



Southern Agricultural Growth
Corridor of Tanzania

Concept Note





The Southern Agricultural Growth Corridor covers approximately one third of mainland Tanzania. It extends north and south of the rail and road ‘backbone’ that runs from Dar es Salaam to the northern areas of Zambia and Malawi.

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Executive summary

Tanzania's Southern Corridor links the Port of Dar es Salaam to Malawi, Zambia and the Democratic Republic of Congo. An established trade route with reasonably good backbone infrastructure (roads, rail, and electricity), the corridor passes through some of the richest agricultural lands in Africa. There is huge potential to develop a sustainable commercial farming sector in Tanzania serving regional and overseas markets, as recognised by the *Kilimo Kwanza* initiative¹. Achieving that potential would provide significant and lasting benefits for millions of people living in rural areas. It would also help achieve national food security and deliver significant economic gains for the Tanzanian economy.

Kilimo Kwanza calls for the private sector to mobilise new investment to promote a modern and profitable agriculture sector in Tanzania. It also calls for a transformation of smallholder farmers into commercial farmers. This concept note sets out proposals to help achieve the *Kilimo Kwanza* vision in the Southern Corridor. Firstly, it proposes an Agricultural Growth Corridor approach, which involves developing clusters of commercial farms and agribusinesses in areas where there is high agricultural potential and access to backbone infrastructure. Secondly, it describes a Nucleus Commercial Farm and Outgrower model, a type of commercial farm design that ensures there are strong and direct benefits for smallholder farmers. Thirdly, it shows how targeted government and donor support, in particular new financing mechanisms, can mobilise private funding to support these types of investments. Fourthly, it underlines the importance of a supportive business environment.

The purpose of this concept note is to seek endorsement and support from key stakeholders in the Tanzanian agriculture sector – including the Government of the United Republic of Tanzania, development partners and leading private sector organisations – for the preparation of a detailed Investment Blueprint for the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) initiative. The Investment Blueprint will describe how to contribute to *Kilimo Kwanza's* vision of a major expansion of commercial agriculture in the corridor, including irrigated and rain-fed farming with associated processing and storage facilities. It will also describe the benefits of commercial agriculture for smallholder farmers and local communities, and for the wider Tanzanian economy.



¹ *Kilimo Kwanza* is a policy initiative of the Tanzania National Business Council (TNBC) supported by the Government of the United Republic of Tanzania.



Outline of the concept note

Section 1 outlines the background to the SAGCOT initiative and introduces the working group behind the concept note.

Section 2 provides an introduction to the Agricultural Growth Corridor model and describes the poverty reduction benefits of a successful commercial agriculture sector.

Section 3 gives an overview of the backbone infrastructure along the Southern Corridor and describes the agricultural potential of the area. It also summarises some of the major investments in agriculture and infrastructure underway.

Section 4 looks at the current status of commercial agriculture in the Southern Corridor and summarises the key constraints on a modern and profitable agriculture sector. It also explains how SAGCOT supports the aims of Tanzania's *Kilimo Kwanza* initiative.

Section 5 proposes ways of making the SAGCOT vision a reality. It recommends actions to provide new financing mechanisms and support for an agricultural development company; to establish the SAGCOT partnership organisation; and to implement new policies.

Section 6 considers some of the main obstacles to the promotion of commercial agriculture in Tanzania – including social and environmental factors – and how these can be addressed.

Section 7 summarises the proposed next steps, including an outline of the Investment Blueprint.

Disclaimer

This concept note is a preliminary review of the potential for commercially viable agricultural development in the Southern Agricultural Growth Corridor of Tanzania in the future. The project team contacted as many stakeholders as possible from the Government of the United Republic of Tanzania, the private sector and international agencies. However, time and resource limitations mean the information presented here is neither complete nor comprehensive. The document is therefore only indicative and should not be relied upon for making investment decisions. Any inaccuracies are the responsibility of the project team.

1. Background

The concept of Agricultural Growth Corridors was launched at the UN General Assembly meeting in New York in 2008. In early 2009, stakeholders with an interest in African agriculture, including Tanzania's Minister of Agriculture, Honourable Stephen Wasira, met at the World Economic Forum in Davos to initiate a process that would see Tanzania and Mozambique taking a lead role in developing Agricultural Growth Corridors, incorporating the ports of Dar es Salaam and Beira.

The concept of a Tanzanian Agricultural Growth Corridor took a step forward at a meeting held in October 2009 at the Norwegian Embassy in Dar es Salaam. The meeting included senior representatives of the Government of the United Republic of Tanzania, representatives from the Norwegian Embassy, Norfund, African Development Bank, World Bank, Tanzanian Investment Centre, Tanzania Agricultural Partnership (TAP) and Yara International. The outcome was agreement to establish a working group to develop a concept note for presentation at the African World Economic Forum in Dar es Salaam in May 2010. If approved, the concept note would lead to the preparation of an Investment Blueprint, identifying public and private sector investment opportunities in the Southern Corridor² and proposing a strategy for attracting the required public and private investments.

Box 1: About the working group

This concept note has been developed with guidance from a group of private sector agribusinesses, both local and international, plus donors and lead ministries, who form part of the ad hoc Steering Committee. At the same time, links are being developed with the key national organisations, such as the Tanzania Investment Centre, Tanzania Private Sector Foundation and the Tanzania National Business Council.

The working group appointed a Concept Note Team led by Prorustica, a consultancy firm, working alongside the Tanzania Agricultural Partnership team within the Agricultural Council of Tanzania, and assisted by AgDevCo and InfraCo. The Concept Note Team would like to thank all of the stakeholders involved in supporting the development of the concept note, in particular the Norwegian Embassy for providing financial support. Appreciation is also extended to the wide range of sources – government ministries, international agencies, non-governmental organisations, financial institutions, farmers and private investors – who contributed information to the study.

² There are two possible corridors served from Dar es Salaam. The initial focus of the working group is on the Southern Highlands of Tanzania and the initiative named the Southern Agricultural Growth Corridor of Tanzania (SAGCOT).

2. The Agricultural Growth Corridor model

This section introduces the Agricultural Growth Corridor approach. It describes why this approach makes commercial sense and explains how it can deliver significant benefits for rural populations and the wider economy of Tanzania.

In all countries where commercial agriculture has been successful – from Western Europe and the United States to Brazil and Vietnam – four common features are present. Firstly, there are ample land with suitable soils, benign climatic conditions and a reliable supply of water. Secondly, there is adequate access to agriculture-supporting infrastructure, in the form of transport links to markets and, in drier climates, irrigation powered by grid electricity. Thirdly, there are clusters of commercially viable farming, processing and service firms located in specific geographical areas (in many cases the early investors in these areas benefitted from public sector support in the form of low-cost financing or subsidies). By achieving economies of scale the clusters help to drive down production and marketing costs for all players in the value chain. Finally, there is a clear and specific government policy dedicated to actively supporting sustainable agriculture and recognising the important role the private sector has to play to implement such a policy. The result is a profitable agricultural sector able to compete in global markets.

For many parts of Africa with high agricultural potential, the urgent challenge is to catch up with international competitors, many of whom already benefit from good infrastructure and mature agribusiness clusters. Achieving this will not be easy: the private sector is reluctant to invest in new farming opportunities in Sub-Saharan Africa, unless it can be assured of access to affordable infrastructure and a supportive business environment. Likewise, governments and state utility companies are unlikely to commit significant

public resources to developing infrastructure in rural areas where there is only limited commercial farming activity and hence low demand for services.

The Agricultural Growth Corridor model is a way of breaking this impasse and catalysing large volumes of private investment and enabling high potential agricultural regions to become internationally competitive. This is done in a number of ways, through:

- identification of areas with high agricultural potential and reasonable access to existing backbone infrastructure
- analysis of the constraints on commercial agriculture and how these can be addressed
- establishment of a partnership organisation, which helps to ensure public- and private-sector programmes and investments are properly targeted and coordinated
- provision of support to the commercial agriculture sector through new types of financing mechanism, on the condition that smallholder and emergent farmers are incorporated and that there are clear benefits for local communities
- recognition of the important roles of different public- and private-sector players in successful execution of the Agricultural Growth Corridor approach.

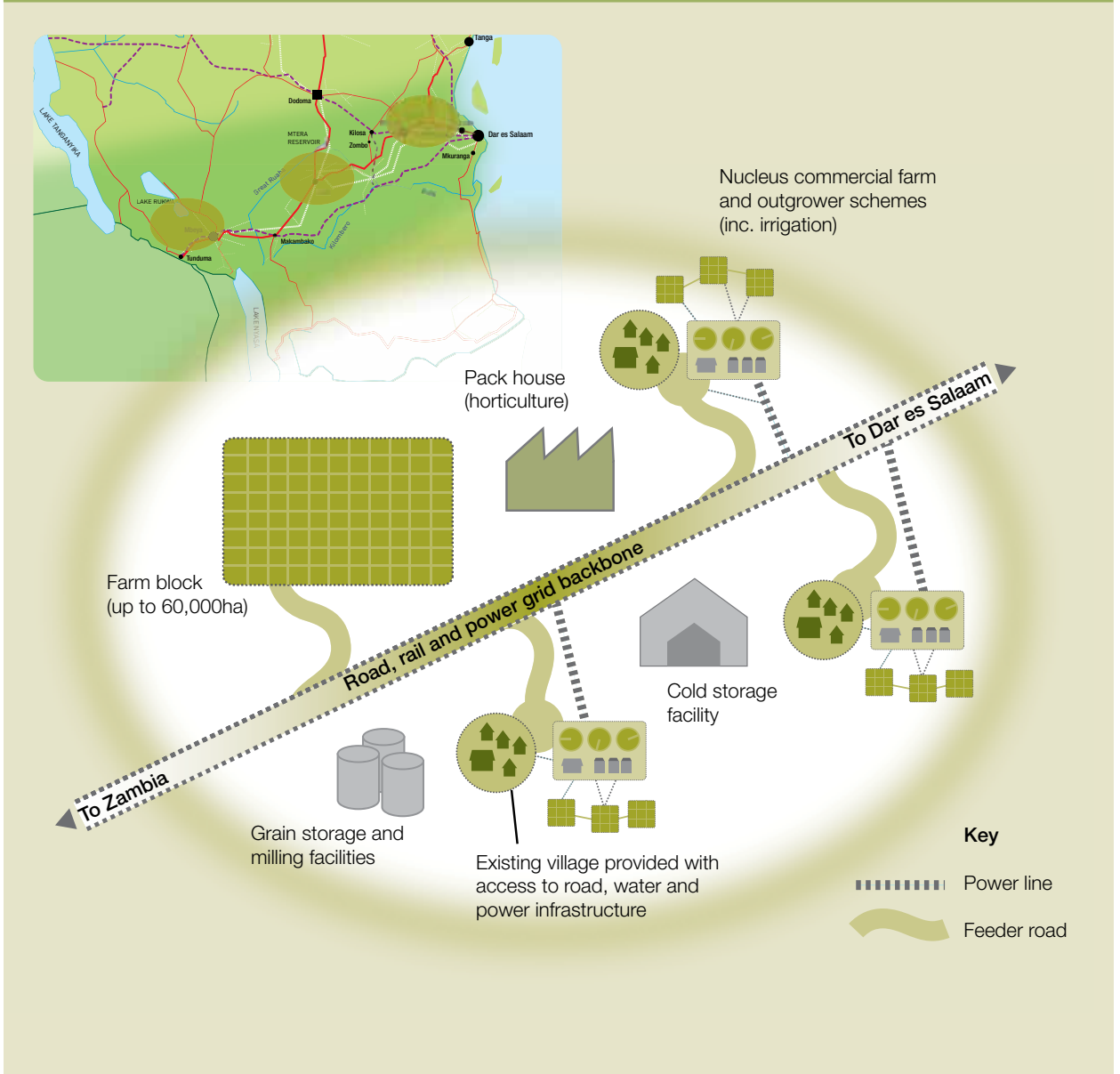
SAGCOT aims to facilitate the development of three or four clusters of profitable small-, medium- and large-scale farms and associated agribusinesses in the Southern Corridor. Building on existing operations and planned investments, the clusters will be centred on areas of particularly high agricultural potential

