DEVELOPMENT CORRIDORS PARTNERSHIP

Development Corridors in Tanzania

A Scoping Study

The Development Corridors Partnership is a research and capacity building collaboration among institutions from China, Kenya, Tanzania, and the UK. Its main purpose is to deliver effective research and build capacity for development corridor decision-making based on sound scientific evidence and effective use of available planning tools and procedures.

Partners

Funders

How to cite this report:

Development Corridors Partnership (2019). Development Corridors in Tanzania - A scoping study. Compiled by P.K.T. Munishi, J.J. Kashaigili, N. Chilagane, P. Lyimo, R.E. Pallangyo and L. Kolukwi. Sokoine University of Agriculture, Morogoro, Tanzania. E-published by UNEP-WCMC, Cambridge, UK.

Executive summary

This report presents the findings of the scoping study conducted to analyse the status and challenges of development corridors in Tanzania. The overall objective of this scoping study is to provide a holistic view of the concept of development corridors and how these are implemented in Tanzania.

The scoping study is not intended to provide a comprehensive and detailed account of development corridors in Tanzania, but rather to identify capacity and research gaps on which the Development Corridors Partnership could focus to assist sustainable implementation of development corridors in Tanzania. Moreover, the scoping study provides an initial assessment of the status, actors involved and key challenges in the different identified development corridors. The study further identifies and describes other relevant policy areas and development strategies and plans, institutions and organisations closely linked to the implementation of development corridors in Tanzania.

A literature review, stakeholder analysis and a critical review of relevant policies and legislation were undertaken to identify actors, policy and legislative frameworks relevant to development corridors in Tanzania. Stakeholder consultations through visits, telephone calls and email correspondence were used to collect data from relevant government agencies, actors and investors.

Key findings

1. Development corridors in Tanzania

There are five ongoing development corridor projects in Tanzania. These are:

a) Southern Agricultural Growth Corridor of Tanzania (SAGCOT): a Public-Private Partnership with an ultimate objective of boosting agricultural productivity, improving food security, reducing poverty and ensuring environmental sustainability through the commercialization of smallholder agriculture. SAGCOT includes areas of agricultural land within the Rufiji river basin of central Tanzania; subdivided into a number of clusters where it is hoped that more focused agricultural investment will be concentrated.

b) Central Development Corridor: the transportation route that connects the Port of Dar es Salaam by road, rail and inland waterways to Burundi, Rwanda, Uganda and the Eastern part of the Democratic Republic of Congo and all of central and north-western Tanzania. The corridor forms part of the backbone of the regional transportation system in East and Eastern Central Africa transporting large proportion of imports and exports of the five countries.

c) Mtwara Development Corridor: was conceptualized under an initiative undertaken by the Southern African Transport and Communications Commission of the Southern African Development Community (SADC) in 1992. The SADC member countries of Tanzania, Malawi, Mozambique and Zambia agreed to work together to realize a corridor which runs through Tanzania from the port of Mtwara inland alongside the Ruvuma river and to the border with Mozambique and Malawi. The aim is to facilitate regional integration and reduce poverty by stimulating broad economic growth through expanding industrial production, and enhancing exports from the corridor.

d) Tanga Development Corridor: this corridor aims to ensure regional integration among the riparian countries around Lake Victoria (the east African Countries of Uganda, Burundi, Kenya and Rwanda), using the Tanga port, Tanzania, to access the Indian Ocean to facilitate trade. One of the projects in this corridor is the Uganda – Tanzania crude oil pipeline project - also known as East Africa Crude Oil Pipeline (EACOP) - which is intended to transport crude oil from Uganda's oil fields to the Port of Tanga.

e) Dar es Salaam Development Corridor/TAZARA Corridor: connects the Dar es Salaam port with the southern and south-eastern highlands of Tanzania through the TAZARA railway the Dar es Salaam – Tunduma highway and the Tanzania Zambia Oil Pipeline (TANZAM). TAZARA is jointly owned by the governments of Tanzania and Zambia. This corridor serves as important pillar for infrastructure in the SAGCOT corridor.

2. Development corridor origin and implementation in Tanzania

The corridor development approach in Tanzania was promoted by the Southern African Development Community (SADC) after realising that these geographic corridors are growing in importance as enablers of multiple sectors to maximise their productivity. The SADC Protocol on Transport, Communication and Meteorology called for the creation of Corridor Planning Committees to focus on specific strategies for development. SADC countries were required to choose their own institution to coordinate the implementation of regional development corridors.

In Tanzania, the National Development Cooperation (NDC) was appointed and assigned to coordinate the implementation of the regional development corridor approach. NDC through the Directorate of Research, Planning and Industrial Development (DRPID) now coordinates studies, consolidates and implements anchor projects in development corridors, with a focus on enhancing regional development balance, and works to attract investors in the corridors.

3. Challenges to corridor implementation

Various challenges in the implementation of development corridors in Tanzania have been identified and they vary by corridor (Section 2). These include existence of policies and regulations that are not supportive to agribusiness (tax collection, weights and measures), insufficient technical expertise to provide extension services and training to small scale farmers, poor multi-sectoral coordination across infrastructure projects and plans, shortage of funds to finance megaprojects in the corridor, dilapidated infrastructure, and lack of appropriate equipment and other working tools to execute infrastructure projects.

4. Potential impacts of development corridors

There are various identifiable potential positive and negative impacts associated with development corridors in Tanzania. These include, among others, biodiversity loss, deforestation, threats to protected areas (including UNESCO World Heritage sites), land and water scarcity, social marginalization, economic displacement, resource-based conflicts, livelihoods impacts and changes in cultural identity. There is also an array of impacts associated with climate change as detailed in Section 5 of this report.

5. Key stakeholders and their influence in Tanzania's development corridors

There are different stakeholders involved in the design, development and implementation of development corridors in Tanzania. These include Government Ministries, Government Agencies and Authorities, Non-Governmental Organisations (NGOs), Community Based Organizations (CBOs) and Community Service Organisations (CSOs), Research Institutions, Investors, Development Partners/Donor Agencies. The analysis and description to these stakeholders is presented in Section 3.

6. Regulatory context of investment in Tanzania

All investment procedures in Tanzania are governed by Tanzania Investment Centre (TIC); the chief government agency to encourage, promote, coordinate and enable investment in Tanzania. Tanzania Investment Centre is a one stop facilitation centre for investors, assisting them to acquire licenses, permits, land access, visas and other procedural assistance for investment. TIC has the authority to oversee public-private partnerships (PPPs) under the 2010 PPP Act that lays down a framework for build-operate and transfer activities with private companies. A step-by-step guide to investment procedures for both local and foreign investors in Tanzania is available on the TIC website (http://www.tic.co.tz/).

7. Investment risk in Tanzania

According to Tanzania Trade and Investment Risk Report Q4 (2016), risks for investment in Tanzania are attributed to legal risk (underlies the high risk in the country's burdensome bureaucratic environment and a corrupt and under-resourced judiciary), government interventions (limitations of the country's banking and financial development as well as tax requirements) and economic openness. The investment risk is detailed discussed in Section 4 of this report.

8. Climate change and adaptation priorities

The Government of Tanzania recognizes the adverse impacts of natural disasters and climate change and has put in place relevant legislation to address the challenges. The key policy documents addressing climate change and natural disaster risks include: National Adaptation Programme of Action (NAPA 2007), Tanzania National Development Plan (2016/17- 2020/21), National Climate Change Strategy (2012), Intended Nationally Determined Contribution (INDC) (2015). The NAPA provides both a prioritization of sectors vulnerable to climate change and a set of six priority areas/projects to address climate change which are detailed in Table 5.

9. Priority research areas and capacity needs in Tanzania

Several priority research areas and capacity needs have been identified in each of the corridor as detailed in Section 6 of this report. The key research and capacity needs are centred on several thematic areas that include Planning and Implementation process, Safeguards/Environmental Impact Assessments (EIA)/Strategic Environmental Assessment (SEA), Ecosystem Services and Biodiversity Conservation, Natural Capital valuation, Support to Agricultural Technology for community benefits Hydrological processes and Water Resources Management/Assessments. Livelihoods/communities constraints, Climate Change adaptation and mitigation and economic and political drivers of corridor development.

Contents

List of Abbreviations

ADB	Asian Development Bank
AfDB	African Development Bank
CBO	Community Based Organization
CSO	Community Service Organization
DC	Development Corridor
DCP	Development Corridors Partnership
DRC	Democratic Republic of Congo
DRPID	Directorate of Research, Planning and Industrial Development
EAC	East African Community
EACOP	East Africa Crude Oil Pipeline
GoT	Government of Tanzania
MSCL	Marine Services Company Limited
NDC	National Development Cooperation
NEPAD	New Partnership for Africa's Development
NGO	Non-Governmental Organization
PPP	Public Private Partnership
RAHCO	Reli Asset Holding Company
SADC	Southern African Development Community
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SDI	Spatial Development Initiative
SEZ	Special Economic Zones
SUMATRA	Surface and Marine Transport Regulatory Authority
TAFFA	Tanzania Freight Forwarders Association
TANAPA	Tanzania National Parks Authority
TANESCO	Tanzania Electricity Supply Company Limited
TANROAD	Tanzania Road Agency
TASAA	Tanzania Shipping Agencies Association
TATOA	Tanzania Truck Owners Association
TAZARA	Tanzania Zambia Railway Authority
TBS	Tanzania Bureau of Standards
TCCIA	Tanzania Chamber of Commerce Industries and Agriculture
TDC	Tanganyika Development Corporations
TIC	Tanzania Investment Centre
TICTS	Tanzania International Container Terminal Services
TJN-A	Tax Justice Network-Africa
TPA	Tanzania Ports Authority
TPDC	Tanzania Petroleum Development Corporation
TRA	Tanzania Revenue Authority
USADF	United States African Development Foundation
URT	United Republic of Tanzania
WTO	World Trade Organization

1. Tanzania's approach to development corridors

1.1. Definition of development corridor in Tanzania

There are several definitions of the term "development corridor" in Tanzania. Tanzania Ministry of Works, Transport and Communication defines Development Corridor as a concept founded in the idea of Spatial Development Initiative (SDI), intended to attract export driven investments and stimulate public private partnerships (PPPs) to areas with under- or un-utilized potential. It considers all potential for multi-sectoral integrated development, built around a backbone transport infrastructure making the region a gateway for international trade. The National Development Corporation (NDC) defines a development corridor as a geographical area identified as a priority for attracting investment to catalyse economic growth and development (NDC, 2018). In this report, the authors (DCP team) define development corridor as a "*geographically defined area with an integrated network of infrastructure, identified as a priority for investment to catalyse economic growth and development"*.

Development corridors allow for and facilitate the seamless movement of capital (i.e. finance), goods and services (i.e. trade and commerce), and people (i.e. investors, traders, customers and visitors). Consequently, they are supported by social services delivery programs. Therefore, in conceptual terms of development economics, the integrated framework for growth with sustainable development may be viewed as a synthesis of multiple sector development initiatives and investments layered on top of one another and grouped together as one. In that regard, development corridors in Tanzania represent a synthesis of aggregated integrated and superimposed Transport Corridors; Trade Corridors; Production and Commercial Enterprise Clusters; Social Services Delivery Catchment Zones; and Borderless Human Migration Corridors.

1.2. Genesis of development corridors in Tanzania

The corridor development approach in Tanzania was highly promoted by the Southern African Development Community (SADC) since corridors enable multiple sectors to maximise their productivity (SADC, 2012). The SADC Protocol on Transport, Communication and Meteorology[1], calls for the creation of Corridor Planning Committees to focus on specific strategies for development along the region's key corridors. SADC countries were required to choose their own institution which can coordinate the implementation of regional development corridors (Vanheukelom and Bertelsmann-Scott, 2016; Vickers, 2014; SADC, 2012).

The National Development Corporation (NDC), formally Tanganyika Development Corporations (TDC), was appointed and assigned to coordinate the implementation of a regional development corridor approach in Tanzania (SET, 2016; NDC, 2018). NDC is the Tanzania's leading industrial development and promotion organization, given a broad mandate as a development and promotion institution to stimulate industrialization in partnership with the private sector. NDC through the Directorate of Research, Planning and Industrial Development (DRPID) undertakes coordination, consolidation and implementation of anchor projects in development corridors (i.e. Mtwara, Central, Uhuru and Tanga), with a focus on enhancing balanced regional development and attraction and facilitation of investors and investments. According to NDC, in order for a corridor to be established, it

[1] https://www.sadc.int/documents-publications/show/Protocol_on_Transport,_Communications_and_Meteorology_1996.pdf

must have three important elements: *(a) anchor* (support) *economic projects, (b) a transport system with international border* (infrastructure) and *(c) gateways* (access).

The establishment of development corridors is a strategic initiative to integrate fragmented landscapes, populations, investments, and other potentials within a specific geographic area and its vicinities. The quality of a development corridor is based on the key economic, infrastructural, and logistic potentials within an integrated geographic area. NDC adopted the development corridor initiatives to facilitate unlocking of natural resources to contribute sustainably to economic and social development or benefits in Tanzania (NDC, 2018).

1.3. Policies and national strategies behind development corridor inception

The 2nd Five Year Development Plan ("FYDP II") includes National Flagship Projects linked to development corridors. The corridors in the FYDP II include – Tanga Corridor; Central Corridor; TAZARA Corridor; and Mtwara Corridor. The Government of Tanzania is leading the implementation of the anchor projects to upgrade infrastructure which will begin to fully unlock the economic potential of the respective development corridors. For example, the Standard Gauge Railway (SGR) will upgrade and modernize the railway system which serves the Central Development Corridor and links the ocean ports of Tanzania with the Democratic Republic of Congo (DRC), Burundi, Rwanda and Uganda. The Government of Tanzania is also completing the final construction phase of the Mtwara-Mbamba Bay main highway with links to Mozambique as the backbone road infrastructure of the Mtwara Development Corridor (Simbakalia, 2018).

One of the main objectives of Tanzania's Development Vision 2025 and those of the East African Community (EAC) and SADC partner States is to attain faster economic growth in order to reduce and in the long run eradicate poverty (URT, 1999, 2015). The major thrust is towards improving road and rail network; improving marine and air transport; minimizing border posts delays; reducing insurance costs; attracting investment in infrastructure development; involving the private sector in infrastructure operation and service provision; and implementing effective legal and regulatory reforms to enhance the development process.

Tanzania has embraced the development corridor approach and plans are underway to leverage infrastructure investments to catalyse inclusive economic development. The Central Corridor has been identified by the government as a strategic vehicle to support the country's development aspirations. The proposed approach is to transform the central transport corridor into a development corridor that is also integrated with the northern corridor. Thus, public investments in transport will include complementary rural infrastructure such as community production centres and market infrastructure to bolster inclusive growth. In this context, African Development Bank support under Country Strategy Paper 2016-20 has prioritized the provision of integrated development solutions to transform regions in which its projects will be located into centres of local economic development.

The Tanzania Development Vision 2025 has prioritized interventions geared at nurturing an industrial economy as indicated by the core business in the Five Year Development Plan (FYDP I) and the National Strategy for Poverty Reduction and Economic Growth II – NSPREG-II (MKUKUTA II), including heavy investment in energy and strategic transport infrastructure: expansion of cargo handling capacity at Dar es Salaam, Mtwara and Tanga ports and improvement of the central railway line. There are ambitious plans for agricultural

development along Mtwara development corridor where the agro-ecological conditions are suitable for maize, soy bean, jatropha and a diversity of other crops.

Other political processes behind corridor inception in Tanzania are the domestic and international responses to the National Strategies and movements like *Kilimo Kwanza Policy*; the strategy through which the country can use its abundant land, water and climatic condition endowments, in an environment of increasing food security concerns, to turn Tanzania into a regional bread-basket. The Southern Agricultural Growth Corridor program is already showing the way forward (URT, 2010). The Integrated Industrial Development Strategy 2025 identifies and provides the direction of policy instruments available to steer the process of industrialization in the desired direction. Major instruments include the accumulation and concentration of industrial firms through cluster development, supported by Special Economic Zones (SEZ). Three SEZs are planned: one for Dar es Salaam linked with the Central Railway Line to constitute the "*Logistics Corridor*" and TAZARA to constitute the "*Agricultural Corridor*"; Mtwara SEZ which is being developed as the "*Minerals Corridor*"; and the Tanga corridor to serve the areas of northern and north-western Tanzania up to and including Rwanda (URT, 2010).

1.4. Current development corridors in Tanzania

Based on the TIC and NDC, there are about five major well-known development corridors in Tanzania: Dar-es-Salaam/Uhuru Development Corridor, Central Development Corridor, Tanga Development Corridor, Mtwara Development Corridor and Southern Agricultural Growth Corridor of Tanzania (NDC, 2018: TIC, 2018: Simbakalia, 2015). Figure 1 shows the location of these corridors and Annex 1 provides a detailed description for each of them including stakeholders and investors involved.

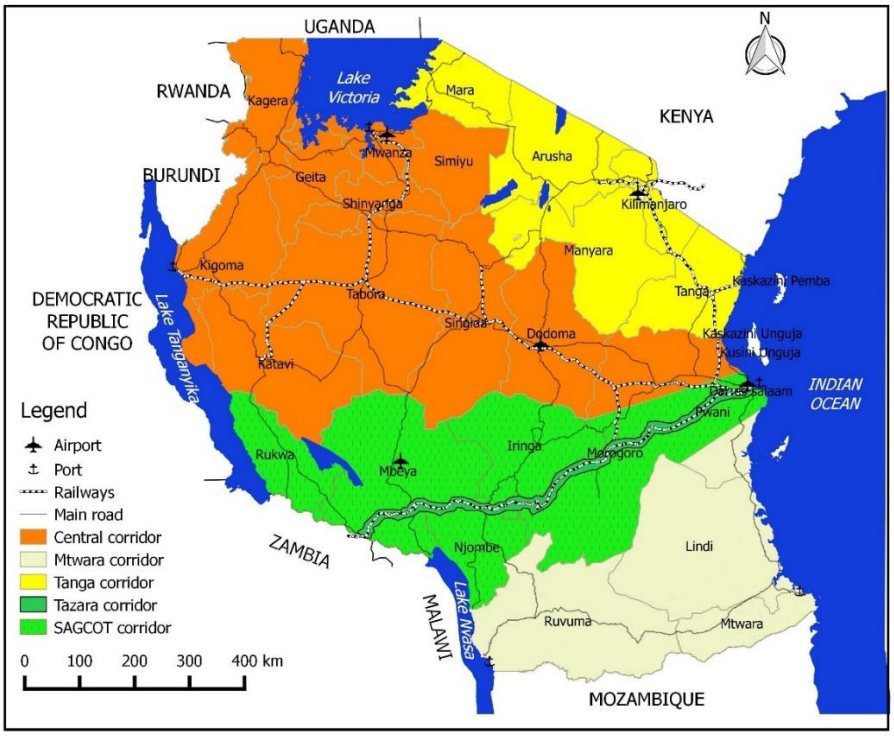

Figure 1. Major development corridors in Tanzania. (Map developed by DCP project Tanzania).

Examples of infrastructure projects that NDC has assisted to profile and promote their implementation are: (a) Mtwara – Mbamba Bay road development, including Unity Bridges to Mozambique; (b) Mtwara –Mbambabay rail (mainly for unlocking Mchuchuma and Ngaka coal and Liganga mineral resources); (c) Central Corridor rail modernization and extension to Kigali, Rwanda and Musongati, Burundi (to service nickel and gold belts extending into Burundi, Rwanda and Eastern DRC); (d) power transmission lines to link its power production projects to the national grid (using Mchuchuma and Ngaka coal); and (e) strategy for supply of power to the nickel belt in North western Tanzania and Eastern Burundi.

1.5. Potential impacts of development corridors in Tanzania

1.5.1. Impacts on biodiversity/ecosystem services

(i) Habitat loss and degradation

The most important direct threat to biodiversity comes in the form of conversion, degradation, and fragmentation of natural ecosystems (Baillie *et al*., 2004). It is estimated that the annual loss of tropical forest range from 8.7 to 12.5 M ha (Chapman and Peres 2001; Mayaux *et al*., 2005). In Tanzania for example, an estimated 63% of the natural habitats of Udzungwa mountains in the SAGCOT have been heavily degraded, primarily through conversion to agriculture (Marshall, 2007).

