Joint Programme Management Unit for the Maputo Corridor Development Programme

International Benchmarking Study of Economic Corridors: A Desktop Study

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Executive Summary

"The relationship between transportation, market access and economic growth goes back thousands of years. Roughly two thousand years ago, ancient caravan routes such as the Silk Road, the Spice Route and the Gold and Salt Route were firmly established as the distribution backbone for bringing far away products to European markets. These distribution networks expanded jobs and income for a supply chain of producers, traders and merchants, and also supported the economy of intermediate locations that served as traveler rest and service areas."

Glen Weisbrod, 3rd International Conference on Transportation and Economic Development, March 2006

PART I: DESKTOP STUDY – ECONOMIC CORRIDORS GLOBALLY

SDIs and Corridors

One of the challenges of this benchmarking study was the understanding of the arena of economic corridors. Specific attention was paid to spatial development initiatives (SDIs) and corridors generally. Various definitions of corridors were found on the Web.

The methodology for Spatial Development Initiatives (SDIs) is a methodology (not a policy) developed in South Africa in 1996. It serves as an integrated planning tool to promote investment in underdeveloped regions of the country with growth potential through Public-Private-Community Partnerships. A corridor can be a type of SDI. There is a range of different corridors – economic, development, industrial, trade, to name a few.

Transport corridors are vital to economic corridors in that “they link the key economic centres of a country to their exit and entry points. They are particularly important because they enable raw materials and products to be transported, and therefore have a direct impact on the viability of trade. In a globalised economy this trade is becoming increasingly important in manufacturing, where product components are manufactured in many different countries and then brought together and finally assembled before being exported to markets.

Benefits of Corridors

Development corridors “were first implemented in Southern Africa under the South African sponsored SDIs (Spatial Development Initiatives) after their liberation in 1994”. The NEPAD Secretariat and the African Development Bank have recently adopted development corridors as an important tool for configuring, prioritising and promoting inter-related infrastructure and large-scale economic sectoral investments in defined geographic areas (also referred to as Spatial Development Initiatives)
A good example of a Southern African development corridor is the Maputo Development Corridor (MDC). The MDC links the South African provinces of Gauteng and Mpumalanga and the city and port of Maputo, in Mozambique.

The Rustenburg Spatial (South Africa) Development Framework asserted that six distinct advantages of economic corridors could be identified:

- Economic and Financial
- Transport
- Social
- Physical and Urban Form
- Institutional
- Environmental

Economic corridors as a strategy is a necessary approach to building economies at a local, regional and global level – within and between countries; it also facilitates the social development of people and geographic spaces that have otherwise not been developed for whatever reason.

**Economic Corridors across the World**

Brief overviews were presented of corridors across the globe, two to three examples for each of the continents. The corridors are generally described in terms of their links, transport modes, purpose/objectives, successes, challenges and funding sources. In other cases an overview is provided of the general approach to corridor development within the respective countries, as opposed to interrogating a specific corridor.

The following specific corridors in seven (7) international geographic areas are discussed in the report:

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<th>Europe</th>
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PART II: ECONOMIC CORRIDORS WITHIN NEPAD AND SADC

NEPAD and SADC Strategy

NEPAD Secretariat and the African Development Bank have adopted development corridors as an important tool for configuring, prioritising and promoting inter-related infrastructure and large-scale economic sectoral investments in defined geographic areas (also referred to as Spatial Development Initiatives or SDIs).

An overview is given of Economic Corridors within the NEPAD and SADC sphere of influence. By reviewing the past, recent and current lessons learned around the development of corridors, freight logistics and the logistics chain much could be gleaned from which to inform the future corridor developments in the areas under review in this report.

In the report “Competition vs Co-operation: SADC’s Regional Development Corridors” it was stated that neoclassical microeconomic theory leads to the structure-conduct-performance (SCP) paradigm, which implies that more competition is better than less competition. However, in some cases voluntary cooperation might lead to greater economic welfare than competition. This possibility is considered with reference to the regional development corridors (RDCs) identified in the Southern African Development Community (SADC).

Reference was also made earlier in this report to development corridors that “were first implemented in Southern Africa under the South African sponsored SDIs (Spatial Development Initiatives) after their liberation in 1994”.

NEPAD after Independence

Research stated that Africa was poorly serviced with road and that the road density was low when compared with other developing regions, such as Latin America and Asia. The difference was partly the result of different levels of development in general, but it also reflected the basic geographic fact that Africa was a very large continent, often with vast distances between the main population and production centres. Connecting the different parts of Africa through road networks was thus, in the best of circumstances, a Herculean task.

Decades of under capitalization, poor management and general neglect of the railways have propelled road transport to the most important means of transport in Africa, by far. Road transport accounted for over 80% of all freight and passenger movements in Africa by 2005 and there were no signs that this position would be threatened during a foreseeable future.

At the time of independence of its states from colonial powers, Africa inherited transport and communication structures that were outward looking rather than geared to improved trade and transport with neighbouring African countries. One of the early goals of the independent African nations was to
break this pattern of dependence and create new, closer African ties. The formulation of the Trans African highways programme (TAH) concept in 1970 formed an integral part of this political vision of closer pan-African integration and co-operation.

The work on integration and increased co-operation in Africa had in many ways been a slow and painful process. However, the establishment by the African Union of the NEPAD provided new encouragement as well as concrete proposals for actions in the fields of African integration and co-operation. African countries were expected to focus on the expansion of roads and road transport in the future, both at national and sub-regional levels as a basis for regional co-operation and integration.

Regional bodies such as NEPAD have a major role to play in leading, directing and supporting countries in developing corridors.

