

**RESOURCES CORRIDORS:
EXPERIENCES, ECONOMICS
AND ENGAGEMENT;
A TYPOLOGY OF SUB-SAHARAN
AFRICAN CORRIDORS**

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Abbreviations and Symbols

AIDS	Acquired immune deficiency syndrome
AU	African Union
bb/d	Barrels per day
BCDC	Bas Congo Development Corridor
BCSDI	Bas Congo Spatial Development Initiative
BIP	Beluluane Industrial Park
BOT	Build Operate Transfer
Bt	Billion tonnes
CAPEX	Capital Expenditure
CAR	Central African Republic
CCFB	Companhia Dos Caminhos De Ferro Da Beira
CDC	Central Development Corridor
COMESA	Common Market for Eastern and Southern Africa
CEN-SAD	Community of Sahel-Saharan States
CVRD	Companhia Vale do Rio Doce
DBSA	Development Bank of Southern Africa
DEAT	Department of Environmental Affairs and Tourism
DRC	Democratic Republic of Congo
DTI	Department of Trade and Industry
DC	Development Corridors
DFI	Development Finance Institution
DFID	Department for International Development
EAC	East African Community
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
ECOSOCC	Economic, Social and Cultural Council
EIIC	Energy Intensive Industrial Custer
EPZ	Export Processing Zone
FAO	Food and Agriculture Organization of the United Nations
GIS	Geographic Information System
GDP	Gross Domestic Product
Gt	Giga tonne
GW	Giga-watt
GWh	Giga-watt Hour
Ha	Hectare
HEP	Hydro Electric Power
HIV	Human Immunodeficiency Virus
HMS	Heavy Melting Steel

IDC	Industrial Development Corporation
IFC	International Finance Corporation
IFS	International Financial Institutes
IGAD	Intergovernmental Authority on Development
Joburg	City of Johannesburg
kg	Kilogram
km ²	Square kilometers
kV	Kilovolt
LPI	Logistics Performance Index
MCLI	Maputo Corridor Logistics Initiative
MOU	Memorandum of Understanding
MDC	Maputo Development Corridor
MDG	Millennium Development Goals
MISP	Maputo Iron and Steel Plant
Mt	Million tones
MtwDC	Mtwara Development Corridor
MRU	Manu River Union (Guinea, Sierra Leone, Liberia & Cote d'Ivoire)
MW	Mega-watts
MWh	Mega-watt Hour
n/a	Not Available
NCTTCA	Northern Corridor Transit Transport Coordinating Authority
NEPAD	New Partnership for Africa's Development
NDC	National Development Corporation
NPK	Potassium
OAU	Organisation of African Unity
p.a	Per Annum
PSC	Peace and Security Council
PGM	Platinum Group Metals
PPP	Public Private Partnership
PGE	Platinum Group Elements
PV	Photovoltaic
REC	Regional Economic Communities
RSA	Republic of South Africa
RSDIP	Regional Spatial Development Initiative Program
SADC	Southern Africa Development Community
SATCC	Southern African Transport and Communications Commission
SDI	Spatial Development Initiative
SMEs	Small and Medium Scale Enterprises
SMME	Small Micro and Medium Sized Enterprises
SOE	State Owned Enterprises

UK	United Kingdom
UMA	Arab Maghreb Union
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
VA	Value Addition
W	Watt
ZVDC	Zambezi Valley Development Corridor
%	Percent
\$	American Dollar

EXECUTIVE SUMMARY

Resource corridors are based on the Spatial Development Initiative (SDI) approach where opportunities that can be realised through investments, mainly the resource-based anchor projects and associated infrastructure (transport & power), in an identified area can spur private sector investments and sustainable development, particularly through the collateral impact on other sectors catalysed through access to the resource infrastructure. The SDI programme was conceived by the South African government in 1995 (after democratic elections of 1994) as an attempt to improve the functioning of government in targeted regions of the country, particularly in those areas where the greatest potential for growth existed (unrealised economic potential, generally resources-based). The SDI programme was aimed at enhancing the attractiveness for investment through the identification of investment opportunities, providing infrastructure and the removal of a range of policy, legislative and institutional bottlenecks. This would then result in job creation in localised areas.

The Regional Spatial Development Initiative Programme (RSDIP) founded on the above SDI's was initiated in 2000 by the South African government through the Department of Trade and Industry (DTI), which later included Botswana, Zimbabwe, Namibia, Malawi, and Zambia and then expanded to Tanzania, Rwanda, Democratic Republic of the Congo (DRC) and Angola. This methodology was later expanded to cover the rest of Africa under the New Partnership for Africa's Development (NEPAD), which was termed the NEPAD Spatial Development Programme (SDP), but there has not been much traction in this regard. Many developing countries would not have the required experience and capacity to launch such an effort on their own without some form of assistance. Southern Africa provides some examples of resource corridors from which other countries can use as a basis for learning to benefit from arising opportunities provided by global markets. This report analyses experiences of resource corridor development in Southern Africa using selected cases.

Overwhelming evidence has shown that a successful Development Corridor (DC) requires, among other things, the following:

- DCs should be initiated and pursued based on inherent economic and infrastructure potential;
- The development of a corridor requires the participation of all economic and infrastructure ministries;
- The success of a DC depends upon the effectiveness of the project manager;
- The initiation of a successful DC requires, from the SDI methodology, the carrying out of sector scans along the potential corridor to expose latent investment potential;
- Investment projects need to be properly packaged for investors;
- Promotion and marketing of the corridor is an important component which will depend upon the attractiveness of the packaged projects;
- Most of the DC anchor projects would be large-scale, which would require deliberate action to create opportunities for Small Micro and Medium Sized Entrepreneurs (SMMEs) as has happened on the South African side of the Maputo Development Corridor (MDC); and
- Cross-border DCs are initiated based on bilateral (or multilateral) agreements.

The table below outlines some of the key lessons learnt from the selected development corridors.

Context	Discussion				
	Maputo Development Corridor	Zambezi Valley Development Corridor	Mtwara Development Corridor	Central Development Corridor	Bas Congo Development Corridor
Natural Resources	- Power - Gas	- Coking coal - Thermal coal	- Coal - Iron ore - Gas - Fisheries	Gold	Inga hydropower complex
Infrastructure	- Highway linking South Africa and Southern Mozambique was upgraded into a modern toll road at a cost of \$250 million - Maputo port rehabilitated. - Telecommunications and electricity links upgraded - Rail links upgrade with South Africa's Transnet running link from South Africa to Maputo	- Weak with limited rail infrastructure - Rail is currently being upgraded	Poor	- Weak – need bulk commodity for rail infrastructure - With gold being the main anchor – road infrastructure can suffice - Rail is dysfunctional	Dilapidated
Private Sector	- The corridor is a success because of in private sector investments (\$5billion) - PPP was essential in ensuring success of this corridor	Active involvement. Multinationals mining companies are driving project development - Rio Tinto and Vale with a host of Junior Australian and Indian exploration companies	Limited, with only recent agreement signed between NDC (Malawi) and China's Sichuan Hongda Group	Limited – mainly gold focused therefore no need for major rail infrastructure	- Poor - BHP Billiton has stopped its bauxite plant development
Business Case / Anchor Projects	- Strong business case with added local economic development, SMME development - Duvha Power Station, Mozal Aluminium, Sasol and Pande gas pipeline	- Quality of resources drives the business case - World class coking coal and thermal coal deposits - Also undeveloped resources or iron ore, nepheline syenite and heavy minerals	- Poor. - No attractive anchor project. - Coal and iron ore projects have not move forward - Limited projects suitable for support	Limited anchor projects in all sectors.	Poor / Hydropower
Policy and Regulatory Environment	PPP encouraged and facilitated by both governments.	- Incentivised FDI for natural resource projects - Government and Vale	Preparation of new Integrated Industrial strategy (IIDS 2025)	Preparation of new Integrated Industrial strategy (IIDS 2025)	Poor

		have agreed through the state institution that oversees ports and railway development to upgrade the Sena line via concession • Experience gained in MDC with regard to PPP • Transport ministry integrate national transport system to use the SDI methodology to transform transport into development corridors	which links SDI's to promoting growth in the country	which links SDI's to promoting growth in the country • Cautious around mining – communities have not benefited from mining in the past • Recent calls for higher mining taxes – has a negative effect on investor sentiment	
Political Support	• Supported by South African and Mozambican governments via the respective transport Ministries and Heads of State	• Currently corridor implemented within Mozambique hence it supports governments political and economic agenda	• Political will appears to be weak between the four participating countries	• Insufficient as there are only two (Tanzania and Rwanda) country signatures to the corridor	• No formal agreement between Republic of Congo and Angola • Corridor activities conigned in DRC
Corridor Authority	• Strong authority with power to move project forward • Strong Project Managers appointed on both sides	• Not yet established, however the SDI Programme is based in Ministry of Transport • Donor collaboration DFID, the World Bank and Dti (South Africa) are supporting the SDI programme • Financial contribution \$2.15 million over a 3 year period from July 2010	• Not active • NDC under the Ministry of Trade and Industry with Champion being Ministry of Transport • The SDI unit (in the NDC) is supported by the DTI (South Africa) in the order of \$2.5 million over 3 years – starting September 2010	• Active authority under the NDC • Corridor Authorities under ministry of Transport • This is insufficient as it requires units and programme managers in each of the participating countries	• Under Ministry of Industry • The ministry has set up a fledging SDI unit staffed by a project manager • Supported by RSDIP
Stakeholder Participation	• Well organized and involvement from private sectors and less organized input from CBO's and NGO's	• The programme not fully implemented	• Limited	• Good within the two participating countries- but do not seem to yield any productive results to develop the corridor	• Limited

Linkages	Forward and side stream linkages supported for the mega projects with the major projects providing opportunities for the SMME's	- No focus on the creation of local SMME – products and services largely from South Africa - However experience from Mozal aluminium programme is intended to be carried into policy on mining	Still at scoping stage	- Government and mining companies place lower emphasis on linkages - Limited linkages	Poor
Cross Border Arrangements	- Easy access and the flow of goods and people between South Africa and Mozambique - The Komatipoort/Ressano Garcia Border post between the two countries were upgraded - Reduced cross-border bottlenecks by providing a one-stop border control procedure - South Africans no longer require visas to enter Mozambique	Appear to be limited with most activity taking place in Mozambique – can be attributed to fact that the corridor is largely within Mozambique	Still to be developed	Limited to two countries	Very limited
Skills and Technical Capacity	Both governments had capacity in form of State Owned Enterprises such as Power Institution, Finance Institution and Transport Institution	The SDI unit is yet to be fully staffed	- Mozambique has the necessary experience and skills however other countries seem to lack the requisite skills and capacity for the management of the programme - Donor support is critical in terms of skill and financial support to drive the programme	Donor support is critical in terms of skill and financial support to drive the programme.	Weak

The MDC was the first SDI corridor developed in South Africa which formed the base of experience for the development of other corridors in the region. The major weakness being the methodology of fast tracking the development to remove bottlenecks and as such it did not take communities into consideration. In this respect it did not allow adequate time for capacity building for communities to participate in the corridor development.

Experiences from ZVDC indicate strong political commitment by benchmarking corridor development within the economic development framework of the country. There is a vibrant private sector interest that can be mobilized for the development of the corridor. There is strong donor support in the form of the World Bank, DIFID and DTI that provides technical and financial support to manage the programme. The corridor has the necessary ingredients for a successful corridor once implemented.

The CDC is still at a phase 1 scoping stage. There are a number of issues that need to be addressed, the key one being the lack of an attractive anchor project.

The Mtwara corridor does not have the required ingredients for a successful corridor. The most important being the lack of an anchor project that will require major infrastructure development. There also appears to be a lack of political support.

The Bas Congo Development Corridor Programme is still at scoping level and too early to undertake a full analysis – however some key issues have been identified such as lack of political will and poor infrastructure.

From the foregoing it can safely be said that the necessary experiences of the Maputo Development Corridor would be very useful for emulation and refinement for replication to other potential corridor areas.

All in all, the resource corridors have had varied experiences and results. They pose an enormous opportunity for investment and growth when the above conditions are met. The applicability of the methodology has been greatly enhanced by the Asian demand led commodities boom. This has increased the economic viability of many erstwhile marginal resource (anchor) projects.

INTRODUCTION

The Spatial Development Initiative (SDI) programme was conceived by the South African government in 1995 (after democratic elections of 1994) as an attempt to improve the functioning of government in targeted regions of the country, particularly in those areas where the greatest potential for growth (investment) existed (Jourdan, 1998). The initiative was meant to facilitate investment-led growth and piloting institutional models to support integrated economic development. The SDI is aimed at enhancing the attractiveness for investment through the identification of investment opportunities, providing infrastructure, removal of a range of policy, legislative and institutional bottlenecks. This would then result in job creation in localised areas.

The Maputo Development Corridor (MDC) was meant to revitalise the area between the economic centre of South Africa (Gauteng province) and the city and port of Maputo in Mozambique (Söderbaum, 2001). The MDC was based on four key objectives:

- Rehabilitation of primary infrastructure along the corridor (road, rail, port, border posts);
- Maximisation of investment in inherent corridor potential with facilitated global capital, regional markets and regional economic integration;
- Maximisation of social development, employment opportunities and increased participation of the historically disadvantaged communities; and
- Ensuring sustainability by developing policy, strategies and frameworks that ensured a holistic, participatory and environmentally sustainable approach to development.

The MDC came into operation in 1995 under the Ministers of Transport of the governments of Mozambique and South Africa. The SDI programme is now coordinated by the Department of Trade and Industry (DTI) in South Africa and hence the MDC. By 1999, there were 11 SDIs in South Africa based on the success of the MDC.

The Regional Spatial Development Initiative Programme (RSDIP) founded on the above SDI's was initiated in 2000 by the South African government through a DTI grant to the RSDIP Unit at the Development Bank of Southern Africa (DBSA), which later included Botswana, Zimbabwe, Namibia, Malawi, and Zambia and then expanded to Tanzania, Rwanda, Democratic Republic of the Congo (DRC) and Angola. This was later expanded to cover the rest of Africa under New Partnership for Africa's Development (NEPAD), which was termed the NEPAD Spatial Development Programme. The Programme was discussed with the various stakeholders and structures of NEPAD through meetings in 2007 and was adopted as part of the African Action Plan.

The SDI methodology as conceptualised and practised in Southern Africa provides the following:

- Opportunity of exploiting stranded natural resources taking advantage of demand from economic growth in China and India and resulting development options for Africa;
- Tool for identification, promotion and delivery of new infrastructure underpinned by the resource-based anchor/s usage (use-or-pay) and/or upgrading or rehabilitating old ones for economic development projects. It thus provides criteria for prioritising infrastructure, which can leverage private sector funds with grants;
- Focusing and directing state infrastructure spending into enhancing the feeder infrastructure to other areas of high economic potential, through the process of corridor "densification" (collateral impact); and
- Private Public Partnerships (PPP) and Public sector infrastructure and private sector economic opportunities, which become catalysts for sustainable economic and industrial development within zones of high latent investment potential.

Many developing countries would not have the required experience and capacity to launch such an effort on their own without some form of assistance, particularly in the configuration of the PPPs (concessions) for the trunk infrastructure. Southern Africa provides some examples of resource-based corridors which other countries can use as a basis for learning to benefit from arising opportunities provided by global markets.

This report is aimed at addressing the following:

- Analyse previous experiences in terms of resource corridor evolution;
- Understand the drivers of economic development and diversification where it has occurred; and
- Examine the role of government and reinforcing actions from the donor community, multilaterals and Development Finance Institutions (DFIs) in facilitating robust resource corridors.

The first part of the report will comprise of the description of the concept and methodology of the SDIs, hence resource corridor development. This will put into perspective the various roles, which include the following:

- Human Capital Development/Capacity Building;
- Institutions;
- Financial Systems;
- Infrastructure;
- Economic Linkages and Enterprise Development; and
- Policy Space.

The second part will consist of an overview of the African continent with much focus placed on natural and mineral resources, high level politics, skills and human development and collaboration between African countries. The third part will include discussions on selected corridors in Southern Africa. Some corridors will evidently have demonstrated progress from data sourced from the public domain. This will be supplemented by concurrent Geographic Information Systems (GIS) work to put in place topological factors and mineral resource opportunities. The fourth part will consist of analysis of results, knitting threads of practices and successes and making recommendations forming some guidelines or framework for successful resource corridor development, especially where practices can be replicated.

PART ONE: DESCRIPTION OF THE SDI CONCEPT AND METHODOLOGY

1. Description and Characteristics of a Spatial Development Initiative or Development Corridor

The SDI is a short-term, focused programme of specific activities and interventions to facilitate investment-led growth. It is a methodology aimed at creating opportunities for successful new fixed investments in identified specific areas and mobilising the requisite investment. Its objectives are to:

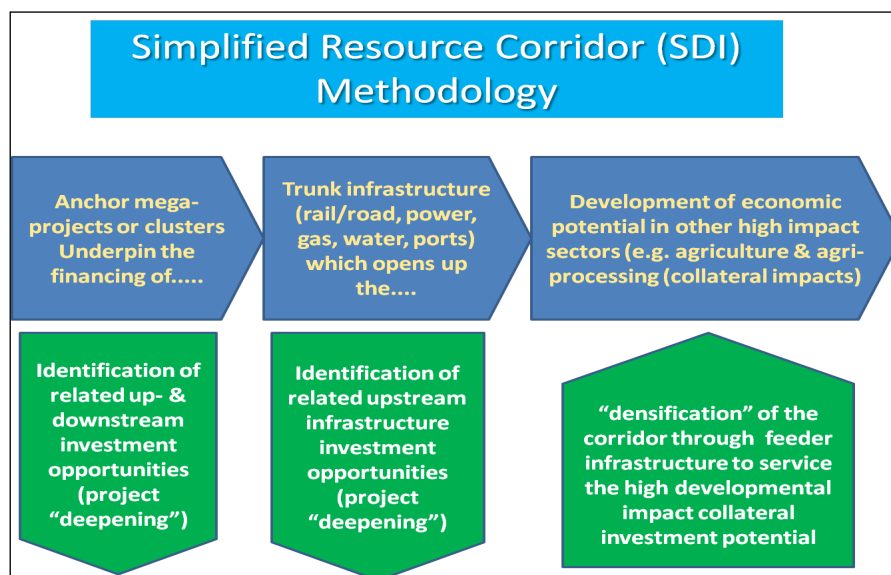
- Stimulate or increase levels of investment from foreign, regional and local sources;
- Promote regional economic growth and development; and
- Create sustainable employment.

The SDI (Figure 1) is thus a tool for promoting inter-related infrastructure and large-scale resource sector investments (anchor projects) in defined areas, in order to realise the latent investment potential in the SDI “catchment” areas (Figure 2). The developmental impact of the SDI densification (collateral impact) is often greater than that of the high capital expenditure (capex) anchor projects. In general the resource rents embodied in mineral resources tend to be much greater than those in other resource sectors (agriculture, forestry, fisheries), resulting in mineral anchor projects shouldering the costs of the trunk infrastructure

(transport & power) through use-or-pay agreements that underpin their financing. However, the other resource-based investment opportunities (densification), realised through the mineral resource anchor project/s infrastructure, tend to impact economically on a much larger segment of the population (greater developmental impact).