In Tanzania, agricultural expansion into areas of high biological value especially evergreen forests or wetlands will inevitably cause biodiversity losses (Burgess *et al*., 2007; Burgess *et al.,* 2010). Careful consideration of areas of agriculture and expansion of forest plantations will be needed to minimise loss of important habitats (URT, 2008) and other natural capital assets.

(ii) Overexploitation of high-value species

Over-exploitation or overharvesting of economically valuable species is another important direct threat to biodiversity from development corridors in Tanzania (CBD, 2009). Establishment of transport infrastructures opens access for illegal hunting/harvesting for both international and local markets, for products such as ivory, timber and fish (ETOA, 2012).

Table 1. Threats and Causes of Overexploitation of High-Value Species (Source: USAID, 2012).

Species	Threats	Causes
Elephant	Illegal hunting for international (mainly Asian) ivory market	Low capacity to monitor and enforce wildlife laws and regulations
Black Rhino	Illegal hunting for international (Middle East & Asian) rhino horn market	Low capacity to monitor and enforce wildlife laws and regulations
High-value Timber Species (e.g. *Afzelia quanzensis*, *Pterocarpus angolensis*, (kiaat), *Diospyros mespiliformis* (jackal berry),	Illegal cutting for domestic and international timber markets	Low capacity to monitor and enforce forest laws and regulations

Paurosa)		
Prawns (*Metapenaeus monocerus*, *Penaeus indicus*, *P. monodon)*	Unregulated/fishing, some illegal and lack of sustainable management	Low capacity to monitor and enforce fishing laws and regulations
Pelagic Fish (yellowfin tuna, marlín, skipjack tuna, big eye tuna)	Illegal, and some legal but unregulated deep-sea fishing, mainly by foreign fleets and lack of sustainable management	Low capacity to monitor and enforce fishing laws and regulations

(iii) Invasive species

Invasive alien species are a threat to ecosystem integrity and native species in some ecosystems in the development corridors of Tanzania (USAID, 2012). Railway sides and roadsides can facilitate invasive species migrations and can act as starting points for plant invasions into habitats adjacent to or within development corridors. Rapid spread and interrupted distribution patterns of introduced species indicates long-distance dispersal along roads or railways. The extent to which this process is due to species' migration along linear habitats or, alternatively, to seed transport by vehicles or railways has not yet been tested systematically (PAMS, 2012).

(iv) Pollution

Pollution is not a major threat to ecosystems and species from development corridors (USAID, 2012). However, fertilizer and pesticides used on fields particularly in agricultural corridors such the SAGCOT corridor can be washed into nearby streams, rivers, and wetlands, threatening fish, amphibians, insects, crustaceans, molluscs, and other aquatic species (URT, 2006). Moreover, pollution from untreated sewage discharged from coastal cities and beach tourism facilities can cause significant damage to nearby coral reefs (Muthiga *et al.,* 2008; Lal Mukherjee, 2019). Sediment from coastal agriculture and construction can also damage reefs (USAID, 2012; Lal Mukherjee, 2019). The current move towards rapid industrialization in Tanzania will likely pause additional and major pollution threats if precaution measures are not taken and the problem be contained from the very beginning. In this respect the precautionary principle should apply as deemed necessary. Poor agriculture and mining activities, particularly from the application and use of chemicals, can cause water and land pollution and negatively impact on the health of people (WWF and CSCO, 2017).

(v) Climate change

Climate change is a threat of unknown magnitude for ecosystems in the development corridors of Tanzania, which may accentuate other direct threats, especially habitat loss, degradation, fragmentation and invasive species (USAID, 2012; Burgess *et al.,* 2010). It is reported that most of the development activities in development corridors are associated with greenhouse gas emissions and thus increase in the global temperature (Harris and Roach, 2016) with implications on climate change and its

impacts on the productive sectors of the economy (Munishi *et al.,* 2010)[2]. Volumes of scientific research across multiple scientific disciplines agree that human activities result into the warming of the climate, and the 2013 IPCC Forth Assessment Report states that, "Human influence on the climate system is clear. This is evident from the increasing greenhouse gas concentrations in the atmosphere, positive radioactive forcing and observed warming of the climate system" (IPCC, 2007).

1.5.2. Socio-economic impacts

(i) Employment and business opportunities

Projects within development corridor are generating economic benefits at local, national and regional levels (NDC, 2018). Employment is often a major opportunity to communities in and around the development corridors of Tanzania (URT, 2015b). There is a real potential that jobs and business activity directly related to project within development corridors will increase. Jobs and business activity in sectors that provide goods and services to the development corridor will also increase.

(ii) Tax revenue

The development corridor projects of Tanzania may generate increased tax revenue (e.g. Pay As You Earn, PAYE) and Value Added Tax (VAT) or business taxes from industrial and associated local business growth in activity (URT, 2015b; NDC, 2018). Property tax revenues may also increase as projects increase in the development corridors. Higher personal income tax revenues may benefit regions, municipalities, districts, and the state if local incomes increase (due to jobs or royalty/lease income) and if the local tax structure enables collection of such local taxes (URT, 2015b).

(iii) Inequalities

There could also be socioeconomic changes associated with new employment opportunities whereby income differentials and inflation could lead to gross levels of overall inequality (Agwanda and Amani, 2014; URT, 2015b; NDC, 2018). Due to different local groups and individuals benefiting or being negatively impacted upon unevenly from the induced socio-economic opportunities and challenges from the projects implemented in the development corridor (WWF and CSCO, 2017). This could be a challenge to social cohesion and harmony.

(iv) Inflation

With increased incomes, prices for products and services along boomtowns especially during railways/roads construction are expected to experience inflationary effects (URT, 2015a). Take for example housing; which is usually scarce in small, rural boomtowns with limited housing stocks. However, the rapid influx of industry workers quickly fills available rental units and temporary housing (such as hotels and mobile homes) (WWF and CSCO, 2017; URT, 2015a).

(v) Stress, crime and disruption of community cohesion

Rapid growth in boomtowns is also linked with mixed social impacts. Earlier research on boomtowns emphasized negative impacts, leading to the development of the

[2] PKT Munishi et al Analysis of Climate Change and its Impacts on Productive Sectors, Particularly Agriculture in Tanzania.

'social disruption' model (WWF and CSCO, 2017). This work demonstrated that rapid population growth from immigration associated with the development corridor projects could increase personal stress, change individuals' patterns of interactions within communities, decrease community cohesion, and change a community's character (WWF and CSCO, 2017; URT, 2015a).

(vi) Increased changes in land-use patterns and erosion of cultural heritage

Changes in land-use patterns such as agriculture, fishing, logging or hunting could increase as a direct consequence of land-take or exclusion during the project (WWF and CSCO, 2017). While there could be improved access due to new and/or improved roads inversely there could also be restricted access to key natural resources due to land-take or change in related access regulations. These changes if not managed well could lead to land conflicts, loss of cultural heritage and spread of disease (WWF and CSCO, 2017; URT, 2015a).

(vii) Human rights violations, community health and safety

There are a number of procedural and substantive human rights that are of fundamental importance, at micro-, meso- and macro-levels when planning and implementing development corridors. These include, rights related to transparency, participation and accountability, the right to freedom of thought, opinion, assembly, and association, the right to access information and participate in public affairs, and the right to a remedy (WWF & CSCO, 2017). Often infrastructure plans exclude people from the outset and fail to actively engage them throughout the life of the project. In addition, governments often ignore indigenous peoples' right to self-determination and fail to seek and obtain free, prior and informed consent of the indigenous peoples for proposed projects. Weak transparency lead to weak accountability, which all too often results in lack of remedy for those whose rights are affected (WWF & CSCO, 2017; URT, 2015a). Even where grievance mechanisms exist at project or local or national levels (including through the formal court system), these typically respond to micro-level or project-related concerns, rather than meso- and macro-level impacts (WWF & CSCO, 2017).

2. Challenges facing development corridors in Tanzania

2.1. Infrastructural challenges

The railway and ports infrastructural systems within development corridors are underdeveloped or not in place (NDC, 2018). For instance, in the Mtwara development corridor, there is no railway line to transport large quantities of economic resources that may be available in the corridor. The installation of a reliable railway line and locomotives and improvements of the port system would be costly which presents a big challenge in terms of infrastructure development (URT, 2008).

Road transport is the major mode of transportation carrying over 90% of the passengers and over 75% of the freight traffic in Tanzania. Despite efforts to improve the road transportation, Tanzania's road network presents substantial challenges at times. Some of the unpaved roads often turn impassable in rainy seasons and might be closed for traffic for considerable

time (URT, 2014). Also, a number of challenges are experienced which have an impact on the infrastructural maintenance operations and the overall performance of the appropriate authority e.g. TANROADS.

There are both internal and external challenges in infrastructure development. The internal challenges, include keeping supervising staff up to date in contracts management skills; insufficiency of supervision staff and facilities and deficient axle load control facilities. The external challenges include low capacity of the local construction industry and delays in disbursement of funds from the Roads Fund. (URT, 2014).

Limited investment in railway infrastructure has led the railway network, which covers 14 out of the 26 regions in all development corridors of Tanzania, to deteriorate over time. Notable progress has been made in improving operational efficiency of ports, for example, by extending operations of the Dar es Salaam port from the previous 8 hours to 24 hours a day (URT, 2016). The handling capacity also improved from 9.9 million tons (2011/12) to 14.6 tons (2014/15). However, these developments remain insufficient to adequately support economic transformation and industrialization of development corridors of Tanzania. Other ports such as Mtwara, Tanga Bagamoyo and potential ports such as Lindi remain underdeveloped. Management and operations inefficiencies and inadequate infrastructure, constrain competitiveness of Tanzania's ports relative to ports in neighbouring countries (URT, 2016).

2.2. Economic challenges

Major economic projects require expensive pre-investment studies to establish the appropriate technology to unlock resources. The engagement of the private sector to take risks in these projects is limited to scoping or pre-feasibility studies which are necessary but not sufficient to inform balanced decisions prior to investments. As a consequence, the government has incurred huge amounts of sunk costs in these projects, but has attracted few investors to implement the plans. Most of the development corridors of Tanzania have a rapidly developing finance sector, but micro-finance provision still relies heavily on semi-formal or informal institutions, with a multiplicity of regulators and limited enforcement capacity. Many of the informal savings and loan associations are extending financial inclusion and reaching the un-bankable, but their operations are not subject to oversight. Meanwhile, mobile phones are revolutionising access to money transfer and savings, and although mobile phones are not yet widely used for payments or loans, this is likely to be a major area of expansion (URT, 2016).

2.3. Financial challenges

As indicated above, the supportive infrastructural, economic and logistic projects require a considerable investment in their initial development phases. These amounts can only be mobilized from external sources that may compromise the sustainability of the public debt and exchange rate risks. In addition, huge amount of resources are incurred for compensation of the Project Affected Persons (PAPs) properties during project development.

There has been relatively little effort towards boosting resource mobilisation in the development corridors of Tanzania, e.g. SAGCOT and Tanga corridors (URT, 2016). The Government continues to fund most of the development projects mainly from its budget.

Disbursements from the government, however, have generally been done on a cash-budget basis, a system which was adopted as an interim macro-economic stabilization measure over two decades ago. Both the level of funding and the mode of disbursement constrain implementation of development projects. Government-owned Development Finance Institutions, such as Tanzania Investment Bank (TIB) and Tanzania Agricultural Development Bank (TADB) are under capitalized and are unable to exercise their mandates to raise syndicated loans to finance projects upfront.

Other challenges to development financing in development corridors of Tanzania, particularly SAGCOT and Mtwara, include low competitiveness and efficiency of the financial sector; low quality and narrow variety of financial services and products; shallow capital market; low tax effort owing to a narrow tax base and inadequate collection capacity of TRA and LGAs; tax exemptions, holidays, waivers and similar preferential facilities; delays in releasing concessional loans and grants; and inhibitive financial regulations (URT, 2016).

Additionally, the packaging and promotion of projects within a development corridor requires broad knowledge before committing substantial outlays of capital expenditure that have long-term effects and high irreversibility. It is important to conduct multiple pre-investment studies to guide investment decisions including analyses of technical and technological, market, organizational, financial, economic, and legal fundamentals.

2.4. Proposed solutions to challenges

Fiscal incentives: There is a need for granting or awarding strategic incentives for supporting or attracting investments in development corridors of Tanzania. These incentives can be in the form of economic, financial and/or monetary and can be packages within the existing systems of incentives such as EPZ Act and Regulations or TIC Act and Regulations (e.g. TIC Act 1997). The proposed motivation to support and attract investments in the development corridors may include exemption on project capital goods, tax relief on deemed capital goods and reduction of corporate tax.

Tanzania's 'Strategic Investor Status' accords various tax incentives to companies investing more than $20 million (TIC, 2018). According to TIC, 'For a big project of over US$20 million offering specific/high impact to the society or economy, investors can request for special incentives from the Government'. Thus, some companies, notably foreign mining and agribusiness companies in SAGCOT, have an individual fiscal agreement with the government, some of which offer special concessions to individual companies that are not formally made public. This lack of transparency in such agreements is among the key burning issues in the context of good governance and prudent public financial management in general and taxation for funding public expenditure in particular (Tax Justice Network-Africa, 2012).

Physical incentives: These include establishment of physical infrastructure within the development corridors such as all-weather/paved roads, power supply, water and sewerage systems, railway lines, airports and airlines, and ports with reliable equipment and logistic facilities. NDC works closely with TIC, EPZA, and the ministry responsible for minerals development, in order to procure investment incentive for large scale projects.

Expansion and modernization of physical infrastructure including road, railways, water ways, water supply, energy, ICT, to support agriculture (especially in the SAGCOT); seaports,

airports, railway systems, are needed in order for the development corridors to realize their full potential for accelerating economic growth.

Financial incentives: The anchor projects require large amount of financial resources for their implementation. The commercial sources of funds demand collateral over and above the value of the project funds to be borrowed. It is important to procure public guarantee to obtain funds for the development of the anchor projects within the development corridors. According the National Development Corporation there is therefore a need to embark on rigorous cost-benefit analyses in the project appraisal stage before taking investment risks.

The successful implementation of the development corridors of Tanzania hinges on timely, availability of adequate financial resources as well as the right mix and quality of human resources (URT, 2016). In the absence of these attributes, the implementation of projects cannot be assured. There is a need to move beyond traditional to more innovative mechanisms of financing development such as creating special financing windows for financing construction, micro - small and medium enterprises (MSMEs) and re-engineering the roles of supportive institutions such as National Development Corporation (NDC), Small Industries Development Organisation (SIDO) coupled with strengthening roles of Development Finance Institutions (DFIs). Such move will help reduce risk investment risks for successful implementation of projects (URT, 2014; 2016). Targeted training for skills required in priority areas are necessary to addressed the risk of shortage in human resources in development finance institutions.

3. Tanzania development corridors' stakeholder analysis and mapping

3.1. Introduction

Stakeholders are persons, groups, or institutions with involvement in, interests in, or in-depth knowledge of, a given context and/or a project. They may include those who directly influence the success of the project or those who are affected, either positively or negatively, by the project. This report adopts a widely accepted definition of Stakeholder given by Freeman (1984) which states that; *A Stakeholder is any group or an individual who can affect or is affected by the achievement of the firm's objectives.* Therefore, stakeholder analysis (SA) is a systematic collecting and analysis of qualitative information to determine whose interest should be considered when implementing policy programme or project objectives. This process helps to identify appropriate types of stakeholders to be consulted in the programme/project implementation process.

The SA for each development corridor in Tanzania was conducted using four steps. The first step was to clarify the objectives and research priorities of the DCP project and how they align to each stakeholder. The second step was to identify all the stakeholders or interest groups associated with the objectives and research priorities of the project. The third step was to assess stakeholder *interests* and potential impact of the project on these interests and the last step was to analyses the influence and importance (power analysis) of different stakeholders towards objectives and research priorities of the DCP project. *Influence* refers to the power that stakeholders have over implementation of project objectives/research priorities. *Importance* relates to the degree to which achievement of project goals depends on the active involvement of a given stakeholder. Stakeholder analysis with respect to DCP

was done in order to inform the design and implementation of development corridors in Tanzania.

3.2. Study approach and methodology

3.2.1. Literature review

A thorough literature review of key and relevant documents was done to facilitate the identification of all stakeholders and programmes/projects implemented in each development corridor in Tanzania. The reviewed sources of information include the following:

- SAGCOT documents (e.g. SAGCOT-Investment Blueprint and Greenprint, Vital Signs SAGCOT report, Environmental and Social Management Framework, Strategic Regional Environmental and Social Assessment: *Revised Draft Final Report*)
- Project Information Document/Integrated Safeguards Data Sheet (PID/ISDS)
- 15 Years of Implementation report of Tanzania Development Vision 2025
- Corridors of power or plenty? Lessons from Tanzania and Mozambique and implications for CAADP
- Tanzania Mtwara development corridor - Mtwara port and seaside industrial estate development plan
- The Tanzania five-year development plan; Unleashing Tanzanian's latent growth potential
- Tanzania's Integrated Industrial Development Strategy 2025
- Regional Infrastructure Development Master Plan
- Electricity Supply Industry Reform Strategy and Roadmap 2014 – 2025
- Baseline Assessment, Stakeholder Mapping and Situation Analysis for SUSTAIN-Africa
- Tanzania development plan, vision and investment priorities to achieve middle income status by 2025
- Developing Economic Corridors in Africa - Rationale for the Participation of the African Development Bank
- Assessment of Tanzania Ports in the Regional Economic Environment, Final report.
- Other information were obtained from websites including http://tpdc.co.tz/, http://centralcorridor-ttfa.org/, http://www.ports.go.tz, http://www.tanzania.go.tz/, http://www.rahco.go.tz/ and http://ndc.go.tz/

3.2.2. Consultation with key stakeholders

After identification of stakeholders for each development corridor through literature review and brainstorming based on researcher's experience, a stakeholder consultation process followed. The consultations focused on:

- Identifying stakeholders and programmes in each development corridor which are relevant to the objectives and research priorities of the DCP project.
- Identifying the spatial and temporal coverage of the programmes and to collect relevant information about their power, influence and roles in the implementation of development corridors.
- Assessing the status of investments implemented by different stakeholders in each development corridor. The list of consulted stakeholders in each corridor is provided in Table 2.

Table 2. List of consulted stakeholders in Development Corridors of Tanzania.