**SADC Research on Corridor / SDI Programmes**

An evaluation was done of the Development Corridors and SDIs in the SADC Region. The current and potential regional corridor traffic flows in million tonnes per annum (by the year 2002):

An imbalance was reported between “ton km” (particularly multi-modal) supply and demand. The report identified an exciting new expanded focus of freight logistics where it was found that pre-2004 focus was only placed on a limited number of time definite participants and that the post-2004 focus was on time critical, time definite and commercial participants.

**The Maputo Development Corridor**

A current and actual example of a Southern African development corridor is the Maputo Development Corridor (MDC). The MDC links the South African provinces of Gauteng and Mpumalanga and the city and port of Maputo, in Mozambique and is viewed from a cluster perspective. The Corridor is referred to as one of the most successful examples of the so-called Spatial Development Initiatives (SDI’s) in Southern Africa. In this cross-border SDI, which is the shortest distance to the sea from the industrial
belt in the South African Gauteng Province, substantial investments were carried out over the years. That was done mainly in large-scale infrastructure projects where the most important conditions are created for business to flourish. Businesses along the corridor expressed the needed for more efforts to stimulate true business development and to improve the competitiveness of the region in terms of improved and modernised cross-border transport logistics and the development of innovative business concepts, which in turn involved a wide variety of stakeholders in both the private and public sectors, such as customs, shipping lines, migration services, railway service providers, transporters, etc.

The Maputo Corridor Logistics Initiative (MCLI), a section 21 organisation, was referred to as having been created by the private sectors of South Africa and Mozambique and launched in February 2004 to speed up the elimination of the current non-physical barriers for trade and developing the Maputo Corridor into the first choice by exporters and importers along the Maputo Corridor. The MCLI viewed the Maputo Corridor as a re-established and proven transportation route for regional trade as well as for trade with international markets for SA, Zimbabwe, Swaziland, Botswana through Mozambique, depicted diagrammatically as below:

![Maputo Corridor Diagram](image)

The Status of the Maputo Corridor historically was compared with the current situation as at and as at May 2007 which in turn provided a view of the broader South African imperatives for modern day development of corridors:

<table>
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<th>Current Situation</th>
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<td>Political Issues (War, etc.)</td>
<td>Political Stability &amp; Will</td>
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<tr>
<td>Very Bad condition of road to Maputo</td>
<td>New N4 toll road – TRAC PPP – SA &amp; MOZ</td>
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<tr>
<td>Lack of sufficient rail capacity &amp; Long rail journey due to delays on Mozambique side</td>
<td>Rail rehabilitation now completed 2008 CFM invested in new rolling stock &amp;Locomotives – Excellent Cooperation TRF &amp; CFM</td>
</tr>
<tr>
<td>Border Issues</td>
<td>Waiting time at border reduced Working hours extended 06h00 – 22h00 24 Hour One Stop Border Post – in Making</td>
</tr>
<tr>
<td>Limited Direct Shipping opportunities</td>
<td>Introduction of direct container shipments in 2008 - MOL &amp; Nile Dutch– Far East service &amp; Hoegh Auto Liners – 50 ships p/m</td>
</tr>
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<td>Port Access, Draft, Marine Services and Infrastructure rehabilitation limitations in Maputo Port</td>
<td>MPDC invested &gt; $70M – with further $500M to follow port master plan development</td>
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The North-South Corridor

The North-South Corridor extends between the port of Dar es Salaam in Tanzania to the Copper belts of Zambia and the DRC, and down through Zimbabwe and Botswana to the ports in South Africa (taking in ‘spur’ connections to the Great Lakes in the north and to Malawi in the east).

The Corridor is a highly flexible road and rail corridor which carries large volumes of regional trade, in particular exports from South Africa to neighbouring countries. With few exceptions, the roads are mostly in good condition. However, railway services are generally unpredictable and will require substantial investment to be more competitive with road transport. The majority of the exports from the DRC, Zambia and the southern Great Lakes region pass through the port of Dar es Salaam. Here, too, is a mixture of both well and poorly maintained infrastructure.

The Walvis Bay Corridor

In 1994 it was decided to develop Walvis Bay as a hub port for south-western and central African countries. This logically led to planning for ways to converge a network of corridors on the Atlantic Ocean port. The Walvis Bay Corridor Group (WBCG) is the road and rail agglomeration responsible for developing the Walvis Bay Corridor (as well as the Trans-Kalahari Corridor, Trans-Caprivi corridor and Trans-Cunene Corridor).

The WBCG is a joint operation of transport stakeholders from public and private sector and include members from trucking, forwarding and port user industries, parastatals Namport and TransNamib, and the government departments of Transport, Trade and Customs. The Group is intent on maximising the Walvis Bay Corridor (WBC) and its respective routes with the WBC being a network of routes linking the Port of Walvis Bay with landlocked countries and regions of Southern Africa and vice-versa. This provides SADC direct access to transatlantic trade routes. The Corridor capitalises on its location and the proximity to transatlantic markets and on time, costs and reliability savings. The WBC also supports Namibia to achieve its national development objective to become the western gateway to SADC.

The Trans-Kalahari Corridor

The Technical Report on the feasibility Study for the Establishment of a One-Stop Border Post on the Trans Kalahari Corridor (Botswana – Namibia Border): Windhoek, was issued in July / August 2008. In the report the establishment of the Trans Kalahari Corridor Management Committee (TKCMC) in 2003 was discussed. That took place with the signing of the Memorandum of Understanding which had the goal of improving Trans Kalahari Corridor operations and implementing the SADC Transport and Trade Protocols’ commitment to regional Corridor performance. The success of the Corridor was known to depend on rapid transport of goods at a competitive rate with minimum constraints posed by the need to transit three countries and two sets of borders. The TKCMC MOU committed the three member countries, Botswana, Namibia and South Africa to improving border operations through simplifying and harmonising customs procedures, adopting common transit procedures, facilitating pre-clearance of goods and implementing joint border controls and management.
The Trans-Caprivi Corridor

The Trans Caprivi Highway links the Port of Walvis Bay to the inland areas of Zambia (Livingstone, Lusaka, Ndola and Kitwe) and South Eastern Democratic Republic of Congo (Lubumbashi area) via the bridge across the Zambezi at Katima Mulilo which was completed in 2008. The Highway provided an alternative route to overseas markets for these landlocked areas rather than the current reliance on the North South Corridor to Durban, which was highly congested, and the Dar es Salaam Corridor. The route provides an important outlet to regional and international markets for secondary hubs along the Trans Caprivi Highway, such as Katima Mulilo, Rundu, Tsumeb and Grootfontein. Since much of the Namibian population was centered in the North, expansion of these secondary hubs provided important opportunities for new economic activity.