and will include nucleus commercial farms and outgrower schemes; serviced farm blocks; processing and storage facilities available to commercial and smallholder farmers; and improved infrastructure to farms and local communities. The development of the clusters would be funded through various sources of finance. Public funding will be needed for major public infrastructure (eg roads and power); ‘patient capital’ for agriculture-supporting infrastructure (eg irrigation systems); grant funding for certain types of smallholder support programmes (eg extension services); and commercial lending for on-farm investment costs and working capital.

The clusters will benefit the Tanzanian economy on a number of levels:

- local entrepreneurs will have the opportunity to set up new businesses in the agriculture services sector – eg transportation, storage, processing, and marketing
- rural communities will benefit from improved access to infrastructure (eg feeder roads, electricity and potable water), while also gaining employment opportunities with agricultural firms throughout the value chain

Figure 1: Agricultural Growth Corridor clusters



‘GDP growth originating in agriculture induces income growth among the 40 per cent poorest, which is in the order of three times larger than growth originating in the rest of the economy... The power of agriculture comes not only from its direct poverty reduction effect, but also from its potentially strong growth linkage effects on the rest of the economy.’

Janvry and Sadoulet (2009)

- commercial, emergent and smallholder farmers will be able to produce higher yielding crops, resulting in a rapid increase in national production
- smallholder farmers will have the opportunity to become emergent or commercial farmers with affordable access to irrigation and other agricultural support services
- a large number smallholder farmers continuing to operate under rain-fed conditions will have improved access to inputs, value-adding services and markets
- the East and Central African region will benefit from improved food security and the Tanzanian economy will benefit from increased tax revenues and an improved balance of payments.

Box 2: The Beira Agricultural Growth Corridor (BAGC)

The BAGC was initiated in early 2009, with the aim of boosting commercial agriculture through the coordination of activities of the Government of Mozambique, private investors and international agencies. The food security, income generation and job creation benefits will be significant. The Government of Mozambique has fully endorsed the aims and objectives of the programme and supports the private-sector-led development of the BAGC. An Investment Blueprint has been developed showing which investments are now required and what actions must be taken by the Government, the private sector and the international community. The BAGC Partnership has been established, with a small secretariat based in Beira. New financing mechanisms for commercial agriculture are being developed.

The benefits of putting 190,000 hectares under irrigation in the Beira Corridor (with associated agriculture service businesses) are expected to be:

- 350,000 jobs
- US\$50 million in taxes to the Government per annum
- 150 villages gain electricity and water supply
- US\$1 billion farming revenues per annum – additional revenues of around US\$750 million in supply chain
- 13,000 smallholder farmers have affordable access to irrigation services
- improved access to inputs, finance and markets for up to 200,000 smallholder households.

See www.beiracorridor.com for more details.

Poverty reduction potential of commercial agriculture

The powerful potential for agriculture to reduce poverty in rural areas is well understood. Research by the World Bank shows that economic growth originating in the agricultural sector can increase incomes for the poorest 40 per cent of the population by a multiple of three times growth originating in the rest of the economy.³ Recent research from Zambia shows that smallholder farmers and local communities often benefit considerably from involvement in commercial value chains for crops such as sugar, tobacco and horticulture.⁴ Moreover, the Zambian research demonstrates that within a short period of time farm clusters can contribute towards turning a staple crop deficit into a national surplus.

However, some types of investment in commercial agriculture have a more direct impact on poverty reduction than others. A lesson from the Cerrado

region in Brazil, which achieved significant increases in agricultural productivity over a 30-year period, is that large-scale mechanised agriculture can, in some cases, exclude smallholder farmers. Learning from that experience, the Agricultural Growth Corridor approach promotes investment models that ensure smallholder and emergent farmers (see Box 3), and the rural communities in which they live, benefit directly from growth in commercial agriculture, including through nucleus farm hub and outgrower schemes and farm-block models (for more details, see Section 6 on page 21.)

The expected benefits of the approach have been assessed in detail for the Beira Agricultural Growth Corridor (BAGC) in Mozambique. Analysis shows how putting 190,000 hectares under commercial irrigation over a 20-year period would benefit up to one million people and provide opportunities for tens of thousands of smallholder farmers to become fully commercial producers able to compete in international markets.

Box 3: What is 'commercial agriculture'?

In the context of SAGCOT, the term 'commercial agriculture' includes farming, processing and agribusiness activities and investments that use modern planning, production, processing and marketing techniques. Commercial farms – be they large, medium or small – operate as financially sustainable businesses with the primary objective of selling crops and livestock products into the market. In terms of turnover and in the context of Tanzanian agriculture, small farms can be defined as those with a turnover of less than US\$5,000 per year, emergent farmers would have a turnover of between US\$5,000 and US\$500,000; and large farms would have turnovers of more than US\$500,000. Although a farm of any size can be commercial, economies of scale generally mean that there is a minimum efficient size of commercial enterprise for a given product. For commodities such as grains, the area is likely to be upwards of 200 hectares, but five hectares of well-managed irrigated flowers or vegetables would provide a viable business.

Commercial opportunities for farmers with limited land holdings can be created by their working together to grow a specific crop for the market and by associating with large-scale farm operations that can provide efficient access to markets and economies of scale in the purchase of inputs. Proven models for integrating smallholders into ongoing commercial farming operations include:

- the commercial hub and outgrower schemes or contract farming approach where a central farming operation provides inputs to smallholders and negotiates to buy their produce – such as with tea in Mufindi and sugar in Kilombero
- the serviced farm blocks approach where an investor leases a series of adjacent small plots of (often irrigated) land to smallholders in return for a share of revenues.

4 World Bank (2009) *Zambia Commercial Value Chains in Zambian Agriculture: Do Smallholders Benefit?*

3. Southern Agricultural Growth Corridor

This section describes the existing and planned infrastructure along the Southern Corridor. It also summarises the enormous agricultural potential of the area. The conclusion is that, despite some significant challenges, all of the essential building blocks are in place to allow an Agricultural Growth Corridor approach to succeed in Tanzania.

The Southern Agriculture Growth Corridor of Tanzania (SAGCOT) is formed along the trade route linking Tanzania to landlocked countries in south-eastern Africa. Within Tanzania, the Corridor serves the Coast, Morogoro, Iringa, Rukwa and Mbeya regions. Internationally, the corridor reaches large-scale industries in the Northern and Central Provinces of Zambia, Malawi and the Katanga Province in the Democratic Republic of Congo (DRC). Although the majority of goods originate from or are destined for Tanzania, trade to the mineral-rich copper-belt of Zambia and the DRC accounted for 27 per cent of all container imports and exports through Dar es Salaam in 2008.

The majority of the backbone infrastructure of the corridor was built after Tanzanian Independence as an alternative to the South African and Mozambique transport links to Zambia and includes:

- the Port of Dar es Salaam, which currently handles approximately eight million tonnes per annum
- the Tanzania–Zambia Railway Authority (TAZARA) network of 1,870km of rail – the railway was commissioned in 1976 to link Dar es Salaam Port to Kapiri Mposhi and thence to the Zambian Railways (and the DRC and Southern African rail networks)
- the Tanzania–Zambia (TANZAM) Highway, a paved trunk road system of 1,762km linking Dar es Salaam Port to Kapiri Mposhi
- the Tanesco electricity grid servicing major towns along the corridor within Tanzania
- total renewable water resources amounting to 93 cubic kilometres per year (km³/yr).

The backbone infrastructure provides a reasonably good, but incomplete, platform upon which to build a sustainable commercial agriculture sector in Southern Tanzania. There are a number of critically important ways in which the backbone infrastructure will have to be improved to enable the agriculture sector to compete with international producers. Firstly, the port capacity needs to be expanded and customs procedures accelerated. Secondly, the road system requires rehabilitation and maintenance. Thirdly, even though rail transport is cheaper than road, it is slow, unsecured and unreliable. There is a need to improve interchange facilities and upgrade wagon and locomotive stock on the railway system to enable it to become more competitive with road haulage. Fourthly, the power grid will need upgrading in places and national shortages in generating capacity will need to be met.

As shown in Figure 3 (page 11), some investments are already taking place. For SAGCOT and the *Kilimo Kwanza* initiative to be a success, there needs to be commitment to seeing these existing investments through, including cooperation from parastatal utilities. Further mobilisation of public resources will also be required to address remaining bottlenecks.

In addition to strengthening the backbone infrastructure, the success of commercial agriculture in the Southern Corridor will depend on the provision of agriculture-supporting infrastructure, including feeder roads, bulk water distribution systems, electricity reticulation, and cold-storage facilities, to connect high-potential farming areas to the backbone infrastructure and provide value-addition opportunities. How to provide the required agriculture-supporting infrastructure is the subject of Section 5 of this report on page 16.

Agriculture potential

The initial focus of production for SAGCOT will be the high-potential agricultural land stretching either side of the infrastructure backbone from Dar es Salaam through Morogoro to Mbeya – and north and south to include the highly productive areas around Sumbawanga and Njombe.