S/N	Stakeholder	Target development corridor
Sector Ministries		
1	Water and Irrigation	All Development corridors
2	Agriculture	All Development corridors
3	Natural Resource and Tourism	All Development corridors
4	Lands, Housing and Human Settlements	All Development corridors
5	Works, Transport and Communication	All Development corridors
6	Livestock and Fisheries	All Development corridors
7	Industry, Trade and Investment	All Development corridors
8	Finance and Planning	All Development corridors
9	Vice President's Office Union Affairs and Environment	All Development corridors
10	Health, Community Development, Gender, Elderly and Children	All Development corridors
Government Agencies and Authorities		
11	Tanzania Investment Centre (TIC)	All Development corridors
12	National Development Cooperation (NDC)	All Development corridors
13	Reli Asset Holding Company (RAHCO)	Mtwara, Central, and Tanga
14	Tanzania Petroleum Development Corporation (TPDC)	All Development corridors
15	SAGCOT limited	SAGCOT corridor
16	Tanzania Electric Supply Company (TANESCO)	All Development corridors
17	Tanzania Port Authority (TPA)	All Development corridors
18	Transit Transport Facilitation Agency (TTFA)	Central corridor
19	Tanzania National Road Agency (TANROAD)	All Development corridors
20	National Land Use Planning Commission (NLUPC)	All Development corridors
21	Dar es Salaam Corridor Committee	Dar es Salaam (TAZARA)
22	National Environmental Management Council (NEMC)	All Development corridors
23	Rufiji Basin Development Agency (RUBADA)	All Development corridors
24	Tanzania Meteorological Agency (TMA)	All Development corridors
25	Tanzania National Park Authorities (TANAPA)	All Development corridors
NGO's, CBO's and CSO's		
26	Worldwide Funds for Nature (WWF)	All Development corridors
27	Agriculture Council of Tanzania (ACT)	All Development corridors
28	Tanzania Forest Conservation Group (TFCG)	All Development corridors
29	Mpingo Conservation	SAGCOT, Mtwara
30	TRAFFIC	All Development corridors
31	IUCN	All Development corridors
32	Wildlife Conservation Society	All Development corridors
33	FZS (Frankfurt Zoological Society)	SAGCOT, Tanga Corridor
34	MVIWATA	All Development corridors
35	Tanzania Horticultural Association (TAHA)	All Development corridors
36	The Nature Conservancy	All Development corridors
37	RUDI	All Development corridors
38	RUBADA	SAGCOT

39	CARE International	All Development corridors
40	Eco Agriculture	SAGCOT
Investors		
41	Sao Hill forest plantation	SAGCOT
42	UNILIVER Tea plantation	SAGCOT
43	Green Resource	SAGCOT
44	New Forest Company	SAGCOT
45	Kilombero Plantations Limited	SAGCOT, TAZARA
46	Mtenda Kyela rice supply Limited	SAGCOT
47	Silverlands Limited	SAGCOT
48	Clinton Development Initiative	SAGCOT
49	Standard Gauge Railway (SGR)	Central corridor
50	Mkunju Uranium Project	Mtwara Corridor
51	Mchuchuma Coal Mining	Mtwara corridor
52	Liganga Iron Mine	Mtwara corridor
53	DANGOTE Cement Limited	Mtwara corridor
54	Mnazi Bay Gas	Mtwara corridor
55	Tanga Economic Corridor Limited	Tanga Corridor
56	HOIMA pipeline project	Tanga Corridor
57	Tanga Cement	Tanga corridor
58	Mlenge Rice Project	SAGCOT
59	Mbarali Rice Project	SAGCOT, TAZARA
60	Mbeya Cement	SAGCOT, TAZARA
61	ASASI	SAGCOT

3.3. Power analysis

1. Power influence and interest of different identified stakeholder were assessed in relation to the objectives and research focus area of the DCP research priorities are: natural capital and ecosystem services assessment and valuation
2. Scenario analysis of the development potential of corridors
3. Political and practical analysis of corridor implementation

The stakeholder's analysis adopted the stakeholder classification framework (Figure 2) (Mitchell *et al*., 1997), which involves an assessment of the stakeholder's possession of power to influence the programme or legitimacy of the stakeholder relationship with the programme; and/or urgency of stakeholder claim on the programme (Kashaigili, 2014). Interest measures to what degree they are likely to be affected by the programme/project or policy change, and what degree of interest or concern they have in or about it. Power measures the influence they have over the programme/project or policy, and to what degree they can help achieve, or block, the desired change. The stakeholder analysis results are summarized in Annex 2.

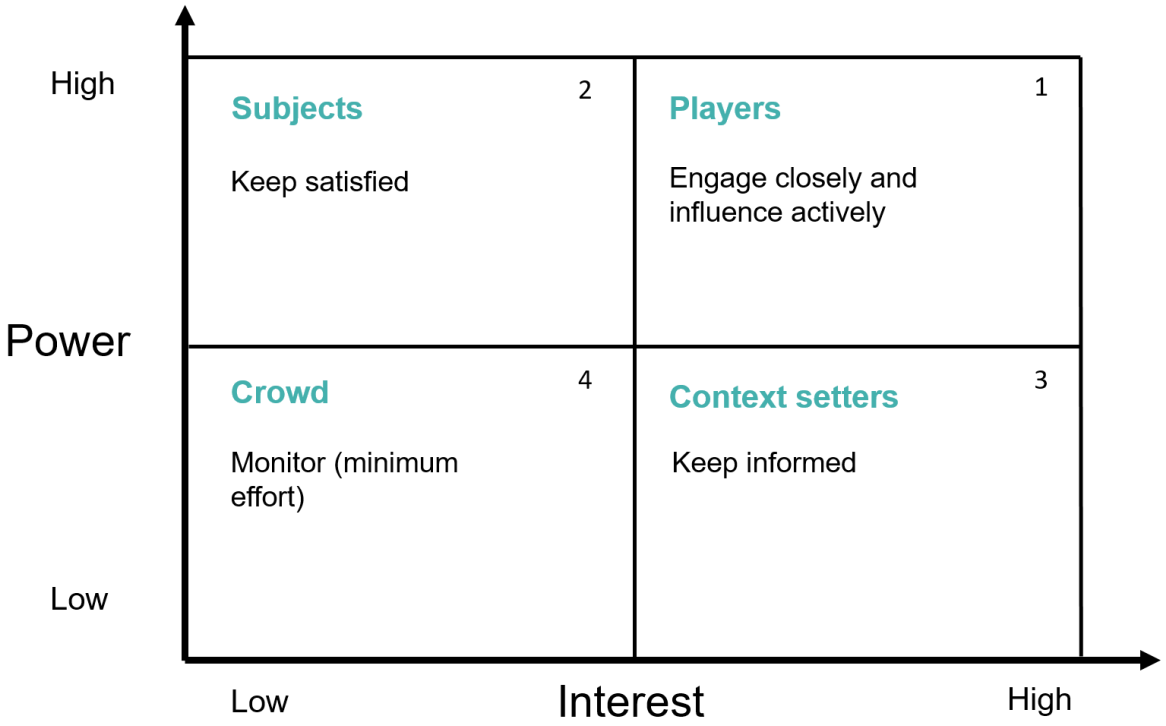

Figure 2. Stakeholder classification framework.

1. Stakeholders appearing to have a high degree of influence on the Development Corridors of Tanzania, who are also of high importance for its success. These are the people DCP project must fully engage and make the greatest effort with, e.g. senior officials and politicians (minister, prime minister) or trade unions.
2. Stakeholders with high influence, who can therefore affect the project outcomes, but less interested with the overall goals of the development corridors of Tanzania. These stakeholders may be a source of significant risk, and they will need careful monitoring and management. The programme should provide sufficient information to these people to ensure that they are up to date but not overwhelmed with data e.g. the Accountable Body (Management Board or Operations Committee).
3. Stakeholders of high importance to the success of the development corridors of Tanzania, but with low influence. This implies that they will require special initiatives if their interests are to be protected. These people should be kept adequately informed; the programme staff should talk to them to ensure that no major issues arise. These people can help with the detail of the project e.g. End Users, other Project Managers, and the Business Community.
4. Stakeholders with low influence and less interested in development corridors of Tanzania. These people should be provided with minimal communication to prevent boredom e.g. other departmental members, teams unaffected by the project.

3.4. Results of stakeholder analysis and mapping

3.4.1. Government ministries

The results of mapping of stakeholders for the “government ministries” are provided in Figure 3. Over 80% of the stakeholders under the “government ministries” fall within powerful and interested stakeholder in regards to development corridors in Tanzania.

Ministerial influences are through steering and implementing sectoral policies, strategies and plans which contribute to the corridor development. Out of 16 ministries that were analysed 13 were regarded as both powerful and interested, with the top 5 ministries being Natural Resources and Tourism, Works, Transport and Communication, Vice President's Office; Union Affairs and Environment, Energy and Minerals and Agriculture. These would be the most important ministerial stakeholders for the development corridors project to engage with in Tanzania.

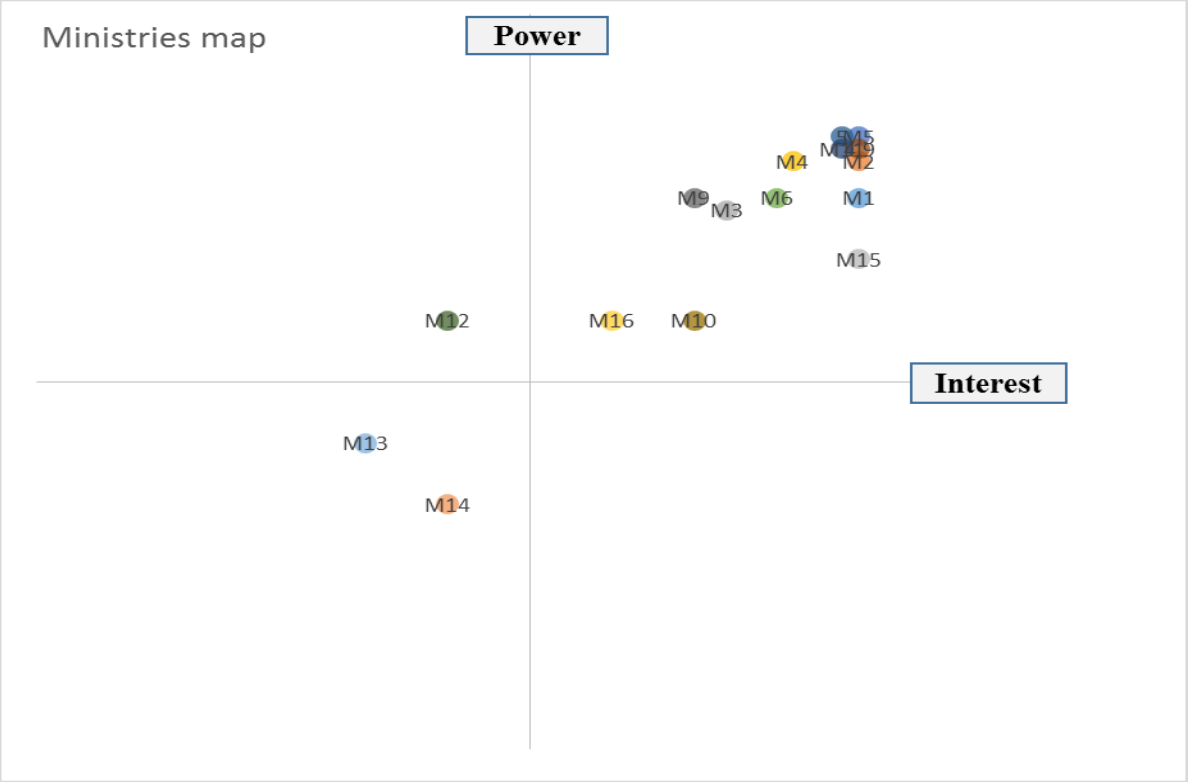

Figure 3. Power and influence diagram for Tanzanian ministries in relation to development corridors.

Key: M1= President's office; M2=Vice President's Office Union Affairs and Environment; M3=Water and Irrigation; M4=Agriculture; M5=Natural Resources and Tourism; M6=Lands, Housing and Human Settlements; M7=Energy and Minerals; M8=Works, Transport and Communication; M9=Livestock and Fisheries; M10=Finance and Planning; M11=Industry, Trade and Investment; M12=Education, Science, Technology and Vocational Training; M13=Health, Community Development, Gender, Elderly and Children; M14=Information, Culture, Arts and Sports; M15=Foreign Affairs, E.A.C., Regional and International Cooperation; M16=Home Affairs

3.4.2. Government agencies and authorities

Figure 4 shows influential power and interest of different Government Agencies and Authorities in development corridors of Tanzania. The Tanzania Investment Centre (TIC), National Development Corporation (NDC), National Environment Management Council (NEMC), National Land Use Planning Commission (NLUPC) and SAGCOT Centre Ltd are the most powerful and interested agencies with regards to the DCP project objectives and research priorities. Implementation of DCP project activities in the development corridors requires conforming to strategies and plans of these agencies. Example, project activities related to water and land resource may require to line up with the existing Integrated Water Resource Management and Development Plans (IWRMDP) and National Land use plan. For this matter it is important to engage these agencies from the beginning of the project implementation.

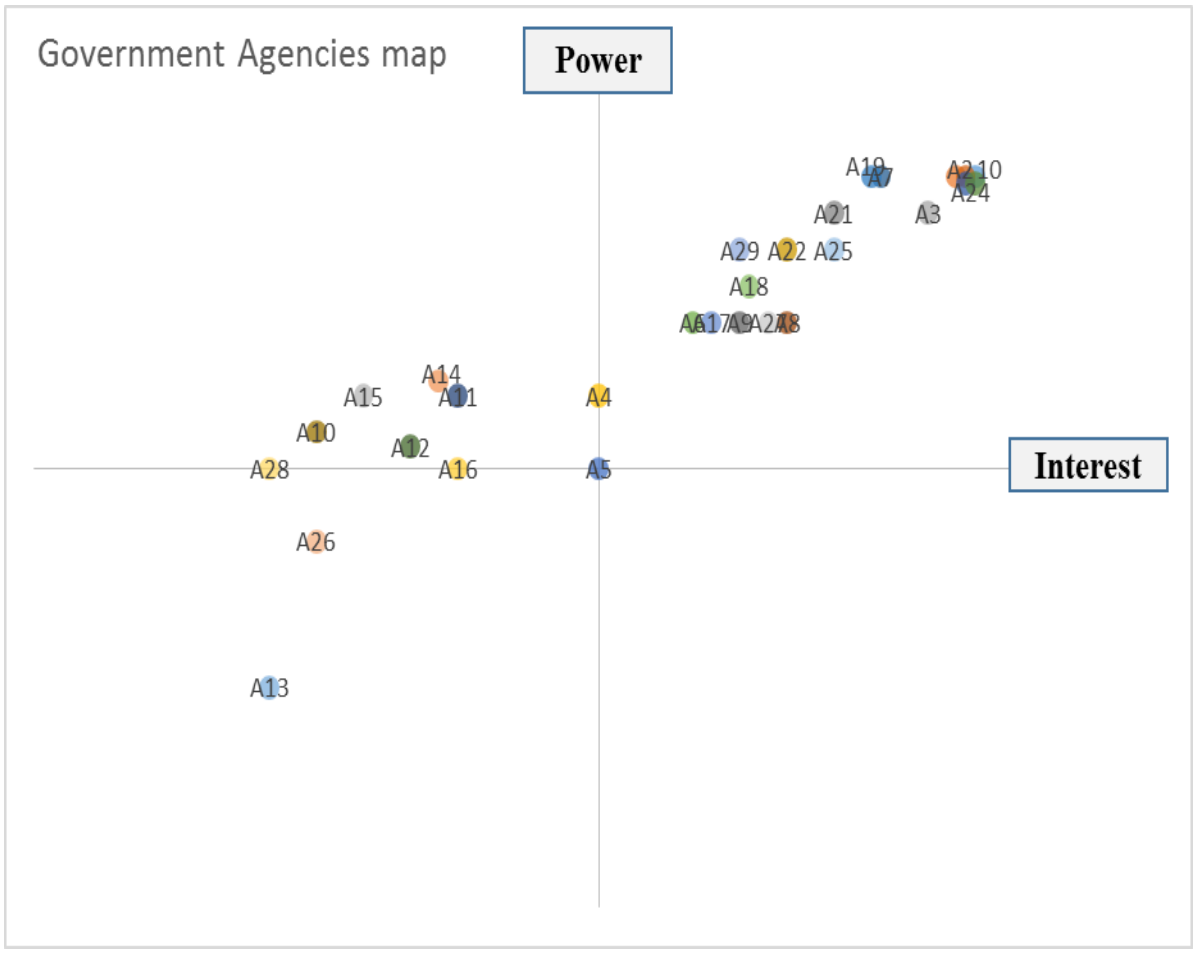

Figure 4. Power and influence diagram for Government Agencies and Authorities in relation to development corridors.

A1 = SAGCOT Centre LTD; A2 = Tanzania Investment Centre (TIC); A3 = National Development Corporation (NDC); A4 = Tanzania Petroleum Development Corporation (TPDC); A5 = Reli Asset Holding Company (RAHCO); A6 = Tanzania Ports Authority (TPA); A7 = National Land Use Planning Commission (NLUPC); A8 = Tanzania Electric Supply Company (TANESCO); A9 = Tanzania Roads Agency (TANROADS); A10 = Tanzania International Container Terminal Services (TICTS); A11 = Surface and Marine Transport Regulatory Authority (SUMATRA); A12 = Tanzania Revenue Authority (TRA); A13 = Marine Services Company Limited (MSCL); A14 = Tanzania Chamber of Commerce Industries and Agriculture (TCCIA); A15 = Tanzania Truck Owners Association (TATOA); A16 = Tanzania Bureau of Standards (TBS; A17 = Dar es Salaam Corridor Group Ltd (DCG); A18 = Tanzania Road Haulage (1980) Ltd (TRH); A19 = Rufiji Basin Water Board; A20 = Lake Rukwa Basin Water Board; A21 = Lake Nyasa Basin Water Board; A22 = Wami-Ruvu Basin Water Board; A23 = National Environment Management Council (NEMC); A24 = Tanzania National Parks (TANAPA)

3.4.3. NGOs, CBOs and CSOs

The stakeholder mapping for the "NGOs, CSOs and CBO" category is presented in Figure 5. The analysis revealed that WWF, TNC, IUCN, MVIWATA, TFCG, TRAFFIC, ECO-AGRICULTURE, RUDI and Frankfurt Zoological Society are among the stakeholders who can influence the implementation of DCP project. Their influence may be associated with their experiences in previous and/or on-going interventions in their respective areas of interest. For example, TFCG have carried out biodiversity inventories and assessments in the Udzungwa mountains ecosystem which cover parts of Kilombero and Ihemi clusters. TFCG has also previously participated in assessments of participatory forest management in Tanzania. MVIWATA as an overall umbrella organization for farmers in Tanzania is responsible for facilitating improvements in agriculture productivity for smallholder farmers by linking them with service providers (e.g. input providers, financial service providers, and

market infrastructure service providers). Eco-agriculture participated in the preparation of the SAGCOT green growth strategy which set out the basis for sustainable agriculture investment in the corridor. The strategy provides a sound and inspiring foundation for integrating climate change adaptation, mitigation, climate smart small-scale agriculture and community-oriented REDD+ for the SAGCOT initiative. Rural Urban Initiative (RUDI) which is a donor-funded service provider gives technical assistance and business support services to farmers associations in Kilombero district and Iringa region. For successful implementation of the project activities there is a need for cross fertilization of knowledge with these stakeholders so as to ensure mutual benefit.

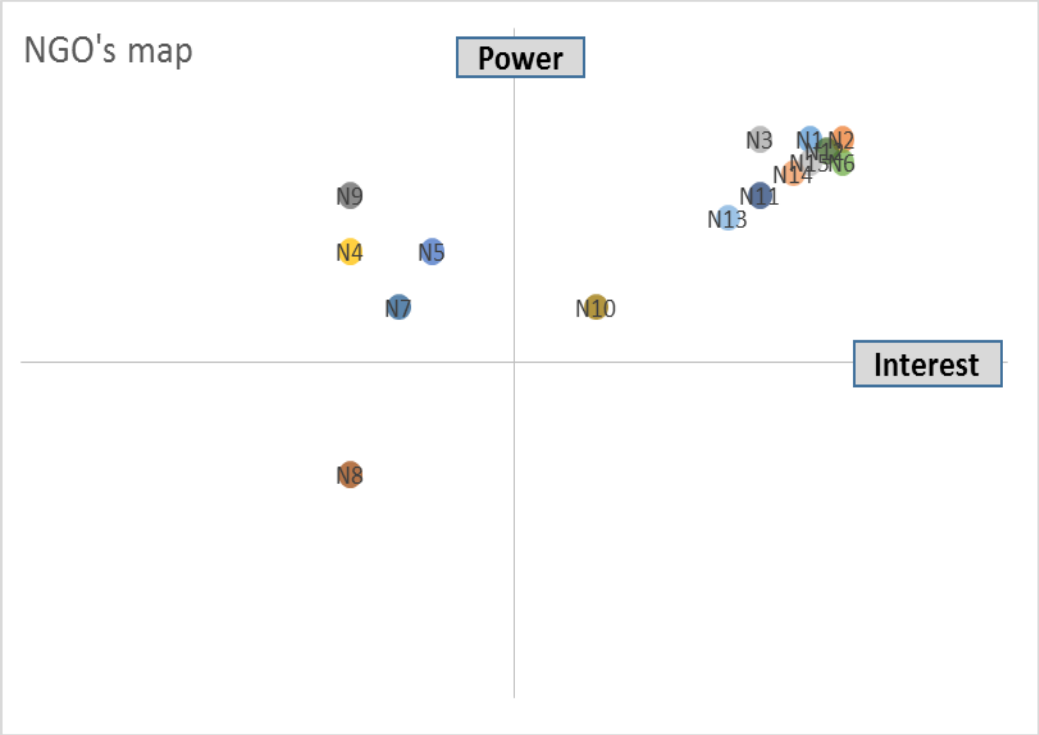

Figure 5. Power and influence diagram for NGOs, CBOs and CSOs in relation to development corridors.