The Trans-Cunene Corridor

The Trans Cunene Corridor is both a road and a rail corridor. Since the cessation of hostilities in Angola, import traffic through the Port of Walvis Bay was the fastest growing Corridor traffic. This Corridor traversed one of the most densely populated parts of Namibia and also has the potential for major economic development. It leads to Ondangwa and Oshakati which served as distribution centers for the North. The northern extension of the TransNamib railway was completed to Ondangwa and was completed to Oshikango by 2007/8.

Other Corridor and Related Developments

In considering corridors it is worthwhile to note that there are South African Corridors that are not known as formal corridors e.g. the N1, N2 and N3 highways. Then there are developments in and to the north of South Africa that are attracting developers. The building of a golf estate near Lagos in Nigeria seemed to support the trend where Johannesburg-based companies were buying up land near Harare, Nairobi and Uganda for future urban development. Added to this are mixed-urban hub developments near airports boasting offices, shops, hotels, leisure facilities, housing, warehousing and factories to be three times bigger than the Sandton CBD within ten years. One such improvement was a R22bn development with its primary role being a trade hub along the Walvis Bay Corridor.

Apart from the development along the Walvis Bay Corridor the Trans Kalahari usage increased with additional routes being developed in the Lobito Corridor (between DRC and Zambia), the Mtwara Corridor (linking Southern Tanzania with Malawi, Zambia and Mozambique across Lake Malawi).

Business Case Development for SDIs and Corridors

Issues that need to be considered when considering the development of corridors in South and Southern Africa are the post-colonisation and post-apartheid challenges in Africa regarding economic and social development, infrastructure, etc. The concept of development corridors were first implemented in Southern Africa under the South African sponsored SDIs (Spatial Development Initiatives) after their liberation in 1994. Spatial Development Initiatives (SDI’s) that were then conceived
by Cabinet was an attempt to improve investment in those areas where the greatest potential for growth existed.

The MDC was initiated for a number of specific objectives constituting a mixture of “enabling factors” (e.g. investment in transport infrastructure and institutional arrangements with the aim of creating an enabling environment for economic growth and development) and “desired outcomes” (e.g. positive macro- and socio-economic impacts that were sustainable in terms of their impact on the environment. The research revealed that the areas closer to the N4 corridor had higher growth in terms of economic output as measured by Gross Valued Added than those further removed. There was a stronger correlation between growth in employment and proximity to the road corridor for the manufacturing-, construction-, trade and transport sectors. Analysis done also shows that income per capita has grown at a faster rate in areas closer to the corridor than areas further removed.

The Regional Spatial Development Initiative (an SDI) programme is an investment facilitation initiative of the South African Department of Trade and Industry (the dti). The programme focuses on high potential resource areas within the region with the basic characteristics. An SDI would seek to create the conditions and opportunities for successful new fixed investment within a specific area, negotiate with the countries in which the SDI is implemented and the host countries take full ownership of the programme. The dti through the Regional SDI Support Programme provides financial, contracting and technical support to the countries.

The nature of the SDI programme and the underlying approaches therefore both requires a high level of economic, regulatory, policy and logistical integration. A key outcome of the initiative however is that it by necessity fosters integration at all these level through implementing the programme. The programmes are structured in such a manner that these matters are more readily dealt with within a more focussed project environment. Nothing builds the business case like new investment. Identifying and developing an initial cluster of high impact projects therefore remains a key component of the SDI approach. It was found that lead investments do more to attract further investment than almost any public sector measure.

**Economic Benefits of Port and Corridor Development**

Investment in transport and logistics is seen as spurring economic and commercial growth for a country. Ideally, this was true both for the Walvis Bay port and along the corridors that radiate from it to Botswana, South Africa, Zambia, Zimbabwe, DRC and Angola. The purpose of the research was to identify the data on the economic impact of the investment already captured in existing reports and to identify available methodologies for further assessing the impact of transport and logistics development on the national economy. The latter have definitive value for other Corridor-type developments across the world and indeed in Southern Africa.
Ports were regarded as being engines of national economies. Port investments were necessary to maintain the competitiveness of a port such as Walvis Bay in taking advantage of its strategic West Coast of Africa location for attracting transit traffic and encouraging growth in manufacturing and diversification of the Namibian economy. Economic growth and diversification was expected to strengthen Namibia’s ability to meet education, health and other needs of its population. Ports were also dependent on the strength of their inland transportation to deliver goods from point of origin to destinations. Therefore it was the strength of the whole transport system that would determine the economic impact the corridors could have on the economy.

To adequately measure the benefits of transportation projects, it was found to be important to have baseline data on key indicators before the project would start and a plan for the type of analysis to be conducted during and after the project. It was also useful to meet with stakeholders on the Corridor to understand their perception of the opportunities and constraints they would have in realizing economic benefits from the project. In that way, constraints could be addressed as the project was being implemented. A number of indicators were identified that could be used to measure economic benefit from transportation investment.