‘Tanzania is undoubtedly one of Africa’s sleeping agricultural giants. It is blessed with ample land and water resources suitable for agriculture, is located on the coast and borders six countries that could serve as agricultural markets. It also has a comparative advantage in the production of both food and export crops [...] as the international trade environment has become more receptive for agricultural exports from the developing World. [...] It is time for Tanzania to gear up to seize these greatly improved opportunities in regional and global agricultural markets.’⁵

Binswanger-Mkhize and Gautam (2010)

Box 4: The Port of Dar es Salaam

The Port of Dar es Salaam is already operating at near maximum capacity, especially in the container trade. The channel layout and the limited depth on the general cargo berths restrict the port from receiving full-size container panamax or handymax dry bulk vessels. Poor port connectivity, lengthy customs and clearance procedures, poor rail services, road and city congestion and a lack of space for modern cargo handling services are resulting in high costs associated with moving goods and substantial inefficiencies. At present, the cost of sea freight as a percentage of import value in Tanzania and its hinterlands is more than five times the world average. Conservative estimates suggest that Dar es Salaam will be able to handle 1.2 million Twenty-foot Equivalent Unit Containers (TEUs), 6.1 million tonnes of dry bulk, 4.0 million tonnes of break bulk, 10 million tonnes of liquid bulk and 120,000 vehicles per annum.

Accordingly, Tanzania Ports Authority have already invested approximately US\$18 million in the procurement of modern handling equipment, the construction of additional yards and the relocation of container scanning facilities, all of which hope to rationalise traffic flow, assist the port to handle greater throughput volumes and reduce container import dwell time. The port is also planning to deepen the existing general cargo berths, construct a new container terminal and modernise the grain terminal. In addition Yara and the DSM Corridor Group are investing in modern fertiliser terminals in order to increase handling rates at the ship to shore interface, allow greater throughput and make fertiliser available year round.



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5 Binswanger-Mkhize and Gautam (2010) *Towards an Internationally Competitive Tanzanian Agriculture*, World Bank.



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The Southern Corridor has a diverse range of climates, from the wet coastal plains through dry hot savannah and tropical wet lower mountain valleys up into the temperate highlands. This variety in climate and altitude, as well as the diverse nature of the soils, allow for a broad scope of choice in crop production. Throughout much of this area there is sufficient rainfall for profitable dry-land farming.

The major crop opportunities in the corridor include cereals (wheat, barley, maize, paddy rice), horticulture, coffee, tea, potatoes, banana, beans, vegetables, and sunflower. For livestock, beef, poultry and dairy operations have great potential. Some of the most significant opportunities for developing and expanding commercial agricultural activities are discussed in more detail in a separate appendix to this concept note (see www.africacorridors/sagcot.com for details).

There is considerable potential for irrigation. Tanzania has the second largest volume of inland fresh water resources in Africa and it is estimated that only one per cent of total theoretically irrigable land is currently developed. Nearly 50 per cent of all the country’s medium-irrigation-potential land and some 40 per cent of high-irrigation-potential land fall within the regions that make up the Southern Agricultural Growth Corridor (see Figure 2). However, this resource must be used wisely, effectively and economically.

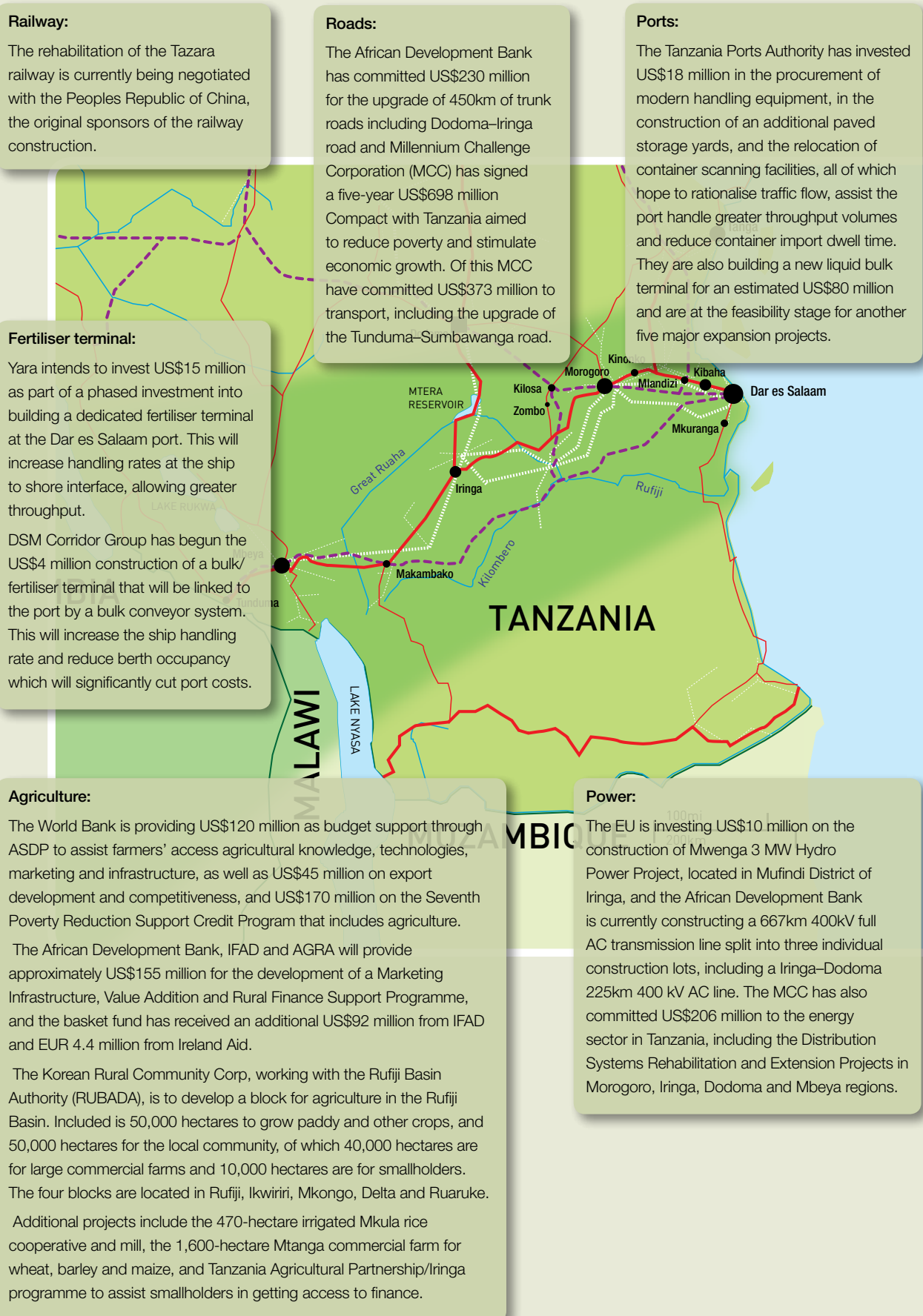
Despite this potential, there are currently very few commercial farming enterprises operating at scale in the Southern Corridor area. Section 4 (page 12) explores the constraints that are preventing the Southern Corridor’s agricultural potential from being realised. Section 6 (page 21) proposes ways of managing and mitigating them.

Figure 2: Irrigation potential in the SAGCOT region

Region	Medium potential (hectares)	High potential (hectares)
Coast	172,000	83,000
Iringa	1,050,000	164,000
Mbeya	500,000	285,000
Morogoro	602,000	377,000
Total	2,324,000	909,000

Source: Ministry of Agriculture, Food Security and Cooperatives (2009) *Investment Potential and Opportunities in Agriculture*.

Figure 3: Major investments in infrastructure and agriculture



4. Current status of agriculture

Tanzania's tremendous agricultural potential has yet to be realised. Agricultural output has failed to keep pace with population growth since the 1960s.⁶ With the population expected to double again to 80 million by 2050, crop yields will have to grow at least three-fold to achieve national self-sufficiency in food. Despite improving economic growth rates, the majority of the rural population remain trapped in poverty without income-earning opportunities. Growth is concentrated in manufacturing and service industries in the main urban centres. Policies to stimulate agriculture have yet to prove effective.

What explains the poor performance of the agriculture sector? There are multiple factors, all of which interact to make the commercial farming a financially insecure activity, especially for small and medium-sized farmers. In contrast, plantations for export crops such as sugar, sisal and tea are more insulated from many of the constraints facing individual commercial farmers because they are generally supported by large international companies, benefit from scale economies, and can rely on internal financial resources and access international markets. This section summarises the major constraints and describes how the Government and development partners are acting to address them.

Poor infrastructure

- The port, local roads and the lack of utilisation of the railroad all lead to transport obstacles that significantly increase the cost of bringing local production to market.

- Large-scale dams, irrigation and electrification systems are generally not available and are beyond the capability of individual farmers to finance and install. Farmers have to use expensive diesel-powered electricity.
- The rural feeder road network away from the main Dar es Salaam–Mbeya road is poor. There are no temperate or cold-storage facilities or reefer/container facilities readily available to agriculture along the corridor.
- The majority of farmers lack processing services in their area. Larger and more efficient processing services require higher crop volumes. Without the stimulation of concentrated production areas, installation of efficient processing services will be hard to justify economically and local farmers will not receive the benefits of such efficiencies in higher milling output and lower processing costs.

Lack of access to finance

- Only a few banks are lending to agriculture in any significant way. According to the Tanzania National Business Council, in 2008 the total domestic lending was around TZS4,378 billion, of which TZS540 billion (12 per cent) went to agriculture. Of the total lending to agriculture, only eight per cent went to production, while the remaining 92 per cent went to agricultural trading.
- When banks do lend, it is usually on a short-term basis to fund working capital, and at rates of interest that are often too high to be commercially affordable.

⁶ Agricultural output has increased by a factor of three since 1960, while population has increased from 10 million to 40 million. 'Total Factor Productivity', a measure of the efficiency of agricultural output, has remained static over the period and has fallen below the average for Sub-Saharan Africa (Binswanger-Mkhize and Gautam (2010)).



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Difficulties securing land

- No comprehensive land survey of the area is available. Consequently, investors have difficulty accessing information on land availability and quality. This discourages new investment in agriculture because locating suitable land is expensive and time consuming.
- Only limited land in Tanzania is currently secured under 'Right of Occupancy' title and available for purchase or long-term lease. Lack of long-term security over land deters long-term investments in land clearing, soil upgrade, irrigation and fixed assets such as pack houses and storage facilities.
- Soils are generally deficient in nutrients, likely to be the result of years of poor husbandry without proper replenishment. However, soil structure is generally very good and conducive to intensive farming.
- There is a need for scientific soil analysis facilities to allow for selection of type and

quantity for fertiliser application. Without such information fertiliser is often misapplied resulting in soil and water pollution or underutilised where it becomes ineffective and encourages abandonment.