NI = International Union for Conservation of Nature (IUCN); N2 = Worldwide Funds for Nature (WWF); N3 = Wildlife Conservation Society (WCS); N4 = Mpingo Conservation and Development Initiative (MCDI); N5 = Tanzania Forest Conservation Group (TFCG); N6 = Mtandao wa Vikundi vya Wakulima Tanzania (MVIWATA); N7 = Agricultural Council of Tanzania (ACT); N8 = Tanzania Horticultural Association (TAHA); N9 = FZS (Frankfurt Zoological Society); N10 = TRAFFIC; N11 = RUDI; N12 = RUBADA; N13 = CARE; N14 = Eco-Agriculture; N15 = TNC.

3.4.4. Corridor investors

The stakeholder mapping for the “investors” category is resented in Figure 6. Of the 21 investors that were analysed, 10 are regarded as both powerful and interested stakeholders. The stakeholders under this category with influence in the implementation of the DCP project include the ASAS Dairies; Kilombero Plantations Limited; UNILIVER tea plantation, Sao Hill forest plantation; Green Resource Ltd, Private Forest Company, New Forest Company, Silverland Limited and Kilombero Sugar Plantation. The rest of the investors fall under stakeholders with high influence, who can therefore affect the project outcomes, but less interested with the overall goals of the DCP project.

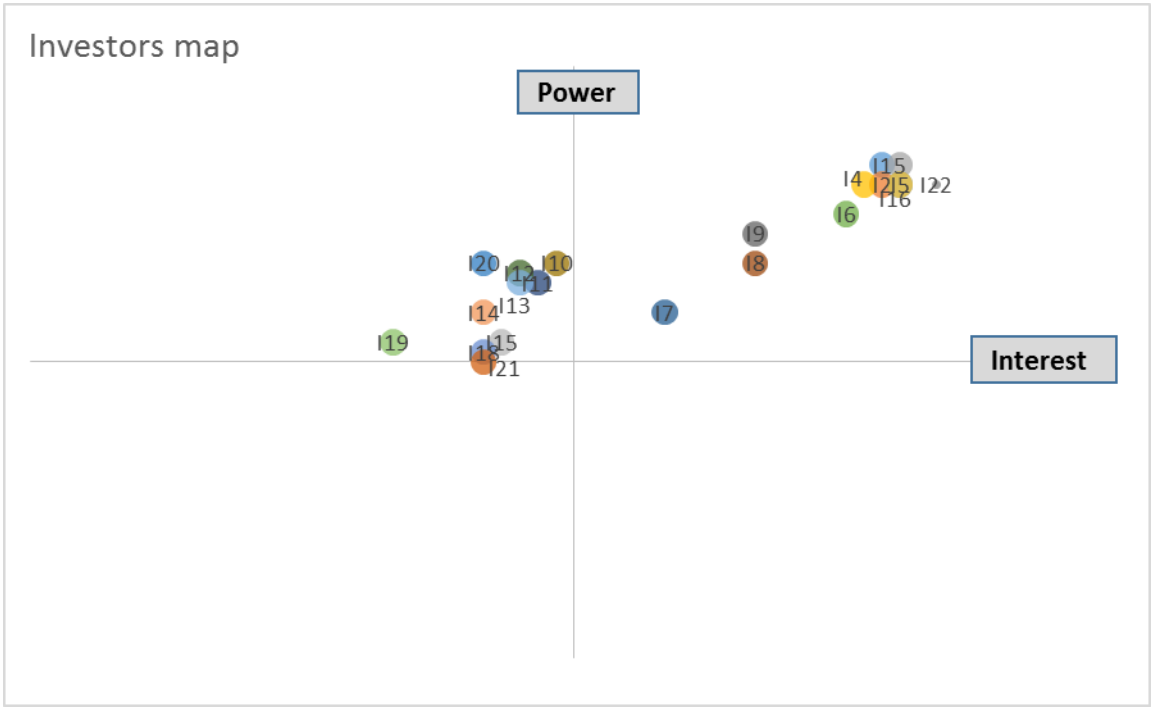

Figure 6. Power and influence diagram for Investors in relation to development corridors.

I1 = Sao Hill forest plantation; I2 = UNILIVER Tea plantation; I3 = Green Resource; I4 = Private forest program; I5 = New Forest Company; I6 = Kilombero plantations Limited; I7 = MtendaKyela rice supply Limited; I8 = Silverlands Limited; I9 = Clinton development initiative; I10 = Standard Gauge Railway (SGR); I11 = Mkunju Uranium project; I12 = Mchuchuma Coal mining; I13 = Liganga iron mine; I14 = DANGOTE cement Limited; I15 = Mnazi bay gas; 16 = Tanga Economic Corridor limited; I17 = HOIMA pipeline project; I18 = Tanga Cement; I19 = Mlenge Rice project; I20 = Mbarali rice project; I21 = Mbeya Cement

Overall, the analysis shows that the most relevant and influential stakeholders for the DCP project who are necessary to engage and work with are the Ministry of Natural Resources and Tourism, Ministry of Works, Transport and Communication, Vice President's Office Union Affairs and Environment, Ministry of Energy and Minerals, Ministry of Agriculture, Tanzania Investment Centre (TIC), National Development Corporation (NDC), National Environment Management Council (NEMC), National Land Use Planning Commission (NLUPC), SAGCOT Centre Ltd, WWF, TNC, IUCN, MVIWATA, TFCG, TRAFFIC, ECO-AGRICULTURE, RUDI, Frankfurt Zoological Society, ASAS Dairies, Kilombero Plantations Limited, UNILIVER Tea Plantation, Sao Hill forest plantation, Green Resource Ltd, Private Forest Company, New Forest Company, Silverland Limited and Kilombero Sugar Plantation.

4. Development corridors and investment processes in Tanzania

4.1. Investment agreements

Tanzania is a member of a number of agreements collectively known as the Investment/trade agreements or the WTO's agreements often referred to as the Final Act of the 1986-1994 Uruguay Round of trade negotiations. These agreements fall under 3 categories i.e. Multilateral Agreements, Bilateral Treaties and Regional Treaties.

4.1.1. Multilateral agreements

Tanzania is a member of both the International Centre for Settlement of Investment Dispute (ICSID) and Multilateral Investment Guarantee Agency (MIGA). Disputes arising between the government and investors are normally settled cordially through negotiations or may be submitted for arbitration before the above international bodies (UNCTAD, 1998; 1999; 2001).

There are several conventions and agreements that fall under the multilateral agreements that may influence investments in the development corridors. These include the Conventions on the Recognition and Enforcement of Foreign Arbiter Awards of 1958 came into force on 7th June 1959, the Convention on Settlement of Investment Disputes between States and Nationals of Other States of 1965 came into force on 14th October 1966 and the Convention Establishing the Multilateral Investment Guarantee Agency of 1985, came into force on 12th April 1988 (UNCTAD, 1998; 1999), the Marrakesh Agreement Establishing the World Trade Organization of 1994, came into force on 1st January 1995, the Agreement on Trade-Related Investment Measures and the General Agreement on Trade in Services and Trade Related Aspects of Intellectual Property Rights (UNCTAD, 1998).These agreements recognize that widely varying standards in the protection and enforcement of intellectual property rights and the lack of a multilateral framework of principles, rules and disciplines dealing with international trade in counterfeit goods have been a growing source of tension in international economic relations (UNCTAD, 1999).The Paris Convention for the Protection of Industrial Property of 1883 (Revised in Brussels in --- 1900, Washington in 1911, The Hague in 1925, London in 1934, Lisbon in 1958 and Stockholm in 1967, and as amended in 1979) signed in 1994 (UNCTAD,1999; 2001).

4.1.2. Bilateral treaties

Tanzania has bilateral investment treaties with 19 countries and seven other investment agreements with regional economic blocks. The country is also a signatory to global investment instruments such as the International Centre for Settlement of Investment Disputes (ICSID), the New York Convention, and the UN Guiding Principles on Business and Human Rights. Tanzania is a member of the East African Community (EAC), which signed a Trade and Investment Framework Agreement (TIFA) with the United States in July 2008. Under the US EAC Trade and Investment Partnership Initiative, the United States and EAC are seeking to expand trade and investment ties and dialogue with the private sector. Tanzania has signed a number of bilateral treaties related to trade and development cooperation (UNCTAD, 1999; 2001). These include bilateral treaties for the promotion and protection of foreign direct investment with: Germany signed on 30th January 1965 and came into force on 12th July, 1968, Netherlands, signed on 14th April, 1970 and came into force on 28th June, 1972, Switzerland signed on 3rd May 1965 and came into force on 16th September 1965 and the United Kingdom signed on 7th January 1994 but did not come into force, Bilateral Investment Treaties, 1959 – 1995 (Geneva, United Nations, February, 1996) and Bilateral investment treaties for the avoidance of double taxation (in force unless otherwise stated) with Denmark, India, Italy, Norway, Sweden, and Zambia.

4.1.3. Regional treaties

Tanzania has signed the Fourth ACP-EEC Convention (LOME IV) of 1989, which came into force on 1st March 1990; Charter on a Regime of Multinational Industrial Enterprises (Mills) in the Preferential Trade Area for Eastern and Southern African States (UNCTAD, 1999).

China Tanzania Economic Relations

Tanzania is China's largest aid recipient country in Africa. Since 1964 China has provided various kinds of assistance to Tanzania (Lu and Kweka, 2013; Pigato and Tang, 2015). The largest Chinese-supported projects in Tanzania include the Tanzania Zambia Railway (TAZARA), Friendship Textile Mill, Mbarali Rice Farm, Kiwira Coal Mine, Mahonda Sugar Factory and Mtwara gas pipeline (Fujita, 2017).

China Tanzania Trade

China is Tanzania's third highest export partner by export volume after India and South Africa. In 2014, Tanzania's export to China amounted to USD 684 million, represented mostly by oilseeds, precious metal ore, copper ore, and refined copper (Fujita, 2017). China is Tanzania's second highest import partner by volume of import after India. In 2014, Tanzania's import from China amounted to USD 2 billion. Tanzania imports a variety of products from China, including rubber tires, motorcycles, motor vehicles and iron structures (Fujita, 2017).

China Foreign Direct Investments

The investment of China Foreign Direct Investments (FDI) to Africa through Tanzania Chinese FDIs at the end of 2014 was USD 24.5 billion representing 14% of China's total FDI according to the World Resources Institute (Pigato and Tang, 2015). Tanzania accounted for 16.3% of China's FDI to Africa with USD 4 billion in 2014. An increase of 100% from the total Chinese FDI recorded in Tanzania at the end of 2013 (Lu and Kweka, 2013; Pigato and Tang, 2015). At the end of 2015, the Tanzanian Government announced that over 100 Chinese investors will set up their businesses in the country, as part of a five-year program backed by the China Africa Development Fund (URT, 2015a).

4.2. Regulatory context of investments

4.2.1. Tanzania investment guide

Tanzania Investment Centre (TIC) is a government agency initiated by the Tanzanian investment Act of 1997. It was established as the chief government agency to encourage, promote, coordinate and enable investments in Tanzania. The Tanzania Investment Centre is a one stop facilitation centre for investors, assisting in acquisition of licenses, permits for land access and visas. Furthermore, TIC has the authorization to oversee public-private partnerships (PPPs) under the 2010 PPP Act that lays down a framework for build-operate, transfer activities with private companies (TIC, 2018).

TIC also encourages trade opportunities and investments in agriculture, natural resources, manufacturing, oil and gas exploration and production, real estate, financial services, mining, telecommunication, transportation and energy infrastructure, services - tourism and real estate, broadcasting, education sector, insurance, health sector, security services, water and sanitation, construction industry and integrated waste management (TIC, 2018).

The role of TIC falls under three categories of services that is research, promotion and facilitation, supervised under three units namely; research unit, promotion unit and facilitation unit. Research undertaken by TIC aims to reveal areas with potential for investment opportunities. Also, this unit is responsible for monitoring and evaluation of projects implemented in the identified potential areas. Promotion unit has the function of advertising and marketing areas that are identified as potential for investment. Facilitation unit has the function of supporting and assisting investors who are interested in investing in identified potential areas.

There is a step-by-step guide to investment procedures for both local and foreign investors in Tanzania, which is available at TIC website (http://www.tic.co.tz/). An online database designed to provide investors and entrepreneurs with full transparency on investment related procedures in Tanzania is available to any investor on the TIC portal through the Tanzania e-Regulations.

4.2.2. Land acquisition for investment in Tanzania

For the purposes of land management, land is classified as general land, village lands, and reserved land. The President as the trustee is the only mandated authority to transfer land from one category to another (URT, 1997). Investors can obtain land from general land or from village land. Land ownership is by means of obtaining right of occupancy for citizens. Non-citizen investors may occupy land for investment purpose through a government granted right of occupancy, through derivative right granted by Tanzania Investment Centre or sub lease through a granted right of occupancy. Right of occupancy and derivative right may be granted up to 99 years and are renewable (TNRF, 2012; TIC, 2018).

Reserved land include national parks, forest reserves and wildlife conservation areas. Altogether they constitute 28% of all land area in Tanzania. Village land fall under the jurisdiction of existing registered villages in the country which constitute nearly 70% of the total land area.

General land belong to all land under granted titles which is under the jurisdiction of the Commissioner of land. Procedure on how to apply for village or general land is available at http://tanzania.eregulations.org/procedure/286/165?l=en.

All investors are required to conform to different sectoral acts and policies while investing in Tanzania. Some of the relevant major Policies/Acts include Advocates Act 1955; Business activities registration Act 2005; Business Licensing Act No 25 of 1972; Company Act 2002; EAC Customs Management Act 2004; EFD regulation 2010; Electricity Act, 2008; Fees payable to Registrar - Regulations, 2014; Immigration act 1995; Immigration Regulation, 2012; Income tax act 2008, Revised edition; Local government finance Act 1982; Notary Public Act 1928; NSSF Act no.28 of 1997; Parastatal pension fund act 1978; Public Private Partnership Act, 2010; Public Private Partnership Policy; Public Private Partnership Regulations, 2010; Rural Energy Act, 2005; Social Security Regulatory Authority act 2008; Stamp duty Act 2006; Subsidiary legislation of the Tanzania Investment Act 1997; Tanzania Investment Act 1997; Tanzania Revenue Authority Act 2006; The Business Names (Registration) Act (Cap. 213); The Land Act 1999; Value Added Tax Act, 2014 and other sectorial acts and policies related to targeted investments (TIC, 2018).

4.2.3. Existing Initiatives that cut across all development corridors in Tanzania

Development Initiatives are designed to unlock inherent potential in local primary production (agriculture, livestock, forestry and minerals production); and to link localized production to regional and global markets through trade using efficient transport infrastructure connecting to logistics and trade hubs that supply domestic and regional markets, as well as to gateway ports for international trade (Simbakalia, 2018). Hence, the Development Initiative settings provides for synchronized and coordinated public and private sector investments. Furthermore, the initiative settings provides for local economic development and social services delivery programs to be integrated and coordinated with large scale and macro-economic setting of the host development corridors of Tanzania. In that way, growth,

development and positive social transformation can be realized concurrently with poverty reduction (Simbakalia, 2015). There are several existing initiatives which are specific to certain development corridor and others cut across all development corridors of Tanzania. The following are development initiatives which cut across all development corridors of Tanzania:

Mtandao wa Vikundi vya Wakulima Tanzania (MVIWATA)

MVIWATA is a Swahili acronym that stands for *Mtandao wa Vikundi vya Wakulima Tanzania* (National Network of Small-Scale Farmer Groups in Tanzania). MVIWATA is a national farmers' organisation which brings together smallholder farmers from all regions of Tanzania in order to have a common voice to defend their economic, social, cultural and political interests. Founded in 1993, MVIWATA aspires to empower smallholder farmers economically and socially through capacity building, lobbying and advocacy especially by strengthening their groups and networks, facilitating communication and learning so that they are capable of defending their interests.

Rural Urban Development Initiatives (RUDI)

The Rural Urban Development Initiatives (RUDI) is a private sector development organization based in Dar es Salaam, Tanzania. It is one of the local NGOs, which deals with empowering micro-small enterprises (MSE) and farming communities through improved market linkages and distribution channel for their products. RUDI activities are targeted at building strategic partnership and strong business associations especially within farming communities that can formulate and advocate policy reform measures, improve market linkages through information sharing, facilitate access to credit and expand production (crop/product) through business skills management training.

Tanzania Agriculture Development Bank (TADB)

The Tanzania Agricultural Development Bank (TADB) was established by the Government of Tanzania to assist in implementing policies and strategies relating to the agricultural sector. The TADB is dedicated to contributing significantly to the development of agriculture in Tanzania through mobilizing financial resources and supporting smallholder farmers with low interest loans.

Centre for Sustainable Development Initiatives (CSDI)

The Centre for Sustainable Development Initiatives (CSDI) was established in 2002 and works as a partner organization to the United State African Development Foundation (USADF) which is responsible for implementing the USADF program in Tanzania. This program focuses on supporting Small and Medium Enterprises (SMEs) development mainly through provision of grants and technical assistance. CSDI has over 10 years of experience in working with SMEs (particularly agro-processing value addition) and other grass roots organizations.

4.3. Investment risks

Tanzania is among the preferred destinations for foreign investments in Africa. It offers a number of strategic advantages to investors and businesses, including a wealth of natural resources and a government that is becoming increasingly open to foreign participation in the economy of the country. It is among the 10 biggest recipients of Foreign Direct Investment in Africa and ranks at 37.5% for Trade and Investment Risk. Investors are

attracted to the country's commitment to implementing sound macro-economic policies, its effective privatisation programme and rich natural resources. However, low levels of industrial development, environmental concerns, inadequate transparency and poor compliance with legislation are obstacles to investments.

According to Tanzania Trade and Investment Risk Report Q4 (2016), risks for investment in Tanzania are attributed to legal risks (underlining the high risk in the country's burdensome bureaucratic environment and a corrupt and under-resourced judiciary), government intervention (limitations of the country's banking and financial development as well as rising tax requirements) and economic openness (lack of critical infrastructure and inadequate network for logistics)

Moreover, Tanzania's economy is very dependent on the climate because a large proportion of GDP is associated with climate sensitive activities, particularly agriculture. Because of this sensitivity, periodic droughts and floods cause major socio-economic investment risk and reduce economic growth. The economic costs of these events affect the whole economy. Major drought years lead to the loss of crops and livestock, reduce hydro-power generation and electricity supply, and reduce industrial production. The 2005/6 drought affected millions of people and costs of at least 1% of GDP. A study by the Global Climate Adaptation Partnership and partners (2011) disclosed climate change induced investment risk by sectors in Tanzania as follows.

4.3.1. Social and economic risks

Tanzania contains high human populations, significant economic activity and important ecosystem services within different agro ecological zones. Coastal areas of Tanzania are at risk from future sea-level rise due to the effects of climate change. Without adaptation, the physical, human, and economic impacts will be significant.

The agriculture sector is the mainstay of Tanzania's economy, as well as having a key role in sustaining livelihoods. It is also a very climate-sensitive sector. Climate change has the potential to exacerbate current production risks in agriculture, either from changes in temperature and rainfall trends, from enhanced variability, or from other effects.