A number of reference studies were identified that were conducted in various parts of the world that sought to define transport corridors, their performance and the role of institutions in managing them. The studies concluded that transport availability had a major impact on mobility, access to goods and services and economic growth. Virtually every economic and social sector depended on transport in some way. Corridors were economic growth areas where public sector investment could spur business investment and economic development. While this was widely believed, there were few regional studies to demonstrate the economic benefit of corridor development. The study analysis was critical to transport planners as they decided where to invest limited resources most effectively. It was equally critical to policy-makers when they sought to mobilize funds for transport projects.

Corridor Performance Assessment Criteria

Research references presented lessons that were learned from several corridor performance measurements carried out in Africa. In evaluating assessment criteria the study accepted various steps in the logistics chain as reference points where performance could be measured:

In considering the assessment criteria and approach that should be considered for application a number of matters typical to SADC / NEPAD countries were considered including the following:

- Developing countries that are landlocked face many challenges to compete effectively in the world markets. They experience high trade transaction costs, with logistics representing a significant proportion of the GDP, which at times can more than double that of other emerging economies or treble that of developed countries. This problem impacts Sub-Saharan Africa more than any other region, as it includes fifteen landlocked countries.
• International transport corridors serve the foreign trade of a single country or of several adjoining countries. They are composed of national segments, also serving domestic traffic. As a result they serve competing demands, and are subject to conflicting objectives for their development, multiple jurisdictions responsible for maintenance and uncoordinated sources of funding for both development and maintenance. Co-operation between States, through corridor-based actions and improved dialogue, can lead to significant transit benefits for landlocked countries.

• Given the challenges facing landlocked countries, sensitizing and influencing policy makers on how to improve access requires accurate and specific data on impediments to the smooth flow of traffic. Appropriate data can assist in pinpointing those components of the regional systems that are not working well so that infrastructure, regulatory or institutional reform interventions, or simply operations improvements can be better targeted. It is therefore critical that data on corridor operations be collected systematically.

The study found that the performance of a corridor could be evaluated from an infrastructure and a service perspective.

**Freight Monitoring and Corridors**

By March 2009 a report was issued by the South African Global Competitiveness Hub where it was found that the Southern Africa region remained among the poorest of the world. The region accounted for less than one per cent of global merchandise trade. The region’s ability to compete effectively in the global economy was found to have been constrained by a number of factors, including the trade policy environment and domestic regulatory policies that result in increased transaction costs. Trade policies remain generally mercantilist, which resulted in anti-export bias. Constraints in trade facilitation, including customs valuation and clearances, government procedures and cross-border transport were found to be widespread. Restrictive policies suppressed foreign investment in many key service sectors.

The region was found to be characterized by a multiplicity of regional integration agreements and bilateral agreements, and was engaged in trade negotiations at the multilateral and bilateral level. These included the Doha Development Round, the EPA negotiations, the mid-term review of the SADC Trade Protocol and negotiations for a free trade agreement between the US and SACU. The African Growth and Opportunities Act (AGOA) stimulated an increase in apparel exports to the United States. The trade negotiations provide opportunities for increased economic growth providing the countries are able to compete in the global economy. The project supported the Southern African countries to transform the opportunities into results.

According to the report the railways had been reliable forms of transportation for both passengers and goods for decades, on a selective basis, the performance of railways in some countries started declining. However, levels of efficiencies declined to ultimately low levels of performance, followed by requests for increased levels of subsidy by central governments. However, due to alleged persistent government interference in the running of railways, as well as poor management thereof, the
commercialized railways performance still declined. This trend then called for a new strategy aimed at institutionalizing sustainable reforms of the railways and their performance to rid them of unwarranted interference, and an institutional framework coupled with investment to put the railways on the path to long term viability.

Pursuant to this initiative, SADC railways pursued the path of concessioning although a number of Member States, especially those whose performance were satisfactory, namely Spoornet, Swaziland Railways, Trans Namib, Botswana Railways, that continued to entertain state participation in the management and operation of railways as a basis for the running of the railway business. However, other States, namely Malawi, Zambia, Mozambique acceded to the concept of concessioning and by March 2009, the United Republic of Tanzania had finalized concession agreements for Tanzania Railways Corporation.

The SADC Railways with its concessioning process were assisted through funding from the United States Agency for International Development (USAID), under the SADC Transport Efficiency Programme (STEP) component. The Southern Africa Transport and Communications Commission Technical Unit ((SATCC) - TU) formulated some guidelines for concession options for the region. The guidelines constituted a model on the basis of which, SADC Member States could formulate their concessioning frameworks. Customized frameworks were also developed through SATCC-TU for the railway concessioning frameworks for Namibia, Zimbabwe, Zambia and Tanzania.

**Funding of Corridor Management Institutions**

Research reporting was considered on the topic of the Study of Sustainable Funding of a Corridor Management Institution (a CMI). Challenges of sustainable funding of corridor management institutions were considered to identify the characteristics and key factors for a sustainable corridor management funding regime and to design a generic model or mechanism for sustainable funding of corridor management institutions. The design was to be based on a literature review on corridor management. The goal was to come up with a model that could be applied to corridors entailing both interviews and literature reviews.

**Institutional Arrangements for Corridors**

Research that was considered mapped and assessed the institutional and organisational structure of a Corridor such as the Maputo Development Corridor (MDC), the actors and stakeholders who were involved in the policy and decision-making processes, and drew lessons for future development corridors and spatial development initiatives (SDIs) in the broader Southern African region.

The analysis revealed that the institutional structure of the MDC was based on such aspects as ‘political champions’, ‘fast-tracking’ of project design and implementation, the crowding-in of private investment and a minimalist approach to institutions - was designed for the facilitation of ‘bankable’ private investments projects and public-private partnerships (PPPs). It also revealed that the MDC contained
several institutional and organisational weaknesses which had negative consequences for broader ‘development’ goals, job creation and the integration of provincial and local governments and communities in the process. The analysts had a difficult task to draw lessons for future development corridors and SDIs in Southern Africa. They admitted to the latter being somewhat speculative, since it depended not only on the interpretation of the MDC as such, but also on the qualities and objectives of the particular regional SDI which was talked about. In drawing such lessons it was logical to concentrate on key aspects that were emphasised in the analysis of the MDC.