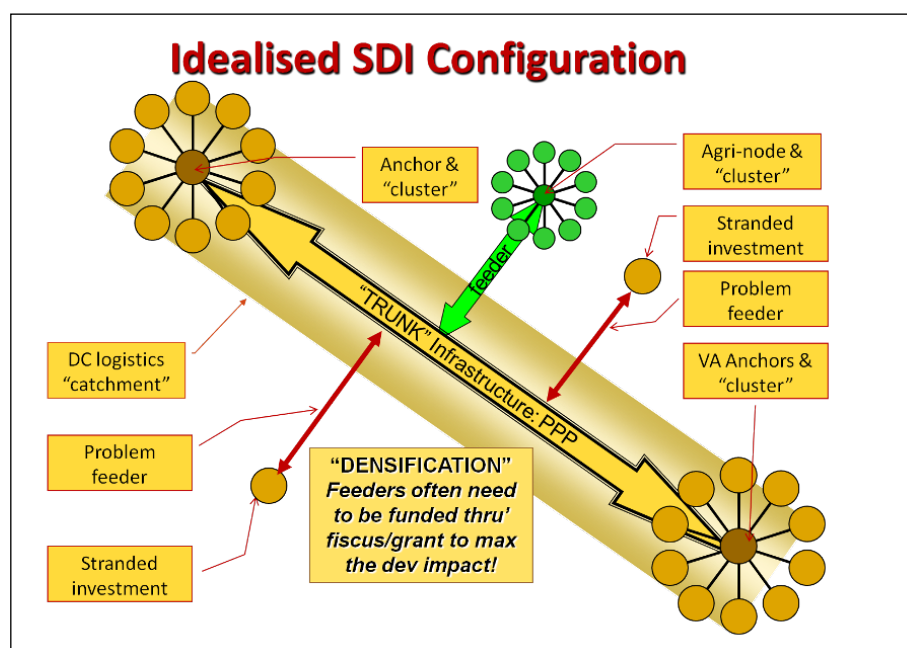
However, the high development impact densification is critically dependent on:

- The condition that all of the trunk infrastructure is available to third parties (open access) at non-discriminatory prices and that the infrastructure is over-dimensioned to cater for the expected third party users; and
- The provision of feeder infrastructure to connect other potential users to the trunk infrastructure. This SDI densification infrastructure is generally not concessionable through PPPs and oftentimes requires grant financing (from the fiscus or donor).



Source: Jourdan, 2011

Figure 1: Simplified SDI Methodology.

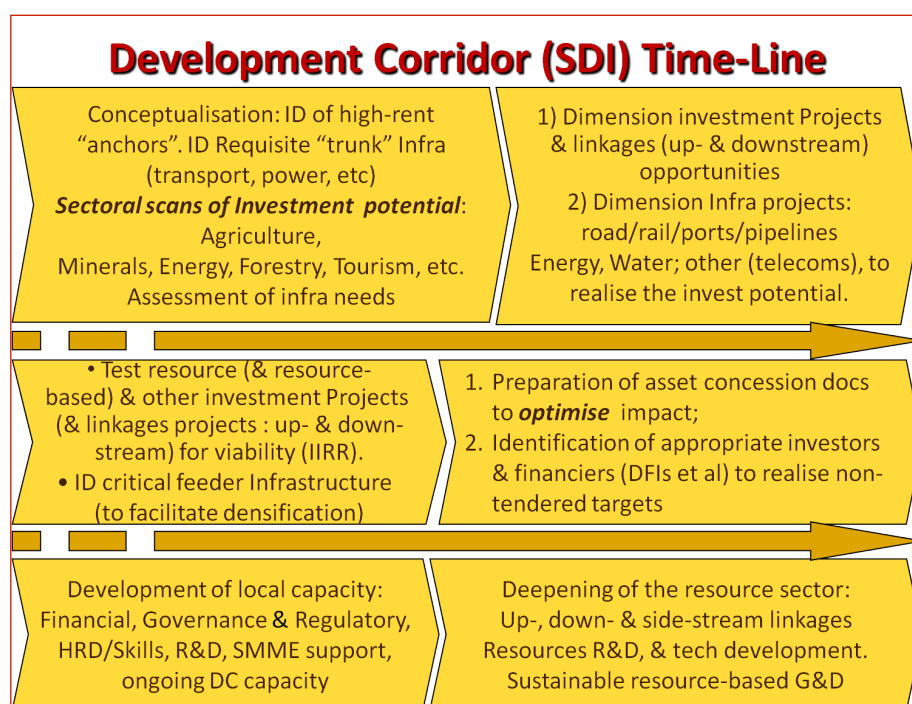


Source: Jourdan, 2011

Figure 2: Idealised SDI Configuration.

The SDI methodology in a defined Development Corridor (DC) project area entails the following elements of work:

- The scoping of the DC area as a means to achieving consensus amongst stakeholders on a conceptual business case in which a broad development objective and the main economic drivers are identified;
- The identification and profiling (project packaging) of viable resource anchor project/s and associated infrastructure (SDI trunk infrastructure);
- An intensive appraisal of existing economic activity on a sectoral basis;
- A scan for other viable investment opportunities (realisable through the trunk infrastructure) and the identification and profiling of requisite feeder infrastructure and sectoral economic projects (densification);
- The unpackaging of the major investment projects to maximise the backward and forward linkages (local supplier industries and beneficiation/Value Addition);
- The identification and removal of infrastructural, policy and regulatory, bureaucratic, or institutional constraints to investment as well as those steps required to overcome them (“de-bottlenecking”);
- The carrying out of project appraisals to develop a portfolio of investment projects that can be tested for feasibility and for which appropriate funding models can be developed; and
- Engagement with and mobilisation of private sector interest through the development of concession (PPP) documents and appropriate investment marketing strategies.



Source: Jourdan, 2011

Figure 3: SDI Conceptual Time-Line.

If the DC is a regional programme involving two or more countries, it is necessary to obtain buy-in from the participating governments and formalise an agreement through a Memorandum of Understanding (MOU) and organisational arrangements, particularly regular bilateral meetings. A project manager must then be appointed to drive the formulation of a business plan for implementation, which becomes his/her work contract.

From the experience gained on the South African Regional SDI Programme it is evident that there are a number of critical success factors that determine the relative success of any DC on which the SDI methodology is applied. These include:

- Obtaining initial political commitment and maintaining this throughout the SDI process;
- Installing an adequate technical capacity to implement the SDI work programme, usually through in-country project management;
- Keeping stakeholders focused on the agreed conceptual business case for the DC;
- Engaging in a targeted interaction with the private sector; and
- Effective institutional arrangements.

In Southern Africa, a considerable amount of work has already been conducted through the South African sponsored RSDIP to identify and prepare a range of infrastructure and economic development projects that could be catalytic for the economic development process in a number of different localities. While some of the associated investments have already been realised on a number of SDIs, market conditions and a number of other factors have constrained many of the other investment opportunities.

SDI/DC deepening (industrialisation):

Once the “anchor” economic and infrastructural projects (see Table 1) have been configured, work needs to commence on the densification and deepening of the DC, before concessioning, as this process usually results in some reconfiguration of the anchor projects, to optimise linkages into the local (DC), national and regional economies. Such linkages are generally either in the form of “densifying” the infrastructure, through the dimensioning of the ancillary infrastructure to maximise the impact (particularly SMMEs), or in the form of “deepening” both the infrastructure and economic projects through the maximisation of outsourcing to local entrepreneurs and the maximisation of local economic linkages. For state assets, these aspects are often built into the RFPs¹ as conditions on minimum local content, SMME content, labour-intensive content, HRD & indigenisation, R&D & technology transfer, etc.

Table 1: SDI “deepening” – Potential Markets for Local Supplier Industries.

Resource & Resource-based Markets	Resource Infrastructure Markets
Minerals & mineral processing	Construction (cement, ceramics, steel, etc.)
Agri-foods & food-processing (foods, stimulants, etc.)	Railways (rail, rolling-stock, etc.)
Livestock & livestock products (leather, meat, fibres, etc.)	Highways, roads (vehicles, trailers, etc.)
Sugar and processing (refined, ethanol, lysine, etc.)	Ports & Airports (capital goods, etc.)
Agri raw materials & processing (cotton, biofuels, chemicals)	Pipelines (gas, fuels, slurries, etc.)
Forestry & wood processing (P&P, products, fibre, etc.)	Power plants & transmission lines
Fishing/aquaculture & processing	Water (treatment, pumping, storage & transport)
Energy resources (fossil fuels, HEP, biomass, etc.)	Telecommunications (transmission, etc.)
Tourism (hospitality industry, flora/fauna, culture, etc.)	Knowledge infrastructure (universities, etc.)

A key area of DC densification of infrastructure, such as transport, power and water, is the stimulation of agricultural SMMEs along the length of the DC. However, the development of these SMMEs usually requires more than mere access to infrastructure: Other constraints, such as land title (for collateral), financing, training (both technical and business), market access, etc., also need to be addressed. The development of such an SMME enabling environment (Figure 4) is generally beyond the scope of the DC project management, and will

¹ RFP Request for Proposals

require the establishment of a dedicated capacity that brings together the both local and international expertise found in numerous NGOs and other agencies.



Figure 4: SMME Support “Golden Triangle”

The “deepening” of the SDI through the maximisation of the resources exploitation economic linkages embraces the development of the five main resources economic linkages potential, namely (Figure 5):

1. **Fiscal Linkages** - Capture and efficient deployment of rents (inter-generational equity);
2. **Knowledge Linkages** - (HRD & Tech Development) - *prerequisite* for developing the other linkages.
3. **Backward Linkages** - (inputs: capital goods, services, consumables) - Tend to be knowledge intensive: Can reinvent themselves in other sectors and survive beyond resource depletion (exports - e.g. Nordics);
4. **Forward Linkages** - (beneficiation), important, but could be constrained in the longer term by finite resources.
5. **Spatial Linkages** - (infrastructure & LED), important at early phase of resources development and “life beyond the mine” (LED). This is the essential “linkage” for building resources-based SDIs, through the development of all the collateral opportunities arising out of the establishment of the resources infrastructure

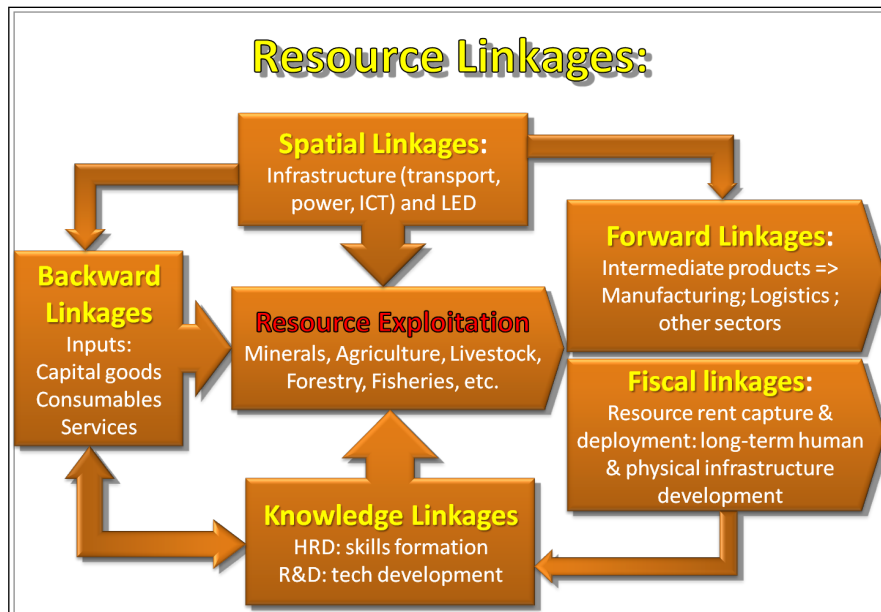


Figure 5: Resources Economic Linkages Potential

2. Objectives of African Development Corridors

In order to achieve the Millennium Development Goals (MDGs) to eradicate poverty and achieve sustainable growth and development in Africa, the continent must industrialize (Jourdan, 2008). Jourdan argued that a resource-based African industrialization and development strategy is rooted in the utilization of the continent's significant resource assets to catalyze diversified industrial development. This is also an objective of the African Mining Vision, which emphasizes resource-based industrialization.

Both the African Industrial Strategy and the African Mining Vision acknowledge that the realisation of the potential from the continent's natural resources is constrained by infrastructure inadequacy (particularly transport and energy). As a result, most resources cannot be economically extracted or cannot absorb the high costs of the necessary infrastructure. These 'stranded' projects could be grouped or a few high rent projects (generally minerals and energy) could collectively underpin the infrastructure investments through 'use-or-pay' contracts with infrastructure providers (Jourdan, 2008). Jourdan contends that such pooling of usage usually requires cross-border collaboration as resource terrains seldom follow political boundaries. Therefore, the huge resources potential of Africa could be realised through integrated multi-state DCs.

The development of multi-state DCs requires establishing cross-border institutions both for the DC itself and the associated infrastructure and facilities, such as:

- DC governing organ (Heads of State Multi-lateral);
- DC investment promotion and smooth operation agency;
- Cross-border electricity entities;
- Cross-border transport concessions (Public Private Partnerships (PPP)); and
- Joint border post administration to facilitate rapid transit, for example 'one-stop' border post.

The 'collective self-reliance' strategy through DCs could pool the meagre resources of participating states as well as broaden the ownership of the DC utilities which would militate against unilateral intervention by any participating country (Jourdan, 2008). In addition, as DCs are regional initiatives, they could draw on governance support from the regional economic communities (RECs), such as SADC, COMESA and ECOWAS, where appropriate.

This strategy requires a high level of commitment from neighbouring states and willingness to work together for the common good of their respective peoples.

Some of the principal elements for DC selection would include the following:

- Inherent economic potential (direct and indirect economic impact). This element is critical for underpinning the DC viability;
- Infrastructure constraints (to the realisation of the economic potential);
- Policy and regulatory constraints;
- Enhancement of regional integration potential and the stimulation of local and cross-border trade;
- Impact on poverty alleviation;
- Potential for small and medium enterprises (SME) development, particularly agriculture supply chains;
- Ancillary infrastructure constraints (densification); and
- Potential accountability and transparency constraints.

PART TWO: OVERVIEW OF AFRICA

1. Natural and Mineral Resources

Africa is predominantly an exporter of primary commodities because it is rich in a vast array of natural resources (see Figure 5). Its principal current and potential natural resources are:

- *Agriculture*

Over 90% of Africa is in the tropics (greater than any other continent) and agriculture currently contributes about 40% to African GDP, but is also largest user of scarce water, and it provides livelihood for 60% of the population. However, its agri-commodities are generally exported without processing (value-addition: beneficiation).

- *Minerals*

Africa is the world's top producer of numerous mineral commodities and has the world's greatest resources of many more, but most of Africa still lacks systematic geological mapping which could bring light a much greater resource base. Unfortunately most of Africa's minerals are exported as ores, concentrates or metals, without significant value-addition. There is thus a large potential for mineral-based industries.

- *Energy*

Africa has significant known resources of fossil fuels (oil, gas and coal) and has large biomass and bio-fuels potential (ethanol, bio-diesel), especially in the tropics. In addition it has massive hydro-electric potential (e.g. Inga 45GW, Congo River 200GW) and largely un-assessed geothermal potential along the Great African Rift Valley.

- *Forestry*

22% of African land is forested (650m hectares= 17% of world total). However, deforestation has resulted in Africa having the highest net change globally (-0.78% p.a). Nevertheless, Africa has huge potential for plantation forestry, particularly in the tropics and sub-tropics (brachystegia/miombo biome).

- *Fishing*

There has been a decline in Africa's catch rate from natural fisheries, much of it due to poaching by other continents and 68% of its marine protected areas under threat.

Aquaculture and mariculture are still nascent and offer a large potential protein source.

- *Tourism*

Africa has enormous tourism potential due to its huge diversity, including cultures, flora, fauna and geomorphology. For example, the Great East African Barrier Reef is unknown and untapped for tourism. Nevertheless tourism is an increasingly important source of livelihoods as it suffers less from poor infrastructure (logistics) than other natural resource sectors (air travel) that require heavy infrastructure (Jourdan, 2008)

1.1 Minerals & Mineral Processing

The African continent is extremely rich in mineral resources and is a key producer of some of the world's most essential minerals and metals such as Platinum Group Elements (PGEs), gold, uranium, diamonds, cobalt, manganese, nickel, bauxite and chromium. Regardless of the underexplored nature of African mineral resources, the continent hosts about 30% of the world's mineral reserves, including 60% cobalt, 90% of PGMs and 40% of gold. Accordingly, Africa is beyond doubt a strategic producer of the aforementioned precious metals (Mbendi, 2012). Figure 6 shows the major mineral resources of African countries.