- The approval process for the commercial release of new seed varieties and plant material is cumbersome because of the many legislative requirements and the numerous government departments involved. Improved seed is often the easiest way to increase yields without incurring significant extra costs, but is an option unavailable to most Tanzanian farmers.

Limited market access and economies of scale

- Low production volumes and poor information flows prohibit direct access to markets resulting in reliance by the majority of smallholders on local traders (sometimes as many as seven intermediaries) and inefficient processors prior to product reaching final markets.

‘The agricultural potential of the Southern Corridor is enormous but remains largely dormant or highly underexploited. With a rapidly growing population in the Eastern and Central African region and global food shortages, serious market opportunities for agricultural produce abound. It is time for the Agricultural Sleeping Giant [Tanzania] to awake. SAGCOT can play an important role in making that happen, and thereby contribute in achieving the objectives of Kilimo Kwanza.’

Salum Shamte, Chairman, Agricultural Council of Tanzania

Box 5: Key statistics on Tanzanian agriculture

Although Tanzania achieved 7.4 per cent growth in 2008, this statistic is highly skewed, focusing primarily on a few urban centres.

An estimated 85 per cent of the country's poor live in rural areas and rely on agriculture as their primary source of income.

Ninety-eight per cent of rural women who are defined as economically active are engaged in agriculture.

Agricultural output and total factor productivity (TFP) has stagnated since 1961. From 2000 to 2007 Tanzania's export growth averaged 4.3 per cent per year, compared with neighbouring countries such as Ethiopia and Uganda that averaged 18.8 per cent and 15.3 per cent growth per year respectively.

Tanzania uses an average of 9kg of fertiliser per hectare, compared with 27kg for Malawi, 53kg for South Africa and 279kg for China.

- The dispersion of smallholder farmers, their significant distance to markets and the low volumes they are producing make it difficult to install infrastructure (roads and electricity) that would improve their access to markets.

Taxes and export barriers

- Most crops are taxed at the national level, once certain volumes have been achieved, using the VAT system. This discourages larger production volumes. Crops are further taxed at the district level, by each local district individually. Such taxes result in costs that discourage the inter-district transport of crops. Consequently, trade is curtailed because areas that produce excess crops are often unable to sell their crops economically in areas where there is a shortage. Moreover, taxation is not on profits but on production volume. Such taxation discourages surplus production and forces farmers to focus on smaller volumetric harvest and higher value crops.
- In addition to the high cost of transport, periodic export bans prohibit access to larger and often closer regional markets. Such bans reduce incentives for farmers to invest in increasing production volumes, potentially exacerbating crop shortages in future seasons. As a result of these ad hoc bans, local financial organisations such as PASS have stopped lending to maize producers in some cases, citing the lack of a reliable market as its primary concern.

The combined effect of these constraints is to discourage the development of a critical mass of commercial farmers and supporting agribusiness firms in the Southern Corridor. Although sporadic agricultural development is taking place along the corridor, it is slow, disjointed and insufficient to meet local demand, and lacks the critical mass or economies of scale to compete with Tanzania's international competitors. Despite its enormous natural promise, the agricultural potential of the Southern Corridor remains unrealised.

The Government of the United Republic of Tanzania recognises the constraints on commercial

Box 6: Kilimo Kwanza

The 10 pillars of the *Kilimo Kwanza* Implementation Framework are founded on: (i) political will to push agricultural transformation, (ii) enhanced financing for agriculture, (iii) institutional reorganisation and management of agriculture, (iv) paradigm shift to strategic agricultural production, (v) land availability for agriculture, (vi) incentives to stimulate investments in agriculture, (vii) industrialisation for agricultural transformation, (viii) science, technology and human resources to support agricultural transformation, (ix) infrastructure development to support agricultural transformation, and, finally and essentially, (x) mobilisation of Tanzanians to support and participate in the implementation of *Kilimo Kwanza*.

‘Stakeholders in agriculture envisage an agricultural sector that is modernised, commercial, highly productive and profitable, utilises natural resources in an overall sustainable manner and acts as an effective basis for inter-sectoral linkages by the year 2025.’⁷

Ministry of Agriculture, Food Security and Cooperatives (2009)

agriculture and supports the *Kilimo Kwanza* initiative launched by the Tanzania National Business Council. The objectives of *Kilimo Kwanza* respond to many of the pressing needs for reform in the agricultural sector and the initiative acknowledges the pressing need to move from subsistence to commercial farming. Although mobilising the private sector will be central to the success of *Kilimo Kwanza*, the means of achieving this have yet to be spelt out in detail. The SAGCOT initiative can help *Kilimo Kwanza* move from concept to reality in the Southern Corridor and provide a roadmap showing how private investment can be applied to promote socially responsible and ecologically sustainable agriculture.

Achieving the aims of *Kilimo Kwanza* will require a step change in agricultural productivity, not just a continuation of sporadic and incremental improvements. Furthermore, this will require strong leadership and determination to follow through to completion. The next section looks at ways of making SAGCOT a reality and helping to deliver the vision of *Kilimo Kwanza* by mobilising private investment within the Southern Corridor.



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7 Ministry of Agriculture, Food Security and Cooperatives (2009) *Investment Potential and Opportunities in Agriculture*.

5. Making it happen

Achieving the Kilimo Kwanza vision of a modern and profitable agriculture sector will require bold new approaches and strong commitment to success from the Government and the private sector. This section describes the practical steps necessary to promote the formation of agricultural clusters along the Southern Corridor with major benefits for smallholder farmers and local communities.

Many potentially profitable agriculture projects in Sub-Saharan Africa do not get beyond the concept stage because the costs and risks of early-stage agriculture investments are too high. Compounding this, expected financial returns are often reduced because of uncompetitive production costs and inefficient marketing arrangements, caused by a lack of economies of scale and poor infrastructure. There are proven approaches for promoting commercial farming investments that incorporate smallholder and emergent farmers (see Box 7). The question is how to overcome the barriers that prevent the private sector from making pioneering investments in areas where there is, as yet, little commercial farming activity.

The **first requirement** is for new types of finance. The high costs of connecting a commercial farm to backbone infrastructure (eg US\$10,000–20,000 per kilometre for an electricity line) cannot in most cases be absorbed by a single medium-sized commercial farm. The same applies to the cost of installing bulk water supply to the farm gate or building feeder roads. If prohibitive and uneconomic to the medium-sized farmer, these costs will certainly be prohibitive for smallholder farmers and associations.

An important part of the solution is to make available long-term, low-cost finance – patient capital⁸ – that can be used to finance the agriculture-supporting infrastructure components of commercial farming projects. Patient capital is used to address

market failures and only needs to be employed once. Once the infrastructure has been installed, it could be expected to remain in place for a long period, at least 30 to 50 years with proper maintenance. With access to agriculture-supporting infrastructure, farmers face significantly reduced production costs and should be able to finance their on-farm investments through the private capital markets.

The provision of patient capital makes commercial farming in early-stage situations viable. It is a form of subsidy in the sense that commercial finance is not available for these types of long-term infrastructure investment. However, it is important to note that the majority of the benefits of the subsidy are passed on to smallholder farmers and local communities rather than to large-scale commercial farms (large-scale commercial farmers are expected to pay for such services in the form of a utility charge, set at higher rate than for smallholders). Indeed a requirement of access to patient capital is that strong benefits to smallholder farmers and the local community are built into the project from the outset. For example, in the Nucleus Farm Hub and Outgrower model (see Box 7), the charges for access to irrigation services for smallholders are set at much lower levels than for the nucleus farm. Furthermore, local communities are provided with access to infrastructure services at low cost (eg water and electricity) or free of charge (eg feeder roads). Smallholder farmers will also benefit from the market access and economies of scale in input-purchasing created by the demand and volumes generated by the commercial farmer. (For a successful example of a project of this type see InfraCo's Chiansi irrigation project at www.infraco.com.⁹)

8 For more details see Palmer (2010) *Agricultural growth and poverty reduction in Africa: The case for patient capital*, AgDevCo. Available at http://www.agdevco.com/documents/The_Case_for_patient_capital.pdf

9 A full write up of the Chiansi project, including how it relies on patient capital to fund irrigation infrastructure, is available at: <http://www.infracoafrica.com/images/library/files/Chiansi.pdf>

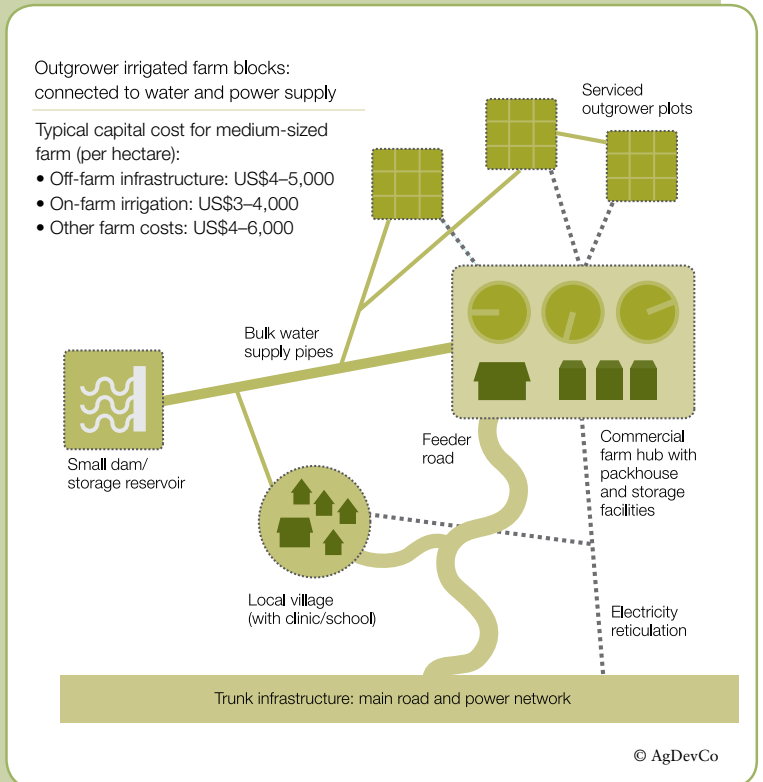
Box 7: Commercial farming models and benefits for local communities

There are proven models for integrating large-scale commercial and smallholder farmers with mutual benefits. These models could be promoted within agricultural growth clusters along the Southern Corridor.