Climate change will affect energy supply and demand. On the supply side, hydropower currently provides 55% of the country's power generation, and has been affected heavily by drought events in recent years. This has induced high costs (~$70 million) from the use of incremental thermal generation plants, and reduced economic growth in drought years by more than 1% due to electricity shortages

4.3.2. Natural risks

Climate change has the potential to affect water availability, as well as potentially exacerbating the pattern of extreme dry events. Water is a critical sector for Tanzania economically and supports livelihoods through fishing and traditional farming irrigation systems, as well as terrestrial and aquatic ecosystems including associated ecosystem services.

While there are some potential benefits to forests from climate change, there are also many risks, either directly (changing temperature, precipitation and variability including extremes) and indirectly (including effects on soil, moisture, pests and diseases, fire risk). These may affect growth, forest health, wider biodiversity and even system stability, with potentially irreversible losses. These impacts in turn will reduce the services and economic value that forests provide, including direct provisioning services (timber, fuel wood, building material),

supporting and regulatory functions (soil erosion and flood protection, carbon storage, climate change mitigation), and cultural and tourism values.

4.3.3. Community risks

Climate change is likely to affect human health in Tanzania. This may happen directly, with the effects of heat extremes or flood injury, or indirectly, through changes in the transmission of vectors, food or water-borne diseases. There are also a wider set of indirect impacts from climate change on health, which are linked to other sectors such as food security and malnutrition).

5. Climate change in Tanzania

Climate change is a global problem, although the associated impacts and adaptation strategies vary across the Globe (New *et al*., 2006; Ehrhat and Twena, 2006). Developing countries are expected to be severely affected by climate change (Kurukulasuriya and Mendelsohn, 2008). These countries are reported to be more vulnerable to climate change impacts because the majority of the population depend on rain-fed agriculture for food and livelihoods (Morton, 2007; IPCC, 2007; Boko *et al*., 2007). Climate variability has a direct adverse influence on agricultural production in Africa because nearly 80% of agricultural production is rainfall and temperature dependent (Thornton, 2011). Africa is particularly vulnerable to climate change impacts, which will disproportionately affect the continent's small-scale and subsistence farmers (IPCC, 2007).

National economies, livelihoods and social wellbeing across Africa are highly vulnerable to climate variability and the additional challenges imposed by human induced climate change are likely to be formidable. Adequate funding and technological assistance to build resilience and support adaptation are required, and appropriate institutional arrangements are needed to facilitate this, possibly under a legally binding framework (URT, 2007).

Tanzania's economic base is dependent on the use of natural resources, rain-fed agriculture and biomass for household energy. The economy is highly vulnerable to the adverse impacts of climate change and to extreme weather events. Measurements from different agro-ecological zones in the country have shown a steady increase in temperature for the past more than 30 years, unpredictable rainfall, shifts and shortening of the growing season and increase in the probability of dry spells, (URT, 2007; Munishi et al 2010). The increasing temperatures and unpredictability of rainfall have caused adverse impacts and risk to various economic sectors essential for Tanzania's livelihood and sustenance, including water resources, energy generation, food security, ecosystems/biodiversity and human health. In the most vulnerable communities, the impacts of climate change pose a direct threat to people's survival. Climate change is already having significant impacts in Tanzania and will affect the country's ability to achieve the Sustainable Development Goals (SDG).

Tanzania's precipitation is governed by two rainfall regimes. Bimodal rainfall, comprised of the long rains of *Masika* between March-May and short rains of *Vuli* between October-December. The country can be roughly divided into four main climatic/topological/agro-ecological zones:

(a) The lowland coastal zone

This zone can further be divided into three sub-zones: the wet sub-zone, between 0 to 500 meters above sea level (m asl), with 1,800 mm of annual rainfall on average;

humid sub-zone, between 500 to 1000 m asl with an annual rainfall of between 1000 and 1,800 mm; and the drier zone, about 1,000 m asl, with less than 1,000 mm of rainfall per annum.

(b) The highlands zone

This comprises of the North-eastern Highlands, which include the Usambara Mountains, Mt. Kilimanjaro and Mt. Meru; the Southern Highlands, which include Mt. Rungwe, Livingstone ranges, and Mt. Mbeya. These are generally areas of high precipitation with high catchment values.

(c) The plateau zone

Comprise of areas round Lake Victoria and much of western Tanzania, with an average rainfall of up to 1,000 mm.

(d) The semi-desert zone

This zone fall mainly central Tanzania, comprising the regions of Dodoma, Singida and Shinyanga and part of north eastern in the regions of Arusha, Mwanza and Mara. This zone has a rainfall of less than 600 mm per annum.

5.1. Expected impacts of climate change

Climate change scenarios developed during the National Communications (1990, 2014) and NAPA (2007) processes indicate that the country is likely to undergo an increase in mean daily temperature as well as in the temperature of the warmest and coolest months. The results indicate that mean annual temperatures are projected to rise by 2.2°C by 2100, with somewhat higher increases (2.6°C) over June, July and August, and lower values (1.9°C) for December, January and February.

Annual precipitation over the whole country is projected to increase by 10% by 2100, although seasonal declines of 6% are projected for June, July and August, and increases of 16.7% for December, January and February. These overall increases are nuanced regionally, with some parts of Tanzania projected to experience an increase in annual rainfall, while others are expected to experience decrease. Munishi et al., (2010)[3] observed that the country is not homogenous with respect to climate and different parts will experience differential impacts of climate change. The number of rain days has decreased meaning that the growing season has shortened in most parts. On the other hand the rainfall start and cessation dates show to have either increased or decreased. This means that rainfall start and ends earlier in different parts or starts late and ends earlier, an indication of a shift in the growing season over most parts of the country. The probability of dry spells has increased over most parts of the country threatening crop growth and maturity. Each sector has different vulnerability requiring different adaptation measures. It is estimated that Tanzania will have an annual loss of GDP of US$ 63.2 mill by 2060. The potential losses due to energy production on the GDP has been estimated at US$ 66 mill per year, that due to infrastructure damage resulting from climate change is conservatively estimated at US$ 1.12 mill per year (Munishi *et al.,* 2010).The National Vulnerability and Adaptation Assessment of Tanzania under the National Communication predict increased and modified

[3] PKT Munishi, Deo Shirima, Happiness Jackson and Halima Kilungu (2010). Analysis of Climate Change and its Impacts on Productive Sectors, Particularly Agriculture in Tanzania.

climate variability. For example, northern and south-eastern sectors of the country would experience an increase in rainfall ranging from between 5% and 45%. The central, western, south-western, southern, and eastern parts of the country might experience a decrease in rainfall of 10% to 15%. The southern highlands might similarly experience a decrease of 10%, which could alter the suitability of this area for maize cultivation.

The overall average figures for climate change mask potentially more complex seasonal variability patterns. For instance, the north-eastern sector might experience an increase of 25%-60% in the short rains and an increase of 20-45% in the long rains, and the north coastal region might get an increase of 0-20% in the short rains and a decrease of 0-10% in the long rains. Additionally, the timing of rains will become less predictable and their intensity is likely to become more volatile. While there are no precise predictions of sea level rise for Tanzania, the IPCC has predicted a global average sea level rise of between 18 and 89 cm by 2100. Impacts on the Indian Ocean are expected to be highly variable, and impacts on the Tanzanian coastline and islands are also uncertain, due to variables such as currents and modifications of tidal patterns and overall regional climatic patterns. Consequently, Tanzanian government estimates are based on a conservative and a worst-case scenario of 50cm and 1m sea-level rise respectively (NAPA, 2007: Munishi *et al.,* 2010).

Warming temperatures are projected to cause more frequent and more intense extreme weather events, such as heavy rainstorms, flooding, fires, hurricanes, tropical storms and El Niño events (IPCC, 2001). Tropical storms can ravage coastal areas and intensify the impacts of sea-level rise by accelerating erosion in coastal areas and by removing protective natural buffer areas that absorb storm energy, such as wetlands and mangroves (Magadza, 2000). Extreme rainfall and subsequent heavy flooding damage will also have serious effects on agriculture including the erosion of topsoil, inundation of previously arid soils, and leaching nutrients from the soil.

All productive sectors of the Tanzanian economy and livelihoods will experience changes and, in most regions, increased vulnerability due to climate change (Munishi *et al.,* 2010) Table 3 shows the impacts of climate change resulting from climate change in Tanzania. The following are sectors which will be highly affected by climate change in Tanzania.

5.1.1. Agriculture

In areas where rainfall will increase, the leaching of nutrients, washing away of topsoil and water logging would affect plant development and thus affect plant growth and yield. Climate change is bound to promote the occurrence of diseases and insect pests due to both increased temperature and rainfall. For areas that will get less rainfall, irrigation will be required to substitute for moisture losses due to increased evapotranspiration and thus drought resistant varieties would be required more than at present.

5.1.2. Fisheries

Fisheries are expected to be impacted directly and indirectly through changes in habitat, potential destruction of breeding grounds and mangroves, and coral bleaching. As well as through changed patterns of consumption induced by decreased agricultural productivity during longer drought periods.

5.1.3. Water resources

Climate change is projected to have both positive and negative consequences for Tanzania‘s water-resources, specifically for the three major river basins: Ruvu sub-basin, Pangani, and Rufiji. The Ruvu sub-basin, of particular importance because it is upstream of

Tanzania‘s major population centre, Dar es Salaam, could experience a 10% decrease in runoff according to the Initial National Communication (URT, 2003; ETOA, 2012). In the Pangani basin which supplies water to the Tanga, Kilimanjaro, and Arusha regions, supporting a number of economically important activities, there is some seasonal variation with runoff projected to increase in some months and decrease in others, with annual basin runoff decreasing by an estimated 6%.

Rural communities often depend on streams and rivers for drinking water, and some of these tend to dry up during droughts and dry seasons (Table 3). Recurrent droughts have already had significant impacts throughout the country. In the coastal area, some saltwater intrusion in coastal aquifers and deltas can also be expected due to sea level rise and intrusion into shallow coastal rivers, as in the case of the Rufiji delta (Munishi *et al.,* 2010).

5.1.4. Energy

Under the climate change scenarios, runoff of three major rivers (Ruvu, Pangani, and Rufiji) will be altered. The reduced runoff in the three rivers which are economically important for supplying water and hydro-electricity to major towns, where industrial activities are highest in the country, would adversely affect socio-economic activities in the country. The five regions supplied are Dar es Salaam, Coastal, Tanga, Kilimanjaro and Arusha. These changes would adversely affect water supply and socio-economic activities, and most likely lead to an increase in deforestation for fuelwood supply (Munishi *et al.,* 2010).

In rural areas, wood fuels provide up to 92% of energy needs (Ministry of Natural Resources and Tourism, 2000). While at the moment about 29% of urban settlements have access to the electricity supply, decreased hydrological flows could raise the costs of urban energy, leading to a sharp increase in the demand for wood-based fuels (including charcoal).

5.1.5. Infrastructure

Studies undertaken prior to the National Communication and NAPA processes analysed vulnerability to a 50cm and 1m sea level rise, whereas IPCC estimates place global sea level rise predictions at between 9 and 88 cm by 2100. Estimates show that in Dar es Salaam and Coast region, a total of 14,757 ha and 29,485 ha could be inundated by a sea level rise of 0.5m and 1.0m respectively. In Tanga the areas could cover 2,022 ha and 4,045 ha and in Mtwara and Lindi the inundated areas could reach 7,922 ha and 15,855 ha by a sea level rise of 0.5m and 1.0m respectively. Total potential land loss is estimated to be 247 square km and 494 square km by a sea level rise of 0.5 m and 1.0m, respectively. In addition, stronger storm surges, stronger winds and cyclones may also have impacts on coastal infrastructure, and increase coastal erosion. Along the Dar es Salaam coastline (approximately 100km), the estimated loss of important structures is estimated to cost TZS 49,83 billion and TZS 85.972 billion for a sea level rise of 0.5 m and 1.0 m respectively.

Table 3 provides an overview of predicted impacts of climate change in Tanzania which are further developed in the following sections.

Table 3. Impacts of climate change in Tanzania (source: Munishi et al., 2010).

Areas	Higher temperatures	Increased drought	Increased rainfall & shift in seasonality	Sea level rise	Impacts
Communities	Shifts in disease vector habitats / incidence of malaria; respiratory problems	Increased of water related disease; food shortage; water conflict; famine. 2 million affected by food shortages in 2006/7; 3 million in 1996/7	Increased of waterborne disease; flood/ landslide risk	Inundation in low lying coastal areas; possible elevated salinization of coastal aquifers	Conflict; health burdens and risks; economic costs; poverty; inequity
	Shifts in the viable area for coffee and cash crops; reduced maize output; higher evapotranspiration on losses	Crop failure; reduction in grazing lands and stock loss	Elevated erosion, land degradation crop loss; change in crop yields/ disease	Limited to potential impacts on marine coastal fisheries	Food insecurity; economic shocks; loss of incomes and livelihood options; poverty
Built	Increased evaporative losses; damage to roads; cooling costs	Significant implications for HEP; water shortage	Flood damage to infrastructure, transport, communications and settlements. Only 3% of roads are sealed	Coastal inundation on and modification to port facilities- US $85 million damage in Dar es Salaam with 0.5m rise	Economic loss and growth volatility; reduced reliability of HEP; migration
Natural	Biodiversity loss as niches are closed out; changing ecosystem dynamics and production	Additional pressure on natural resource use (forests & fisheries)	Shift in habitats and growing seasons	Potential impacts on marine coastal ecosystems	Impacts on biodiversity and agro-ecological systems; fishery productivity deforestation

5.2. National strategies, plans, and institutions relevant to climate change

The Government of Tanzania recognizes the adverse impacts of natural disasters and climate change and has put in place relevant legislation to address the challenges. The key policy documents reviewed include: National Adaptation Programme of Action (NAPA, 2007), Tanzania National Development Plan (2016/17- 2020/21), National Climate Change Strategy 2012, Intended Nationally Determined Contribution (INDC), 2015.

In addition, there are climate relevant sector specific strategies which include: National Guidelines for Mainstreaming Gender into Climate Change Related Policies, Plans, Strategies; Tanzania Climate Change Gender Action Plan; Tanzania Agriculture Climate Resilience Plan, 2014–2019; The National Climate Change Communication Strategy; Guidelines for Integrating Climate Change into National Sector Policies, Plans and Guidelines, 2013 and the Disaster Management Act 1990. While the policies on climate change are in place, challenges remain on commitment to implement actions with the necessary institutional coordination and inter-sectoral cooperation.

5.2.1. Initial National Communication (2003)

In 1996 Tanzania's ratified the United Nations Framework Convention on Climate Change (UNFCCC) and submitted its 'Initial National Communication on Climate Change' in 2003. This document covers both mitigation and adaptation, and includes information on greenhouse gas emissions, mitigation options, vulnerability assessments of key sectors, potential adaptation measures, and the policy and institutional context for responding to climate change.

5.2.2. Tanzania's National Adaptation Programmes of Action (2007)

The Tanzania National Adaptation Programme of Action (NAPA) was prepared in 2007 to identify immediate short-term priorities that could be addressed by the UNFCCC LDC fund for adaptation to climate change effects. The NAPA ranks sectors according to priority and identified 14 priority actions:

1. Increase irrigation by using appropriate water efficient technologies to boost crop production in all areas.
2. Introduce alternative farming systems and relocation of water sources, including wells along low-lying coastal areas.
3. Develop water harvesting and storage programmes for rural communities particularly those in dry lands.
4. Launch community-based water catchment, conservation and management programmes.
5. Explore and invest in alternative clean energy sources, e.g. wind, solar, bio-diesel, etc.
6. Promote application of cogeneration in the industrial sector.
7. Conduct forestation programmes in degraded lands, using more adaptive and faster-growing tree species.
8. Develop community forest-fire prevention plans and programmes.
9. Establish and strengthen community awareness programmes to address major preventable health hazards.
10. Implement sustainable tourism activities.
11. Enhance wildlife extension services and assistance to rural communities in managing wildlife resources.

12. Introduce water harvesting and recycling.
13. Construct artificial structures, e.g., sea walls, artificially placing sand on the beaches and coastal drains, beach management system.
14. Establish a good land tenure system and facilitate sustainable human settlements.

5.2.3. National development plans and sectoral strategies

Tanzania has a Joint Assistance Strategy and associated direct general budget support for implementation of the National Strategy for Poverty Reduction and Economic Growth, more commonly known as MKUKUTA. The initial MKUKUTA ended in 2010 and was replaced by MKUKUTA II. The first MKUKUTA made no mention of climate change and whilst 'environment' was said to be mainstreamed into the plan, the indicators used were poor and very little was achieved within the plan to support climate change adaptation in the country. The opportunities look more promising for MKUKUTA II with some sectoral studies were done to examine how climate change adaptation can be integrated (Munishi *et al.,* 2010), and a designated consultation process organised by an Informal Discussion Group on the Environment (IDGE) to champion more focus on environment in development plans.

Water Sector Development Programme Phase II (2014/2015 – 2018/2019). The water sector is the focus of significant reform and investment through the implementation of the Water Sector Development Programme. The programme focuses on infrastructure investment and provision for urban and rural water supply and sanitation alongside implementation of a reformed water resource management regime. The successful implementation of the Water Sector Development Programme may improve resilience to climate change though there is little explicit attention to climate change impacts within the strategy or the sector. The Water Sector Development Strategy (WSDS) documentation confines discussion of climate change and extremes and their management to only two of thirteen chapters. The first focuses on the development of alternative resources (rainwater harvesting, wastewater reuse, desalination and inter-basin transfer) to supplement during times of scarcity. The second, relating to disaster management, recognizes that disaster mitigation has been based on remedial not preventative measures, and targets future efforts on the provision of early warning systems and contingency planning. The overall objective of Water Sector Development Programme Phase II is to ensure availability of water for socio-economic development and environmental sustainability. The focus of the strategy is implementation of Integrated Water Resources Management and Development (IWRMD) plans, considering Basins priorities and water sector climate change strategic action plan.

5.2.4. Agriculture and food security

Sectoral development plans including the Agricultural Sector Development Strategy (ASDS), the National Irrigation Master Plan (NIMP) and Kilimo Kwanza (Farming First launched 2010) promotes significant expansion of irrigated land in Tanzania to unlock rural and national development. Plans are based on analysis in the National Irrigation Master Plan of 2002 which suggested that Tanzania had 29.4 million hectares (now revised) suitable for irrigation whereas irrigation currently supports only 1 per cent of the alleged total potential area. Whilst expansion of irrigation is undoubtedly a major strategy for enhancing Tanzania's resilience to climate change, there is sparse consideration of future climate change within these planning documents and the estimates of irrigation potential are technically inadequate. Further, the pre-appraisal process and recent assessment for new irrigation schemes shows that there is no sufficient water for all planned agricultural projects in Tanzania especially in the SAGCOT.

5.2.5. Disaster management

Tanzania has endorsed the Hyogo Framework of Action, and the African Union Regional Disaster Reduction Strategy, which clearly commit countries to addressing disaster risks in a proactive and participatory way. The National Disaster Management Policy (2004) and the National Operational Guidelines for Disaster Management (2003), set the policy framework for coordination and cooperation for comprehensive disaster management among key players at all levels. Its goal is to mainstream disaster management activities as an integral part of development programmes in all sectors.

Institutional Framework:

(i) **National Climate Change Committee (NCCC)**: Advises the Department of the Environment on climate change related issues.
(ii) **Centre for Energy, Environment, Science, and Technology**: Houses the secretariat of the NCCC and offers technical and administrative support to the NCCC and climate change study teams.
(iii) **Tanzania Meteorological Agency**: Provides meteorological data as well as climate information and predictions to inform the country's planners.

5.3. Key players and initiatives

A number of adaptation-specific activities have been funded and implemented by bilateral donors, multilateral agencies and development banks in Tanzania (Table 4). Donor funded activities have tended to focus on documenting vulnerability in specific sectors, identifying and assessing possible adaptation measures, and developing action plans. Very little progress has been made on implementing adaptation. There are also a number of activities seeking to address non-climate stressors in various sectors that are important for adaptation, although their adaptation benefits are not explicitly monitored or evaluated.