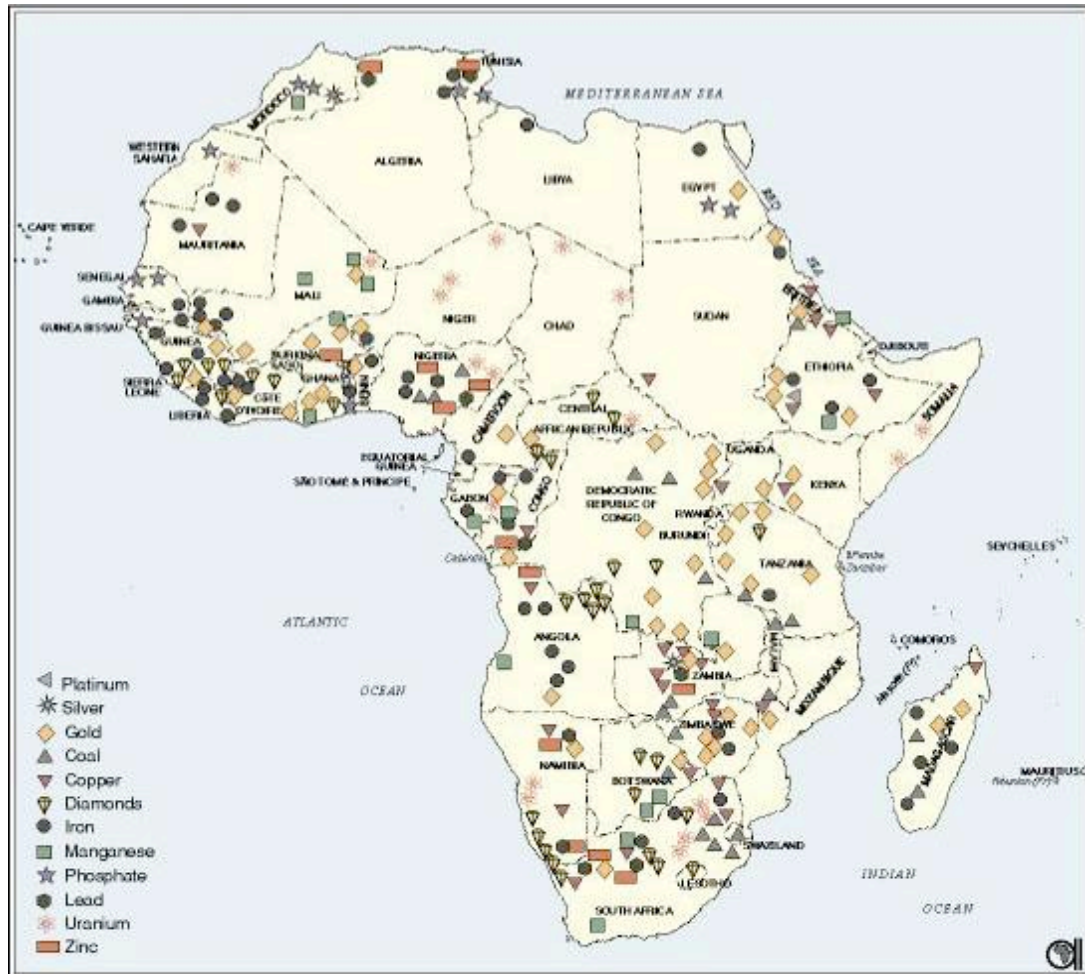
The African mining industry is dominated by countries such as the Democratic Republic of Congo, Republic of South Africa, Zambia, Ghana, Tanzania and Zimbabwe. Countries such as Botswana, Angola, Namibia and Sierra Leone profoundly rely on the mining industry as a major foreign currency earner. However, commodities such as diamonds, gold and coltan (columbite (Nb) and tantalite (Ta)) have caused and still do exacerbate a number of African civil wars. In Gabon, Sierra Leone, Guinea, Liberia, Namibia, South Africa, Tanzania and Botswana, there are several new mines opened and some still under development. These mines produce or aim to produce base metals, niobium products, diamonds, gold, chrome and PGEs (Mbendi, 2012). There are over 300 mineral projects (including those shown in Figure 6), excluding coal, currently under development (exploration, feasibility, construction) as well as both new projects and expansions to existing operations. Collectively these projects represent 73 billion tons (Bt) of ore resources, including over 50Gt of iron ore resources, some 6.5Bt of copper ore resources, 4.5Bt of gold ore resources, nearly 4Bt of uranium ore resources, 3Bt of titanium ore (HMS) resources, 1.3Bt of diamond ore resources and 1.2Bt of nickel ore resources. Virtually all of these "new" projects are on old exploration plays (pre-2000) or old workings.

Africa has been experiencing an increase in exploration and mine development mainly focused on iron ore, copper, gold, uranium and diamond exploration as there is a great potential in growth of these and other commodities. The increase in diamond exploration is evidenced by recent major discoveries of a number of prospective diamondiferous kimberlites in Mauritania as well as prospective marine diamond deposits in offshore southern Namibia (Mbendi, 2012), but by far the most animated new activity has been around Africa's iron ore resources in response to surging demand from China which now imports around 700 million tons (Mt) p.a. (forecast for 2012 by the Massachusetts Institute of Technology amounts to 730Mt). Iron ore tends to be one of the better SDI "anchors" due to the volumes and the need for heavy infrastructure such as rail, roads, and port/terminal.

1.1.1 Fertiliser Minerals

Africa has huge agricultural potential which is constrained by the poor availability of fertilisers, estimated at less than 10% of the global average, which results in yields well-below other regions.

Yet Africa is relatively well-endowed with fertiliser minerals. The principal ones are nitrogen (from gas, coal or HEP), phosphates and potassium (NPK). The demand for fertiliser could be met through investments into transport infrastructure in turn established through resource-based SDIs and their densification to service the areas of high agricultural potential.



Source: Inform Africa, 2012

Figure 6: Africa's Mineral Resources.

1.2 Energy

Africa has significant known resources of fossil fuels (oil, gas and coal) and has large biomass and bio-fuels potential (ethanol, bio-diesel), especially in the tropics. In addition it has massive hydro-electric potential (e.g. Inga 45GW, Congo River 200GW) and largely un-assessed geothermal potential along the Great African Rift Valley.

Sources of energy in Africa broadly reflect each sub-region's energy resource endowment. For instance, oil and gas reserves are prominent in North and West Africa and the power sector in this region is dominated by fossil fuel fired electricity generation systems. The power sector in the Eastern and Central Africa on the other hand is dominated by hydroelectric power plants with some limited use of geothermal based and biomass based power stations. In Southern Africa, coal and to a lesser extent hydropower is the dominant energy source

The energy sector in Africa consists of both electricity generation plants (and combined heat and power (CHP) plants), transmission and distribution infrastructure. The primary purpose of these components is to generate, transport and sell electricity (or electricity and heat in the case of CHP) to the public.

Electricity in Africa is essential for industrialization and provision of basic energy for the majority of the people living off the grid in rural areas. However, Africa is faced with power provision problems which have proved costly to the economy.

Efforts to stimulate economic growth in all industries across the African continent are being stifled by the lack of reliable electricity. It has been reported that 1.7 billion of the world's population lack access to energy of which 600 million is accounted for by Africa's rural and nomad areas. Furthermore, it is suggested that about 17% of sub-Saharan Africa's population lack electricity while only about 5% of the region's rural areas are electrified.

1.2.1 Hydrocarbons

Africa has abundant oil and gas resources and the prospects for gas exploration are exceeding expectations especially in untapped regions not yet open for exploration activities.

The rate of discovery of new oil reserves in Africa has been the fastest in the world in the past decade. Currently, oil is produced in 16 countries and prospects are high in at least another 5 countries. Furthermore, in the five geographic regions of Africa, there is at least one oil producing and exporting country. Africa has 46 refineries with total installed capacity of 3.419 million bbl/d and actual output of 3.240 million billion barrels/day.

Africa has total proven natural gas reserves of over 13 TCM, 7.3% of world total and has been growing over the past 20 years. Growth rate of reserves during the past 20 years was 6.8% (Double of the World average). In each of Africa's five energy regions there is at least one natural gas endowed country with enough gas reserves to meet the region's domestic demand.

Africa's failure to utilize its natural gas resources is due to the following factors:

- Lack of pipeline infrastructure,
- Lack of energy diversification policies
- Lack of management policies for inclusion in the national energy balance, and
- Efficient policies for domestic use

1.2.2 Coal

Coal accounts for about 19% of the energy production in Africa and is the dominant fuel for much of the Southern African power industry. It is the main source of electricity production in Africa (about 19 %) of which close to half is generated in South Africa.

Coal plays a major role in the economy of South Africa and accounts for about 93% of its electricity production. To keep up with the country's electricity demands three old coal stations have been recommissioned and two new coal powered stations are under construction (Etihad, 2011).

1.2.3 Hydro Electric Power

Sub-Saharan Africa has a tropical climate and a significant number of perennial rivers, with great potential to generate hydropower. The exploitable hydropower potential from these rivers is about 1,750TWh of which only 7% of this potential has been developed while the remainder remains unexploited (Frost & Sullivan, 2009). Hydro Power is regarded as the least costly option for meeting electricity demand as evidenced by various hydropower projects in Cameroon, DRC, Ethiopia and Tanzania (Babu, 2010).

Frost & Sullivan (2009) believe that further exploration of key rivers such as the Niger, Nile, Zambezi and Congo could reveal solutions to electricity in Africa. The Congo River in DRC which is the most significant renewable energy resource of Africa has the potential of producing over 100 000MW, which is sufficient to meet the energy needs of the whole Southern Africa (Babu, 2010). The Zambezi River on the other hand can produce 10 000MW while other rivers, for example in Ethiopia have potential of 30 000MW and Nigeria with over 20 000MW (Frost & Sullivan, 2009).

2. Skills and Human Development

The World Bank has noted that the African continent's future lies in the hands of its people. The bank further noted that Africa must resolve its current human development crisis if it is to become successful in the twenty first century (Wachira, year unknown). Countries on the African continent are the only countries in the world which have been experiencing low levels of human development. In Africa, the scarcity of human development is one of the factors which are impeding poverty eradication.

The World Bank supports the development of quality education programs in most countries in Africa. The bank's assistance includes provision of quality primary education for all by 2015, improving secondary, tertiary, technical & vocational education and education for orphans, addressing teacher and textbook shortages and the interaction between HIV/AIDS and education (The World Bank, 2011).

African countries are also working independently towards improving the quality and skills levels of their labour forces. It has been recognized that higher technical and vocational skills are essential in enhancing competitiveness and contributing to social inclusion, decent employment and poverty eradication. It is suggested that competencies can be obtained through structured training in public or private technical and vocational education and training schools and centres or through practical experience on the job in enterprises (African Economic Outlook, 2008).

There is a strong relationship between skills development and human development because for one to lead a better life, they must be well equipped with the necessary skills to ensure themselves a place in the working class population.

3. Logistics

"There are in Africa none of those great inlets, such as the Baltic and Adriatic seas in Europe, the Mediterranean and Euxine seas in both Europe and Asia, and the gulfs of Arabia, Persia, India, Bengal, and Siam in Asia, to carry maritime commerce into the interior parts of that great continent: and the great rivers of Africa are at too great a distance from one another to give occasion to any considerable inland navigation" (Smith, 1976/1776).

This pessimistic comment on Africa's logistics (access to seaborne trade) and, indirectly, its bleak chances for development, was made by Adam Smith about 250 years ago. Unfortunately his prognosis has turned out to be, by and large, true, but it could be overcome through massive investment in transport infrastructure, to give the great African hinterland, with its exceptional natural resources potential, access to global markets.

Globally, on the World Bank logistics performance index (LPI), Sub-Saharan Africa unsurprisingly ranks lowest of all the regions, due to both physical constraints (poor infrastructure) and governance constraints (bureaucratic: customs, etc.). See Table 2 for the LPIs of the world's regions.

Resource-based SDIs could provide cost-effective logistics in amenable areas of Africa through the establishment of a network of SDI trunk transport infrastructure that could service other latent investment potential through the provision of SDI feeder infrastructure (densification).

Table 2: World Regions Logistics Performance Index (LPI).

	Europe and Central Asia	Latin America	Middle East, N. Africa	South Asia	Sub-Saharan Africa	Sub-Saharan Africa Asia (%)	Sub-Saharan Africa Europe (%)
LPI	2.74	2.74	2.60	2.49	2.42	97	88
Customs	2.35	2.38	2.33	2.22	2.18	98.2	92.8
Infrastructure	2.41	2.46	2.36	2.13	2.05	96.2	85.1
International shipments	2.92	2.7	2.65	2.61	2.51	96.2	86.0
Logistics competence	2.6	2.62	2.53	2.33	2.28	97.9	87.7
Tracking and tracing	2.75	2.84	2.46	2.53	2.49	98.4	90.5
Timeliness	3.33	3.41	3.22	3.04	2.94	96.7	88.3

Source: <http://info.worldbank.org/etools/tradesurvey/mode1c.asp>

4. High Level Politics

The African continent has in the past been under colonization by Britain, France, Spain, Germany, Portugal, Italy and Belgium. In the 21st century, colonization has faded and the number of wars in Africa has steadily declined as evidenced by the end of the nearly 30 year old civil war in Angola in 2002. Furthermore, this saw many countries abandoning communism economies and opening up for the development of markets. Economic improvement in many Africa nations has encouraged foreign investment and this has prompted rapid economic growth in many countries. As of 2011, numerous African economies are among the world's fastest growing economies (Allen *et al.*, 2011).

Africa currently consists of 54 sovereign countries, most of which still have the borders set up during the European colonialism era. However, ever since colonialism, African states have been regularly troubled by violence, authoritarianism, instability and corruption. Most states are republics controlled by the presidential system but only a minority has been able to sustain democratic governments on a permanent basis while the majority has been through a series of rebellions, leading to military dictatorships (Allen *et al.*, 2011).

4. Potential for Collaboration between African Countries

4.1 The African Union

The African Union (AU) is a 54 member federation consisting of all of Africa's states excluding Morocco. Currently, three countries namely Madagascar, Mali and Guinea-Bissau are suspended as members of the union. The AU was officially launched on 9 July 2002 as a successor to the Organisation of the African Unity (OAU). The headquarters of the union are located in Addis Ababa, Ethiopia (African Union, 2012).

The AU is aimed at promoting co-operation and peace between the continent's countries as some countries are still experiencing human rights violation often under the oversight of the state. A majority of these violations are politically influenced and are the consequences of civil war. Countries in which major human rights violations have been reported recently include the Sudan, Côte d'Ivoire, Sierra Leone, Liberia, Democratic Republic of the Congo and Zimbabwe. Furthermore, the AU was formed by the Constitutive Act of the AU, which aims to transform the African Economic Community, a federated commonwealth, into a state under established international conventions (African Union, 2012).

The AU consists of a parliamentary government, the African Union Government comprising of federal, regional, state, and municipal authorities and various institutions, which together manage the day-to-day dealings of the institution. The AU government is led by the African Union President and Head of State, who is also the President of the Pan African Parliament (African Union, 2012). Table 3 shows organs of the AU and their duties and responsibilities.

Table 3: Organs of the African Union.

Organs	Duties
The Assembly	It is the supreme organ of the AU
The Executive Council	To monitor the implementation of policies formulated by the Assembly
The Commission	Each Commissioner is responsible for a portfolio
Peace and Security Council (PSC)	To deploy peace keeping and quick intervention missions to assist in cases of genocide, war crimes and crimes against humanity
The Permanent Representatives' Committee	Preparing the work of the Executive Council
The Pan-African Parliament	To ensure the full participation of African peoples in governance, development and economic integration
The Economic, Social and Cultural Council (ECOSOCC)	To drive strong partnership between governments and all segments of African civil society
The Court of Justice	To develop and promote the adoption of harmonized codes of conduct of public officials
The Financial Institutions	To facilitate trade within the continent
The AU Commission	Each Commissioner is responsible for a portfolio
The Specialized Technical Committees	To prepare projects and programmes of the Union and submit it to the Executive Council

Source: African Union, 2012

4.2 Regional Economic Communities

The 1980 Lagos Plan of Action for the Development of Africa and the 1991 treaty to establish the African Economic Community proposed the establishment of Regional Economic Communities (RECs) for African integration. Table 4 shows all the established RECs to date as well as their objectives. The membership of many of the communities overlaps, and their rationalisation has been under discussion for several years.

Table 4: Regional Economic Communities recognised by the African Union.

Organisation	Members	Objectives
Arab Maghreb Union (UMA)	Algeria, Libya, Tunisia Mauritania, Morocco	Economic and some sort of future political unity Arab countries
Common Market for Eastern and Southern Africa (COMESA)	Burundi, Comoros, Sudan, Libya, Democratic Republic of Congo, Djibouti, Egypt, Eritrea, Ethiopia, Kenya, Malawi Madagascar, Mauritius, Rwanda, Seychelles, South Sudan, Swaziland, Uganda, Zambia, Zimbabwe	To share Africa's common heritage and destiny and to allow greater social and economic co-operation, with the ultimate objective being to create an economic community
Community of Sahel-Saharan States (CEN-SAD)	Burkina Faso, Chad, Libya, Mali, Niger, Sudan, Central African Republic, Eritrea, Djibouti, Egypt, Gambia, Senegal, Morocco, Nigeria Somalia, Tunisia, Benin, Togo, Côte d'Ivoire, Guinea-Bissau, Liberia, Ghana, Sierra Leone, Comoros, Guinea, Kenya, Mauritania, São Tomé, Príncipe	Promoting common and shared action in political, cultural, economic and social field
East African Community (EAC)	Burundi, Kenya, Rwanda, Tanzania and Uganda	The EAC aims at widening and deepening co-operation among the partner states and other regional economic communities in, among others, political, economic and social fields for their mutual benefit
Economic Community of Central African States (ECCAS)	Angola, Burundi, Cameroon, Central African Republic, Chad, Democratic Republic of the Congo, Equatorial Guinea, Gabon, Republic of the Congo, São Tomé and Príncipe	To promote regional economic co-operation in Central Africa. It "aims to achieve collective autonomy, raise the standard of living of its populations and maintain economic stability through harmonious cooperation"
Economic Community of West African States (ECOWAS)	Benin, Burkina Faso, Cape Verde, Côte d'Ivoire, Togo, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone	To promote economic integration
Intergovernmental Authority on Development (IGAD)	Djibouti, Eritrea, Ethiopia, Kenya, Somalia, Sudan, South Sudan, Uganda	For development and drought control
Southern Africa Development Community (SADC)	Angola, Botswana, Democratic Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Swaziland, Tanzania, Zambia, Zimbabwe, South Africa, Seychelles, Madagascar	Its goal is to further socio-economic cooperation and integration as well as political and security cooperation among 15 southern African states

Source: African Union, 2012

A regional approach is important to meet Africa's developmental challenges emanating from individual country weaknesses. It is anticipated that such an approach would entail benefits including new trade opportunities, larger markets; increased competitiveness, facilitate larger investments, commit governments to reforms, increase bargaining power, enhance cooperation and improve security (ECA, 2004). Progress towards integration is sector-based, for example transport, trade, mining and communications. This starts with cooperation and collaboration through policy harmonisation and alignment at regional level.

Cooperation and integration in the minerals sector at the continental level is driven by the African Union guided by the Mining Vision (UNECA/African Union, 2009), which is a product of several initiatives drawn from RECs, amongst others. The Vision aims at utilizing mineral resources for industrial development to transform Africa towards modernization. An integrated African market would be achieved by developing downstream processing and manufacturing; upstream linkages into inputs to the mineral value chain; and side stream to infrastructure including physical (transport, energy, telecommunications) and human skills with the requisite research and development (R&D). A Framework for Action to be done at national, sub-regional and continental levels to implement the vision was developed. To achieve these goals it was recommended that the local private sector, communities and other stakeholders needed to participate fully.

The Action Plan of the African Mining Vision, Africa acknowledges that natural resources-driven corridors offer solutions for unlocking mining and infrastructure projects. In this vein, mining spatial development corridors are perceived as offering pragmatic approach to public and private investments in infrastructure. The African Union through the AMV has the goal to increase investments in mining and infrastructure projects to support broad socio-economic development.