One main lesson of the MDC was that any SDI seems to require considerable political commitment and political will provided by the political champions. Considering the centralised decision-making structure in most SADC countries, it appeared that the political champions had to be in the highest centres of decision-making, preferably a key minister or even the president. A weak champion was expected to ruin the whole process, since otherwise decisions and policies might not be taken or implemented. It was likely that serious problems would arise if the political champion was not in charge of one of the main line departments driving the process.

In another research paper the institutional arrangements for the Transport Corridor Management in Sub-Saharan Africa were discussed. The study found that Corridor management institutions were emerging as strategic institutions for promoting and developing the various transit corridors across Africa. The corridor institutions address all aspects of transport and transit of goods throughout a given corridor, typically based on an agreement signed by all participating countries and private sector stakeholders. Corridor agreements deal with a wide range of issues such as infrastructure, customs, bottlenecks and user charges. The institutional characteristics of some of the existing arrangements are discussed in the report. The Apparent Strengths and Weaknesses of Existing Corridor Management Groups were determined by the authors in considering institutional arrangements for Corridor Institutions:

- **Northern Corridor:** The Northern Corridor is an interstate body that has been particularly effective in driving the implementation of regional transit regimes at national level. Its status was clearly an important consideration with its funding mechanism. However, the very same status would appear to have engendered overtly political considerations in the TTCA decision making processes, which can slow down the pace of implementation of activities. Recent moves to involve the private sector are likely to improve the operational dynamics of the TTCA.

- **Central Corridor:** The CCTTFA is a new entity largely based on arrangements that are similar to the TTCA. This instrument is clear on the role of the various stakeholders in achieving the expected results. The funding regime also helps to emphasize the critical role that donor funding can play in getting corridor institutions off the ground.

- **Dar es Salaam Corridor:** This Corridor is the only one of the corridors reviewed that intends to have a body founded on a Constitution. This would appear to be a major constraint to getting the corridor body fully functional. Zambia, one of the main parties to the Constitution, is still to sign the document four years after it was negotiated. The approval process has taken a long time. The delayed signature of the Constitution by the state parties has however not completely prevented
key stakeholders from developing an action plan and lobbying for reforms which could enhance corridor operations.

- **Walvis Bay Corridor**: The Corridor Group is one of the most active and aggressive corridor bodies in Africa. It is business development oriented and has been able to commission various pieces of forward looking research and feasibility studies. The Group is dominated by a few large private sector stakeholders. It underscores the link between infrastructure development and the need to increase volumes to justify some of the investments that have been made or are being contemplated.

- **Maputo Corridor**: The MCLI is very much similar to the WBCG. It is a very vibrant corridor body that has played a key role in concentrating energy on a few strategic issues that can help in unlocking the full potential of the corridor. However, after starting as predominantly private sector driven initiative, the MCLI is now part of a process to revive a Corridor Committee where the governments have a much stronger influence. While this is important, hopefully it will not slow the pace at which the private sector has been trying to drive issues.

- **Abidjan-Lagos Corridor**: ALCO started off as a single issue corridor entity, with a high level of recognition. At the same time, it has a significant local level reach through NGOs. More recently, initiatives have started to broaden the range of issues tackled by ALCO, to include trade facilitation measures. These developments serve to underscore the importance of having a broad perspective on cross border issues as they relate to transit movements. The ALCO experience also brings to the fore the important contribution that donor funding can make to the initial establishment of multi-state corridor initiatives. It is not always the case that all countries would be willing to fund corridor based initiatives right from the beginning, before some of the benefits have been demonstrated.

### How to make Corridors work within NEPAD/SADC

Reference was made to the Sub-Saharan Africa Transport Policy Program (the SSATP) and concluded that corridor efficiency was important to the competitiveness of most African economies, especially those that are landlocked. Some lessons emerged from the existing corridor management arrangements across Sub-Saharan Africa that would be most helpful in determining the most effective and efficient way of developing and implementing corridors within NEPAD and SADC:

- Corridor group interventions were problem solving in nature, the operational procedures should encourage the stated objective and should retain flexibility necessary to be responsive.

- Working groups could be formed on an ad hoc basis to address specific issues and should be disbanded once the stated and contracted objective was met.

- Corridor issues by their nature were often solved by interactions between many public entities and participatory processes should be fostered.

- Ownership and power sharing should be encouraged by organizational design and procedures.

- The group organization should ensure public-private interaction at all levels.

- Most existing arrangements have been established with donor funding and their financial sustainability has remained a key challenge.
PART III: CASE STUDIES OF SUCCESSFUL ECONOMIC CORRIDORS

Successful Corridors
A number of identified successful corridors are discussed to include the following:

- India: Delhi-Mumbai Industrial Corridor
- South East Asia: Greater Mekong Sub-region Economic Corridors Programme (Vietnam)
- Africa: Northern Corridor (Mombasa-Nairobi – Great Lakes)
- Africa: Central Corridor (Dar es Salaam – Great Lakes)

Each of the Corridors was discussed under the following topics:

- Corridor description
- Partnerships and Funding
- Institutional Arrangements
- Challenges and Benefits
- Progress

Lessons Learned
A number of lessons were learned in reviewing the issues the selected corridors were faced with and which needed to be taken to heart for the development and implementation of any corridor, i.e.:

- **Fundamental transit policy issues**: reducing customs bureaucracy and fees, designed to cut costs and travel days for landlocked countries’ exports.
- **Infrastructure development and maintenance issues**: projects will reflect local transport modes. In Africa, road is the predominant mode of transport; in South Asia, rail is more common.
- **International trade and trade facilitation issues**: to give preferential treatment to landlocked countries’ goods, making them more competitive.
- **International support measures**: donor countries will lend know-how and money to landlocked and transit countries for infrastructure and policy improvements.
- **Implementation and review issues**: monitoring and follow-up on agreements with measurable criteria, such as travel days and costs, will be used, with anticipated annual reviews before international and regional bodies such as the United Nations, NEPAD and SADC.
PART IV: CORRIDOR ASSESSMENT TOOL

Reasons for Assessment Tools

The research reported on in this benchmarking report showed that it is imperative that any transport network – including those within economic corridors – must be sustainable in order to ensure the sustained economic and social benefits that derive there from. This has particular bearing for developing countries that face the challenges of economic growth, job creation, social development and poverty eradication, amongst others; South Africa is one such country.

Some outcomes/impacts of a sustainable transport network included the following:

- Accessibility to resources, markets and services through improved quality of transport connections and savings in time and cost;
- Balanced spatial development through rural entrepreneurship and trade and the demand for unskilled labour during construction;
- Multiplier effect of transport on the economy through direct employment in operations and non-direct jobs created in industries associated with planning, development and operation.
- Development impact of international transport facilitation through relevant policies, improved border crossing movements, etc.

The World Commission on Environment and Development and the Organisation for Economic Co-operation and Development (OECD) adopted a definition of sustainable development that cited four principal items that constitute “sustainable transport”, i.e. (i) access/congestion; (ii) health; (iii) ecology/pollution and (iv) climate change and the ozone layer.

Assessing the Social and Economic effects of Transportation Projects

Research that was considered had to be understood to assist transportation planning practitioners to accurately assess the social and economic effects of transportation investments on communities.

The lack of sufficient methods, tools, and techniques for the scale, context, and complexity of projects meant that planners and decision makers had limited information and understanding of the full range of effects that may be attributed to a transportation project’s development. These limitations result in challenges for government and funding recipients to conduct social and economic analyses of their programmes and projects.

In a country such as South Africa, where there still exists huge infrastructural and developmental disparities between urban and rural communities, spiralling unemployment, increasing poverty, and irreversible damage to the environment, it becomes imperative for us to take full cognisance of the social and economic effects of economic (and transport) corridor development projects on our own local communities.
Key Indicators of the Assessment Tool

The first element of the Assessment Tool was the requirement to consider the range of transport network strategies along the corridor to include the description, additional lanes and traffic using the new facility.

A table was developed to show criteria cluster elements, the criteria themselves and identified measures used to evaluate a Project. Additional criteria have been added to the original matrix; these criteria are far from exhaustive and should be modified as is appropriate to and relevant for the project.

In order to increase confidence in the outputs, all criteria within a cluster as well as the clusters themselves may be weighted. An example of a weighting table for the Criteria Clusters is provided; the same may be developed for the individual criteria within each cluster. It must be noted that this table has been modified to accommodate additional criteria, resulting an amendments to the weights.

South Africa is a developing country that manifests first world elements in what is largely as third world territory. As such, there are multiple priorities and challenges competing for scarce financial resources and technical capabilities. Capital and human investments in one invariably impact on the other – government and private sector are constantly dancing on shifting rugs, if not have the carpet pulled from under their feet. Throw into this mix a fairly vocal civil society and organised labour and one has the recipe for a potent mix!

Successful economic corridors

- Build on existing transport and other infrastructure
- Foster public-private partnerships with civil society consultation and participation
- Grow the economy through strengthening existing industries and businesses and grow new ones
- Creates mixed land use zones that enhances spatial and facilities/services development in a range of sectors
- Advances the objectives of regional spatial development initiatives and aspirations
- And, very important, addresses some of the social goals of job creation, poverty alleviation, and improved quality of life, amongst others.

A number of objectives and performance measures were reported in this benchmarking report, including economical and financial, as well as transport, social, physical / urban, institutional and environmental. This application of key indicators in the assessment of a transport and corridor development must be applied with the appropriate weighting of the criteria clusters and, as necessary, the weighting of the individual respective criteria.
Acronyms