Table 4. Climate change adaptation-specific activities in Tanzania.

Title	Lead Organization	Funding Source
Mainstreaming Climate Change in Integrated Water Resources Management in Pangani River Basin	United Nations Development Programme (UNDP)/Ministry of Water/Pangani River Basin Board	Global Environment Facility – Small Grants Program, Special Climate Change Fund
Community Based Adaptation to Climate Change in Africa	International Development Research Centre, Canada (IDRC)	Climate Change Adaptation in Africa (CCAA)
Managing Risk, Reducing Vulnerability and Enhancing Productivity under a Changing Climate	IDRC	Climate Change Adaptation in Africa (CCAA)
Improving Smallholder Livelihoods through Woodlots Management: An Adaptation to Climate Variability	UNDP/United Nations Environment Programme	Climate Change Adaptation and Development Initiative

and Change in Makete District, Tanzania		

5.4. Government adaptation priorities

The NAPA provides both a prioritization of sectors vulnerable to climate change and a set of six priority projects, listed in Table 5. Similarly, there are some adaptation strategies

Table 5. Government Adaptation Priorities of Tanzania (NAPA, 2007).

NAPA Prioritization of Sectors	NAPA Priority Projects
Agriculture and food security (including livestock) (1)	(i) Increase irrigation to boost maize production in all areas (1) (ii) Alternative farming systems (2) (iii) Make better use of climate and weather data, weather forecasts, and other management tools and expand climate and weather data collection network (3) (iv) Create awareness on the negative effects of climate change (4) (v) Increase the use of manure and fertilizer (5) (vi) Range management for livestock production (6) (vii) Change land use patterns (7) (viii) Drip irrigation for specific regions (8) (ix) Control pests, weeds, and diseases (9) (x) Biological control of tsetse fly (10) (xi) Promote indigenous knowledge (11)
Water (2/3)	(i) Develop alternative water storage programs and technology for communities (1/2) (ii) Promote water harvesting and storage facilities (1/2) (iii) Develop reservoirs and underground water abstraction (3) (iv) Community based catchments conservation and management programs (4) (v) Develop new water serving technologies in irrigation (5) (vi) Develop early warning systems on drought and floods (6) (vii) Development of recycle and reuse facility in industrial sector (7)
Energy (2/3)	(i) Explore and invest in alternative clean energy sources e.g. Wind, Solar, biodiesel, etc. (1) (ii) Develop community based mini-hydropower (2) (iii) Improve biomass to energy conversion efficiency (improved charcoal production technology, improved charcoal and wood stoves, use of biomass waste briquettes, biomass waste gasification, promote fuel crop) (3) (iv) Increase use of geo-thermal power generation (4) (v) Harness the proven coal reserves (5) (vi) Promotion of application of cogeneration in the industry sector (6) (vii) Enhance natural gas utilization (7)
Forestry (4)	(i) Afforestation programmes in degraded lands using more adaptive and fast-growing tree species (1)

NAPA Prioritization of Sectors	NAPA Priority Projects
	(ii) Develop community forest fire prevention plans and programmes (2) (iii) Strengthen community-based forest management practices (3) (iv) Promotion of alternative sources of energy for both domestic and industrial use (4) (v) Promotion of appropriate and efficient technologies to reduce use of wood (5) (vi) Control habitat destruction and fragmentation along coast forest resources (6) (vii) Enhance the development of buffer zones and wildlife migratory routes (7)
Health (5)	(i) Establishing and Strengthening community awareness programmes on preventable major health hazards (1) (ii) Ensure availability of sufficient trained staff at all health facilities (2) (iii) Strengthen malaria control programme (3) (iv) Develop early warning system and emergency measures (4) (v) Establish Health & Climate collaboration & synthesis programs (5) (vi) Establishment of efficient and well-coordinated early warning system in all districts (6) (vii) Provide efficient communication equipment to assist early diagnosis in the health centre.
Wildlife (6/7)	(i) Enhance wildlife extension services and assistance to rural communities in managing wildlife resources (1) (ii) Support implementation of Community Based Management (CBM) programmes of wildlife management areas surrounding the national parks and game reserves (2) (iii) Combating illegal hunting and forest fires (3) (iv) Developing wildlife information database (4) (v) Development of migratory corridors and buffer zones for wildlife species (5) (vi) Development and implementation of management plans for protected and conserved areas (6) (vii) Improve wildlife and ecological surveillance systems (7)
Tourism (6/7)	(i) Establish alternative source of income for the community in the tourist area (1) (ii) Establishment of Community Based Fire Protection and Control Programme (2) (iii) Development of buffer zones around the national parks and game reserves (3) (iv) Implement sustainable tourism activities (4) (v) Relocation of people living in wildlife corridors (5)
Industry (8)	(i) Improve energy efficiency in industrial energy consumption (1)

NAPA Prioritization of Sectors	NAPA Priority Projects
	(ii) Efficient use of raw materials (2) (iii) Alternative use of raw materials (3) (iv) Water harvesting and recycling (4) (v) Create better and permanent drainage systems (5) (vi) Promote use of renewable energy sources such as solar, wind etc (6)

Table 6. Adaptation strategies and approaches in Tanzania.

Areas	Adaptation strategies
Natural	Establishment of collaborative ecosystems management in various districts.
	Integrated water resource Management.
	Ecosystem stability through conservation of forest biodiversity, water catchment and soil fertility.
	The National integrated ecosystem management strategy.
	Protection of hydropower water catchments.
	National-wide tree planting campaign.
	Research and detailed assessments of the response of different component species of forest ecosystems to the predicted climate change scenarios.
Built	Establishment of climate change information facility for early warning to communities.
	Increasing the number of rural health centres and personnel.
	Construction of water harvesting infrastructure including rain water harvesting, water points, intake, storage, transmission pipes, distribution networks and water laboratories.
	Enhancing climate resilience e.g. climate risk screening of infrastructure and climate proofing all new investments and flood protection measures.
	Adequate planning of urban and rural infrastructure - sustainable human settlements.
	Use of appropriate town and urban plans (Central Business District Schemes).
	Regularization and upgrading of unplanned settlements.
Technology	Improvement and intensification of clean thermal power generation projects.
	Improving weather and climate forecasting infrastructure through the procurement and installation of highly sophisticated hydro-met technologies to improve collection of the hydro-met data.
	Promotion of renewable green energy technologies (biogas, liquefied petroleum gas (LPG), solar energy), as well as geothermal and wind.
	Improve and intensify irrigation technology and fertilizer application
	Increased irrigation and improvements in irrigation technology to ensure more efficient water use.
Community	Investment in research and development on drought and diseases tolerant seed varieties.
	Strengthening of agriculture extension services to farmers and livestock

	keepers.
	Presence of emergency plan response unit, which coordinates and manages all health-related hazards, including epidemics, accidents, drought and flood.
	Facilitation of small-scale irrigation schemes.
	Diversification of agriculture, involving growing different crops on different land units.
	Improvements in soil fertility such as conservation agriculture/farming.

5.5. Sector specific adaptation measures

Natural

Expert judgment suggests changes in vegetation types, species composition and distribution under the doubling of CO_2 scenario resulting from variations in temperature and precipitation. Such changes include Miombo woodlands along the Lake zone and south-eastern in well drained soils developing into closed woodlands and evergreen forests with increase in precipitation and temperature, Miombo woodlands in areas with poorly drained soil being replaced by wooded grasslands or thickets/bush-lands in severe cases, wetter upland dry forests becoming Afromontane forest/vegetation with precipitation increase of 30% and general increase in temperature in the southern highlands.

In areas where there will be a slight decrease in precipitation and increase in temperature, woodland vegetation would be converted into wooded grasslands, or under more severe conditions, thicket/bush-land forest due to high evapotranspiration. Further, wooded grasslands would change into thicket/ bushlands in areas with imperfect to good excessively drained soils in the north and north-eastern Tanzania, drought resistant species would dominate, upland woodlands would remain unchanged in the southern areas where rainfall would increase slightly and temperature would rise. Areas with drought resistant species like those in the Central zone would likely remain unchanged irrespective of increase in temperature and decrease in rainfall. As is predicted, climate change impacts on forestry will include changes in vegetation types and their distribution and changes in life zones vulnerability will differ with species.

Short Term Adaptation Measures

Based on these impacts, several adaptation measures have been suggested and are practiced (URT, 2003). These include:

- Insurance of ecosystem stability through conservation of forest ecosystems, forest biodiversity, water catchment and soil fertility.
- Participatory forest management to build local community capacity and empowerment in managing and conserving forests.
- National wide tree planting to increase tree stocking on the landscape and enhance carbon sequestration on land.
- Awareness creation, training and capacity development in climate change knowledge and practice, impacts and potential coping strategies in forestry and land use.
- Mobilization for participatory action at all levels – village to national level.
- Research, information generation and communication on climate change issues including indigenous coping strategies that may be used as input into development of coping/adaptation strategies in forest management and advocacy.
- Development of community forest fire prevention programmes.

Medium – Long Term Adaptation Measures

In the medium to long term response the potential adaptation/mitigation strategies include:

- Research and detailed assessments of the response of different component species of ecosystems to the predicted climate change scenarios.
- Catchment forest management to enhance water storage and conservation.
- Strengthening community-based forest management practices including enhancement of participatory forest management through benefit sharing from forest resources.
- Promotion of natural forest regeneration and enhancement of forest seed banks.
- Ex-situ conservation of important plant genetic resources.
- Afforestation programmes in degraded lands using more adaptive species.
- Establishment of multipurpose fast-growing tree species in community woodlots.
- Control of habitat destruction and fragmentation in high biodiversity areas.
- Promotion of alternative sources of energy for both domestic and industrial use, promotion of appropriate and efficient technologies to reduce use of wood e.g. wood efficient stoves.
- Development of new plant varieties and promotion of lesser known timber species.
- Planning for forest restoration and mitigation of climate change impacts.

6. Priority research areas and capacity building needs in Tanzania

6.1. Priority research areas

Based on the findings of the scoping study, stakeholder consultation and field work following priority research areas are proposed;

- **Planning and implementation process:** The planning and decision-making processes through which corridor projects are designed, approved and implemented is not well understood. Therefore, there is a need to identify and clarify each stage of decision-making process and where the planned project can make a significant impact by providing technical input or building capacity.
- **Safeguards/ EIA/SEA:** Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) are important tool for enabling decision-makers make informed strategic decisions about the environmental implications of proposed project in the development corridors of Tanzania. Unfortunately, the processes for EIA/SEA are still not clear. There is a need to identify gaps in EIA and SEA processes for corridors and deliver capacity enhancement work to fill in gaps and enhance outcomes for conservation and social development. It also specifically advocates integrating environmental factors into decision-making, in order to advance sustainability in development corridors of Tanzania.
- **Ecosystem services and biodiversity conservation:** The most important direct threat to ecosystem services biodiversity comes in the form of conversion, loss, degradation, and fragmentation of natural ecosystems which lead to habitat loss. There is a need to understand type and mapping the available ecosystem services and biodiversity and project the implication of planned project under different land use scenarios to the integrity of ecosystems.

- **Support on agricultural technology to benefit communities:** Improved crop suitability modelling, incorporating field survey, for key crops in development corridors e.g. SAGCOT are vital to ensure sustainable agricultural development.
- **Hydrological processes and water resources assessments:** Further work is required to answer key questions on water resource development. Water extraction and use is currently not built into the models, due to a lack of information on spatially referenced water extraction. Therefore, additional work is required to generate the water use patterns and to further explore how these patterns have influenced water availability across the landscape.
  Water use monitoring, mapping and harmonization of the existing water extraction data may need to be carried out to facilitate water accounting and allocation modelling. Proxies such as irrigation area and population density could be used to generate informed estimates of water use.
- **Livelihoods/communities constraints from corridors:** There is a need for better understanding of the social and economic constraints of adopting sustainable intensification and green growth approaches. Development of interactive web-based mapping tool for agricultural constraints and opportunities for the development corridor are important to guide local and foreign investor to reduce risk of the investment.
- **Climate Change adaptation and mitigation**: There is a need to assess and strategize the climate change adaptation and mitigation measures in relation to socio-economic and ecological nature of the development corridor.
- **Livelihoods/communities benefits from corridors**: Identification and mapping of the influence of projects on livelihoods in short and long term in the development corridor is imperative. Sometimes, project can result in uneven development impacts, further marginalise the poor and increase vulnerability of the community to the impacts of climate change.
- **Drivers of corridor development:** It is important to understand the economic and political drivers and diversification of the development corridors. This will smoothen processes and entry points for functional cooperation and for creating trust need to be explored in the development corridors.
- **Natural capital and ecosystem services valuation:** Identify and mapping natural capital and ecosystem services for the development corridor are vital to public and private sector decision-makers as an evidence-based points to facilitate the planning and design of the development corridors.
- **Understanding the contribution of ecosystem services and natural capital to socio-economic development at local land district levels to enhance their conservation from the grass roots.**

6.2. Capacity needs

The following capacity needs/gaps have been identified in Tanzania:

- Communication techniques to communicate research findings including facts and figures to policy engagement and how to use other medias for communication. This component was found a key need to bridge between research findings, policy engagement and the end consumers (community)
- Understanding of the investment negotiation skills and how to integrate with the emerging issues like climate change, biodiversity losses and invasive species to mention few. In addition to this, there is a need for capacity building in ecosystem

services, climate change adaptation and related policies as it will ensure the sustainability of investment in Tanzania.

- Training on social and environment impact assessment and monitoring, integrated natural capital assessment tools, climate and hydrological modelling, biodiversity data management, ecosystem services valuation and statistical analysis and interpretation (generalization and homogenization)
- Training for regulators and professionals on the processes and reviewing on EIAs and SEAs procedures and standards to capture emerging challenges and issues arose through implemented projects in Tanzania

7. Conclusions

The scoping study found five development corridor of Tanzania including Southern Agricultural Growth Corridor of Tanzania (SAGCOT, Central Development Corridor, Mtwara Development Corridor, Tanga Development Corridor and Dar Es Salaam Development Corridor/TAZARA Corridor. The corridors were established for different purposes spanning from connectivity infrastructure, regional integration to agricultural development.

The corridor development approach in Tanzania was promoted by the Southern African Development Community (SADC) after realising that these geographic corridors are growing in importance as enablers of multiple sectors to maximise their productivity. The SADC Protocol on Transport, Communication and Meteorology called for the creation of Corridor Planning Committees to focus on specific strategies for development. SADC countries were required to choose their own institution to coordinate the implementation of regional development corridors.

The National Development Cooperation (NDC) coordinates the implementation of the regional development corridor approach in Tanzania. NDC through the Directorate of Research, Planning and Industrial Development (DRPID) now coordinates studies, consolidates and implements anchor projects in development corridors, with a focus on enhancing regional development balance, and works to attract investors.

There are various potential identifiable positive and negative impacts associated with development corridors in Tanzania have been. These include, among others, biodiversity loss, deforestation, threats to protected areas (including UNESCO World Heritage sites), land and water scarcity, social marginalization, economic displacement, resource-based conflicts, livelihoods impact and dilution of cultural identity. There also various impacts related to climate change that require to be addressed.

Several challenges can be identified in the implementation of development corridors in Tanzania and they vary by corridor. These include existence of policies and regulations that are not supportive to agribusiness (tax collection, weights and measures), insufficient technical expertise to provide extension services and training to small scale farmers, poor multi-sectoral coordination across infrastructure projects and plans, shortage of funds to finance megaprojects in the corridor, dilapidated infrastructure, and inadequate and inappropriate equipment and other working tools to execute infrastructure projects.

Different stakeholders involved in the design, development and implementation of development corridors in Tanzania are identifiable. These include Government Ministries, Government Agencies and Authorities, Non-Governmental Organisations (NGOs),

Community Based Organizations (CBOs) and Community Service Organisations (CSOs), Research and Development Institutions, Investors, Development Partners/Donor Agencies.

The Tanzania Investment Centre (TIC) is the chief government agency charged with encouraging promoting and coordinating investments in Tanzania. Tanzania Investment Centre is a one stop facilitation centre for investors, assisting to acquire licenses and permits for land access. TIC has the authority to oversee public-private partnerships (PPPs) under the 2010 PPP Act that lays down a framework for build-operate transfer activities with private companies.

The risks for investment in Tanzania are attributed to legal (underlines the high risk in the country's burdensome bureaucratic environment and a corrupt and under-resourced judiciary), government interventions (limitations of the country's banking and financial development as well as rising tax requirements) and economic openness (lack of critical infrastructure and inadequate logistics networks).

The Government of Tanzania recognizes the adverse impacts of natural disasters and climate change and has put in place relevant legislation to address these challenges. The key policy documents include: National Adaptation Programme of Action (NAPA, 2007), Tanzania National Development Plan (2016/17- 2020/21), National Climate Change Strategy 2012, and Intended Nationally Determined Contribution (INDC), 2015. The NAPA provides both a prioritization of sectors vulnerable to climate change and a set of six priority projects which are detailed in Section 5.

Based on the findings of the scoping study, several priority research areas and capacity needs have been identified in each of the corridors. The key research and capacity needs are centred on the key thematic areas of: Planning and implementation process, Safeguards/ EIA/SEA, Ecosystem services and biodiversity conservation, Support to agricultural technology to benefit communities, hydrological processes and water resources assessments, livelihoods/communities constraints from corridors, Climate Change adaptation and mitigation, livelihoods/communities benefits from corridors, drivers of corridor development and natural capital valuation and accounting.

8. References

Agwanda, A. and Amani, H. (2014). Population Growth, Structure and Momentum in Tanzania. The Economic and Social Research Foundation (ESRF). 84 pp

Baillie, J.E.M., Hilton-Taylor, C., Stuart, S.N. (2004). The IUCN Red List of Threatened Species. IUCN, Gland.

Balchin, N. (2015). Shaping Tanzania's Second Five Year Development Plan (2016-2021). Workshop Report of a Meeting on 6 October 2015

Bhattacharjee, D. (2015). China Pakistan Economic Corridor. SSRN Electronic Journal. doi:10.2139/ssrn.2608927

Burgess, N.D., Butynski, T.M., Cordeiro, N.J., Doggart, N.H., Fjeldsa, J., Howell, K.M., Kilahama, F.B., Loader, S.P., Lovett, J.C., Mbilinyi, B., Menegon, M., Moyer, D.C., Nashanda, E., Perkin, A., Rovero, F., Stanley, W.T. and Stuart, S.N., (2007). The biological importance of the eastern Arc Mountains of Tanzania and Kenya. Biological Conservation 134, 209–231.

Burgess, N.D., B. Bahane, T. Clairs, F. Danielsen, S. Dalsgaard, M. Funder, N. Hagelberg, P. Harrison, C. Haule, K. Kabalimu, F. Kilahama, E. Kilawe, S.L. Lewis, J.C. Lovett, G. Lyatuu, A.R. Marshall, C. Meshack, L. Mil es, S.A.H. Milledge, P.K.T. Munishi, E. Nashanda, D. Shirima, R.D. Swetnam, S. Willcock, A. Williams, and E. Zahabu. (2010). Getting ready for REDD+ in Tanzania: a case study of progress and challenges. Oryx 44:339-351.

Brunner, H. P. (2013). What Is Economic Corridor Development and What Can It Achieve in Asia's Subregions?

Byiers, B., and Rampa, F. (2013). *Corridors of power or plenty? Lessons from Tanzania and Mozambique and implications for CAADP* (Vol. 138). ECDPM Discussion Paper.

CBD (2009). Convention on Biological Diversity. <www.cbd.int> (last visited 19.12.2018).

Chapman, C.A., Peres, C.A. (2001) Primate conservation in the new millennium: the role of scientists. Evolutionary Anthropology 10, 16-33.

Engineers and Consulting firms association, Japan Development Institute (2009) Mtwara development corridor (Mtwara port and economic development zone development plan, study report

Fujita, M. (2017). Chinese Involvement in Tanzania and Its Local Impacts". Honors Theses. 413.