PART THREE: OVERVIEW OF SELECTED CORRIDORS IN SOUTHERN AFRICA

1. Mozambican Development Corridors

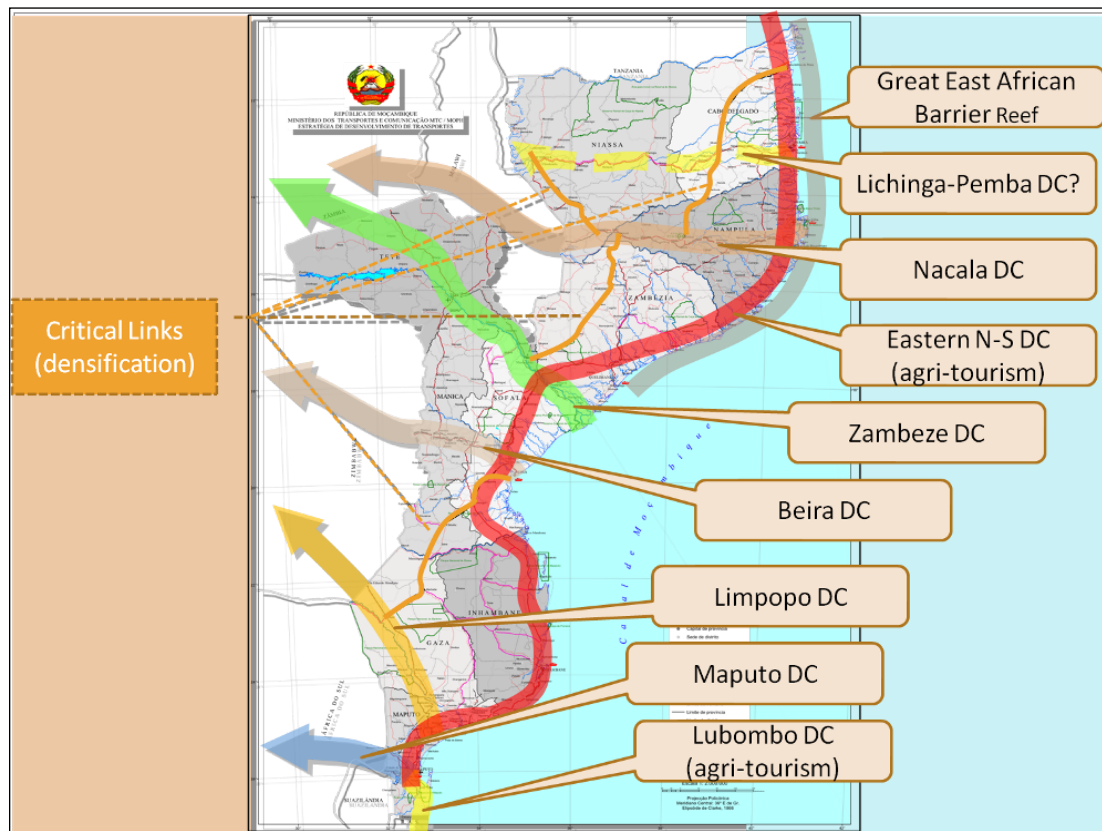
1.1 Overview of Mozambique

Mozambique, officially referred to as the Republic of Mozambique is located in South-eastern Africa and borders the Mozambique Channel with Madagascar on the east (Figure 7). The country covers a total area of about 799,380 square kilometres (km²) of which 786,380 km² is land cover while 13,000 km² is water cover. In 2011, the estimated population of the country amounted to 22.9 million (United States Department of State, 2011; and Central Intelligence Agency, 2012).

Mozambique was ravaged by series of conflicts over extended periods, starting with the war for independence against the Portuguese colonisers in the early 1960s and the sixteen years of civil war that commenced shortly after the independence in 1975 (Robinson, 2006). The roads and railway lines that linked the inland provinces and the ports of Beira and Nacala were damaged during the civil war. This had a devastating effect on the economies of Mozambique and Malawi, and to some extent the Zambian economy (Columbia University, 2011).

The economy in Mozambique is principally based on the manufacturing and agriculture industries. The country in 2011 saw a 7.2 % growth (\$23.87 billion) in GDP with a large portion accounted for by the industry, services and agriculture sectors (Central Intelligence Agency, 2012; and United States Department of State, 2011). Major industries of the country include tobacco, food, chemicals, beverages, textiles, petroleum products, glass and cement.

The country mainly trades goods with China, Netherlands, India and South Africa. The main import goods of Mozambique include chemicals, vehicles, machinery and equipment, fuel, textiles and foodstuffs. Export goods on the other hand include timber, prawns, sugar, aluminum, cashew nuts, citrus and cotton.



Source: MTC, 2011

Figure 7: Mozambique, Indicative SDI Programme.

1.2 Maputo Development Corridor

The revival of the MDC commenced in May 1996 and was supported by the South African and Mozambican governments through the Ministers of Transport in South Africa and Mozambique, Mac Maharaj and Paulo Muxanga respectively. Furthermore, the MDC was supported by South Africa's then President Nelson Mandela, Mozambique's President Joaquim Chissano and the first Premier of the Mpumalanga Province, Matthews Phosa (Bek and Taylor, 2001; and Söderbaum, 2001). The Maputo Development Corridor as shown in Figure 8 presents the shortest road and rail connection between the Gauteng, Northwest, Limpopo and Mpumalanga provinces of South Africa and Gaborone in Botswana and a deep water port in Maputo (MCLI, 2012).

Revitalization of the MDC is conducted through the SDI method with bilateral policies and extensive private and public sector investments to fuel sustainable development in both South Africa and Mozambique. At present, a major role in the running of the MDC is played by the Department of Transport of the two countries. However, the MDC has now become the most high-profile project of South African's SDI programme coordinated by the DTI. Furthermore, it is mainly the task of the private sector to ensure full optimisation of the MDC (MCLI, 2012; and Gajewski, 2006).

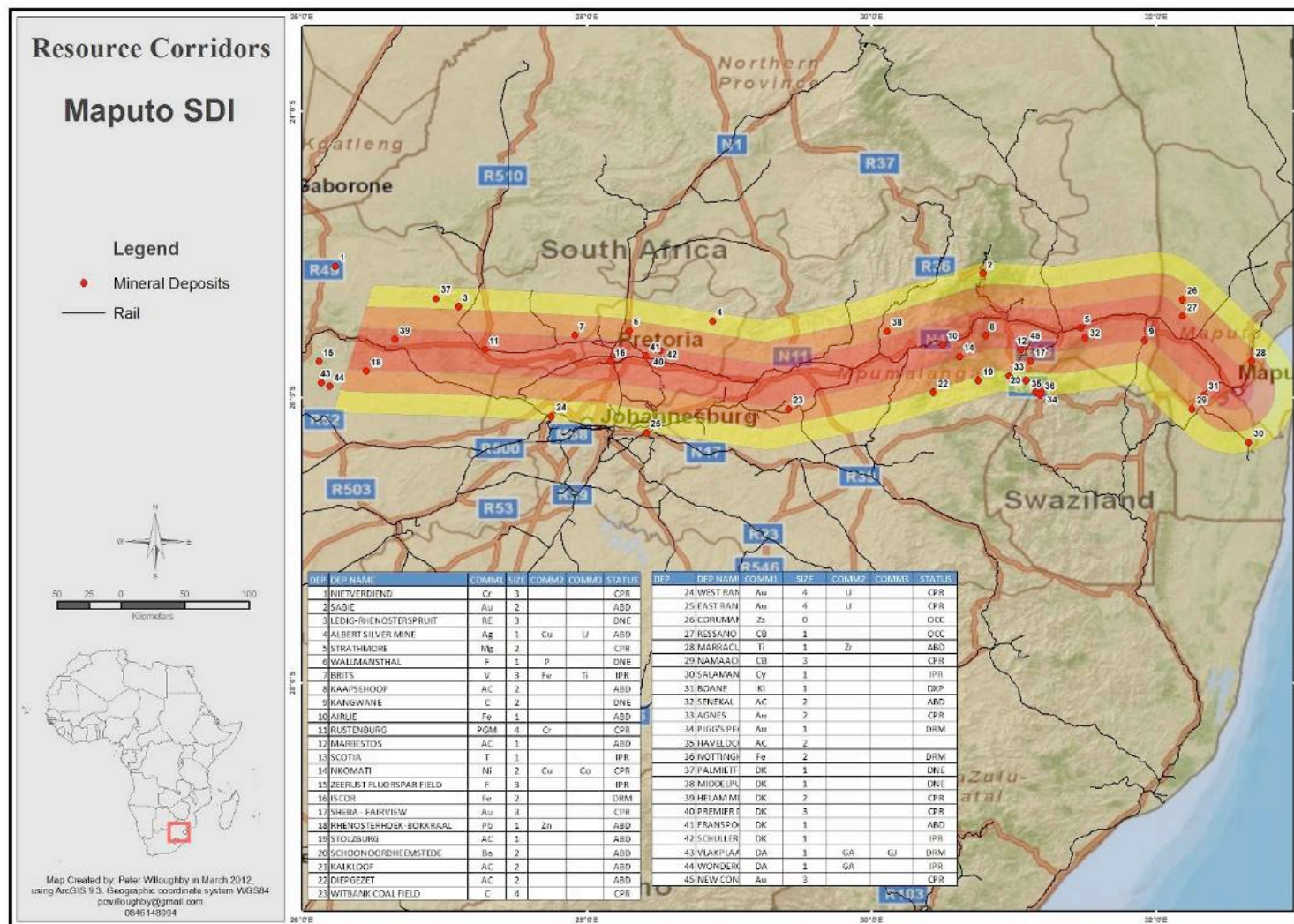
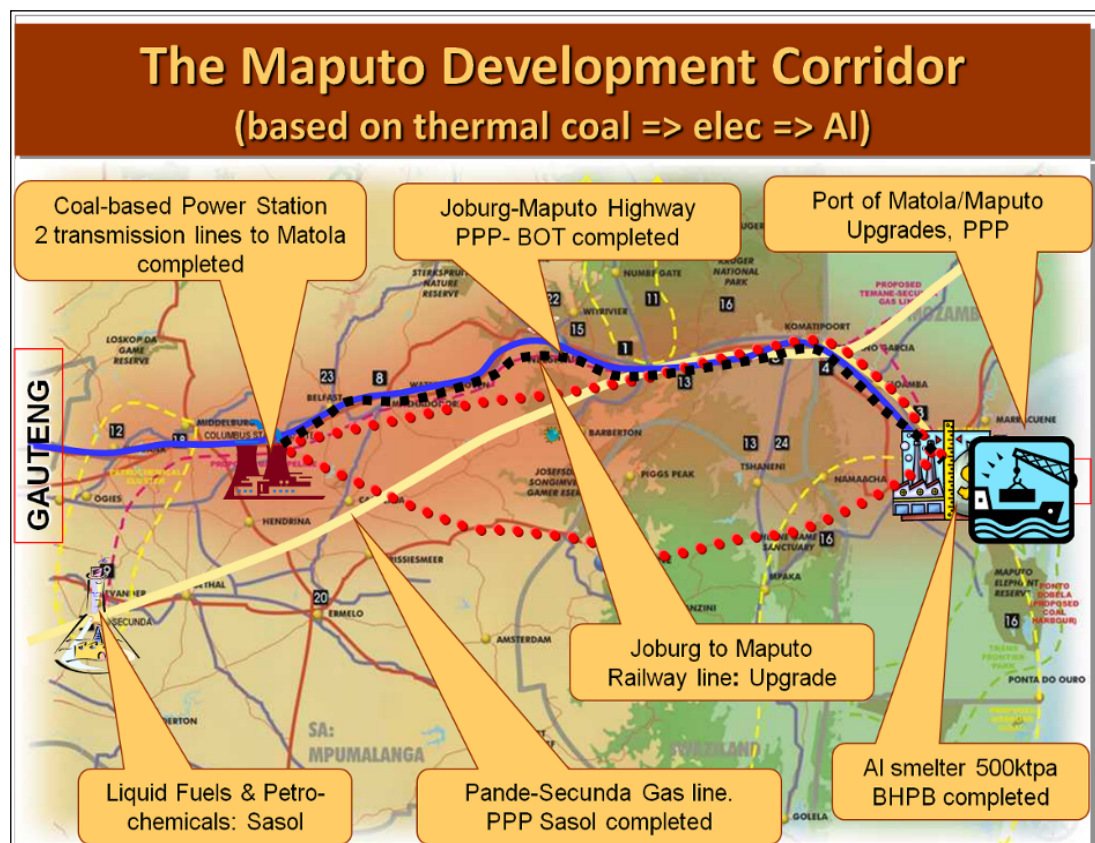


Figure 8: Map Showing the Extent of the Maputo Development Corridor.

The aim of the MDC was to establish developmental alliance between the Maputo port and the Gauteng province of South Africa. The intentions of the MDC were to develop a transportation corridor running through the most highly industrialised and productive regions of Southern Africa such as the Mpumalanga, Gauteng, and Limpopo Provinces to Mozambique. This link is facilitated by the construction and upgrading of railways and roads between Witbank and Maputo and a border post intended for accelerating movement between Mozambique and South Africa. The economic significance of the MDC is that the corridor is the shortest route to an export harbour for South Africa's industrial heartland in Gauteng and Mpumalanga (Figure 9). The MDC project is considered to be vital for job creation and GDP growth as well as increasing exports and investment opportunities in both South Africa and Mozambique. The MDC is also seen as a means of contributing to other key policy areas such as regional economic integration, broadening of the ownership base and international competitiveness (Söderbaum, 2001; and Bek and Taylor, 2001).



Source: Jourdan, 2011

Figure 9: The MDC.

Four key objectives on which the MDC was established according to Söderbaum (2001) and Bek and Taylor (2001) are as follows:

1. To rehabilitate principal infrastructure such as rail, port, road as well as border and dredging posts located along the corridor. Participation of the private sector in this task of revitalizing infrastructure was anticipated.
2. To promote investment from the private sector in the inherent potential of the corridor and in the opportunities to be created by infrastructure revitalization.
3. To accelerate social development, job creation as well as increasing the involvement of historically disadvantaged communities.
4. To facilitate the realisation of the “anchor” projects (Duvha Power – Transmission lines; Mozal Al and, later, Pande/Temane gas – pipeline – Sasol petrochemicals) and the “deepening” of the anchors (supplier industries “linkages”).

Implementation Plan of MDC

- 1. Set Up:** Appointment of project manager; gathering of socio-economic and institutional data on the loosely defined corridor area.
- 2. Pre-Feasibility:** Pre-feasibility appraisal of data; organisation of conceptual workshop, development framework and spatial definition (led by project manager).
- 3. Institutional:** Establishment of structures at the political, official and technical capacity levels, e.g. set-up of political team; interdepartmental team; technical team; working groups; identification of local champions.
- 4. Feasibility:** Together with key stakeholders, further development of the conceptual framework into terms of reference for more detailed appraisal. Identification and appraisal of lead projects and the developmental programme of action. DBSA and IDC play significant role in identifying and testing projects.
- 5. Packaging:** Finalisation of a detailed development perspective document, which indicates a list of viable projects and investment opportunities.
- 6. Launch:** Launching of the MDC, at the investors conference, to present vision, objectives, perspective, anchor projects and investment opportunities; establishment of investment promotion mechanism and implementation capacity. Technical teams and project identification teams are dissolved.
- 7. Exit Strategy:** Institutional arrangements to facilitate momentum and implementation of the initiative and the 'hand over' to provincial structure, e.g. the establishment of the Maputo Corridor Company and the consolidation of Provincial Investment Promotion Agencies. Establishment of clusters for selected sectors in the MDC area, which bring firms across the supply chain together and enhance their collective efficiencies.

Source: Soderbaum, 2001.

1.2.1 Development Costs and Successes of the MDC

The MDC had by 2002 generated a number of notable successes. The corridor accounted for over \$5 billion in private sector investments put into natural resources exploitation and beneficiation as well as industrial and regional infrastructure development. Furthermore, the corridor attracted new investments to the value of \$600 million and created 8000 new permanent jobs together with 15 000 new construction temporary jobs. The MDC demonstrated that transport efficiency for increasing imports and exports was not the only value of DCs but are also tools for aiding the enhancement of local and regional economies (Thomas, 2009; and Gajewski, 2006). Infrastructure and economic development projects initiated within the MDC are discussed below.

1.2.2 Infrastructure Development Projects

- *Single Toll Road (The N4 from Witbank to Maputo)*

The \$250 million worth N4 highway connecting southern Mozambique and South Africa was constructed and has been upgraded into a modern toll route on the basis of a Build Operate Transfer (BOT) toll road project. The company Trans African Concessions consortium (Trac) in 1997 was awarded a 30 year concession relating to the development of the road (Thomas, 2009; Söderbaum, 2001; de Beer, 2001; and Bek and Taylor, 2001).

- *Maputo Port*

Maputo port was rehabilitated, developed and managed by the Liverpool's Merseyside Docks and Harbor Company, an international association which initially invested about \$70 million to improve the facility (Thomas, 2009).

- *Telecommunications, Electricity Links and a Sub-Station*

Telecommunications lines as well as two 200kV electricity lines from Duvha, near Johannesburg to Maputo through South Africa-Mozambique electricity utilities Joint Venture (Motraco) were constructed and some upgraded. The electricity and telecommunications lines were complimented by the building of a new sub-station next to the Mozambique Aluminium Smelter (MOZAL) project in Maputo. Furthermore, these lines have led to industrialization in Maputo through the establishment of the MOZAL smelter as well as the creation of an industrial park and other investments (Thomas, 2009; and de Beer, 2001).

- *Railway Links to Maputo*

The Railways network comprising of main lines from Maputo Port to Zimbabwe (Limpopo Line), to Swaziland (Goba Line), to South Africa (Ressano Garcia Line) and the marshalling yard at Maputo Port has been rehabilitated and upgraded. Furthermore, Spoornet which is South Africa's rail service provider currently runs the whole line between Maputo and South Africa hence providing importers and exporters with a seamless transportation route (de Beer, 2001; and Bek and Taylor, 2001).

- *One-stop border facility*

To facilitate easy access and the flow of goods and people between South Africa and Mozambique, the Komatipoort/Ressano Garcia Border post between the two countries was upgraded. It was envisaged that the facility would cost about US\$ 20 million and will aid in diminishing cross-border bottlenecks by providing a one-stop border control procedure (de Beer, 200; and Bek and Taylor, 2001).

1.2.3 Economic Development Projects

- *Aluminium Plant*

The world's third largest Aluminium plant, the MOZAL plant developed near Maputo was a joint venture between South Africa's BHP Billiton and the Industrial Development Corporation (IDC). The MOZAL project is the anchor project of the MDC and it is valued at about US\$1.3billion (Bek and Taylor, 2001; and Thomas, 2009).

- *Natural Gas*

The South Africa's SASOL and Mozambique's ENH developed the Pande/Temane gas field and constructed a US\$1.4billion pipeline to South Africa (Bek and Taylor, 2001; and Thomas, 2009).

- *Industrial Park*

The development of the Beluluane Industrial Park (BIP) which is a 600 hectare industrial free zone has been conducted next to the MOZAL plant. This park attracts a combination of foreign, regional and local investors keen on heavy industry, manufacturing and hi-tech businesses (Thomas, 2009).

- *Iron & Steel Complex*

The development of the US\$2bn worth Maputo Iron and Steel Plant (MISP) through the use of magnetite obtained from Phalaborwa, in South Africa and natural gas from the Pande fields north of Maputo has being assessed (Thomas, 2009), but currently it appears that the iron plant may be located at Phalaborwa.

- *Other Projects*

Other projects include a magnetite, vanadium and heavy minerals mining project, chemicals, manufacturing, a fertiliser plant, a project by the conglomerate Sappi and eco-tourism, lodge and game-park development (Bek and Taylor, 2001).