1. Nucleus Farm Hub and Outgrower model

This model incorporates the following design features:

- commercial nucleus farm including storage and processing facilities
- nucleus farm is connected to the infrastructure backbone with feeder roads and electricity reticulation
- access to reliable bulk water supply for irrigation with a small dam/storage reservoir and distribution system
- irrigation made available to smallholder farmers on serviced blocks (each plot within a block at least five hectares in size) allowing fully commercial yields (eg more than six mt/ha for maize)
- adjacent villages linked to water and power supply at low marginal cost
- improved access for smallholder farmers in the vicinity to lower cost inputs, improved post-harvest facilities and access to markets and extension services.



2. Commercial Farm Block model

Another model is the large commercial farm block. Suitable in areas with ample land and sufficient precipitation to support rain-fed agriculture, farming blocks are large areas (often more than 50,000 hectares) where the public sector incurs the cost of preparing the land and installing basic infrastructure including feeder roads. The farm blocks can be subdivided into units ranging in size from 50 to 1,000 hectares and leased to emergent and larger-scale commercial farmers. The State or a public-private partnership company may also arrange for leasing of farm machinery and equipment to farmers.

This model has been successful in Zambia, where a number of farm blocks in Mkushi, Chisamba and Mazabuka contributed to achieving national self-sufficiency in food crops within a decade (between 2000 and 2010). The size of Zambia's agriculture industry now has brought about the prolific expansion in numbers of service industries, including tractor suppliers, local cultivating and harvesting contractors, local fertiliser production, new players offering loans and the means of accessing finance, increased investment in storage and processing industries, all of whom find themselves competing with each other to offer a better service to the farmer. With the increased production many jobs have been created both in urban and rural areas.

In some cases, there will be entrepreneurs with the willingness and ability to design and arrange finance for these types of commercial farming projects. But, in many situations, the high costs and risks of designing early-stage projects and bringing them to successful implementation are likely to deter private entrepreneurs and project developers, even when patient capital is available for the infrastructure.

The **second requirement** is therefore a project development company able to structure early-stage opportunities and bring them to the point where they are attractive to private investors. The tasks to be undertaken during the project development phase include:

- securing long-term land tenure or lease arrangements
- conducting detailed feasibility and technical studies
- soil analysis and trial planting
- detailed consultations with local communities and the Government
- developing business and financing plans
- ensuring strong links to smallholder and emergent farmers and local communities
- soliciting interest from commercial farmers or commercial farming companies
- securing off-take agreements
- arranging financing including patient capital and credit guarantees as necessary.

InfraCo (www.infraco.com) and AgDevCo (www.agdevco.com) already perform this role in Sub-Saharan Africa in the infrastructure and agriculture sectors respectively. InfraCo and AgDevCo are not-for-profit companies managed by experienced private sector teams backed by international donor agencies and private foundations. Their mandate is to promote commercially viable projects that provide developmental benefits for local

communities and national economies. They invest early-stage capital during the project development phase – at their own cost and risk – providing strong incentives to ensure the projects are implemented successfully.

A **third requirement** is a partnership organisation that brings together key stakeholders involved in commercial agriculture in the Southern Corridor. The main purpose of the partnership would be to facilitate communication between the private sector, the Government and other stakeholders to ensure investments are properly coordinated. Membership would include participants from the private sector, the Government and the international community. In principle it would be open to anyone with a substantive interest in the development of SAGCOT. The partnership could also play an important role in assisting farmers and entrepreneurs in the agricultural supply chain to access finance and other types of support from the Government, donors and private investors.

The SAGCOT partnership will include many different players (see Box 9). The Agricultural Council of Tanzania is taking a leading role in coordinating SAGCOT design. The concept note has been developed with guidance from lead ministries. At the same time, links are being developed with Local Government Authorities and key national organisations such as the Tanzania Investment Centre, Tanzania Private Sector Foundation and the Tanzania National Business Council. SAGCOT will also link with ongoing and planned national and international activities working on infrastructure and agriculture in the corridor. These will include, for example, ACTESA, a multi-donor funded initiative with a focus on the whole agricultural value chain in Eastern and Southern Africa; the Agricultural Sector Development Programme (ASDP)¹⁰; the Dar es Salaam Corridor Committee, the emerging African Development Bank/IFAD programme on market infrastructure and value added; expansion of AGRA operations in the Southern Highlands; the European Commission support for the North-

10 Opportunities for ASDP entry through Commodity Investment Plans are being developed by the Tanzania Agricultural Partnership.

South Corridor; USAID's COMPETE project; and a planned new grant window from the African Enterprise Challenge Fund.

A **final requirement** is to improve the business and policy environment such that it that supports, rather than hinders, the development of commercial agriculture. There are also policy areas that are important where SAGCOT will work with advocacy organisations such as the Agricultural Council of Tanzania: for example, streamlining processes for approval and release

of new seed varieties; facilitating access to titled land; removing export bans where unnecessary or counterproductive; and improving incentives for commercial agricultural production through the taxation system. *Kilimo Kwanza* already recognises the need for reforms in many of these areas. The challenge is to implement the reforms quickly and ensure that they lead to tangible changes on the ground, including at the Local Government Authority level where key decisions are made regarding approvals for commercial agriculture investments.

Box 9: SAGCOT partnership members

The SAGCOT partnership would develop a dedicated secretariat function within the Tanzania Agricultural Partnership (TAP) (see below). The secretariat's role would include coordinating information-sharing between members, organising regular meetings, including for sub-groups, and disseminating research and publications to other stakeholders. Links with *Kilimo Kwanza* would be particularly important. The SAGCOT partnership would work with:

- farmers and businesses that source inputs or export products through Dar es Salaam Port, including the high-potential Southern Highlands area in the three Administrative Regions of Morogoro, Iringa and Mbeya in Tanzania
- farmers, traders and regional industries located in Zambia, Malawi and eastern DRC that could efficiently use Dar es Salaam Port as a transport alternative for bulk items
- commercial agricultural operations that make use of the road and rail links along the Southern Corridor, either linking to Dar es Salaam to the east or local and international markets to the west and south-west
- private-sector investors currently operating, or looking to invest, in agriculture and agribusiness within the catchment area of the Southern Agricultural Growth Corridor
- government institutions – the Tanzania Investment Centre, the Tanzania National Business Council and Local Government Authorities, as well as national ministries – responsible for establishing an enabling environment to encourage and support production, processing, marketing and trade.

SAGCOT will also link with ongoing and planned national and international activities working on infrastructure and agriculture in the corridor.

The Tanzania Agricultural Partnership (TAP) is an innovative public-private partnership operating as an independent unit within the Agricultural Council of Tanzania. The Partnership's main role is to facilitate and coordinate the activities of partners around specific agricultural value chains: including extension, inputs, finance, information and output marketing. The Partnership is already working with private-sector partners, donors and Local Government Authorities in all districts within the Southern Corridor. The organisation is increasingly becoming a technical focal point and an institutional platform for value-chain partnerships, rather than an implementation organisation. This is needed in an environment where low levels of trust, inefficient traditional production and marketing systems, and poor communications characterise much of agriculture. Improving communications and information, helping to create new opportunities and developing fresh incentives for more efficient and profitable production and marketing are central to the strategy.

Box 10: Investment opportunities – examples

1. A seed potato growing and distribution operation on a 200-hectare nucleus farm to provide improved seed to 60,000 smallholder farmers: potential to develop irrigated farming blocks for emergent farmers
2. A 30-unit commercial farming block area in the Southern Highlands on 36,000 hectares under rain-fed production with basic infrastructure provided through a public-private partnership, leading to production of 115,000 tonnes of maize, wheat and soya for local and regional consumption
3. A 60-hectare nucleus avocado plantation supported by 140 hectares of smallholder production under irrigation and a further 400 hectares of smallholder outgrowers: benefits would include improved incomes and reduced risks (through crop diversification) for large numbers of smallholder farmers

If all of the above requirements are met, there is a good chance of building on the natural agricultural potential of the Southern Corridor and stimulating significant private investment into socially responsible commercial agriculture. Over time agribusiness clusters would begin to develop, providing processing, storage, and market facilities to serve the surrounding farms. Equally, service industries along the supply chain would be expected to emerge – especially for fertiliser, seeds, and transport. Although this process would likely occur naturally, it may be possible to accelerate the development of clusters by providing specific incentives.

Appendix 1 (page 23) provides three case studies of potential projects that could be developed along the above lines. They are summarised in Box 10.

The Southern Corridor could deliver benefits for 1.5 million people and provide opportunities for at least 30,000 smallholder farmers to become fully commercial farmers achieving internationally competitive yields and incorporating a competitive cost structure. It could also create nearly one million jobs in the agricultural value chain and generate significant tax revenues for the Government. Increased production of crops such as rice and wheat could achieve the Government’s objective of national food self-sufficiency and allow Tanzania to become a major exporter to the rest of the world. The proposed Investment Blueprint would assess the scale of these potential benefits in greater detail.



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6. Managing risks

The potential benefits to Tanzania from successfully developing the Southern Agricultural Growth Corridor are enormous, but there are also significant risks. In this section we focus on three priority risks:

- that benefits do not reach smallholder farmers and local communities
- that the natural environment suffers degradation
- that the business environment does not support private investment in commercial agriculture.

The proposed Investment Blueprint will address these and other risks and how they can be managed or mitigated.

Ensuring benefits reach smallholder farmers and local communities

As mentioned in Section 3 (page 8) models of agricultural development around the world have followed different paths with varying degrees of integration of smallholder farmers. The purpose of SAGCOT is to ensure that the benefits of commercial agriculture are shared widely. One way of achieving this is to make access to certain types of financial support (eg patient capital) conditional on smallholder and community benefits being built into the project. Supporting agricultural development organisations such as AgDevCo that have a specific mandate to develop socially responsible agriculture projects is another.

Managing environmental risks

In all parts of the world commercial agriculture depends on significant inputs of water, fertiliser and chemicals. The environmental footprint of commercial agriculture can be reduced by ensuring optimal use of those inputs and pursuing conservation agriculture¹¹, including low-till farming and recycling animal waste into arable fields. Agroforestry, intercropping, and mixed arable-livestock systems are all examples of ecologically sound farming approaches. SAGCOT could ensure that all members of the partnership sign up to a statement of good environmental practice. Requirements to minimise any negative environmental impacts could also be placed on recipients of patient capital and other forms of public support.