ADB  Asian Development Bank
AGOA  African Growth and Opportunities Act ()
ALCO  Abidjan-Lagos Corridor:
ASYCUD  Automated Systems for Customs Data
BRIC  Brazil, Russia, India and China
CBTA  Cross-Border Transport Agreement
CBD  Central Business District
CSI  Container Safety Initiative
CDC  Corridor Development Consultants (the)
COMESA  Common Market for Eastern and Southern Africa
CSI  Container Safety Initiative
DBSA  Development Bank of Southern Africa
DC  Development Corridor
DC (bypass)  Distribution Centre
DMIC  Delhi-Mumbai Industrial Corridor
DMIC  Development Corporation (DMICDC),
DPRU  Development Policy Research Unit (University of Cape Town)
DRC  Democratic Republic of the Congo
dti  Department of Trade and Industry
EAC  East African Community
EC  Economic Corridor
ESCAP  Economic and Social Commission for Asia and the Pacific
EU  European Union
EWEC  East-West Economic Corridor
GCOS  General Containerized Operating System
GMS  Greater Mekong Sub region
HRD  Human Resources Department
IA  Industrial Area
ICT  Information, Communication and Technology
ISPS  International Ships & Port Security Code
IR  Investment Region
LDC  least developed country
MBC  Mesoamerican Biological Corridor
MCLI  Maputo Corridor Logistics Initiative
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>MDC</td>
<td>Maputo Development Corridor</td>
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<td>MDG</td>
<td>Millennium Development Goals</td>
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<td>NAFTA</td>
<td>North American Foreign Trade Association</td>
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<td>NCTTCA</td>
<td>Northern Corridor Transit Transport Coordination Authority</td>
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<td>NDP2</td>
<td>National Development Plan</td>
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<td>NFMF</td>
<td>National Freight Monitoring Framework</td>
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<td>NFLS</td>
<td>National Freight Logistics Strategy</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>PPP</td>
<td>Pueblo-Panama Plan</td>
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<td>PSO</td>
<td>Public Service Obligations</td>
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<td>RDC</td>
<td>Regional development corridors</td>
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<td>RESDICC</td>
<td>Regional Spatial Development Initiative Regional Coordination Committee ()</td>
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<td>RSDI</td>
<td>Regional Spatial Development Initiative (SADC Regional)</td>
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<tr>
<td>RTFP</td>
<td>Regional Trade Facilitation Programme</td>
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<td>R&amp;D</td>
<td>Research and Development</td>
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<tr>
<td>RECs</td>
<td>Regional Economic Communities</td>
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<td>SADC</td>
<td>Southern African Development Community</td>
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<td>SATCC - TU</td>
<td>Southern Africa Transport and Communications Commission Technical Unit</td>
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<td>SDI</td>
<td>Spatial Development Initiative</td>
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<td>SKU</td>
<td>Stock Keeping Unit</td>
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<tr>
<td>STEP</td>
<td>SADC Transport Efficiency Programme</td>
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<td>SSATP</td>
<td>Sub-Saharan Africa Transport Policy Program</td>
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<td>TAH</td>
<td>Trans African highways programme</td>
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<td>TKCMC</td>
<td>Trans Kalahari Corridor Management Committee</td>
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<tr>
<td>TEN</td>
<td>Trans-European Network</td>
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<tr>
<td>TNC</td>
<td>Trans-National Corporation</td>
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<tr>
<td>USAID</td>
<td>United States Agency for International Development</td>
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<td>WBC</td>
<td>Walvis Bay Corridor</td>
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<td>WBCG</td>
<td>Walvis Bay Corridor Group</td>
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1. Part I: Desktop Study – Economic Corridors Globally

1.1 Key Terms – Defining the Field

One of the challenges of understanding the arena of economic corridors is to be able to separate the various types of development one-from-the-other, and to know why-and-when some of these are used interchangeably.

In this regard, one draws specific attention to spatial development initiatives (SDIs) and corridors generally; the latter constituting various types of corridors, economic corridors being just one.

1.1.1 Spatial Development Initiatives

The methodology for Spatial Development Initiatives\(^1\) (SDIs) is a methodology (not a policy) developed in South Africa in 1996. It serves as an integrated planning tool to promote investment in underdeveloped regions of the country with growth potential through Public-Private-Community Partnerships.

In the short-term, investment-led growth is a primary goal through which the establishment of integrated development and manufacturing platforms is sought in the long term.

1.1.2 Corridors

According to definition of corridor on the Web\(^2\),

- A corridor is a passageway in, and generally between, railway passenger vehicles.
  
  [www.en.wikipedia.org/wiki/Corridor\_rail\_vehicle](http://www.en.wikipedia.org/wiki/Corridor\_rail\_vehicle)

- A narrow hall or passage with rooms leading off it; a restricted tract of land that allows passage between two places; airspace restricted for the passage of aircraft.
  

- A designated strip of land between two locations within which rail, highway and pedestrian traffic, topography, environment and other characteristics are evaluated for transportation purposes.
  
  [www.oli.org/education_resources/glossary.html](http://www.oli.org/education_resources/glossary.html)

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\(^1\) www.mcli.co.za (20 April 2009) Maputo Corridor Logistics Initiative (MCLI) website

\(^2\) www.google.com (20 April 2009)
In planning, a broad geographical band that follows a general directional flow or connects major sources of trips. It may contain a number of streets and highways, and transit lines and routes.

www.twinpeaksi-10.com/glossary.htm

An area of variable width between two points where the needs for improvement are studied. The study includes, but is not limited to, social, economic, and environmental considerations, and alternatives for an area.

www.rebuildingi93.com/content/acro/

One may deduce, therefore, that a corridor can be a type of SDI. A further point to clarify is that there are a range of different corridors – economic, development, industrial, trade, to name a few. One of the challenges in this respect is that these different types of corridors are often named interchangeably in various texts. One cannot be sure that this is deliberate or accidental.

For our purposes we shall look specifically at transport, development and economic corridors.

- **Transport Corridors**
  A transport corridor is a “multi-modal corridor connecting two points of economic activity (together with as many places of economic concentration as possible along its length) as reliably and as cost-effectively as possible. Its primary focus is on economic efficiency rather than economic distribution and it should ideally provide users with transport choices.”

According to the Global Transport Knowledge Partnership, “Transport corridors - sometimes known as interurban, intercity or trade corridors - are the strategic transport infrastructure networks that connect major ports and border crossings, conurbations, industrial centres and transport interchanges. These corridors are usually heavily used, particularly for freight and business travel. They are strategically important to the national economy, as they determine the speed at which goods can travel to markets, and the ability of people to access business opportunities.”

- **Development Corridors**
  A development corridor is “characterised by the integrated nature of its programmes and typically focuses on the upgrading of transport and energy infrastructure and the crowding-in of investment, initially in those sectors in which the potential exists to develop anchor sectoral economic projects and subsequently into related sectors that bring about integrated development at a local and regional level. Development corridors are usually medium-term initiatives involving multiple stakeholders working towards a series of inter-related goals to bring about local and regional economic development”.