1.2.4 Failures

Despite the MDC being regarded as a success, there have been and still are setbacks relating to the functioning of the corridor. Setbacks encountered by the corridor include provision of rail services, lack of community engagement, environmental issues, legal matters, governance issues and investments. Furthermore, the goal of establishing an efficient, one-stop border post between South Africa and Mozambique has not yet been fully realized.

The envisaged border post has been improved by far, however the progress is not satisfactory and more still needs to be done before it is able to fully meet the requirements of commerce and industry. Nevertheless, the Mozambican and South African governments have embarked on a mission of escalating collaboration with the intention of ensuring increasing improvements to the border post (Thomas, 2009). The one-stop customs and immigration facility has received negative criticism from discouraged travellers for supposed corruption and delay as the facility does not operate 24 hours a day.

The setbacks experienced have led to the slow development and utilization of the Maputo port by South African importers and exporters. Consequently, these importers and exporters still prefer to make use of Durban's deep-water port regardless of it being further away (Bek and Taylor, 2001; and Thomas, 2009). A discussion of challenges relating to the MDC project is rendered below.

1.2.4.1 Mozambican Side

- *Inadequate Rail Services*

The pre-existing rail link from the South Africa-Mozambique border to the Maputo port requires severe rehabilitation and upgrading. The poor conditions of rail facilities on the Mozambican side of the corridor have resulted in a narrow growth in the conveyance of passengers as well as sugar, coal and other commodities (Bek and Taylor, 2001; and Thomas, 2009).

- *Lack of Densification Activities*

The MDC was not capable of generating densification activities on the Mozambican side and therefore needed supplementary extraordinary efforts of the International Finance Corporation (IFC) in order to stimulate SMEs in the Matola area (Bek and Taylor, 2001; and Thomas, 2009).

- *Appropriate Legal and Institutional Framework*

Mozambique failed to institute a suitable legal and institutional framework prior to the commencement of the project (Bek and Taylor, 2001; and Thomas, 2009).

- *Slow Initiation of Projects and Lack of Community Engagement*

Since South Africa promptly initiated projects as compared to Mozambique, the Mozambicans were incapable of catching up and assessing the implication of specific projects. This coupled with inadequate involvement of the affected local communities further delayed project initiation. For instance, residents in the Matola area lodged grievances regarding the lack of consultation by the government about the N4 toll road (Bek and Taylor, 2001; and Thomas, 2009).

1.2.4.2 South African Side

- *Provision of Rail Services*

Initially, there were problems with South Africa's state owned rail services company Spoornet coming on board in 1996 and this resulted in the failure of provision of rail services to the Maputo Port (Bek and Taylor, 2001; and Thomas, 2009).

- *Community Engagement and Investment*

There was great enthusiasm around the corridor during its initiation and this created idealistic expectations for the concerned communities. However, these expectations were not met due to lack of anticipated investments in certain areas of the corridor.

Communities soon after developed negative perceptions due to disappointments by potential investors as anticipated projects were considered not to be bankable (Kepe, 2001 and Thomas, 2009).

- *Negative Environmental Impacts and Governance Issues*

Negative environmental impacts and governance issues have been brought forward in some places, all of which present lessons for a wider strategy at the continental level (Kepe, 2001 and Thomas, 2009).

1.2.5 Summary of Benefits to Date

Geoffrey de Beer in 2001 summarised the economic benefits the MDC brought to both Mozambique and South Africa as follows:

- Increased use of transport infrastructure as indicated by cross-border freight movements, cross-border people movements and increased number of shipping services;
- Increased efficiencies associated with the operation of the transport infrastructure as indicated by freight travel times and costs;
- Substantial private sector investment as indicated by the sheer scale of private sector investment in infrastructure;
- Related economic sector investments as indicated by the scale and diversity of private sector investments;
- Related employment creation; and
- Related SMMEs development.

1.2.5 Summary of Benefits to Date

The MDC (Table 5) was the first SDI corridor developed in South Africa which formed the base of experience for the development of other corridors in the region. The major weakness being the methodology of fast tracking of its development to remove bottlenecks and as such it did not take communities into consideration. In this respect it did not allow adequate time for capacity building for communities to participate in the corridor development.

Table 5: Analysis of MDC

Context	Discussion Maputo Development Corridor
Natural Resources	• Power • Gas.
Infrastructure	• Highway linking South Africa and Southern Mozambique was upgraded into a modern toll road at a cost of \$250 million. • Maputo port rehabilitated. • Telecommunications and electricity links upgraded. • Rail links upgrade with South Africa's Transnet running link from South Africa to Maputo.
Private Sector	• The corridor is a success because of private sector investments (\$5billion). • PPP was essential in ensuring success of this corridor.
Business Case / Anchor Projects	• Strong business case with added local economic development, SMME development. • Duvha Power Station, Mozal Aluminium, Sasol Pande gas pipeline.
Policy and Regulatory Environment	• PPP encouraged and facilitated by both governments.
Political Support	• Supported by South African and Mozambican governments via the respective transport Ministries and Heads of State.
Corridor Authority	• Strong authority with power to move project forward. • Strong Project Managers appointed on both sides.
Stakeholder Participation	• Well organized and involvement from private sectors and less organized input from CBO's and NGO's.
Linkages	• Forward and side stream linkages supported for the mega projects with the major projects providing opportunities for the SMME's.
Cross Border Arrangements	• Easy access and the flow of goods and people between South Africa and Mozambique, the Komatipoort/Ressano Garcia Border post between the two countries were upgraded. • Reduced cross-border bottlenecks by providing a one-stop border control procedure. • South Africans no longer require visas to enter Mozambique.
Skills and Technical Capacity	• Both governments had capacity in the form of State Owned Enterprises such as Power Institution, Finance Institution and Transport Institution.

1.3 Zambezi Valley Development Corridor

The Zambezi Valley Development Corridor (ZVDC), as shown in Figure 10, gets its name from the Zambezi basin or Zambezi Valley, an area that includes the Mozambican Tete Province and the southern part of Malawi (Perkins and Robbins, 2011). The Zambezi Valley, which incorporates the Mozambican's Tete Province and the southern part of Malawi, is among the poorest regions in the world despite being endowed with one of the currently biggest unexploited coal resources in the world. Rural communities in this region have low access to water reticulation, education and electricity (Columbia University, 2011).

The newly re-routed ZVDC (Figure 10) cuts across the central provinces of Mozambique and the southern part of Malawi. The central provinces which form part of the ZVDC are the water and mineral rich province of Tete, the south eastern part of the Manica Province, the southern part of the Zambezia Province and the Sofala Province. The ZVDC starts in Tete Province and terminates in the Indian Ocean (Mozambique Channel) in the port of Beira.

Together with three other development corridors in Mozambique, the ZVDC is the beacon of hope for populace of Mozambique. Other three important development corridors are the Maputo Development Corridor, the Beira Development Corridor (a link between Harare and the port of Beira) and the Nacala Development Corridor (a link from Mchinji in Zambia, through Malawi, to the port of Nacala). The success of the MDC is likely to have been a catalyst for the adoption of the development corridor modality by the government of Mozambique (Perkins and Robbins, 2011).

The strategic importance of both ZVDC and Nacala corridors lies in their ability to unlock economic potential of mining and agriculture in Mozambique, Malawi and Zambia. In addition, coal fired power station potential in the Tete Province, together with the hydropower energy from the Cahora Basa complex, will supply the necessary electrical power for industry and general consumption. This will be opportune if it is considered that only approximately 4.7%, 10.2% and 6.4% of residents in Tete, Sofala and Manica Provinces respectively have access to electricity (Columbia University, 2011).

1.3.1 Mineral Resources along the ZVDC

The ZVDC (Figure 11) is endowed with minerals, in particular the Zambezi basin which is a host to one of the world's largest unexplored coking and thermal coal resources. In addition, the central provinces of Mozambique have vast and unexplored resources such as iron ore (magnetite), bauxite, nepheline syenite, heavy minerals and fluorspar. In particular coal resources of the Tete Province, which are estimated at 23Bt, will be used as the anchor sector in the ZVDC (Perkins and Robbins, 2011).

Currently Vale of Brazil and Riversdale (now Rio Tinto) are at an advance stage with their coal mining projects in the Moatize region and by 2016 it is expected that there will be eight coal mines in the Tete Province. It is estimated that coal production in the Tete Province will reach 48 Mt p.a. by 2017 and by 2025 it will reach 100 Mt p.a. All coal exports will be hauled along the Sena railway line (a link between the town of Tete and the port of Beira) and the Nacala railway line (a link between Mchinji and the port of Nacala) via a new railway link from Tete through Malawi. Both the Sena railway line and the Nacala railway line run along the centre of the ZVDC and Nacala Development Corridor respectively.

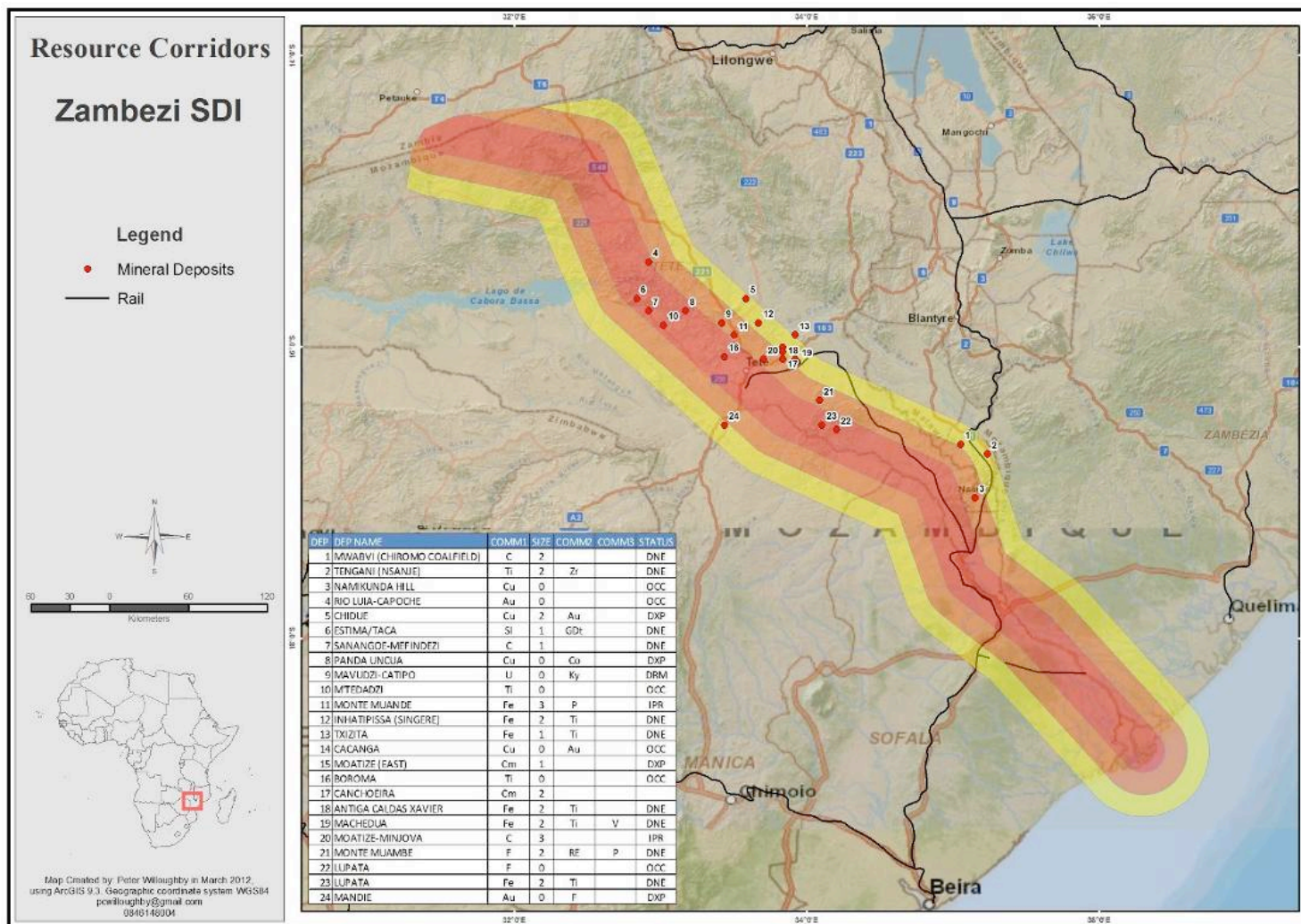
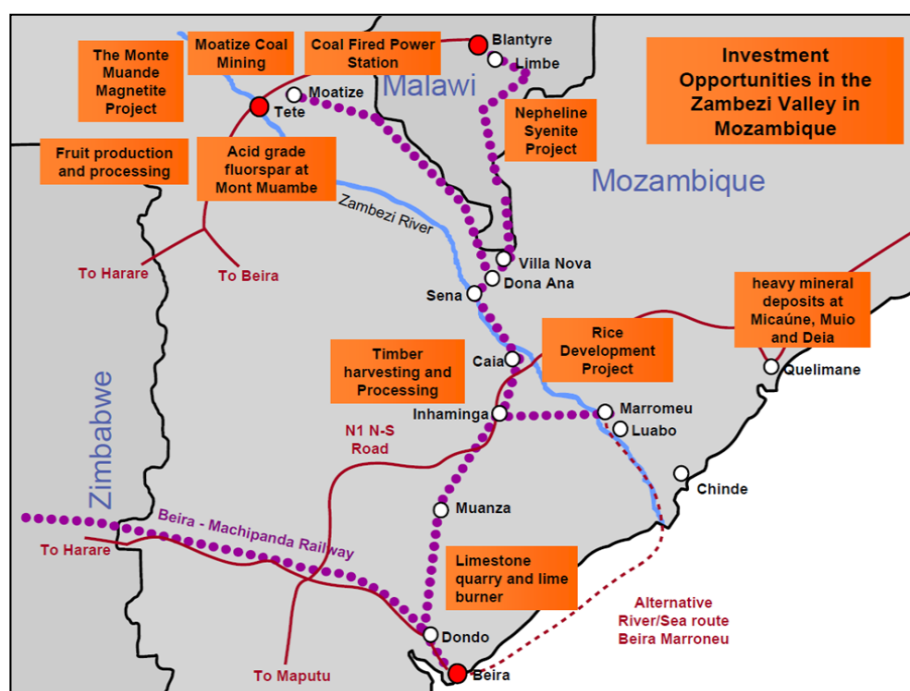


Figure 10: Map Showing the Extent of the Zambezi Development Corridor.



Source: Punugwe, 2005

Figure 11: Investment Opportunities along the ZVDC.

1.3.2 Agricultural Potential of the ZVDC

About 80% of the poor population within the ZVDC is subsistence farmers with very low yields and poor access to market. Due to high cost of transportation, presumably as the results of bad road conditions and substandard railway system, Mozambique had a fertiliser usage of 4kg/ha in 2010 compared to average African fertiliser usage of 10kg/ha and African Union target of 50kg/ha (Columbia University, 2011).

Notwithstanding, Mozambique has a huge potential in agricultural production. Currently the country trade with its neighbours and Western and Eastern countries in cashew nuts, tobacco, cotton, timber and sugar (SADC, 2006). With the rehabilitation and upgrade of the Sena railway line, it is envisaged that many of the commercial and subsistence farmers will benefit enormously from the transportation point of view.

1.3.3 Road and Railway Capacity

Two of the crucial elements of the development corridor are road and railway links. The road and railway links in Mozambique were ravaged by a fight for liberation and civil war. It is estimated that the rail capacity projection of the Sena and Nacala lines will not keep up with projected coal export from the Zambezi Valley.

1.3.4 The Railway Link between Tete Province and Port

The success of the ZVDC depends on the railway connection from Moatize to Beira (the Sena Line). In 2004 the government of Mozambique awarded a 25 year concession to operate the Sena Line to Companhia Dos Caminhos De Ferro Da Beira (CCFB), a joint venture company made up by two Indian State-owned companies, RITES (26%) and IRCON (25%) and the Government of Mozambique (49%). The CCFB was contracted to improve the Sena Line to 6 Mt p.a. By the beginning of 2011 the rehabilitation of the Sena Line was not completed as expected and that posed capacity risk to mining in the Tete Province (Perkins and Robbins, 2011).

In parallel to the efforts of the CCFB, lead investors in the Tete coalfields, such as CVRD and Riversdale, investigated coal transportation alternatives which included (Perki & Robbins, 2011):

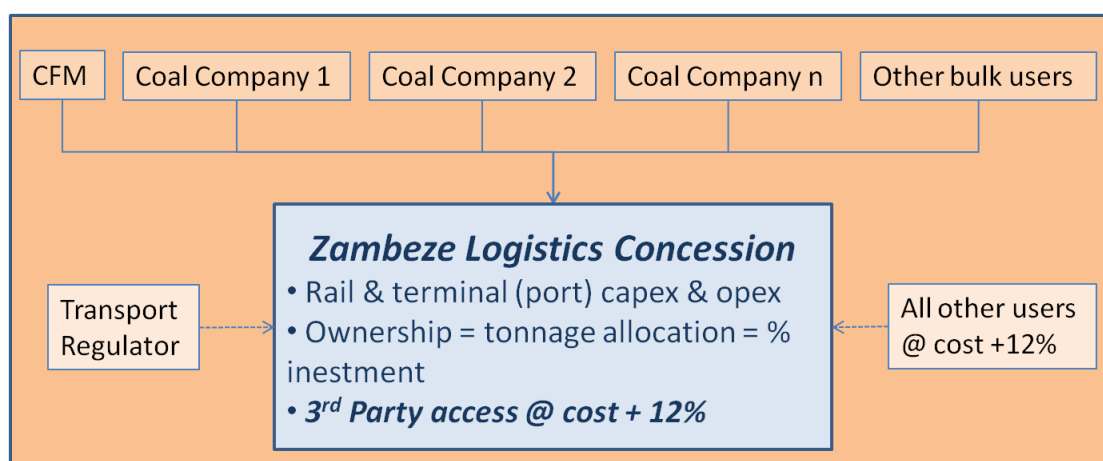
- The expansion of the Sena Line to 12 Mt p.a.;
- A new 30 to 35 Mt p.a. rail link between Moatize and the Nacala Line through Malawi (CVRD has controlling interest in the company that operates the Nacala Line);
- The barging of coal between Benga and Chinde;
- The construction of a coal line between Moatize and Savane; and
- The construction of the coal slurry pipe from the coalfields to the coast.

1.3.5 Multi User Railway Link

Generally mining companies do not want to share railway lines with other outside parties. This behaviour tends to create an enclaved development which is contrary to the notion of a development corridor. The Sena Line is expected to serve the agriculture and other mines between Moatize and Beira. To achieve this, the government has proposed to use a multi-user model such as the one shown in Figure 12.

1.3.6 Public Private Partnership

Through the Maputo Development Corridor, the government of Mozambique has gained a decade long experience of developing a workable PPP model. With respect to ZVDC, the government has chosen to partner with CVRD, a company with extensive experience in managing rail concessions and ports. In line with terms of the coal mining concession, CVRD will invest \$1.5 billion in the training of local people and the provision of housing, education and health care (Jomo, 2007).



Source: Jourdan

Figure 12: Proposed Multi-User Model in Mozambique.