The policy and business environment

A policy and business environment that is supportive of private-sector investment in commercial agriculture is critical to the success of SAGCOT, and *Kilimo Kwanza* more generally. Transforming the agricultural sector will take a long time – possibly 20 years or more – and there needs to be dedication to ensuring that the process is seen through. Early gains can be made, but only if the full machinery of government is orientated towards supporting commercial agriculture. High-level endorsement of SAGCOT is essential, but it is equally important that decision-making at the local level and within key parastatals is geared towards supporting commercial agriculture on issues such as access to land, infrastructure and new seed varieties.

11 For more information on conservation agriculture, see www.fao.org/ag/ca/

7. Conclusions and next steps

This concept note has proposed an approach to mobilising private investment to support the objectives of the *Kilimo Kwanza* initiative in the Southern Corridor region of Tanzania. The approach involves providing support to the commercial agriculture sector – in particular new types of finance – to encourage the development of profitable clusters of farms and associated businesses along the infrastructure backbone. There should be conditions attached to the support provided: commercial agriculture investors must ensure strong and direct benefits to smallholder farmers and local communities and they should adopt good environmental practices.

Successful implementation of SAGCOT will help form the basis for a competitive and sustainable agriculture sector in Tanzania, with benefits for millions of people living in the corridor. It will create hundreds of thousands of jobs and provide opportunities for tens of thousands of smallholders and emergent farmers to become fully commercial producers. By helping to achieve the vision of the *Kilimo Kwanza* initiative, SAGCOT can contribute towards making Tanzania self-sufficient in food and an exporter to the rest of the world. This will not happen overnight. Making it happen will require a

Box 11: Investment Blueprint contents

Detailed analysis of agriculture potential and infrastructure requirements

Model of what can be achieved over 20-year period

Description of economic and social benefits

Identification of eight to 10 investment opportunities

Proposal for mechanisms to make it happen

strong commitment to change and the perseverance necessary to ensure successful implementation from both public- and private-sector stakeholders.

Subject to endorsement of this concept note, the next step is to develop a detailed Investment Blueprint for SAGCOT. The Investment Blueprint would provide technical and financial analysis of investment needs and opportunities in infrastructure and agriculture along the corridor. Taking into account feedback on the concept note, it would also develop further the proposals on new financing facilities; an agricultural project development company; a SAGCOT partnership organisation; and a supportive business environment.

Appendices

Appendix 1: Investment case studies

1. Seed potatoes

A seed potato growing and distribution operation on a 200-hectare nucleus farm to provide improved seed to 60,000 smallholder farmers – potential to develop irrigated farming blocks for emergent farmers

The high plateaux in the Iringa and Mbeya areas are ideal for potato production. The profitability associated with this crop is already above many staple crops such as maize and rice. Potatoes are rich in calories, can provide high yields on small areas of land, can be stored and easily transported and are widely accepted as a food stock in Tanzania. Should the industry grow significantly, they can be exported to regional markets.

Current yields by small farmers average between three and eight tonnes per hectare. Such yields are based on old variety seed stocks for which modern alternatives exist. Use of proper seed varieties can increase yields to as much as 30 tonnes per hectare with the required management and inputs. Moreover, a professionally managed seed operation can also serve as a training centre for extension officers in order to transfer proper potato farming techniques to smallholder farmers.

A recently reopened commercial farm near Iringa has the managerial expertise and land available to commence a seed potato operation. Their proposal is to grow up to 200 hectares of seed potatoes with

the use of mini-tubers produced by means of tissue culture. Such seed could form the basis of a proper bulking stock for planting 2,000 hectares of Irish potatoes and providing seed sufficient to plant 20,000 hectares. This could benefit 60,000 farmers and 240,000 of their dependants.

Making it happen will require access to affordable working capital finance to assist with planting and one-off grant support to provide technical assistance to a large number of smallholder farmers. Infrastructure in the farm area needs to be addressed. Electricity is some 25km away and the road needs to be upgraded, particularly should crop volumes increase. Patient capital could be used to part-finance the infrastructure with the condition that the nucleus commercial farm:

- establishes strong links to surrounding smallholder farmers to support them in becoming commercial potato growers
- provides access to inputs (eg fertiliser), storage facilities and markets to smallholders at appropriate cost
- facilitates technical assistance by accessing appropriate grant facilities and training extension officers.

There is also the option of establishing irrigated farm blocks for production by a combination of emergent and larger commercial farmers, offering the potential for higher yields. The feasibility of this will need to be explored in the Investment Blueprint.

Smallholder farmer potato economics

1 hectare is 2.47 acres
1 US\$ equals 1,300 TZS

					Per acre		Per hectare	
COSTS					TZS	US\$	TZS	US\$
Type	Quantity	Unit	Cost per unit	TZS	Amount			
Seed	8	bag	50,000	400,000	308		988,000	760
Fertiliser	DAP	2 bag	50,000	100,000	77		247,000	190
	CAN	2 bag	33,000	66,000	51		163,020	125
Chemicals	ridomil	1 pkt	30,000	30,000	23		74,100	57
Bags		80 bag	700	56,000	43		138,320	106
ACTIVITIES								
Land clearing		1 app	10,000	10,000	8		24,700	19
Cultivation		1 app	25,000	25,000	19		61,750	48
Planting		1 app	10,000	10,000	8		24,700	19
Weeding		2 app	20,000	40,000	31		98,800	76
Fertiliser application		1 app	15,000	15,000	12		37,050	29
Spraying		2 app	10,000	20,000	15		49,400	38
Harvesting		80 bag	2,000	160,000	123		395,200	304
Transport field to home		80 bag	1,000	80,000	62		197,600	152
Total cost				1,012,000	778		2,499,640	1,923

YIELD AND REVENUE

CURRENT YIELD – FARMER RETURNS – 30 BAGS PER ACRE

Yield per acre	Current yield	50 bag	108kg	5,400	kg	13,338	kg
Price at farmgate		50 bag	TZS30,000				
Total sales				1,500,000	1,154	3,705,000	2,850
Gross margin				488,000	375	1,205,360	927

IMPROVED SEED YIELD – 25 TONS PER HECTARE

Yield per acre	Current yield	100 bag	108kg	10,800	kg	26,676	kg
Price at farmgate		100 bag	TZS30,000				
Total sales				3,000,000	2,308	7,410,000	5,700
Gross margin				1,988,000	1,529	4,910,360	3,777

2. Commercial farm block

A 30-unit commercial farming block area in the Southern Highlands on 36,000 hectares under rain-fed production with basic infrastructure provided through a public-private partnership structure, leading to production of 115,000 tonnes of maize, wheat and soya for local and regional consumption

The farming block could be designed with a combination of large units of up to 2,000 hectares and smaller units up to 200 hectares. Achieving economies of scale would require 36,000 hectares, of which 60 per cent should be arable, ie 21,600

hectares under cultivation. The farming block would benefit from infrastructure provided through a public-private partnership structure to finance land clearance, feeder roads, and collection/storage facilities.

The suggested rotation includes maize, wheat and soya in both the emergent and large commercial farms. The proposed area could support an estimated annual production of 61,200 tonnes of maize, 42,000 tonnes of wheat and 12,300 tonnes of soya. At current prices such production can save Tanzania US\$30–35 million in foreign exchange annually. The table below shows forecast production, costs and income.

Commercial Farm Block Economies

CROP PRODUCTION: LARGE SCALE UNIT					
Crop	Hectares	Yield (mt/ha)	Total production (mt/yr)	Price/tonne (US\$)	Total revenue (US\$)
Maize	240	7.5	1,800	280	504,000
Wheat	240	5.0	1,200	420	504,000
Soya	120	3.0	360	450	162,000
Totals	600		3,360		1,170,000
Variable costs					720,000
Gross margins					450,000

CROP PRODUCTION: EMERGENT UNIT					
Crop	Hectares	Yield (mt/ha)	Total production (mt/yr)	Price/tonne (US\$)	Total revenue (US\$)
Maize	40	6	240	280	67,200
Wheat	40	5	200	420	84,000
Soya	20	2.5	50	450	22,500
Totals	100		490		173,700
Variable costs					100,000
Gross margins					73,700

TOTAL PRODUCTION OF FARM BLOCK AREA, TONNES AND VALUES					
Maize	8,400		61,200		17,136,000
Wheat	8,400		42,000		15,120,000
Soya	4,200		12,300		4,860,000
Total variable costs					24,600,000

The map below provides an example of the Southern Corridor’s agricultural potential. This area south of Mikumi, with the main town being Ifakara, produces rice, maize, sugar cane and fruit (mainly bananas) on smallholder farms. There are two large commercial estates producing rice and sugar respectively. The shaded area demarcates an area in excess of 500,000 hectares that appears to have excellent rainfall and good soils. However, it is currently lying fallow because infrastructure is absent and development activities are restricted due to an inability to acquire land, as well as other bureaucratic constraints. Roads are poor, making market access difficult.



3. Avocados

A 60-hectare nucleus avocado plantation supported by 140 hectares of smallholder production under irrigation and a further 400 hectares of smallholder outgrowers – benefits would include improved incomes and reduced risks (through crop diversification) for large numbers of smallholder farmers

Plans are already underway to establish a number of avocado plantations and outgrower schemes, the first of which is already established in the Rungwe area. Presently, there is a 59-hectare established plantation: plantings were completed in 2008/09 and the early planted trees are already producing fruit, significantly earlier than newly planted trees in other areas. The aim is to have planted the following by the end of 2011:

- 60 hectare nucleus commercial farm
- 140 hectares of smallholder plantation
- 400 hectares of smallholding outgrower avocados.

Longer-term and ongoing aims are:

- to establish a fully modernised pack house
- to export 4.2 million kilograms of avocados by year 10 of the plantation
- to graft Hass avocado seedlings onto existing smallholder trees
- to train and to establish extension services.

The estimated total cost of the start up is an estimated US\$4.2 million. The present business model gives an indicative IRR over 10 years of 30 per cent, a very attractive investment for those willing to take a long-term view in agriculture. The gross sales by year 2015 should reach US\$6.8 million per annum.

Costs and production

The cost of establishing avocado plantations, including land clearing by hand, is estimated at US\$612 per hectare, which, in the case of smallholder farmers, accrues mostly to their own labour account. The cost of each seedling to a smallholder is US\$0.60. Other major costs will include the making of compost, phosphate and plantation maintenance such as weed control, most of which are planned to follow organic processes.

On average, each outgrower will have 60 trees planted, which is the equivalent of 0.15 of a hectare. The table below gives an indication of the gross income, excluding the farmer's own labour costs.

There will also be chemical costs and the cost of rock phosphate at planting. The table below gives an indicative summary of production income to the smallholder farmer.

