reflows table as provided in Annex B of the NGI Program Call for Proposals and the Trustee excel sheet for reflows (as provided by the Secretariat or the Trustee) in the Document Section of the CEO endorsement. The Agencys is required to quantify any expected financial return/gains/interests earned on non-grant instruments that will be transferred to the GEF Trust Fund as noted in the Guidelines on the Project and Program Cycle Policy. Partner Agencies will be required to comply with the reflows procedures established in their respective Financial Procedures Agreement with the GEF Trustee. Agencies are welcomed to provide assumptions that explain expected financial reflow schedules.

ANNEX H: (For NGI only) Agency Capacity to generate reflows

Instructions. The GEF Agency submitting the CEO endorsement request is required to respond to any questions raised as part of the PIF review process that required

clarifications on the Agency Capacity to manage reflows. This Annex seeks to demonstrate Agencies? capacity and eligibility to administer NGI resources as established in the Guidelines on the Project and Program Cycle Policy, GEF/C.52/Inf.06/Rev.01, June 9, 2017 (Annex 5).