1.3.7 Cross Border Collaboration between Zambia, Malawi and Mozambique

The Zambezi Valley Development Corridor is largely within the borders of Mozambique and largely coordinated by the government of Mozambique. In retrospect, the governments of Zambia and Malawi, both landlocked, should have opted to be partners in the ZVDC and the Nacala Development Corridor rather than signing tripartite agreement with respect to the Nacala Line. The partnership would have unlocked the export capacity within their respective countries. Currently 55% of production cost in Malawi is attributed to transport cost compared to an average 17% in less developed countries. In addition, 70% of the cargo on the Nacala line comes from Malawi. The government of Malawi also subsidizes Malawian commuters on the Nacala Line. Partnership in the ZVDC and Nacala corridor would have substantially dropped the transportation (Columbia University, 2011).

1.3.7 Conclusion about ZVDC

Experience from ZVDC (Table 6) indicates strong political commitment by benchmarking corridor development with the framework of the country. There is a vibrant private sector interest that can be mobilised for the development of the corridor and strong donor support in the form of the World Bank, Department for International Development (UK) and DTI to provide technical and financial support to manage the programme. The corridor has the necessary ingredients for a successful corridor once implemented.

Table 6: ZVDC Analysis

Context	Discussion Zambezi Valley Development Corridor
Natural Resources	• Coking coal • Thermal coal
Infrastructure	• Weak with limited rail infrastructure. • Currently being upgraded.
Private Sector	• Active involvement. • Multinationals mining companies are driving project development - Rio Tinto and Vale with a host of Junior Australian and Indian exploration companies.
Business Case / Anchor Projects	• Quality of resources drives the business case. • World class coking coal and thermal coal deposits. • Also undeveloped resources of iron ore, nepheline syenite and heavy minerals.
Policy and Regulatory Environment	• Incentivised FDI for natural resource projects. • Government and Vale have agreed through the state institution that oversees ports and railway development to upgrade the Sena line via a concession. • Experience gained in MDC with regard to PPP. • Transport ministry integrate national transport system to use the SDI methodology to transform transport into development corridors.
Political Support	• Currently corridor modality in Mozambique supports government's political and economic agenda.
Corridor Authority	• Not yet established, however the SDI Programme is based in Ministry of Transport. • Donor collaboration DFID, the World Bank and DTI (South Africa) are supporting the SDI programme. Financial contribution \$2.15 million over a 3 year period from July 2010.
Stakeholder Participation	• The programme not fully implemented.
Linkages	• No focus on the creation of local SMME – products and services largely from South Africa. • However experience from Mozal aluminium programme is intended to be carried into policy on mining.
Cross Border Arrangements	• Appear to be limited with most activity taking place in Mozambique – can be attributed to fact that the corridor is largely within Mozambique.
Skills and Technical Capacity	• The SDI unit is yet to be fully staffed.

2. Tanzanian Development Corridors

2.1 Overview of Tanzania

Tanzania, officially referred to as the United Republic of Tanzania is located in East Africa and is bordered to the north by Uganda and Kenya, to the west by the Democratic Republic of the Congo, Burundi and Rwanda and to the south by Mozambique, Malawi and Zambia. To the east, Tanzania's border lies on the Indian Ocean and the coastline is about 1,424 km long (Figure 13). Tanzania with the capital being Dar es Salaam consists of 30 regions of which 25 are on mainland, 3 on Zanzibar and 2 on Pemba. The country covers a total area of about 947,300 km² of which 885,800 km² is the land cover and 61,500 km² water cover (Central Intelligence Agency, 2012; and United States Department of State, 2011). In 2010, the estimated population of the country amounted to 43.1 million, 41.8 million on mainland and 1.3 million on Zanzibar (United States Department of State, 2011).

Tanzania is endowed with natural resources including nickel, coal, iron ore, diamonds, natural gas, phosphates, gold, hydropower, tin, gemstones, forest products, wildlife, fisheries and crude oil. Regardless of the country's abundant natural resources, Tanzania's economy is still ranked as one of the world's poorest economies in terms of per capita income. However, the country in 2011 saw a 6.1% growth (\$63.44 billion) in GDP with a large portion accounted for by the gold production and tourism industries (Central Intelligence Agency, 2012; and United States Department of State, 2011). The Tanzanian economy relies profoundly on the agriculture sector which contributes over a quarter of the GDP and provides 85% of exports as well as employment to about 80% of the work force.

2.2 Mtwara Development Corridor

The Mtwara Development Corridor (Figure 13) was first initiated in 1992 by the Southern African Transport and Communications Commission (SATCC) which is part of the Southern African Development Community (SADC). However, it was only in December 1994 that the Mtwara Development Corridor (MtwDC) multi-lateral agreement was signed by Heads of State of the Republic of Malawi, Republic of Mozambique, United Republic of Tanzania and Republic of Zambia. The agreement was supported by various complementary agreements as well as the South African Department of Trade and Industry (Japan Development Institute, 2009).

The regions within the MtwDC corridor are faced with transportation setbacks as bottlenecks are developing in the region. It was concurred that to address the problem, an upgrade of infrastructure was required and development and rehabilitation of roads and bridges, sea and lake ports, telecommunications, air transport facilities and ferry services were regarded as potential remedies to the situation (Aurecon, 2012).

The MtwDC was initiated with the aim of developing a transportation corridor that will afford the southern regions of Tanzania, Malawi, Zambia and Mozambique easy access to the Mtwara port in Tanzania in addition to other transit corridors within the focus areas of the project (Aurecon, 2012). For instance, the MtwDC which is located in the vicinity of the Mozambique border is regarded as a road based alternative to add on to the more distant ports of Dar es Salaam in central Tanzania and the rail corridor of Nacala in north-central Mozambique.

The MtwDC further aims to encourage investment, trade and tourism in the four regions of the corridor and also enhance development through integration of electricity, roads and other infrastructure (SADC Today, 2006). Moreover, the corridor aims to eradicate poverty through the stimulation of economic growth through the beneficiation of raw materials hence accelerating expansion of industrial production and exports.

Resource Corridors

Mtwara SDI

Legend

- Mineral Deposits
- Mtwara
- Rail



Map Created by: Peter Willoughby in March 2012,
using ArcGIS 9.3. Geographic coordinate system WGS84
pwilloughby@gmail.com
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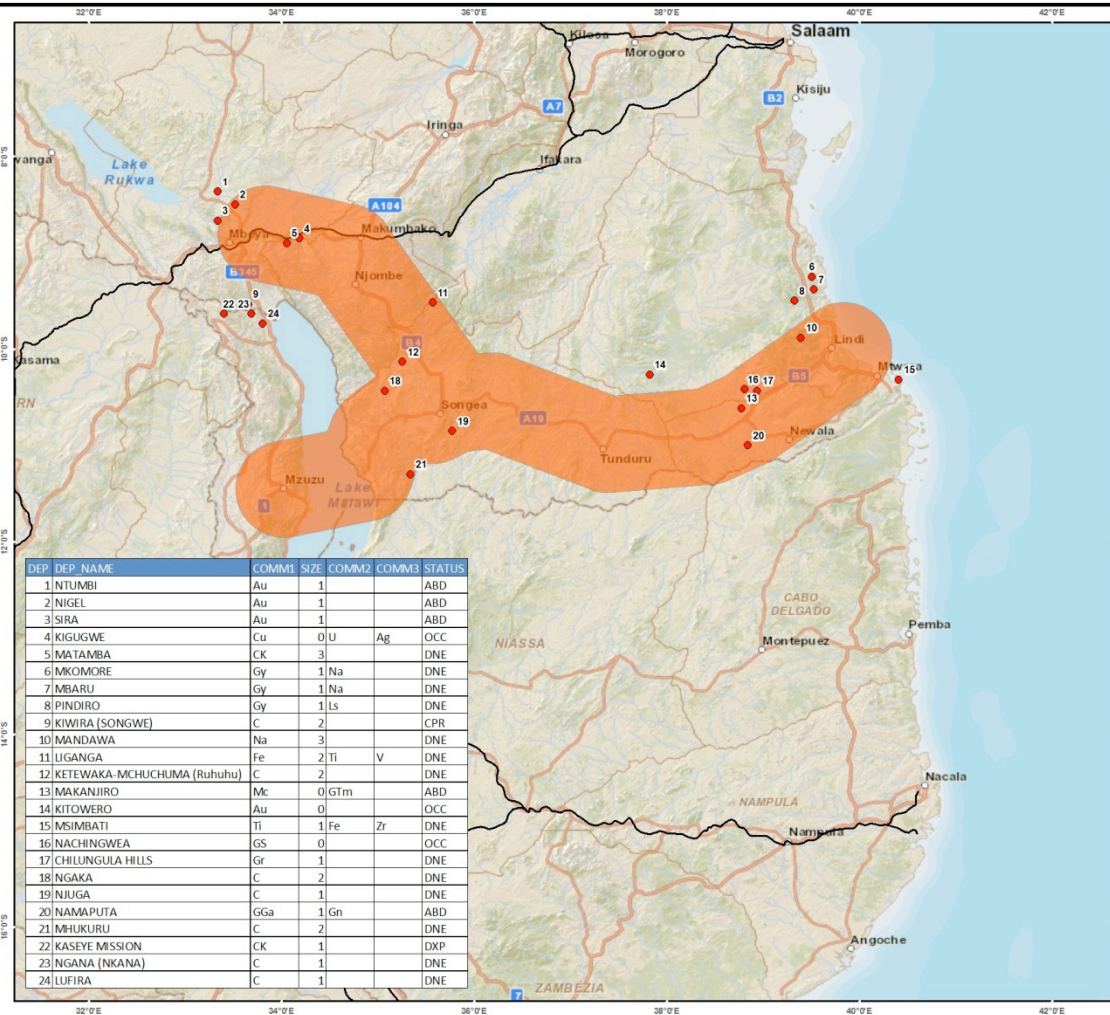


Figure 13: Map showing the Extent of the Mtwara Development Corridor.

2.2.1 Economic Development Projects

- *Development of the Mchuchuma Coal Mine and Power Station*

Coal from the \$100 million coal mine in south west Tanzania was intended for use by the power station for electricity generation for industries, agriculture, households and also for export. The project was scheduled to be implemented by the year 2004 (de Beer, 2001; and Anonymous).

- *Development of the Liganga Iron Ore Reserves*

Geological investigations and studies have shown that the Liganga Iron Ore reserves are estimated between 45 million and 1200 million tons (Mt). The iron ore was envisaged for use in the processing of titanium, vanadium, iron and in the manufacture of steel products (de Beer, 2001; and Anonymous).

- *Development of Gas Reserves of the Songo Songo Island and Mnazi Bay*

The development of the Songo Songo Island gas reserves was estimated at \$375 million and the proven recoverable gas amounts to about 540 billion cubic feet. Furthermore, two 35 million cubic feet per day processing units were planned on the Songo Songo Island. It was also envisaged that gas reserves at Mnazi Bay in Mtwara will be developed for the purpose of power generation and other applications (de Beer, 2001; and Anonymous).

- *Development of Coastal and Inland Fisheries Industries*

The Mtwara Corridor offers opportunities for fisheries development in both inland and coastal water. Opportunities exist for fish capture (deep sea and fresh water), aquaculture, production of seaweeds and supply of boats and accessories (de Beer, 2001).

2.2.2 Infrastructure Development Projects

- *Development of the Mchuchuma Thermal Power Station*

The \$360 million power station will only be viable if a credible power purchase agreement is obtained from credible off takers (de Beer, 2001 and Anonymous).

- *Development of the Unity Bridge*

The bridge is to be built across the Ruvuma River between Negomano in Mozambique and Mtambaswala on the Tanzanian side (SADC Today, 2006).

- *Development of a Power Transmission System*

The new system will link the new power station into the national grid. Furthermore, additional lines will be built to service previously unsupplied areas of southern Tanzania. The estimated costs of this project are \$110 million (de Beer, 2001).

- *Development of a Petroleum Products Pipeline from Mtwara to Mbamba Bay*

The 973km line will transport and supply petroleum products to the southern regions of Tanzania, Malawi and northern Mozambique. Tanzania is completely dependent on imported petroleum products (de Beer, 2001; and Anonymous).

- *Development of Various Regional Water Supply Schemes*

These schemes are aimed at providing urban and rural communities with access to improved water and sanitation facilities (de Beer, 2001; and Anonymous).

- *Upgrading of the Inland Ports Of Mbamba Bay and Manda*

Both ports require substantial investment if they are to handle projected transit traffic from Malawi (de Beer, 2001; and Anonymous).

- *Upgrading of Various Roads*

These roads will facilitate access for Malawi and Zambia to the Mtwara Port as well as access between the corridor's major anchor projects (de Beer, 2001; and Anonymous).

- *Upgrading of the Telecommunications Services in the Southern Region of Tanzania*

The telecommunications services have not kept pace with those in the rest of the country (de Beer, 2001; and Anonymous).

- *Upgrading of the Mtwara Airport (de Beer, 2001; and Anonymous).*
- *Upgrading and Development of Mtwara Port (de Beer, 2001; and Anonymous).*

2.2.3 Failures

Projects of the MtwDC have not progressed well since their initiation until around 2009. The main constraint around the rather slow development was the unavailability of reliable transportation infrastructure such as railway, port and road in the corridor. Some of the failed projects are listed below.

- *Construction of the Mchuchuma–Liganga–Mtwara Railway Line*

Cost estimates for construction were known after a feasibility study conducted by the National Development Corporation in 2006 but the railway line is not yet constructed. The Tanzanian government has stated that a significant contribution from the private sector is needed to commence this project because the costs involved in the project were high. Talks have been held with the potential investor, Sichuan Hongda Corporation, and it was agreed that preparations for the construction of the railway line would only commence after the implementation of the Mchuchuma and Liganga projects in 2012 (Shekighenda, 2011).

- *Mchuchuma Coal and Liganga Iron Ore Projects*

Since the announcement of these projects in the 90s, it was only in 2011 that a \$3 billion agreement was signed to develop the Mchuchuma coal and Liganga iron ore projects. The joint venture agreement was signed by the National Development Corporation (NDC) which will hold 20% and China's Sichuan Hongda Group which will hold the remaining 80% (Tanzania Affairs.org, 2012; and TradeMark Southern Africa, 2011).

RSDIP reports that there are limited projects suitable for support and hence requirement to develop additional project proposals. The RSDIP support to DC will concentrate on assistance to coal and iron ore transactions and related downstream cross-border power, liquid fuels, TiO₂, pigment, urea, sulphur and cement.

2.2.4 Conclusion about MtwDC

It can be said that the MtwDC (Table 7) is still at a phase 1 scoping stage. There are a number of issues that need to be addressed, key being the lack of an attractive anchor project.

Table 7: Analysis of Mtwara Development Corridor

Context	Discussion Mtwara Development Corridor
Natural Resources	• Coal • Iron ore • Gas • Fisheries
Infrastructure	• Poor
Private Sector	• Limited, with only recent agreement signed between NDC (Malawi) and China's Sichuan Hongda Group
Business Case / Anchor Projects	• Poor • No attractive anchor project • Coal and iron ore projects have not move forward • Limited projects suitable for support
Policy and Regulatory Environment	• Preparation of new Integrated Industrial strategy (IIDS 2025) which links SDI's to promoting growth in the country
Political Support	• Political will appears to be weak between the four participating countries
Corridor Authority	• Not active, NDC under the Ministry of Trade and Industry with Champion being Ministry of Transport • The SDI unit (in the NDC) is supported by the Dti (South Africa) in the order of \$2.5 million over 3 years – starting September 2010
Stakeholder Participation	• Limited
Linkages	• Still at scoping stage
Cross Border Arrangements	• Still to be developed
Skills and Technical Capacity	• Mozambique has the necessary experience and skills however other countries seem to lack the requisite skills and capacity for the management of the programme • Donor support is critical in terms of skill and financial support to drive the programme

2.3 Central Development Corridor

The Central Development Corridor (CDC) was established in 2005 by Rwanda and Tanzania with step in rights for DRC, Uganda and Burundi. The establishment of the CDC was coupled with the signing of a bilateral agreement between Burundi, Tanzania and Rwanda on the proposed Isaka-Kigali and Keza-Gitega-Musongat railway lines (Regional SDI Programme.com).

The CDC covers Tanzania, Burundi, Rwanda and extends into the eastern DRC. The corridor connects the port of Dar-es-Salaam with the landlocked countries of Rwanda and Burundi and the eastern DRC. Furthermore, the corridor consists of the Dar es Salaam Kigoma railway network (1254 km) and it connects to Bujumbura by boats on Lake Tanganyika and to Rwanda by road. The road route is from Dar es Salaam via Dodoma, Singida, Nzega to Lusungu into Rwanda and Burundi (Mkiaru, year unknown).

The aim of the CDC is to establish an efficient transportation corridor between Dar es Salaam, Tanzania's hinterlands, the DRC, Rwanda, Burundi and Uganda. Furthermore, this corridor aims to promote and facilitate improvements in the corridor infrastructure, its management and promote new investments in the areas covered by the corridor. The CDC is being implemented under the auspices of mainly the Tanzanian and Rwandan governments as Burundi and the DRC are not yet signatories to the corridor agreement. However, these

two countries have participated in processes and activities of the programme of work (Perkins and Robbins, 2011).

2.3.1 Development Projects

A road and rail corridor linking the Dar es Salaam port to Rwanda, Burundi and DRC as well as to the lake zone across to DRC and up to Uganda forms the backbone of the corridor. Based on the throughput volumes at Dar es Salaam port, unhindered transit traffic demand to Burundi, DRC, Rwanda and Uganda is expected to grow from 990,000 to 16.9 million harbour tonnes over the period 1997 to 2032. In addition, power demand from mining is estimated at 600 MW, which could rise if downstream industrial projects are realized that would also improve the prospects for expanded production in coffee, tea, cotton, sugar, rice and aquaculture and open up remote locations to tourism developments. Table 8 shows other investment opportunities along the CDC.

Table 8: Investment Opportunities on the on the Tanzanian Side of the CDC.

Activities	Opportunities
Mining	Gold at Kahama, Geita, Mwanza, Mara, Nzega, Sekenke, Mpanda, Dodoma and Tabora; cobalt and nickel at Ngara; diamonds; salt; gypsum; and related industries in EPZs
Agriculture	Vineyards, tobacco, rice, maize, cassava, groundnuts, cotton, fruit, coffee, palm oil, marula and aloe vera
Agri-industries	Food and fruit processing; textiles; wine; and coffee and tobacco processing
Forestry	Timber; furniture; honey; wax
Marine	Fishing and fish processing
Tourism	Establishment of tourist hotels in the major tourist nodes at Kigoma, Tabora, Singida and Dodoma, and restaurants along the main travel route Revitalizing the Bagamoyo Town near Dar es Salaam Dar es Salaam East Coast Development programme for mixed use development, tourism and conservation

Source: Perkins and Robbins, 2011

2.3.2 Minerals Resources along the CDC

The corridor has a number of mineral resources as shown in Table 9 at various levels of development from those requiring grass roots exploration to extraction. These projects, amongst others, have potential for infrastructure development in terms of transport and energy.