Smallholder income

INCOME FROM AVOCADO SALES	Year	2009	2010	2011	2012	2013
Hectares planted (cumulative)	Hectares	36.00	126.00	261.00	396.00	396.00
Average yield for area planted	Kilos/hectare	0.00	0.00	103.45	443.18	1346.59
Total tonnes produced	Tonnes	0.00	0.00	27.00	175.50	533.25
Price paid to smallholder	US\$/cents/kilo	0.15	0.16	0.16	0.16	0.17
Gross income per grower with 60 trees	US\$	0.00	0.00	2.48	10.85	33.64
Gross income per grower with 120 trees	US\$	0.00	0.00	4.97	21.71	67.27
Gross income per grower with 240 trees	US\$	0.00	0.00	9.93	43.41	134.55
Gross income per grower per hectare	US\$	0.00	0.00	16.56	72.36	224.25
Smallholder total income	US\$	0	0	4,322	28,653	88,801

INCOME FROM AVOCADO SALES	Year	2014	2015	2016	2017	2018
Hectares planted (cumulative)	Hectares	396.00	396.00	396.00	396.00	396.00
Average yield for area planted	Kilos/hectares	2869.32	4659.09	6051.14	7073.86	7500.00
Total tonnes produced	Tonnes	1136.25	1845.00	2396.25	2801.25	2970.00
Price paid to smallholder	US\$/cents/kilo	0.17	0.17	0.18	0.18	0.18
Gross income per grower with 60 trees	US\$	73.11	121.08	160.40	191.27	206.84
Gross income per grower with 120 trees	US\$	146.21	242.16	320.81	382.53	413.69
Gross income per grower with 240 trees	US\$	292.43	484.33	641.62	765.06	827.37
Gross income per grower per hectare	US\$	487.38	807.21	1069.36	1275.10	1378.95
Smallholder total income	US\$	193,002	319,657	423,467	504,940	546,065

Appendix 2: Investments/donor programmes/finance facilities

High-level mapping of actual and planned activities relevant to development of the agricultural sector in the Southern Corridor.

SECTOR	ORGANISATION	NAME	DESCRIPTION	SIZE	GOVT	DONOR	PRIVATE SECTOR
AGRICULTURE AND AGRIBUSINESS FINANCE	World Bank	Agricultural Sector Development Project	Budget support to assist farmer's access agricultural knowledge, technologies, marketing and infrastructure. Promote agricultural private investment (includes other donors eg ADB)	US\$120,000,000	x	x	
		Seventh Poverty Reduction Support Credit Program	Fourth in a series of five annual budget support operations including Agriculture	US\$170,000,000	x	x	
		Accelerated Food Security Program	Provision of credits to support an Accelerated Food Security Program. The program responds to an urgent request from the Government of the United Republic of Tanzania to support its efforts to achieve greater food security by increasing food production and productivity and providing social protection for vulnerable groups and the rural poor	US\$160,000,000	x	x	
		Private Sector/ MSME Competitiveness	Supporting the Business Environment Strengthening for Tanzania (BEST) Program that aims to lower the cost of investing in, establishing, and operating a business in Tanzania by eliminating policy, legal, regulatory, and institutional constraints that inhibit private sector	US\$95,000,000	x	x	
		Financial Sector Support Project	The projects aims to increase the soundness and competitiveness of the financial sector and improve access by small savers and micro-entrepreneurs to the formal financial system	US\$22,000,000		x	
		Regional Trade Facilitation project	Export development and competitiveness	US\$45,000,000		x	
	African Development Bank	Small Entrepreneurs Loan Facility II	Financial Services will manage a Wholesale Credit Fund. Based on the eligibility criteria stipulated, the programme will lend these funds to MFIs for on-lending to end user clients especially in rural areas and provide support for Institutional Capacity Building	US\$30,000,000	x	x	
		Marketing Infrastructure, Value Addition and Rural Finance Support Programme (with IFAD and AGRA)	Rural marketing infrastructure development. Rural Financial Services Support to grassroots MFIs, including informal groups	US\$155,000,000 (TBC)	x	x	
	European Commission	Support to the Sugar Sector	Policy, association development	US\$8,800,000		x	x
		ASDP	Contribution to the basket fund		x	x	
		Food Facility Grant	Rapid response to increasing food prices in developing countries	€11,589,970		x	
		STABEX	EC compensatory finance scheme to stabilise export earnings	US\$8,000,000		x	x
	DANIDA	Private Agricultural Sector Support Trust (PASS)	Credit Guarantee Facility	US\$25,000,000		x	
		SME Competitiveness Facility	Matching Grant Facility supporting agroprocessing SMEs	US\$8,000,000		x	

AGRICULTURE AND AGRIBUSINESS FINANCE	DANIDA	BEST-AC	Multi-donor fund (DfID, SIDA, Dutch, Danida) supporting private-sector organisation advocacy efforts	US\$12,000,000		x	
	Ireland Aid	Private Sector Development	Selected private sector initiatives (Technoserve, Farm Inputs Promotion and Care international)			x	x
		ASDP	In 2010 Ireland Aid will make a contribution to the basket fund	€4,425,000	x	x	
	Canada, UK, Sweden, the Netherlands and Denmark, in close collaboration with the Bank of Tanzania and the Government of the United Republic of Tanzania.	Financial Sector Deepening Trust	Provide support to greater access for more people to engage with the financial system throughout Tanzania. The three pillars of financial sector development include: * expanding the scale and viability of financial institutions and related transactions * financial sector infrastructure, especially the crucial task of capacity-building * the policy, legal and regulatory framework			x	x
	USAID	Agricultural Development	Focus on increasing rural incomes and improving agricultural productivity and market access by increasing the sale and trade of cash crops. Implementation via Technoserve, FINTRAC etc			x	x
		COMPETE	Multi-country programme with private sector-led Regional Trade Associations, COMESA and the EAC to enhance competitiveness and trade	US\$80,000,000		x	x
	AGRA	Innovative Financing initiative	Credit Guarantee Facility with NMB	US\$1,600,000		x	x
		Agro-dealer development programme	Providing training, capital and credit to establish certified agro-dealers			x	x
	JICA	Irrigated rice programme	Empowerment of farmers to increase rice productivity			x	
	IFAD	Marketing Infrastructure, Value Addition and Rural Finance Support Programme	Follow-up joint programme to the rural finance and agricultural market development programmes (with ADB and AGRA)		x	x	
		ASDP	Contribution to the basket fund	US\$92,000,000	x	x	
	Standard Bank/ AGRA	Innovative fund for Africa's smallholder farmers	AGRA and others providing a US\$10 million loan guarantee fund, and in turn, Standard Bank is making US\$100 million available for lending over three years (spread over Tanzania, Mozambique, Ghana and Uganda.)	US\$10,000,000		x	x
	IFC	Emergent Farmer Programme	Still at planning stage but similar to a US\$40 million programme in Zambia	TBC		x	x
	National Microfinance Bank/ AGRA	Agricultural Loan Programme	AGRA guarantee for US\$9.5 million total loan portfolio. Agra shares 33 per cent in losses aimed at outgrower input finance				x
	Standard Chartered Bank	Financial support to agriculture	DEG has joined with Standard Chartered Bank to provide US\$142 million over the next three years for financial support of agriculture in Sub-Saharan Africa (but mainly South Africa, Namibia, Zambia and Cameroon)				x
	CRDB	CRDB Microfinance Services Company	CRDB MF works with Savings and Credit Cooperative Societies (SACCOS), Savings and Credit Associations (SACAS), financial non-government organisations (NGOs), and Community Banks to disburse loans and provide technical support. It has disbursed approx US\$17 million (2008) to microfinance institutions through the government's Uwezeshaji Credit Guarantee Scheme				x
SELFINA	Micro-leasing	Enabling women to acquire equipment for business and small amounts of loans for working capital				x	

AGRICULTURE AND AGRIBUSINESS FINANCE	Community Banks	Micro-finance	Delivering Financial And Non Financial Services to micro, small and medium-sized enterprises			x
	DfID/AusAid/CGAP/IFAD/NMFA	African Enterprise Challenge Fund	Fund aimed at encouraging private-sector companies to compete for investment support for their new business ideas	US\$20,000,000 (TBC)		x
	Wood Family Trust and Gatsby Foundation	Chai project	US\$9 million support programme for smallholder tea growers, to promote commercially viable and sustainable production models	US\$9,000,000		x
	Private sponsors	Kilombero Rice Plantation	3,200 hectares of rice, soya beans and maize. Sponsors are working fast but require additional funding. Rice yields are still low. Access to good stable identified rice varieties and technical services are a major challenge to achieving commercial yields	est. US\$40,000,000		x
	FAO	Food systems development	The project supports the Agricultural Sector Development Strategy (ASDS), with particular attention to the inadequacies in the agribusiness enabling environment; relatively weak sector coordination and oversight, insufficient capacity for market development; need for value chain innovation; weak integration of farms, firms and markets; and limited capacities of small farmers and processors	US\$2,500,00		X
	FAO	Advisory service capacity development in support of food security	The project will provide assistance in sub-sector planning, investment appraisal and policy implementation; business, enterprise and value chain development; improving the marketing and business skills of producers and agro-processors, and strengthening public and private agro-enterprise support services.	US\$2,500,000		X
POWER	African Development Bank	Iringa-Shinyanga Power Project	The multi-donor (WB,EIB,JICA,Korea, AfDB) project consists of construction of a 667km 400 kV full AC transmission line split into three individual construction lots. The ADB funding will be used to co-finance with JICA Lot 2 of the project which stretches from Dodoma to Singida (217km).	US\$69,000,000	x	x
	Millennium Challenge Corporation	Rehabilitation and Extension Projects	The Millennium Challenge Corporation has committed US\$206 million to the energy sector in Tanzania, including the Distribution Systems Rehabilitation and Extension Projects in Morogoro, Iringa, Dodoma and Mbeya regions.	US\$206,000,000		x
	European Commission	Mwenga 3 MW Hydro Power Project	Located in Mufindi District of Iringa	US\$10,000,000		x
ROAD AND RAIL DEVELOPMENT	EU	Rehabilitation of Mandela Road	This project includes the resurfacing of the existing Mandela road (a dual carriage-way and the main port access road linking the port to Ubungu), the construction of drains and slip roads	€32,000,000		x
	JICA	Urban Transport Policy and System Development Master plan	The project aims to formulate a Transportation Policy and System Development Master Plan by 2030 for the city of Dar es Salaam.	At pre-feasibility stage		x
	African Development Bank	Tanzania Road Sector Support Project	Upgrading 450km of trunk roads including Dodoma-Iringa road and Tunduru-Namtumbo road (part of Mtwara corridor that Japan Bank for International Cooperation (JBIC) is considering co-financing)	US\$230,000,000	x	x
	DANIDA	Tanzam Highway	This project which is currently under progress includes the repair and upgrading of the Tanzam highway over a distance of 149km between Iyovi and Iringa	TZS127.7 billion		x