Harris, J. M. and Roach, B. (2016). Environmental and Natural Resource Economics: A Contemporary Approach. Global Development and Environment Institute, Tufts University.

Hope, A., and Cox, J. (2015). Development Corridors. Coffey International Development.

IPCC (2007). Climate Change 2007, Synthesis Report. Intergovernmental panel on climate change. Geneva, Switzerland. 104pp.

Japan International Cooperation Agency, (2009). The Research on the Cross-border Transport Infrastructure: Phase 3 : Final Report

Katz, O., Reichenbach, P. and Guzzetti, F. (2011). Rock fall hazard along the railway corridor to Jerusalem, Israel, in the Soreq and Refaim valleys. *Natural Hazard, 56*(3), 649–665. doi:10.1007/s11069-010-9580-z

Lal Mukherjee, A. (2019): Impact of tourism in coastal areas: Need of sustainable tourism strategy. Available from http://www.coastalwiki.org/wiki/Impact_of_tourism_in_coastal_areas:_Need_of_sustainable_tourism_strategy [accessed on 7-03-2019]

Lu, Yiye, and Josaphat Kweka. 2013. “Chinese Private Investments in Tanzania: Where to or Where From?” Poverty Reduction and Economic Management Africa Region, World Bank, Washington, DC.

Mayaux, P., Holmgren, P., Achard, F., Eva, H., Stibig, H.-J., Branthomme, A. (2005) Tropical forest cover change in the 1990s and options for future monitoring. Philosophical Transactions of the Royal Society of London Series B: Biological Sciences 360, 373-384.

Marshall, A.R. (2007) Disturbance in the Udzungwas: Responses of Monkeys and Trees to Forest Degradation. Ph.D. Thesis, University of York, UK.

Ministry of Finance and Planning, (2018). The Economic Survey for 2017. *The United Republic of Tanzania.*

Mulenga, G. (2013). Developing economic corridors in Africa: Rationale for the participation of the African Development Bank. NEPAD, Regional Integration and Trade Department

Munishi, P.K.T., Shirima, D. D. Jackson, H. and Kilungu, H. (2010). Analysis of Climate Change and its Impacts on Productive Sectors, Particularly Agriculture in Tanzania. Ministry of Finance and Economic Affairs, United Republic of Tanzania. Ministry of Finance and Economic Affairs Tanzania 106 pp

NDC (2018). Role of NDC in Establishment and Implementation of Development Corridors of Tanzania. Presented during Development Corridor Partnership (DCP) Project Launching in 27th November, 2018 held in Bahari Beach Hotel, Dar es Salaam, Tanzania

NEPAD (2014). Tanzania’s seaports and transport corridors as development opportunity for East and Southern Africa, Regional Integration brief.

Octaviano, B.Y. and Trishia, P. (2014) Economic corridors boost markets, living conditions". *Business World Research*.

PAMS Foundation. (2012). What Is an Alien Invasive Plant?

Pigato, M. and Tang, W. (2015). China and Africa: Expanding Economic Ties in an Evolving Global Context. Addis Abba, Ethiopia, World Bank, Washington, DC.

SADC (2012) Regional Infrastructure Development Master Plan

SAGCOT (2011). Investment Blueprint

SAGCOT (2016) SAGCOT Centre Annual Report – 2015/2016

Ministry of Finance and Planning (2006). National Five Year Development Plan (FYDP II) 2016/17 – 2020/21. Nurturing Industrialization for Economic Transformation and Human Development”

SET- Supporting Economic Transformation. (2016). Supporting the preparation of Tanzania's Second Five-Year Development Plan (FYDP II) 2016/17 – 2020/21. Final Report. 236 pp

Simbakalia, J. L. (2015). 15 Years of Implementation of Tanzania Development Vision 2025: Progress in Industrial Development – Targets and Goals, Achievements, Challenges and The Way Forward. The Engineers Registration Board 26 pp.

Simbakalia, J. L. (2018). Perspectives On Development Corridor Partnerships For Planning, Design and Implementation. Presented during Development Corridor Partnership (DCP) Project Launching on 27th November, 2018 held in Bahari Beach Hotel, Dar es Salaam, Tanzania.

Teravaninthorn, S., and Raballand, G. (2009). Transport prices and costs in Africa: a review of the main international corridors. World Bank Publications.

Tax Justice Network-Africa (TJN-A). (2012). Tax Competition in East Africa. A race to the bottom? Tax Incentives and Revenue Losses in Tanzania. 41 pp

Tanzania Investment Centre (TIC) (2018). Available at: http://www.tic.co.tz/

TNRF (2012). Making land investment work for Tanzania: scoping assessment for Multistakeholder Dialogue Initiative. Arusha: Tanzania Natural Resources Forum (TNRF). http://www.tnrf.org/LBI-report.pdf. Accessed 26 October 2018

United Republic of Tanzania (URT). (1997) 'The National Land Policy'. Dar es Salaam: United Republic of Tanzania

United Republic of Tanzania (URT) (1999). Tanzania Development Vision 2025 Dar es Salaam: Ministry of Planning

United Republic of Tanzania (URT) (2013). National Climate Change Strategy (NCCS) of 2013

United Republic of Tanzania (URT) (2006). State of the Environment Report. Vice President's Office-Division of Environment.161 pp

United Republic of Tanzania (URT) (2007). National Adaptation Plan for Action. Vice President's Office, Division of Environment. 61 pp

United Republic of Tanzania (URT) (2008). 10 Year Transport Sector Investment Programme (TSIP) Phase I 2007//08 – 2011//12, Main report. Ministry of Infrastructure Development. 119 pp

United Republic of Tanzania (URT) (2010). Tanzania's Integrated Industrial Development Strategy 2025, Main report

United Republic of Tanzania (URT) (2011). The Tanzania Five Year Development Plan 2011/12 – 2015/16. Unleashing Tanzania's Growth Potentials

United Republic of Tanzania (URT) (2012). Assessment of Tanzania's Ports in the Regional Economic Environment. Final report

United Republic of Tanzania (URT) (2014). Comprehensive Transport and Trade System Development Master Plan in the United Republic of Tanzania, Building an Integrated Freight Transport System. Final Report Volume 4 Pre-Feasibility Studies

United Republic of Tanzania (URT) (2015a), 15 years of implementation of Tanzania development vision 2025. Progress in industrial development – targets and goals, achievements, challenges and the way forward, 13th Annual Engineers' Day

United Republic of Tanzania (URT) (2015b). Tanzania Human Development Report 2014: Economic Transformation for Human Development. Economic and Social Research Foundation. 128 pp

United Nations Conference on Trade and Development (UNCTAD) (1998). World Investment Report: Trends and Determinants (New York and Geneva: United Nations), United Nations publication, sales no. E.98.II.D.5.

United Nations Conference on Trade and Development (UNCTAD) (2001). "Country profile: United Republic of Tanzania." Project on Needs Assessment to Attract Asian FDI into Africa (Geneva: UNCTAD), unpublished mimeo.

United Nations Conference on Trade and Development (UNCTAD) (1999). National Treatment: UNCTAD Series on issues in international investment agreements. New York and Geneva. 94pp

USAID (2012). Tanzania Environmental Threats and Opportunities Assessment report. United States Agency for international Development (USAID)- Tanzania. 145 pp

World Bank (2018). Lake Tanganyika Transport Program, Project Information Document/Integrated Safeguards Data Sheet (PID/ISDS).

WWF and CSCO (2017). Safeguarding People & Nature in the East African Crude Oil (EACOP) Pipeline Project, A preliminary environmental and socio-economic threat analysis, WWF and CSCO Research Paper No. 3, 2017, Kampala, Uganda.

Vanheukelom, J. and T. Bertelsmann-Scott. (2016). The political economy of regional integration in Africa: The Southern African Development Community (SADC) Report. Maastricht: ECDPM.

Vickers, B. (2014). 'The Political Economy of South Africa's External Trade', 1994-2014. Strategic Review for Southern Africa. 36(2): 57-79.

9. Appendices

9.1. Appendix 1. Development corridors in Tanzania: description and key stakeholders

S/N	CORRIDOR NAME	NARATIVE	STAKEHOLDERS/INVESTORS
1	**SAGCOT** SAGCOT Centre Ltd – Head Office 5th Floor, Ikon Building Plot No. 153, Basins Singh Avenue, Masaki P.O. Box 80945, Dar es Salaam. **Tel:** +255(0) 22 260 1024 +255(0) 22 260 0146 **E-mail:** info@sagcot.co.tz Mr. Geoffrey Kirenga Chief Executive Officer	**About the corridor** The Southern Agricultural Growth Corridor of Tanzania (SAGCOT) is a pioneering initiative of the Government of Tanzania (GoT) to mobilize $2.1 billion in new private sector agribusiness investments, backed by $1.3 billion in public sector facilitating investments in infrastructure and related public goods, to achieve rapid and sustainable growth in smallholder agriculture in the southern corridor of Tanzania. Its ultimate objective is to boost agricultural productivity, improve food security, reduce poverty and ensure environmental sustainability through the commercialization of smallholder agriculture. It is a public private partnership but also involves many players from the public and private sectors, it started with about 20 partners and now they have close to 150 partners. 85% of these are business (small, medium to large) at national and international level. They have partnership principles which are: 1. Engaging smallholder farmers and ensure environmental sustainability through their investments; 2. Partnering with others to promote a harmonized approach and improve synergies within and across priority value chains; 3. Maintaining engagement, communication and support for the SAGCOT Centre; 4. Contributing to the resolution of policy and infrastructure constraints; and 5. Considering new and innovative financing mechanisms. **Objectives** Its ultimate objective is to boost agricultural productivity, improve food security, reduce poverty and ensure environmental sustainability through	SAGCOT now has 105 registered partners, 14 of which joined in 2016. Out of the 105 SAGCOT Partners, 17 lead partners received intensive investment facilitation support as part of the strategic partner base 1. Private sectors companies 2. Government agencies and regulators 3. Apex and farmers organizations 4. Development partners, foundations, research organizations and Civil Society Organizations 5. Public financial institutions 6. Government of Tanzania **Find more at** **http://sagcot.co.tz/index.php/mdocs-posts/sagcot_partnership-list/?mdocs-file=325&mdocs-url=false**

		the commercialization of smallholder agriculture. **Source of funds** • SAGCOT is funded by government, donors and business companies which pays contributions for management. • Start-up budget was 3.5 billion dollars for investment, 2.1 billion is from private sectors and the remaining is from the public sector. To date half of the budget has already being invested by the private sectors and now the SAGCOT center is developing a number of public investments. Some few examples are a road in Kilombero, infrastructure which have been constructed in rural roads, irrigation infrastructures, and ware houses. **Challenges** 1. There is a problem of prioritization: which crops should be given priority in production? 2. Challenges to develop infrastructure (roads, railway, water, power) to ensure easy accessibility to and from investment centres to fit all weather conditions. 3. Existing policies and regulations are not supportive to agribusiness (tax collection, weights and measures) 4. Insufficient of agronomists and technical expertise to provide extension services and training to small scale farmers 5. Lack of appropriate management of natural resources to ensure sustainable agriculture. 6. Poor accountability around infrastructure implementation/deliver 7. Shortage of funds to finance megaprojects in the corridor 8. Poor multisectoral coordination across infrastructure projects and plans	
2	**CENTRAL DEVELOPMENT CORRIDOR**	**About the corridor** The Central Corridor is the transportation route that connects the Port of Dar es Salaam by road, rail and inland waterways to Burundi, Rwanda,	**Stakeholders:** 1. National Development

	P.O. Box 2372 Dar es Salaam – Tanzania **E-mail:** ttfa@centralcorridor-ttfa.org **E-mail:** info@centralcorridor-ttfa.org **Phone:** +255 22 2127 149 **Mobile:** +255 687 440 941	Uganda and Eastern part of the DRC and all of central and northern-western Tanzania itself. The corridor forms part of the backbone of the regional transportation system in East and Eastern Central Africa carrying the import and export of the five countries with a population of more 120 million people. The Central Corridor has been identified by the Government as a strategic vehicle to support the country's development aspirations. The proposed approach is to transform the central transport corridor into a development corridor that is also integrated with the northern corridor. Thus, public investments in transport will include complementary rural infrastructure such as community production centres and market infrastructure to bolster inclusive growth. **Objectives** 1. To sustain and promote the use of the Central Corridor 2. The reliability of the corridor infrastructure and its services 3. Co-ordination and harmonization of procedures for ease of use, minimization of delays, and the predictability of costs and times 4. To promote the use of the Central Corridor 5. To grant each other the right of transit in order to facilitate movement of goods through their respective territories and to provide all possible facilities for traffic in transit between them 6. To take all necessary measures for the expeditious movement of traffic and for the avoidance of unnecessary delays in the movement of goods in transit through their territories 7. To strategically position the Central corridor as the most efficient in East and Central Africa so as to contribute positively to poverty alleviation programmes in member states **Source of funds** 1. Government budget from country members 2. Fees from business holders **Challenges** 1. Destabilization of Central Railway line and lack of modern specialized ships for carrying containers around lake ports is	Corporation (NDC) 2. Tanzania Roads Agency (TANROADS) 3. Tanzania Ports Authority (TPA) 4. Tanzania Investment Centre (TIC) 5. Tanzania International Container Terminal Services (TICTS) 6. Tanzania Railways Ltd 7. Rail Assets Holding Company (RAHCO) 8. Surface and Marine Transport Regulatory Authority (SUMATRA) 9. Tanzania Revenue Authority 10. Marine Services Company Limited (MSCL) 11. Tanzania Shipping Agencies Association (TASAA) 12. Tanzania Chamber of Commerce Industries and Agriculture (TCCIA) 13. Tanzania Freight Forwarders Association (TAFFA) 14. Tanzania Truck Owners Association (TATOA) 15. Tanzania Police Force – Traffic

		denying the port business. 80% of the port revenues depends on transit business 2. Dilapidated infrastructures, equipment and other working tools. For example, at Kigoma port, until December 2016, there were only two cranes which were installed in 1927. The capacity of cranes has diminished from carrying 5 tons to 2.5 tons. In early 2017 TPA commissioned one crane to support handling activities especially for container handling. 3. Transporters (ships and train) face empty returning trips because currently the trade on Lake Tanganyika is one way i.e. almost all cargo comes from Tanzania to Burundi and DRC but there is little coming from those countries. TRL locomotives also go back to Dar empty after leaving cargo in west and northern-western Tanzania 4. Truck holding area there are challenges such as lack of toilet facilities, poor parking surface, no safety and security measures in place and the parking area was designed for small parking capacity. 5. Prolonged stay of trucks due to delays in the clearance of payments by cargo owners, weighbridges crossing time police and other check points and transit border and post border crossing	Police 16. Directorate of Tanzania Immigration 17. Tanzania Bureau of Standards (TBS) 18. Tanzania Electricity Supply Company Limited (TANESCO) **More info:** http://centralcorridor-ttfa.org/stakeholders/tanzania-stakeholders/
3	**MTWARA DEVELOPMENT CORRIDOR** Ministry of Infrastructure Development Ministry of Works, Transport and Communications (Works Sector) Tanzania Building	**About the corridor** The Mtwara Development Corridor (MtDC) is conceptualized under an initiative undertaken by the Southern African Transport and Communications Commission of the Southern African Development Community (SADC) in 1992. The SADC member countries of Tanzania, Malawi, Mozambique, Zambia agreed to work together for realization of the Mtwara Development Corridor, which is aiming for facilitation of the regional integration with reducing poverty by stimulating broad economic growth through expanding industrial production and enhancing exports from the corridor.	**Stakeholders:** 1. National Development Corporation (NDC) 2. Tanzania Investment Centre (TIC) 3. Tanzania Roads Agency (TANROADS) 4. Tanzania Ports Authority (TPA)

	Agency (TBA) House, 1st Floor, Moshi Street, P. o Box 2888, 40470 Dodoma, TANZANIA. **Phone:** +255 26 2322251 **Fax:** +255 26 2323233 **Email Address:** ps@mow.go.tz	**Objectives** 1. To provide road, rail and waterway access from the surrounding region to the Port of Mtwara. A road and rail link is to be built from the port of Mtwara to Mbamba bay on Lake Nyasa to link Malawi to the corridor and further road links into Mozambique will facilitate access to northern Mozambique, 2. To help regional integration and facilitate growth in agriculture, fisheries, tourism and mining sector through building and rehabilitating over 800 km of roads, telecommunications, air transport facilities and ferry services, construction of Unity Bridge and upgrading ports of Mtwara and Mbamba bay to handle high volume **Source of funds** 1. Government budget 2. Fees from business holders **Challenges** 1. Shortage of funds to facilitate the implementation of corridor development 2. Resource use conflict due to high expectation and poor understanding of local communities towards the appropriate use of resources (e.g. gas) 3. Limited Mtwara port capacity 4. Absence of both rail and road network linking the port to the hinterland. 5. Mbamba Bay port which need to be developed to allow for transit traffic from Mkata Bay in Malawi, to Mtwara and to overseas 6. Improved infrastructure between the Southern regions of Tanzania and Mozambique through the Unity Bridge to enhance trade and also to boost the Mtwara port throughput.	5. Tanzania International Container Terminal Services (TICTS) 6. Rail Assets Holding Company (RAHCO) 7. Surface and Marine Transport Regulatory Authority (SUMATRA) 8. Tanzania Revenue Authority (TRA) 9. Tanzania Electricity Supply Company Limited (TANESCO) 10. Tanzania Petroleum Development Corporation (TPDC)

4	**TANGA DEVELOPMENT CORRIDOR**	**About the corridor** The corridor has great potential to ensure the regional integration between Lake Victoria regions as well as Uganda, Burundi and Rwanda using the Tanga port. Projects which need to be implemented to remove critical bottlenecks along this corridor includes; The development of new deep-water port at Tanga and construction of Tanga – Musoma railway. Another project is Uganda – Tanzania crude oil pipeline project also known as East Africa Crude Oil Pipeline (EACOP) which is intended to transport crude oil from Uganda's oil fields to the Port of Tanga, Tanzania to the Indian Ocean. Also in Tanga corridor there is high agricultural potential, Tourist attractions, Mineral deposits which make investment in transport infrastructure such as railway line, roads and airports economical very viable. At the moment there is a railway line joining Tanga and Arusha. There is a good tarmac road stretching from Tanga to Arusha, Makuyuni to Ngorongoro gate. There also the airport at Tanga, Kilimanjaro, Arusha, Lake Manyara and Musoma **Objectives** Main objective of the Tanga corridor is to facilitate regional trade connectivity and development opportunity for East Africa using the Tanga port **Source of funds** 1. Government budget 2. Government levy 3. Loans **Challenges** 1. Absence of deep-water berth at Tanga port 2. Absence of a railway stretch linking Arusha with Uganda, Rwanda and Burundi. 3. Environmental concerns for the possible railway alignment between Arusha and Musoma. 4. Shortage of funds for conducting a study to determine socio-	**Stakeholders:** 1. Tanzania Petroleum Development Corporation (TPDC) 2. Rail Assets Holding Company (RAHCO) 3. Tanzania Ports Authority (TPA) 4. National Development Corporation (NDC) 5. Tanzania Investment Centre (TIC) 6. Surface and Marine Transport 7. Tanzania Roads Agency (TANROADS) 8. Tanzania National Park Authority (TANAPA) 9. Tanzania Electricity Supply Company Limited (TANESCO) 10. Tanzania International Container Terminal Services (TICTS) 11. Regulatory Authority (SUMATRA) 12. Tanzania Revenue Authority

		economic and environmental viability. 5. Tanga port has no expansion possibilities because it is located near the city centre with housing and municipal facilities located adjacent to the port on all sides. Some very limited expansion would be possible on both sides of the port, but this area would not be sufficient for large scale port operations as forecasted for new dry bulk cargo. 6. Development of large scale port operations very close to the city centre would also increase city traffic and would potentially have strong negative environmental impact.	
5	**DAR ES SALAAM DEVELOPMENT CORRIDOR/TAZARA CORRIDOR**	**About the corridor** The Dar es Salaam corridor which is sometime referred to as the TAZARA corridor connects the DSM port with southern and eastern highland through the TAZARA rail way and the Dar es Salaam – Tunduma highway. TAZARA is jointly owned by the governments of Tanzania and Zambia. The corridor offers the shortest distance between the port of Dar es Salaam and Zambia, Malawi in southern parts of Tanzania and it is a backbone infrastructure for a SAGCOT Corridor. The land along Dar es Salaam corridor hosts most of the maize production which is the leading food crop in Tanzania. Other agricultural products include tea, coffee, pyrethrum and forestry products. Industrial activities include cement, beverages, vegetables and fruits canning. This corridor provides the shortest transit route for Zambia and Malawi. Investments to tap the potential of the corridor are desired. However, the importance of this corridor at regional level is in the packaging of both infrastructure and economic project to make them viable for attracting direct foreign investment **Objectives** 1. Operate Tanzania – Zambia road-rail services by caring passengers and goods 2. Manufacture parts and provide maintenance and repairs services at any foundry, workshop or other factory owned or operated by	**Stakeholders:** 1. Tanzania Ports Authority (TPA) 2. Dar es Salaam Corridor Group Ltd (DCG) 3. Ocean Freight Limited 4. Tanzania Road Haulage (1980) Ltd (TRH) 5. National Development Corporation (NDC) 6. Tanzania Petroleum Development Corporation (TPDC) 7. Tanzania International Container Terminal Services (TICTS) 8. Tanzania Investment Centre (TIC) 9. Tanzania Electricity Supply Company Limited (TANESCO)

		the Authority 3. Provide storage facilities in Tanzania and Zambia for goods to be carried by the Authority 4. Provide for the consignment of goods to and from any place in Tanzania or Zambia or any other place 5. Determine, impose or levy rates, fares and other charges for any service performed by the Authority or for the use by any person of the facilities provided by the Authority or for the grant to any person of any license, permit or certificate. 6. Provide in Tanzania and Zambia such other amenities and facilities for passengers and other persons making use of the services provided by the Authority as the Board may consider necessary or desirable **Source of funds** 1. Government budget 2. Levy **Challenges** 1. General deterioration in the performance of TAZARA permanent way (track), signalling and telecommunication system, locomotives, wagons and other operating equipment. 2. Delays due to port cargo clearance resulting from poor over land transportation system contributed especially by the poor performance of TAZARA. Long transit and turnaround time due to shortage of equipment, i.e. locomotives and wagons 3. Inadequate return cargo due to unbalanced trade pattern between imports and exports from the south. 4. Inadequate facilities of trans-shipment of interface points. 5. The corridor faces stiff competition from Mozambican and South	

		African port in handling traffic to and from Malawi, Zambia and DRC. During the last 10 years fundamental political and economic changes have taken place in countries served by DSM corridor, for instance end of civil wars in Mozambique and DRC have made freighter to have more route options than before. Today most of Malawi traffic is going through Mozambique port.	