Table 9: Mineral Resources of the Central Development Corridor

Mineral	Area/Country
Gold	Tanzania mines and prospects DRC (South Kivu) – one mine and a prospect
Nickel	Tanzania (Kabanga) Burundi (Murumera)
Coltan, Tungsten, Cassiterite	DRC (North and South Kivu)

Source: Perkins and Robbins, 2011

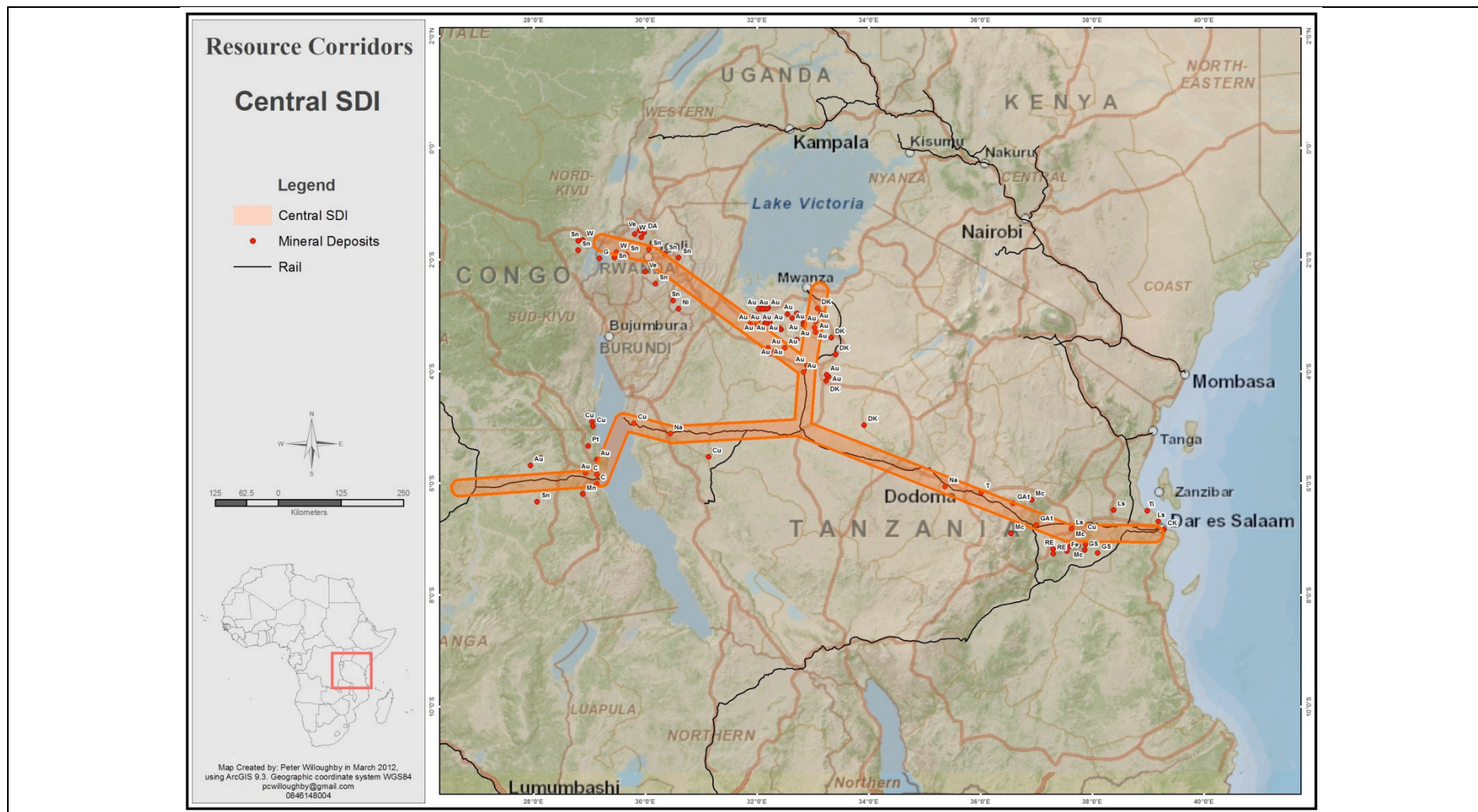


Figure 14: Map Showing the Extent of the Central Development Corridor.

2.3.3 Agriculture Potential

Agriculture is the mainstay of the economies along the CDC employing more than 80% of the population in Rwanda and Tanzania. It is also the largest contributor to the GDP (Perkins and Robbins, 2011). According to Perkins, the downside is that the sector suffers from low productivity, under-utilisation of resources, low incomes and profitability for most of its producers. Therefore opportunities exist in the corridor for investments to increase competitiveness and profitability along the value chain. The CDC explores prospects for increased private investments to enhance activities in the sector for growth and sustainability.

Agricultural produce include coffee, tea, cotton, sugar and rice. Aquaculture also provides added opportunity for investment. Tourism is yet another sector that has an opportunity for investment and growth. These sectors can ride on anchor projects as they may not support the development of the requisite infrastructure on their own.

2.3.4 Infrastructure

The corridor required integrated port, road and rail network to meet the production requirements. Many infrastructure challenges were identified and included the following (Perkins & Robbins, 2011):

- Expansion of the port at Dar es Salaam;
- Rehabilitation of the main railway lines and linking the three countries of Tanzania, Rwanda and Burundi;
- Developing missing paved road links between the countries;
- Restoration of shipping systems on lakes Tanganyika and Victoria; and
- Development of a power strategy for security of supply.

The RSDIP provides support to the Ministry of Transport to carry out the following:

- Review options to decongest the Dar es Salaam port;
- Advance preparation for corridor railway rehabilitation; and
- Leverage donor funding into rehabilitation of MSC Lake Transport fleet.

In Rwanda and Burundi the RSDIP provides support to create integrated cross-border intervention to increase trade in cassiterite, coltan, wolframite to \$1 billion.

2.3.5 Conclusion about CDC

The CDC (Table 10) does have the required ingredients for a successful corridor. The most important being the lack of an anchor project that will require major infrastructure development. There also appears to be a lack of political support.

Table 10: Analysis of CDC

Context	Discussion Central Development Corridor
Natural Resources	• Gold
Infrastructure	• Weak – need bulk commodity for rail infrastructure. With gold being the main anchor – road infrastructure can suffice. • Rail is dysfunctional.
Private Sector	• Limited – mainly gold focused therefore no need for major rail infrastructure.
Business Case / Anchor Projects	• Limited anchor projects in all sectors.
Policy and Regulatory Environment	• Preparation of new Integrated Industrial strategy (IIDS 2025) which links SDI's to promoting growth in the country. • Cautious around mining – communities have not benefited from mining in the past. • Recent calls for higher mining taxes – has a negative effect on investor sentiment.
Political Support	• Insufficient as there are only two (Tanzania and Rwanda) country signatures to the corridor.
Corridor Authority	• Active authority under the NDC, Corridor Authorities under ministry of Transport. • However this is insufficient as it requires units and programme managers in each of the participating countries.
Stakeholder Participation	• Good within the 2 participating countries- but do not seem to yield any productive results to develop the corridor.
Linkages	• Government and mining companies place lower emphasis on linkages. Limited linkages.
Cross Border Arrangements	• Limited to two countries.
Skills and Technical Capacity	• Donor support is critical in terms of skill and financial support to drive the programme.

3. Democratic Republic of Congo Development Corridor

3.1 Overview of the Democratic Republic of Congo

The Democratic Republic of the Congo (DRC) is the second largest country (in terms of landmass) in Africa. The DRC shares its border with the Atlantic Ocean to the west and nine other countries, namely the Central African Republic (CAR) and South Sudan to the north; Uganda, Rwanda, Burundi and Tanzania to the east; Zambia and Angola to the south; and the Republic of the Congo (Brazzaville) and the Cabinda Province of Angola to the west. The DRC is also endowed with world class mineral deposits, abundance of water, forests and arable land (AfDB and ADF, 2009).

The estimated population of the DRC in 2010 was 67.8 million. Despite the country's huge landmass, the DRC is one of the poorest countries in the world with the least human development index out of the 187 countries evaluated by United Nations Development Programme (UNDP) in 2011.

3.1.1 Forestry

The DRC has both equatorial and tropical climates which are conducive for the growth of variety of vegetation. To this effect three quarters of the country is covered with forests (AfDB and ADF, 2009). Forest exploitation is conducted in both formal and informal level. The industrial component of forest exploitation has grown from 4 million cubic metres in 1950 to 66 million cubic metres in 1980. Some of the logging companies that have or are still exploiting the DRC forests include Forescom, Bimpe-Kempili, Agrifor, Soforma and Sokinex (Sébastien and N'yang-Nzo, 2001).

3.1.2 Minerals

The DRC is endowed with world class deposits of minerals such as copper-cobalt, bauxite, columbite-tantalite (coltan), diamonds, iron and silver (AfDB and ADF, 2009). Before 1990, mining was an important sector in the economy of DRC, contributing 70% to 80% of export earnings for the government and contributing around 8% to the GDP. When the civil war broke out, output from the industrial mining sector declined to a level where communities that relied on mining were left in devastation. The demise of industrial mining sector opened the door for the growth of artisanal mining. It is estimated that in the mid-2000s artisanal miners contributed as much as 90% to the mineral export of the DRC. Nonetheless it is estimated that as from 2012 there will be a resurgence of the industrial mining sector, largely made possible by the adoption of the New Mine Law of 2002 (The World Bank, 2008).

3.1.3 Mineral Extraction in the DRC

The government has embarked on an initiative to promote the Mining Code and regulation. The broader aim is to promote private capital investment, restore production and improve asset management. With these three pillars in place, the government hopes to accelerate mining investment and improve tax revenue from mining operations. To this effect, by 2009 the government managed to improve its tax collection mechanism by streamlining the process with the view of reducing or eliminating leakages.

3.1.4 Water

The DRC is a home to the Congo River, which is the second longest river in Africa (after Nile) and with the second largest discharge volume (after Amazon) in the world. The Congo River is 4 700km long and its catchment area of 3.7 million km² is the largest in Africa. The catchment area of the Congo River drains water from nine countries and 70% of it accumulates in the Cuvette Centrale (Central Basin) where it is gradually released into the Congo River system to give it a mean flow rate of 41 000m³/s.

The Congo River opens into the Atlantic Ocean in the western part of the country. The river flows through the Inga Valley on its flow from Kinshasa to the ocean. It is in this valley that the river has the greatest potential to generate electricity. To this effect, two hydropower plants, Inga 1 and Inga 2, have been constructed and there are talks with various stakeholders that include NEPAD, AfDB, South African government and mining companies to construct Inga 3. After Inga 3, it is envisaged that the Grand Inga (40GW) will be constructed which will bring the total installed capacity in the Inga Valley to 47 119MWh as shown in Table 11 (Tshombe *et al*, 2007). The total hydropower potential of the Congo River Basin is estimated at 100-200GW (or 4 times the current South African consumption).

Table 11: Planned and Installed Capacity of Inga Hydropower Plants.

Element of hydropower	Inga 1	Inga 2	Inga 3 planned	Grand Inga planned
Number of unit	6	8	7	52
Total installed capacity	351 MWh	1424 MWh	1344 MWh	44 000 MWh
Height of water head	50 metres	58 metres	60 metres	150 metres
Gross energy capacity	2 400 GWh	10 400 GWh	9 900 GWh	324 900 GWh

Source: Tshombe *et al*, 2007

3.2 Bas Congo Development Corridor

The original Bas Congo Development Corridor (BCDC) runs through three countries, namely DRC, Congo-Brazzaville and Angola. In the DRC, the BCDC stretches “from the Atlantic Ocean at Muanda; follow the Congo river through Matadi along existing road and rail infrastructure before terminating in the capital, Kinshasa” (Mawson, 2005). From the Atlantic Ocean the river is navigable all the way to the port of Matadi through the port of Boma.

In Congo-Brazzaville, the BCDC runs from the port of Pointe Noire along the railway line up to Brazzaville. Again from Pointe Noire the BCDC runs along the Atlantic Ocean shore through the Cabinda Province of Angola towards N’zeto in Angola. The Pointe Noire - N’zeto extension has the effect of bringing in the benefits of the oil and gas sectors into the corridor. The BCDC is currently confined to the DRC since the other two countries are not yet participating in the initiative (Figure 15).

3.2.1 Potential Anchor Project of the BCDC

While there are many different mineable minerals within the BCDC, the developments of the Inga hydropower plants (potentially the biggest hydropower complex in the world), is potentially the single project that could leverage growth in the region. The Inga hydropower complex, in particular Inga 3 and the Grand Inga, are touted to supply the northern, western and southern African regions with electricity through potentially three transmission highways.

These highways are basically multilateral concessionary servitudes for the main power-lines from Inga to their respective destinations. The northern highway will start from the Inga Valley in the Bas Congo Province and travel through Congo-Brazzaville, CAR, North Sudan and terminate in Egypt. Alternatively the northern highway could travel through the DRC, CAR, South Sudan, North Sudan and terminate in Egypt. The western highway will commence in the Bas Congo Province and travel through the Republic of the Congo, Gabon, and Cameroon and terminate in Nigeria. The southern highway will split into eastern and western routes. Both routes will originate from the Inga Valley and the western route will travel through Angola, Namibia, and Botswana and terminate in South Africa, while the eastern route will travel through Zambia, Zimbabwe and terminate in South Africa.

Potentially electricity from the Inga Valley could be auctioned against the take-or-pay contract, taxes/levies to the State, value-addition activities along transmission highways, and infrastructure development with third party access. However, in order to get a base-load to underpin the Grand Inga Project (40GW with estimated \$80bn capex – including transmission), off-take agreements with power utilities in other SADC states (particularly South Africa) will probably have to be secured, for roughly 10GW. This is being investigated, but the political risk could prove to be a major obstacle (Internationalriver.org).

The potential of hydropower generation in the Inga Valley are enormous for the DRC (Figure 16). The electricity from the Inga 3 and Grand Inga hydropower plants, if it ever materializes, will stimulate industrial activities in the logging, mining, construction and agricultural sectors of the DRC. With the effective implementation of the New Mining Law of 2002, mining in the DRC (in particular the Katanga Province) is poised to get stronger. A reliable electrical supply to the inland mining provinces will increase mineral exports through the BCDC. With electricity closed by, there is also an opportunity to embark on large scale downside mineral beneficiation close to the three ports of Matadi, Boma and Pointe Noire.

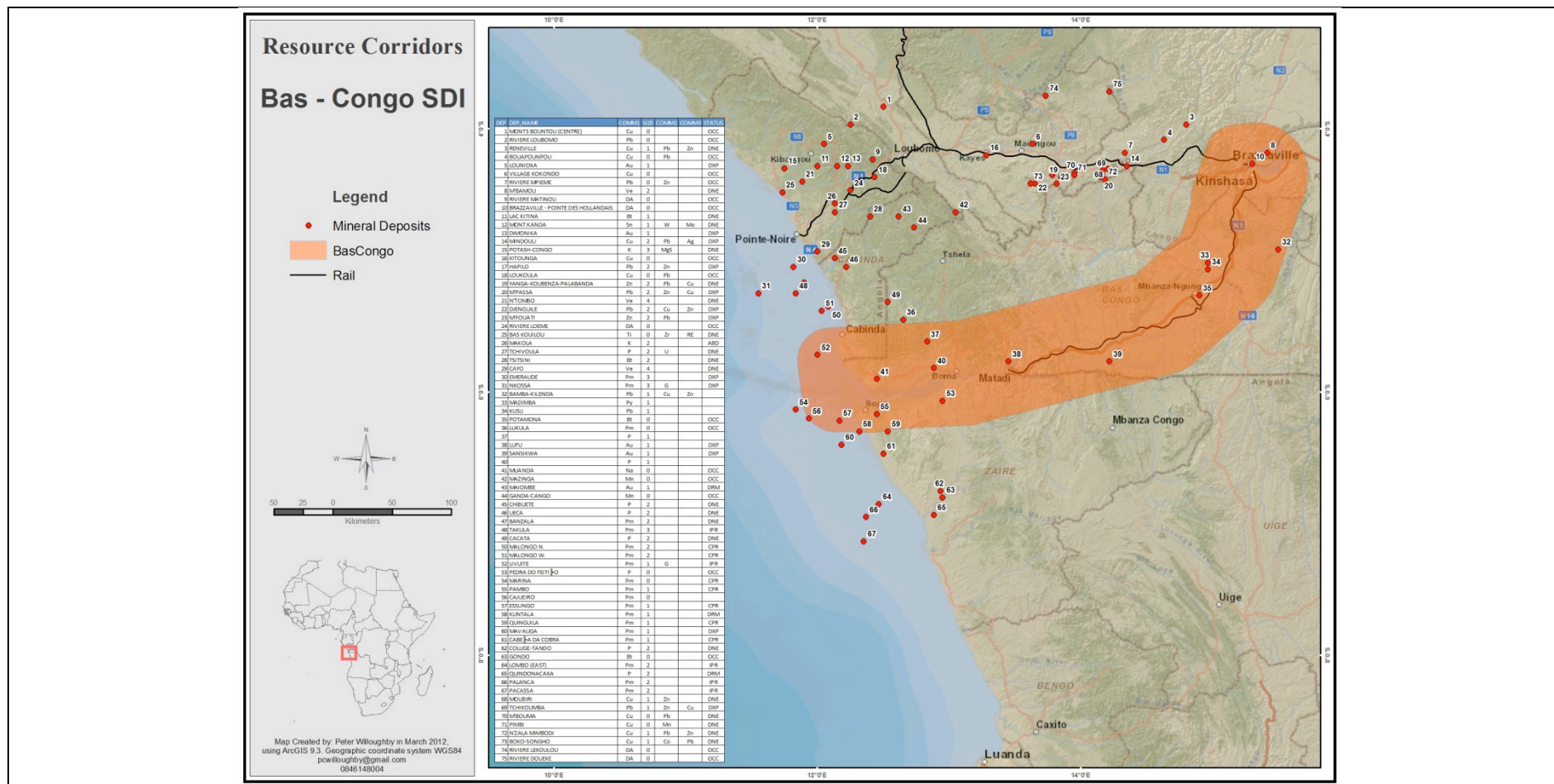


Figure 15: Map Showing the Extent of the Bas Congo Development Corridor.