ROAD AND RAIL DEVELOPMENT	Millennium Challenge Corporation	Tunduma–Laela–Sumbawanga trunk road	Millennium Challenge Corporation has signed a five-year US\$698 million Compact with Tanzania aimed to reduce poverty and stimulate economic growth. Of this MCC have committed US\$373 million to transport, including the upgrade of the Tunduma–Sumbawanga road	At procurement stage		x	
	GoT	Sumbawanga–Kibaoni Trunk Road	This project, due for completion in June 2012, includes upgrading the un-paved trunk road from Sumbawanga–Kanzi–Kizi–Kibaoni (approx 152km)	TZS161.6 billion		x	
	GoT	Mbeya–Chunya Trunk Road	This project, due for completion in January 2011, includes upgrading the un-paved trunk road between Mbeya–Lwanjilo–Chunya (approx 72km)	Tshs 67.8 billion		x	
	The Government of the Peoples Republic of China	Tazara Railway Rehabilitation Project	The rehabilitation of the Tazara railway is being discussed with the Peoples Republic of China, the original sponsors of the railway construction	At planning stage			x
ACTUAL PORT DEVELOPMENT	Tanzania Ports Authority	Procurement of Additional Modern Container Handling Equipment	Procurement of additional container handling equipment for operation on the General Cargo Berths has allowed TPA to handle excess demand for containers and reduce ship waiting time	US\$6,000,000		x	
	Tanzania Ports Authority	The Creation of Additional Container Yards	The creation of additional container yard capacity, including container stacks on berths 4 and 5; in the mid-port areas behind berths 1 and 2, and in the newly paved back-port areas fronting the grain silo has – together with the expansion of yard facilities within the dedicated container terminal operated by Tanzania International Container Terminal Services (TICTS) – allowed port handle greater throughput volumes and reduced container import dwell time	US\$10,000,000		x	
	Tanzania Ports Authority	The Relocation of Container Scanning Facilities	The relocation of container scanning facilities from berth 7 to a designated location and the construction of a separate access road has enabled the port to rationalise traffic flow within the port, reduce congestion and improve turn-around time.	US\$2,000,000		x	
PLANNED PORT DEVELOPMENT	Tanzania Ports Authority	Access Channel Dredging	Capital dredging of the Port Access Channel will increase minimal depth from 10.1m to 12m allowing full-size handymax and panamax vessels to access the port when fully loaded at any tidal state. The channel will be widened allowing vessels to enter and depart simultaneously	At feasibility stage for planned implementation in 2011		x	
	Tanzania Ports Authority	Development of the Greater Kurasini Area for port value-added services	Port development for the expansion of modern port operations because the size and layout of the existing port were not conceived for containers or dry bulk shipping	At feasibility stage for planned implementation in 2011		x	
	Tanzania Ports Authority	New Truck Parking Areas	With daily traffic to the port expected to increase from 1,000 trucks/day to about 6,000 trucks/day over the next 20 years, a truck booking system and facilities to manage the proper coordination of port off-take activities will be required	At feasibility stage for planned implementation in 2011		x	
	Tanzania Ports Authority	The creation of dedicated Dry Bulk Berths and the expansion of the Bulk Grain Terminal	Following container terminal expansion onto berth 8, dry bulk ships are being handled on other general cargo berths. This project, constructed on deepened berth(s) will allow the reception of dry bulk ships at a dedicated terminal and will include the installation of modern bulk handling systems	At feasibility stage for planned implementation in 2011		x	

PLANNED PORT DEVELOPMENT	Tanzania Ports Authority	Deepening Berths 1–4 and Berths 5 and 6	This project, which includes berth strengthening, will bring berths 1–4 and 5 and 6 to the same depth as container terminal berths 8–11. Increasing depths to 12m allows deeper draft vessels (including handymax and panamax) to utilise their full cargo deadweight capacity when loading or discharging	At feasibility stage for planned implementation in 2011	x		
	Tanzania Ports Authority	The creation of car parks and the development of a Roll-on Roll-off (RoRo) terminal	This project will create dedicated facilities in peri-port land where wheeled vehicles (including plant and machinery), currently in excess of 40,000 vehicle units/year, can be discharged and stored without congesting prime port land	At feasibility stage for planned implementation in 2011	x		
	Yara International	Fertiliser terminal	Yara intends to invest US\$15 million as part of a phased investment into building a dedicated fertiliser terminal at the Dar es Salaam Port. This will increase handling rates at the ship to shore interface, allowing greater throughput	US\$15,000,000			x
	Dar es Salaam Corridor Group Ltd	Bulk Terminal	DSM Corridor Group has begun the construction of a bulk/fertiliser terminal that will be linked to the port by a bulk conveyor system. This will increase the ship handling rate and reduce berth occupancy which will significantly cut port costs	US\$4,000,000			x
NEW PORT DEVELOPMENT	Tanzania Ports Authority	New Liquid Bulk Terminal	This project, which is at the tender award phase, includes the replacement of the Single Point Mooring (SPM) System. The upgrade includes a multi-products facility, thereby creating larger economies of scale and reducing traffic demand to the Kurasini Oil Jetty within the port.	US\$60,000,000 to US\$80,000,000	x		
	The Government of the Peoples Republic of China	Construction of additional Container Berths	Development of berths 13 and 14 is being planned to cater for the short- to medium-term growth in the container trade. This will allow Dar es Salaam to handle in excess of one million Twenty-foot Equivalent Units (TEU)	At feasibility stage for planned implementation in 2011		x	
	World Bank	Construction of a dedicated off-dock freight station at Kisarawe	This project, which includes the construction of a large off-dock facility (linked to the port by dedicated rail shuttle services) will allow greater throughput volumes; reduce road congestion in Dar es Salaam city; provide a platform for increased rail transport; and become a node of development of a new satellite industrial centre	At pre-feasibility stage		x	
	Tanzania Ports Authority	Construction of a new port at Bagamoyo	To cater for the estimated growth of trade through Dar es Salaam from eight million tonnes to 50 million tonnes per annum over the next 20 years, TPA are in the process of conducting feasibility studies for new ports on the mainland coast. The development of a new port in Bagamoyo is the most attractive option.	At feasibility stage for planned implementation in 2018	x		
TRADE FACILITATION	World Bank	Implementation of a Port Community System	This work is being implemented through the East African Trade and Transport Facilitation Project, will allow all port users to track and pay for all port services, thus reducing transaction costs and time.	At study phase		x	
	DfID	Improved transport and trade facilitation processes in Tanzania	The Trade Mark East Africa (TMEA) Tanzania will raise TPA's efficiency through better structuring and management, introducing greater transparency into port operations, streamlining port procedures, and updating the Port Master-Plan. TMEA Tanzania will also work with GoT and other Development Partners to develop One Stop Border Posts (OSBPs) at Tunduma.	GB£7,500,000		x	

Appendix 3: Stakeholders consulted

Government of the United Republic of Tanzania

Prime Minister's Office
 Ministry of Agriculture, Food Security and Cooperatives
 Ministry of Water and Irrigation
 Ministry of Transport
 Tanzania Investment Centre
 Tanzania Private Sector Foundation

Donors/DFIs

Norwegian Embassy, Mozambique
 US Agency for International Development
 Department for International Development (DfID)
 World Bank
 African Development Bank
 International Fund for Agricultural Development
 Millennium Challenge Corporation
 European Commission
 Ireland Aid
 SNV
 COMPETE – USAID
 Food and Agriculture Organisation
 African Enterprise Challenge Funds
 World Food Programme
 Deutsche Gesellschaft für Technische Zusammenarbeit GmbH (GTZ)

Private sector

National Microfinance Bank
 Katani Ltd
 Bytrade Ltd
 Dar es Salaam Corridor Group
 Dar es Salaam Corridor Committee
 Agricultural Council of Tanzania
 Yara International
 Marine Logistics
 Standard Bank
 Standard Chartered Bank
 Tanzania National Business Council
 Export Trading Ltd
 Chapa Meli

Non-governmental organisations

Alliance for a Green Revolution in Africa
 Technoserve
 BEST-AC
 Financial Sector Deepening Trust
 Tanzania Private Sector Foundation
 Rural Urban Development Initiatives
 Centre for Sustainable Development Initiatives
 Small Industries Development Organisation

Agricultural stakeholders, farmers and interviewees

Jilanjo – Alan Mayers
 TAP District Coordinators – William Jasseda, Zuberi Mwachulla, Mwanajuma Sizya, John Wihallah, Francis Madembwe Rodgers, Masha District Coordinators
 Intermech – Eng Peter Chisawillo
 SUA – Prof Andrew Temu
 PASS – Cosmo Chinunje
 Sunflower Coop – Fulwa Village
 Kilombero Sugar – Lee Ilkington
 Kilombero Estate – Carter Coleman/Murray Dempsey
 Dabaga – Anand Moro
 Ivori – Thakore
 Asas – Faud Abri
 Shadeco Sunflower Processing – Enoch Ndongole
 Dairy Farmer – Richard Phillip
 Farm Manager – Rob Hoskins Davis
 Kisolanza Farm – Rick Ghau
 Rice Processors – Mr Lupende/Mr Sangale/Oneza Midano
 Sunflower Processor – Mr Mapanda
 Tanwat – Braun Goswani
 Rutuba Farm – Robin Ulyate
 Madibira Rice Scheme – Chris Ngang'unga
 Madibira SACCOS – Henry Mdapo
 Kapunga Rice – Piet Mel
 SAB Miller – Bennie Basson/Trevor Gray
 Rungwe Avocado Co – Robert Clowes
 Tea Research Institute – John Mhagama
 Zonal Irrigation Office, Kilimo – Engr Majo
 Lima Ltd – Gosta Ericsson
 WFT Africa – David Knopp
 Lima Ltd – G Gustavsson
 Southern Corridor working group
 Government of Tanzania
 Agricultural Council of Tanzania
 Yara International
 Norwegian Embassy, Tanzania
 African Development Bank
 World Bank
 Food and Agriculture Organisation
 Prorustica Ltd
 InfraCo Ltd
 Korongo Ltd
 Tanzania Agricultural Partnership
 AgDevCo Ltd



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