9.2. Appendix 2: Stakeholder analysis matrix

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Sector Ministries							
President's office	To assist the Head of the Public Service (the Chief Secretary) in matters of personnel and administration pertaining to Public Service in the entire government system	1,2,3	National	High: Responsible for steering entire government system	High influence, interested	High impacts to DCP project implementation	All
Vice President's Office Union Affairs and Environment	Overall Coordination and policy articulation of environmental management in the country	1,2,3	National	High: Responsible for coordinating human activities which impact of environment	High influence, interested	High impacts to DCP project implementation in terms of environmental policies articulation, future funding requests in biodiversity conservation & CC mitigation & adaptation	All
Water and Irrigation	Management of Nation's water resources (Policies, Legislations and Regulations)	1,2,3	National	High: Authorizes water allocation, one of the crucial natural capital and ecosystem service	High influence, interested	High: Might affect DCP project implementation (water resource management)	All
Agriculture	Facilitate transformation of agriculture	1,2,3	National	High: Responsible for agricultural sectoral policies and strategic Food Reserve	High influence, interested	High: Might affect DCP project implementation as the developer of Agriculture policies	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Natural Resources and Tourism	Management of natural, cultural and tourism resources	1,2,3	National	High: Responsible for granting forestry harvesting, hotel grading & classification, hunting blocks, tour operations licensing & registration; & trophy dealing licensing	High influence, interested	High: Might affect DCP project implementation on future funding requests in biodiversity conservation	All
Lands, Housing and Human Settlements	Land & housing development, survey and mapping, land title registration, town and village planning, land/house conflict management and valuation services	2,3	National	High: Responsible for granting land titles	High influence, interested	High: Might influence some of the programme's activities, which might in turn directly influence services received by investors from the ministry	All
Energy and Minerals	Setting policies, strategies and laws for sustainability of energy and mineral resources	1,2,3	National	High: sets policies, laws, strategies in the energy and minerals sectors	High influence, interested	High: Might affect DCP project on political and practical analysis of corridor implementation	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Works, Transport and Communication	Facilitate provision of economic, safe environmental friendly and reliable construction industry, electrical and mechanical services & government buildings, Stimulate employment growth in the national economy and reduce unemployment and under employment, Integrated transport planning and service delivery and consolidation of like functions to reduce costs and services	2,3	National	Low: some influence in facilitating safe &environmental friendly construction industry	High influence, interested	High: Might affect DCP project on political and practical analysis of corridor implementation and prioritizing of development potentials of infrastructure corridors	All
Livestock and Fisheries	Oversee development, management, and regulation of the livestock and fisheries resources	1,2,3	National	High: sets policies, laws, strategies in livestock, fishing licensing & fisheries development in general	High influence, interested	High: Might affect DCP project implementation on aquatic life forms and livestock keeping in economic development corridors	All
Finance and Planning	Manage the overall revenue and expenditure, and financing of the GoT	2,3	National	High:	High influence, less interested	High: Might affect future funding for sustainability of DCP project initiatives	All
Industry, Trade and Investment	Create an enabling environment for sustainable growth of industry, trade, marketing and SME sectors	2,3	National	High:	High influence, interested	High: Might affect DCP project based on future funding requests - depending on	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
						enabling environment created to attract investment in industry, trade & marketing)	
Education, Science, Technology and Vocational Training	Formulation, monitoring and evaluation of the implementation of education services and infrastructure	2,3	National	Low:	Low influence, interested	Low: Limited impacts on DCP project	All
Health, Community Development, Gender, Elderly and Children	Improving health status of all people, Promote community development, gender equality, equity and children rights	2,3	National	Low:	Low influence, interested	Low: Limited impacts on DCP project	All
Information, Culture, Arts and Sports	Oversee posts and telecommunications, science and technologies (policies and programmes),Information development, Cultural development (policy & planning)	2,3	National	Low:	Low influence, less interested	Low: Limited impacts on DCP project	All
Foreign Affairs, E.A.C., Regional and International Cooperation	Promote Tanzania's economic and other national interest abroad	2,3	National	High:	High influence, less interested	High: Might affect DCP project implementation & soliciting future funding through international relations, regional & multilateral cooperation	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Home Affairs	Ensure a safe and secure country where law and order is respected	2,3	National	High:	Low influence, less interested	Low: Limited impact on DCP project but important for ensuring national security	All
Government Agencies & Authorities							
SAGCOT Centre LTD	Overall Coordinator of SAGCOT programme	1,2,3	SAGCOT regions	High	High influence, interested	High: Might affect DCP project implementation as an overall coordinator of SAGCOT corridor	SAGCOT
Tanzania Investment Centre (TIC)	Investment promotion, facilitation and advocacy	2,3	National	High	High influence, interested	High: Might affect DCP project implementation as a promoter & facilitator of investments in all development corridors in Tanzania	All
National Development Corporation (NDC)	Stimulate industrialization in partnership with private sector to catalyse economic development in all sectors	2,3	National	High	High influence, interested	High: Might affect DCP project implementation as a advocacy for investments in all development corridors in Tanzania	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Tanzania Petroleum Development Corporation (TPDC)	Exploration, development, production and distribution of oil and gas and related services to promoting Industrialization for Economic Transformation and Human Development	2,3	National	High	High influence, interested	High: Research and capacity building development on the effects of oil and gas industries on biodiversity and ecosystem services	All
Reli Asset Holding Company (RAHCO)	To develop, promote and manage the rail infrastructure to facilitate transportation of goods and services	2,3	National	High	High influence, interested	High: Research and capacity building development on the impact of rail infrastructure on ecosystem services and biodiversity	Mtwara, Central and Tanga
Tanzania Ports Authority (TPA)	To manage and operate" the ocean ports and lake ports of the country of Tanzania	2,3	National	High	High influence, interested	High: Research and capacity building development on the impact of road infrastructure on ecosystem services and biodiversity	Mtwara, Central, Tanga and TAZARA
National Land Use Planning Commission (NLUPC)	Principal advisory organ of the Government on all matters related to land use	1,2,3	National	High	High influence, interested	High: Might affect DCP project implementation through land use planning in Development corridors	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Tanzania Electric Supply Company (TANESCO)	Generation, transmission, supply and distribution of electricity	1,2,3	National	High	High influence, interested	High: Might affect DCP project implementation as one of the important users of natural resources (e.g. water, fossils/gas, etc) for generation and supply of electricity	All
Tanzania Roads Agency (TANROADS)	Responsible for the maintenance and development of the trunk and regional road network in Tanzania Mainland	1,2,3	National	High	High influence, interested	Low: Limited impacts on DCP project	All
Tanzania International Container Terminal Services (TICTS)	Largest container terminal in Tanzania.	2	National	Low	Less influence, high interested	Low: Limited impacts on DCP project	Mtwara, Central, Tanga and TAZARA
Surface and Marine Transport Regulatory Authority (SUMATRA)	To regulate the surface and marine transport sub sectors for efficient, safe and environmentally friendly transportation services	2	National	Low	Low influence, interested	Low: Limited impacts on DCP project	Mtwara, Central, Tanga and TAZARA
Tanzania Revenue Authority (TRA)	Responsible for administering impartially various taxes of the Central Government	2	National	Low	Less influence, interested	Low: Limited impacts on DCP project	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Marine Services Company Limited (MSCL)	Operates ferries, cargo ships and tankers on three of the African Great Lakes, namely Lake Victoria, Lake Tanganyika and Lake Nyasa. It provides services to neighbouring Burundi, DR Congo, Zambia and Malawi	2	National	Low	Less influence, less interested	Low: Limited impacts on DCP project	Mtwara, Central, Tanga and TAZARA
Tanzania Chamber of Commerce Industries and Agriculture (TCCIA)	Promote business and industry, and to facilitate an interface between the private sector and public sector in the country.	2	National	Low	Less influence, interested	Low: Limited impacts on DCP project	All
Tanzania Truck Owners Association (TATOA)	A voluntary business Association of Truck Owners involved in the Cargo Freighting business in and outside the United Republic of Tanzania emphasizing on Transit Transportation Trade facilitation within the SADC and Great Lakes regions	2	National	Low	Less influence, interested	Low: Limited impacts on DCP project	Mtwara, Central, Tanga and TAZARA
Tanzania Bureau of Standards (TBS)		2,3	National	Low	Less influence, less interested	Low: Limited impacts on DCP project	All
Dar es Salaam Corridor Group Ltd (DCG)		2,3	National	High	Low influence, interested	Low: Limited impacts on DCP project	TAZARA

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Tanzania Road Haulage (1980) Ltd (TRH)	Provide range of services in the transport industry and related services in any part of Tanzania, Zambia, Malawi, Kenya, Uganda, Burundi, Rwanda & Republic of Congo.	2,3	National	High	High influence, interested	Low: Limited impacts on DCP project	All
Rufiji Basin WaterBoard	Water utilization plans, water fees collection, data collection and analysis, pollution control, resolution of water related conflicts	1,2	Rufiji Basin	High	High influence, interested	High: Might affect DCP project implementation through provision of hydrological data and other activities in Rufiji basin	SAGCOT
Lake Rukwa Basin Water Board	Water utilization plans, water fees collection, data collection and analysis, pollution control, resolution of water related conflicts	1,2	Lake Rukwa Basin	High	High influence, interested	High: Might affect DCP project implementation through provision of hydrological data and other activities in Lake Rukwa	SAGCOT
Lake Nyasa Basin Water Board	Water utilization plans, water fees collection, data collection and analysis, pollution control, resolution of water related conflicts	1,2	Lake Nyasa Basin	High	High influence, interested	High: Might affect DCP project implementation through provision of hydrological data and other activities in Lake Nyasa basin	Mtwara
Wami-Ruvu Basin Water Board	Water utilization plans, water fees collection, data collection and analysis, pollution control, resolution of water related conflicts	1,2	Wami-Ruvu Basin	High	High influence, interested	High: Might affect DCP project implementation through provision of hydrological data and other activities	Central, SAGCOT

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
						in Wami-Ruvu basin	
National Environment Management Council (NEMC)	Enforcement of National Environmental Management Act	1,2,3	National	High	High influence, interested	High: Might affect DCP project implementation through enforcement of environmental laws	All
Tanzania National Parks (TANAPA)	Conservation and management of park resources and their aesthetic values and provision of tourism services	1,2	National	High	High influence, interested	High: Might affect DCP project implementation as well as future funding for biodiversity conservation	All
Rural Energy Agency (REA)	Promote and facilitate improved access to modern energy services in rural areas of mainland Tanzania	2,3	National	Low	Low influence, interested	Low: Limited impact on DCP project but promotes/facilitates access to modern energy technologies to rural communities	All
Tanzania Meteorological Agency (TMA)	Provide quality, reliable and cost effective meteorological services	1	National	High	High influence, interested	High: Might affect DCP project implementation through provision of meteorological data for all development corridors in Tanzania	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Sugar Board of Tanzania (SBT)	Create, sustain and regulate an environment conducive to sugar stakeholders to efficiently and profitably produce can sugar and related product	2	National	Low	Low influence, interested	Low: Limited impacts on DCP project	All
Tanzania Forest Services (TFS)	Management of national forest reserves (natural and plantations, bee reserves and forest, and bee resources on general lands)	1	National	Low	Low influence, interested	Low: Limited impact on DCP project but facilitates and coordinate management of forest reserves in all development corridors in Tanzania	All
NGOs, CBOs and CSOs							
International Union for Conservation of Nature (IUCN)	Conservation of the integrity, diversity of nature and equitable and ecologically sustainable use of natural resources	1,2	International	High	High influence, interested	High: Might affect DCP project implementation as advocate of the programme	All
Worldwide Funds for Nature (WWF)	Conservation of nature and biodiversity	1,2	International	High	High influence, interested	High: Might affect DCP project implementation as advocate of the programme	All
Wildlife Conservation Society (WCS)	Conservation of wildlife and wild places through science, conservation action, education and inspiring people to value nature	1.2	International	High	High influence, interested	High: Might affect DCP project on wildlife conservation	All

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Mpingo Conservation and Development Initiative (MCDI)	Promote forest conservation in southern Tanzania including community forest management	1,2	Southern Tanzania	Low	Low influence, interested	Low: Limited impacts DCP project (Biodiversity conservation)	SAGCOT and Mtwara
Tanzania Forest Conservation Group (TFCG)	Conservation and restoration of the biodiversity of globally important forests in Tanzania	1,2	National	Low	Low influence, interested	Low: Limited impacts DCP project (Biodiversity conservation)	All
MtandaowaVikundivyaWakulima Tanzania (MVIWATA)	Defend economic, social, cultural and political interest of smallholder farmers (capacity building, lobbying and advocacy)	1,2,3	National	High	High influence, interested	High: Limited impacts on DCP project focusing the effects of small scale farmers on the natural capital and ecosystem services	All
Agricultural Council of Tanzania (ACT)	Promote, coordinate and protect the interest of all stakeholders in agriculture and agribusiness in the country (strengthen private sector organization in agriculture, consultative lobbying and advocacy)	1,2,3	National	Low	Low influence, interested	Low: Limited impacts on DCP project, but might help through facilitation and strengthening PP investments in agriculture)	All
Tanzania Horticultural Association (TAHA)	Institutional strengthening and support to horticultural sector	1,2	National	Low	Low influence, interested	Low: Limited impacts on DCP project	All
FZS (Frankfurt Zoological Society)	conserve wildlife and ecosystems focusing on protected areas and outstanding wild places	1,2	International	Low	Low influence, interested	Low: Limited impacts on DCP project	SAGCOT and TAZARA

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
TRAFFIC	work to ensure that trade in wildlife and plants is not a threat to the conservation of nature,	1	International	Low	Low influence, interested	Low: Limited impacts DCP project (Biodiversity conservation)	All
Investors							
Sao Hill forest plantation	Forest plantation	1,2	National	High	High influence, interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and biodiversity	SAGCOT
UNILIVER Tea plantation	Tea plantation	1,2	National	High	High influence, interested	High: Research partnership and capacity building in relation to natural capital and ecosystem services	SAGCOT
Green Resource	Tree plantation	1,2	National	High	High influence, interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and biodiversity	SAGCOT
New Forest Company	Tree plantation	1,2	National	High	High influence, interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and	SAGCOT

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
						biodiversity	
Kilombero plantations Limited	Tree plantation	1,2	National	High	High influence, interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and biodiversity	SAGCOT, TAZARA
Mtenda Kyela rice supply Limited	Rice production	1,2	National	Low	High influence, less interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and biodiversity	SAGCOT
Silverlands Limited	Agricultural production and livestock keeping	1,2	National	High	High influence, interested	High: Research partnership and capacity building in relation to climate change, water resource and agriculture performance and resilience	SAGCOT
Clinton development initiative	Tree plantation	1,2	National	High	High influence, interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and biodiversity	SAGCOT

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
Standard Gauge Railway (SGR)	Railway infrastructure	1,2	National	High	High influence, interested	High: Research and capacity building development in relation to rail infrastructure, ecosystem services and biodiversity	Central corridor
Mkunju Uranium project	Mining industry	1,2	National	Low	High influence, less interested	High: Research and capacity building development on the influence of mining industries on ecosystem services and biodiversity	Mtwara corridor
Mchuchuma Coal mining	Coal mining industry	1,2	National	Low	High influence, less interested	High: Research and capacity building development on the influence of mining industries on ecosystem services and biodiversity	Mtwara corridor
Liganga iron mine	Iron extraction industry	1,2	National	Low	High influence, less interested	High: Research and capacity building development on the influence of mining industries on ecosystem services and biodiversity	Mtwara corridor

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
DANGOTE cement Limited	Cement industry	1,2	National	Low	High influence, less interested	High: Research and capacity building development on the influence of mining industries on ecosystem services and biodiversity	Mtwara corridor
Mnazi bay gas	Gas field	1,2	National	Low	High influence, less interested	High: Research and capacity building development the influence of mining industries on ecosystem services and biodiversity	Mtwara corridor
Tanga Economic Corridor limited	Processing industry	1,2	National	High	High influence, interested	High: Might affect DCP project implementation as an overall investors in Tanga corridor	Tanga corridor
HOIMA pipeline project	Crude oil transportation infrastructure	1,2	East Africa	Low	High influence, less interested	High: Research and capacity building development on the influence of development infrastructures on natural capital and ecosystem services	Tanga corridor
Tanga Cement	Cement industry	1,2	National	Low	High influence, less interested	High: Research and capacity building development on	Tanga corridor

Stakeholder	Major Activities	DCP Research priorities	Geographical area of focus	Power/Influence	Position	Importance to/Impact to the DCP project	Target Development corridor
						the influence of development industries on ecosystem services and biodiversity	
Mlenge Rice project	Rice production	1,2	National	Low	High influence, less interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and biodiversity	SAGCOT
Mbarali rice project	Rice production	1,2	National	Low	High influence, less interested	High: Research partnership and capacity building in relation to the effects of plantation forest in water resource and biodiversity	SAGCOT
Mbeya Cement	Cement industry	1,2	National	Low	High influence, less interested	High: Research and capacity building development on the influence of development industries on ecosystem services and biodiversity	SAGCOT