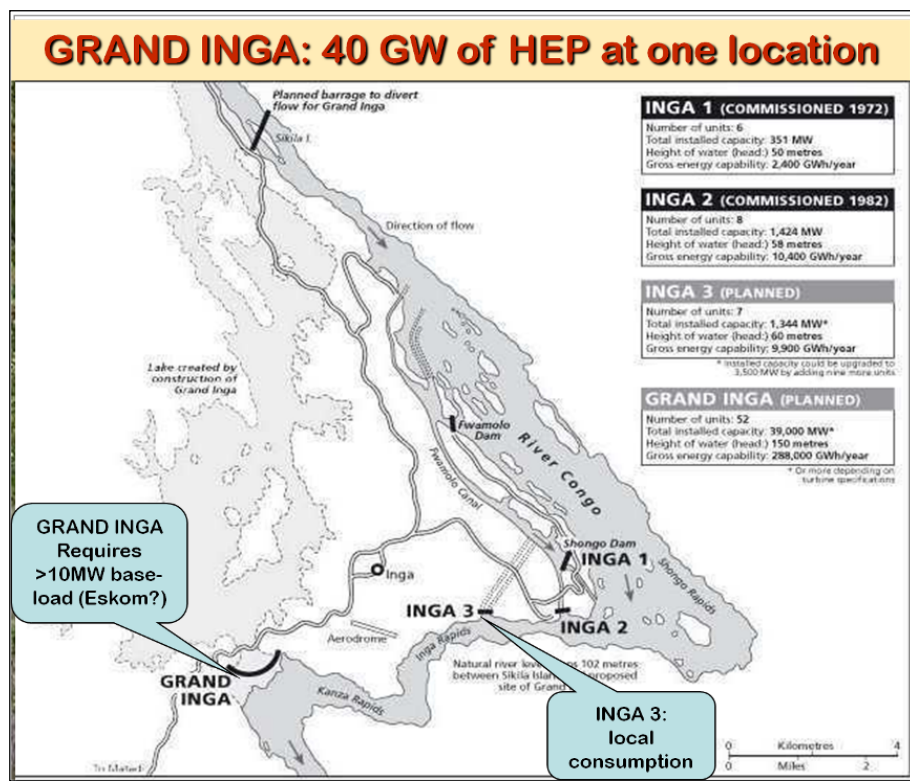


Figure 16: Grand Inga.

3.2.2 Development Project

- **Bauxite Plant**

The BHP Billiton's bauxite plant was planned to be the prime domestic customer of the Inga 3 hydropower plant but the company has recently announced its intention of not pursuing the construction of the bauxite plant due to economic reasons. The delay in the construction of Inga 3 hydropower plant could delay the construction of the Grad Inga hydropower plant and consequently the electrification of countries and corridors that are going to benefit from its trans-African reticulation (Hogg and Felix, 2012).

3.2.3 Potential Problems that Could Undermine the Development of the BCDC.

- **Civil War**

The DRC has recently emerged from a long period of dictatorship and two civil wars that have resulted in capital flight, population displacement and the destruction of infrastructure. Many people that depended on foreign companies in the logging, mining and fisheries were left destitute due to lack of income when these companies pulled out of the DRC during the civil. Those that were displaced were unable to adequately produce food for themselves. By 2006 it was estimated that 80% of the DRC population lived below the poverty line of \$1 per person per day (Faubert, 2006).

- **Dilapidated Infrastructure**

Years of neglect and conflicts has led to the deterioration of infrastructure in the DRC. Some of it is in such a state of disrepair that it negates any efforts to undertake quick wins to invigorate the economy. The state of infrastructure in the DRC contributes towards a hostile environment for investments.

- *Lack of Government Capacity*

Since 2002 the government has adopted progressive legislations that include various forms of taxations, especially in the mineral sector. However due to lack capacity within the government, tax collection has been suboptimal and valuable government revenue has been lost in the process. Weak government institutions, a complex process of collecting tax (four agencies, namely Customs and Excise Board; General Taxation Directorate; Directorate General of Administrative, Judicial, State Land and Share Charges; and private banks) and the complex distribution thereof between the central government, provinces and local authorities poses a risk of abuse, collusion and corruption.

- *Lack of Political Will By Participating Countries*

No formal agreement has been signed between DRC and the Republic of the Congo and Angola with respect to BCDC. As a result the focus of the corridor activities is limited to the DRC.

3.2.4 Successes and Failures

- *The Inga Hydropower Projects*

The Bas Congo Development Corridor hinges largely on the development of Inga 3 Hydropower Plant and later the Grand Inga Hydropower Plant. In turn, these two projects need locked primary customers (e.g. bauxite plant) for them to be economically viable. The withdrawal of BHP Billiton from the construction of a bauxite plant in the DRC could delay the construction of Inga 3.

Another threat to Inga 3 and Grand Inga is historical. The dispossessed in the DRC have an approximately 120 year history of vehemently fighting against imperialism and personal accumulation of the elite from public projects. As it is, Inga 1 and 2 Hydropower Plants have benefitted the elite more than the general public. The mismanagement of Inga 1 and 2 to the detriment of the dispossessed could result in a resistance that could derail the development of Inga 3 and later the Grand, and ultimate the viability of the Bas Congo Development Corridor (Amsi, 2010).

A plausible solution could be the involvement of the highly fragmented civic societies in the planning and development of the hydropower complexes, a feat which in itself will be complex to manage compared to dealing with the central government alone (Amsi, 2010). Another solution could be to win the public confidence by accelerating the planned public electrification from the low of 6% to 12% of the population by 2015 and 60% by 2025, in line with the Millennium Development Goals (IMF, 2010).

- *Transportation Infrastructure*

The success of a corridor anchors on a good transportation infrastructure. Good roads and railway connections are a significant part of such infrastructure. In view of this, the government of DRC has begun the work of rehabilitating some of the main inland roads. By 2010, 22 900km of roads were rehabilitated, including the linkage road between the towns of Kenge and Kikwit, ahead of the target of 20 352km. The rehabilitation work has facilitated efficient road transportation between inland provinces and Kinshasa which is arguably the starting point of the BCDC. In addition, work is underway to rehabilitate road linkage between the towns of Kikwit and Kasongo, inclusive of Tshikapa, Kananga, Mbuji-Mayi and Kabinda. The Kinshasa-Kasongo route will have the advantage of linking the Katanga Province and other mining regions on the eastern part of the country with the BCDC in the western part of the country (IMF, 2010).

On the other hand, there is a slow progress in rehabilitating railways, leading to a significant reliance on the road and river transportation (IMF, 2010). The reliance on roads and river systems could throttle production of bulk minerals such as copper in the eastern and south-eastern mining regions, especially when the effects of the progressive New Mine Law of 2002 start to take effect.

3.2.5 Conclusion about BCDC

In general the BCDC (Table 12) is still at a scoping level.

Table 12: Analysis of Bas Congo Development Corridor

Context	Discussion Bas Congo Development Corridor
Natural Resources	• Inga hydropower complex.
Infrastructure	• Dilapidated.
Private Sector	• Poor. BHP Billiton has stopped its bauxite plant development.
Business Case / Anchor Projects	• Poor / Hydropower
Policy and Regulatory Environment	• Poor
Political Support	• No formal agreement between DRC, Republic of Congo and Angola • Corridor activities focused in DRC
Corridor Authority	• Under Ministry of Industry. The ministry has set up a fledging SDI unit staffed by a project manager. Supported by RSDIP.
Stakeholder Participation	• Limited
Linkages	• Poor
Cross Border Arrangements	• Very limited
Skills and Technical Capacity	• Weak

PART FOUR: LESSONS LEARNED FROM THE DEVELOPMENT CORRIDORS

The lessons learnt from the case studies are presented in Table 8.

The MDC was the first SDI corridor developed in South Africa which formed the base of experience for the development of other corridors in the region. The major weakness being the methodology of fast tracking its development to remove bottlenecks and as such it did not take communities into consideration. In this respect it did not allow adequate time for capacity building for communities to participate in the corridor development.

Experiences from ZVDC indicate strong political commitment by benchmarking corridor development within the economic development framework of the country. There is a vibrant private sector interest that can be mobilized for the development of the corridor. There is strong donor support in the form of the World Bank, DFID and DTI that provides technical and financial support to manage the programme. The corridor has the necessary ingredients for a successful corridor once implemented.

The CDC is still at a phase 1 scoping stage. There are a number of issues that need to be addressed, the key one being the lack of an attractive anchor project.

The Mtwara corridor does not have the required ingredients for a successful corridor. The most important being the lack of an anchor project that will require major infrastructure development. There also appears to be a lack of political support.

The Bas Congo Development Corridor Programme is still at scoping level and too early to undertake a full analysis – however some key issues have been identified such as lack of political will and poor infrastructure.

From the foregoing it can safely be said that the necessary experiences of the Maputo Development Corridor would be very useful for emulation and refinement for replication to other potential corridor areas.

Table 13: Lessons Learnt

Context	Discussion				
	Maputo Development Corridor	Zambezi Valley Development Corridor	Mtwara Development Corridor	Central Development Corridor	Bas Congo Development Corridor
Natural Resources	• Power • Gas	• Coking coal • Thermal coal	• Coal • Iron ore • Gas • Fisheries	• Gold	• Inga hydropower complex
Infrastructure	• Highway linking South Africa and Southern Mozambique was upgraded into a modern toll road at a cost of \$250 million • Maputo port rehabilitated. • Telecommunications and electricity links upgraded • Rail links upgrade with South Africa's Transnet running link from South Africa to Maputo	• Weak with limited rail infrastructure • Rail is currently being upgraded	• Poor	• Weak – need bulk commodity for rail infrastructure • With gold being the main anchor – road infrastructure can suffice • Rail is dysfunctional	• Dilapidated
Private Sector	• The corridor is a success because of in private sector investments (\$5billion) • PPP was essential in ensuring success of this corridor	• Active involvement. Multinationals mining companies are driving project development - Rio Tinto and Vale with a host of Junior Australian and Indian exploration companies	• Limited, with only recent agreement signed between NDC (Malawi) and China's Sichuan Hongda Group	• Limited – mainly gold focused therefore no need for major rail infrastructure	• Poor • BHP Billiton has stopped its bauxite plant development
Business Case / Anchor Projects	• Strong business case with added local economic development, SMME development • Duvha Power Station, Mozal Aluminium, Sasol and Pande gas pipeline	• Quality of resources drives the business case • World class coking coal and thermal coal deposits • Also undeveloped resources or iron ore, nepheline syenite and heavy minerals	• Poor. • No attractive anchor project. • Coal and iron ore projects have not move forward • Limited projects suitable for support	• Limited anchor projects in all sectors.	• Poor / Hydropower

Policy and Regulatory Environment	• PPP encouraged and facilitated by both governments.	• Incentivised FDI for natural resource projects • Government and Vale have agreed through the state institution that oversees ports and railway development to upgrade the Sena line via concession • Experience gained in MDC with regard to PPP • Transport ministry integrate national transport system to use the SDI methodology to transform transport into development corridors	• Preparation of new Integrated Industrial strategy (IIDS 2025) which links SDI's to promoting growth in the country	• Preparation of new Integrated Industrial strategy (IIDS 2025) which links SDI's to promoting growth in the country • Cautious around mining – communities have not benefited from mining in the past • Recent calls for higher mining taxes – has a negative effect on investor sentiment	• Poor
Political Support	• Supported by South African and Mozambican governments via the respective transport Ministries and Heads of State	• Currently corridor implemented within Mozambique hence it supports governments political and economic agenda	• Political will appears to be weak between the four participating countries	• Insufficient as there are only two (Tanzania and Rwanda) country signatures to the corridor	• No formal agreement between Republic of Congo and Angola • Corridor activities confined in DRC
Corridor Authority	• Strong authority with power to move project forward • Strong Project Managers appointed on both sides	• Not yet established, however the SDI Programme is based in Ministry of Transport • Donor collaboration DFID, the World Bank and Dti (South Africa) are supporting the SDI programme • Financial contribution USD2.15 over a 3 year period from July 2010	• Not active • NDC under the Ministry of Trade and Industry with Champion being Ministry of Transport • The SDI unit (in the NDC) is supported by the Dti (South Africa) in the order of \$2.5 million over 3 years – starting September 2010	• Active authority under the NDC • Corridor Authorities under ministry of Transport • This is insufficient as it requires units and programme managers in each of the participating countries	• Under Ministry of Industry • The ministry has set up a fledging SDI unit staffed by a project manager • Supported by RSDIP
Stakeholder Participation	• Well organized and involvement from private sectors and less organized	• The programme not fully implemented	• Limited	• Good within the 2 participating countries- but do not seem to yield	• Limited

	input from CBO's and NGO's			any productive results to develop the corridor	
Linkages	Forward and side stream linkages supported for the mega projects with the major projects providing opportunities for the SMME's	- No focus on the creation of local SMME – products and services largely from South Africa - However experience from Mozal aluminium programme is intended to be carried into policy on mining	Still at scoping stage	- Government and mining companies place lower emphasis on linkages - Limited linkages	Poor
Cross Border Arrangements	- Easy access and the flow of goods and people between South Africa and Mozambique - The Komatipoort/Ressano Garcia Border post between the two countries were upgraded - Reduced cross-border bottlenecks by providing a one-stop border control procedure - South Africans no longer require visas to enter Mozambique	Appear to be limited with most activity taking place in Mozambique – can be attributed to fact that the corridor is largely within Mozambique	Still to be developed	Limited to two countries	Very limited
Skills and Technical Capacity	Both governments had capacity in form of State Owned Enterprises such as Power Institution, Finance Institution and Transport Institution	The SDI unit is yet to be fully staffed	- Mozambique has the necessary experience and skills however other countries seem to lack the requisite skills and capacity for the management of the programme - Donor support is critical in terms of skill and financial support to drive the programme	Donor support is critical in terms of skill and financial support to drive the programme.	Weak

A number of lessons may be obtained from the above corridors; some of these are the observed ones from previous literature by de Beer and Jourdan and quoted extensively herein. These include the following:

- DCs should be initiated and pursued based on inherent economic and infrastructure potential. The MDC provides such a good example. The choice based on wishing to develop depressed areas with little or no economic potential is likely to fail. The Mtwara corridor has few projects and requires further studies to identify more potentially viable projects with commensurate interventions to attract investment. The Central Development Corridor seems to be heavily skewed towards essentially providing a transport corridor for the hinterland countries, hence the active participation of the stranded countries;
- The development of a corridor requires the participation of all economic and infrastructure ministries. The MDC initiated this through bilateral meetings of Heads of State meetings in the early years that helped smooth out critical areas of operation. Again in the case of Tanzanian corridors, the mainstreaming of the National SDI Strategy into the Integrated industrial Development Strategy is very useful allowing for the establishment of a National Ministerial Committee structure to monitor and evaluate progress;
- The success of a DC depends upon the effectiveness of the Project Manager. This person should ideally have a broad techno-economic knowledge of resource and resource-based opportunities as well as infrastructure. Such a person should not be a political appointment. In a number of the Southern African corridors, such individuals have been supported under the technical assistance of the South African DTI though the RSDIP. Regarding the corridors covered in this document, the RSDIP provides support to (1) Ministry of Transport and Communications (MTC) SDI Unit in Mozambique; (2) National Development Corporation (NDC) SDI Unit in Tanzania; and (3) Bas-Congo Investment Promotion and Development Agency (COPIDE) in DRC. The current programme of support is for a period of three years from June 2010 to August 2013;
- To initiate a DC requires, from the SDI methodology, the carrying out of sectoral scans along the potential corridor. Sectoral scans expose economic potential and identify concrete potential projects for investment. This work must be undertaken by skilled people and familiar with local environment. For example, the agriculture sector has several components, which might in it call for animal husbandry, various food crops, etc. expertise not resident in one individual. This is true for many other sectors. This underlines the fact that DC success is largely depended on integrated set of viable projects, economic and infrastructure with their relationships;
- Investment projects need to be properly packaged. This requires mobilisation of specialist skills and other resources for prefeasibility studies by affected governments, which in most cases are resident in DFIs and State-Owned Enterprises (SOEs) for infrastructure. This is a critical component of the success of a DC since these anchor projects if ignored by the investment community would render the corridor unviable;
- Promotion and marketing of the corridor will depend upon the attractiveness of the packaged projects above. Such promotion should be based on integrated sets of infrastructure and economic development projects, in an environment that supports investment and provides developmental benefits to the corridor area. The RSDIP assists in direct investor targeting by facilitating corridor-specific investment forums;
- Most of the DC anchor projects would be large-scale, which would require deliberate action to create opportunities for SMMEs as has happened on the South African side of the MDC. Jourdan (2008) suggested the creation of a dedicated DC SMME facilitation agency, particularly to stimulate small-scale agriculture, which could have a greater impact than the large “anchor” projects in terms of the number of people positively affected; and

- Cross-border Development Corridors are initiated based on bilateral (or multilateral) agreements. The SADC protocols, for example, the protocol on transport deals with, among others, harmonising regulations and enforcement practices that affect transport costs and operations. The mining protocol has also moved towards harmonisation of policies, regulatory and standards in the region. These tend to provide added opportunities for easing operation of cross-border DCs.

CONCLUSIONS

The concept of corridor development is part of the Action Plan in the implementation of the African Mining Vision and broader African industrialization strategy. Across sub-Saharan Africa efforts are being made to initiate development corridors, but with limited success, mainly due to the problems around cross-border coordination. Experiences have varied across the region with the Maputo Development Corridor probably exhibiting the most successful among the five covered in this report.

The MDC has been the most successful due to the following:

- A strong business case for the SDI (“normal” investment decisions had been constrained from the independence of Mozambique till the fall of apartheid);
- Presidential leadership and commitment of both countries, at various levels of government drove, the process actively during the planning and development phases;
- The setting up of inter-sectoral coordinating structures at ministerial and technical levels to facilitate activities in each country;
- Strong Project Management with political access to critical Ministers;
- Rapid-decision-making processes in project identification and packaging;
- Regular bi-national meetings to review progress and tackle “bottlenecks”;
- Availability of private sector funding due to good market demand for the projects products; and
- The DC also had opportunities for SMMEs in construction and maintenance programmes, related capacity-building programmes, etc.

The role of government in facilitating Development Corridor is seminal and would include the following:

- Identifying areas of high latent investment potential, that could possibly service the infrastructure financing, and the testing of the possibility through a rigorous SDI “Concept Study”;
- Initiating DC based on realising inherent economic potential to underpin the provision of trunk infrastructure rather than a tool for developing remote areas;
- Facilitating the engagement of all players in the economy (private, public and civil society);
- The removal of political constraints to project realisation (PPPs) and the establishment of regulatory frameworks;
- The development of project PPP documentation for the concession of state assets/rights;
- Embed corridor effort or strategy in the integrated industrial policy of the country;
- Engage neighboring governments to facilitate cross-border DC development; and
- Commitment to regular SDI Heads of State bilateral to ensure the clearance of bureaucratic and other bottlenecks, constraining delivery.

Reinforcing actions of donors would include the following:

- Supporting national corridor coordination units, where capacity is very critical;
- Support critical stages of projects identification, particularly prefeasibility stages where resources are normally in short supply. This to extend to project packaging and marketing; and
- Skills creation and capacity development, particularly investment promotion.

The case for Development Corridors or SDIs has been dramatically strengthened due to the Asian Boom and concomitant increases in commodity prices, particularly minerals. This has led to a surge in mineral exploration and new project development across the continent (see Appendix A). All of these projects could potentially strengthen the business cases for SDIs through their infrastructure needs, particularly transport (road, rail, ports, and terminals) and power. The trunk SDI infrastructure thus established could catalyse the realisation of a much wider array of collateral projects in other sectors, with a much greater developmental impact, through the SDI process of “densification” (feeder infrastructure).

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