- **Economic Corridors**
  According to the Asian Development Bank (ADB), the economic corridor approach “recognizes that development is not just a matter of infrastructure improvement. Infrastructure needs to be integrated

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3 RSDI Technical Unit Definition
4 www.gtkp.com
5 RSDI Technical Unit Definition
with other economic opportunities, such as trade and investment. At the same time, this approach should also include efforts to address social and other impacts arising from increased connectivity.\textsuperscript{6}

The Bank asserts while “an economic corridor promotes regional economic cooperation, other ways to support regional and sub regional cooperation include:

- Formal mechanisms (free trade area, customs union and common market frameworks)
- Informal mechanisms (growth triangles, economic corridors, transnational free zones)”

The following characteristics have been ascribed to economic corridors:

- “Covers smaller, defined geographic space, usually, straddling a central transport artery such as a road, rail line, or canal;
- Emphasizes bilateral rather than multilateral initiatives, focusing on strategic nodes particularly at border crossings between two countries; and
- Highlights physical planning of the corridor and its surrounding area, to concentrate infrastructure development and achieve the most positive benefits.”

This report shall most frequently use the term economic corridor, which shall also be used to include transport and development corridors unless indicated otherwise. This is governed by the deduction that all economic corridors are built along a transport system – which is vital to the very existence and success of economic corridors; and all economic and/or transport corridors are most likely a spatial development initiative.

\section{1.2 Why Economic Corridors as a Strategy?}

\subsection{1.2.1 Why Economic Corridors are important and necessary?}

Economic corridors have always, and continue to be a desirable strategy across the world – in both developed and developing countries. Economic corridors are “able to achieve a wide range of highly desirable long- and short-term objectives…used to integrate the existing fragmented urban structure…The advantages influence many spheres that range from the economic to the social to the spatial to the environmental\textsuperscript{7}.

Transport corridors are vital to economic corridors in that “they link the key economic centres of a country to their exit and entry points. They are particularly important because they enable raw materials and products to be transported, and therefore have a direct impact on the viability of trade. In a globalised economy this trade is becoming increasingly important in manufacturing, where product components are manufactured in many different countries and then brought together and finally assembled before being exported to markets. This requires often complex transport and logistics chains. Innovations such as “just in time” delivery make it increasingly important that the delivery of

\textsuperscript{6} \url{www.adb.org/GMS/Economic-Corridors/forum-highlights.asp}
\textsuperscript{7} \url{www.rustenburg.gov.za}
components can be scheduled quickly and reliably, requiring a fast, efficient and reliable transport infrastructure.\footnote{www.gtkp.com}

According to Lyndon LaRouche\footnote{Lyndon Hermyle LaRouche, Jr. (born September 8, 1922) is an American economist, philosopher, political activist, and founder of several political organizations, known collectively as the LaRouche movement. He has been a perennial candidate for President of the United States. In 1984, he and his wife co-founded the Schiller Institute, as a global foundation for his ideas. In December 1989, LaRouche commissioned a group of scientists and other specialists from the Schiller Institute to work out an economic programme for Europe, known as the "Productive Triangle." In January 1990, \textit{The Productive Triangle, Paris-Berlin-Vienna: Locomotive for the World Economy} was published, in German. This geographical area, a spherical triangle approximately as large as the territory of Japan, encompassing the industrial regions of northern France, western and eastern Germany, and parts of former Czechoslovakia and Austria, was envisioned to serve as a locomotive to restart the collapsing world economy. The backbone of the triangle was to be an integrated system of high-speed and magnetic levitation rail, to be used for transport of both passengers and freight. The transportation network was to be expanded with roads and waterways, linked by automated freight-transfer systems. The urban centers would be connected with magnetic levitation lines. \textcopyright{www.schillerinstitute.org} MAPS of Great Infrastructure Development Projects Around the World: Infrastructure Development Corridor}, “the proper design of the development of any very large land-area must be based on certain geographical principles. In modern history of the past two centuries, the center of these geographical principles is transportation routes, chiefly for water-borne commerce and trunk railways, still the cheapest and most efficient modes for movement of produced goods.\footnote{www.schillerinstitute.org} (See Figure 1 below)

Figure 1: Development Corridor Outlay

LaRouche suggested that these routes must be considered “as not merely conveyer-belts of people, goods, water, and power, but as like production-lines: a zone of efficient, high-density production of agricultural, mining, and manufactured goods, running the length of the trunk-line and with a width of up to approximately a hundred kilometers.”

What follows are some examples of how and why economic corridors have been used as a strategy for development and growth in various regions across the world.
The Greater Mekong Sub region East-West Economic Corridor Experience

When one looks at the goals of the Greater Mekong Sub region (GMS) East-West Economic Corridor (EWEC), and what has been achieved in this regard, useful insight can be gained into the value and benefits of using economic corridors as a strategy for development and growth.

The Corridor has been able to:

(i) Further strengthen economic cooperation and facilitate trade, investment, and development in the Region;
(ii) Reduce transport costs in the project influence area, and make the movement of goods and passengers more efficient; and
(iii) Reduce poverty, support development of rural and border areas, increase the earnings of low-income groups, provide employment opportunities for women, and promote tourism.

Other benefits have been in the areas of Agro Industry and Tourism. There have also been major investments in priority infrastructure sectors such as transport, energy and telecommunications, which will maximise development impact while minimising development costs. These investments have additional general positive impact on the economy.

1.2.2 The Issue of Landlocked Least Developed Countries

Mark Pearson, Regional Trade Facilitation Programme (RTFP) Programme Director, in a presentation on The North-South Corridor (from the Copper belt of Congo and Zambia to the ports of southern Africa and Tanzania): An Aid for Trade Initiative to a meeting of stakeholders on 11 October 2008 identified the problem necessitating the Corridor as follows.

“The cost of doing business in east and southern Africa, especially in landlocked least developed countries (LDCs), is prohibitively high. This is partly because of internal transport prices. Prices (as opposed to costs) are set by the market and depend on the openness of the transport sector (open competition vs. cartels), demand for transport both ways, time and costs (fuel, tyres, maintenance, formal payment and informal payments). Trade facilitation and liberalisation in its broad definition can help reduce costs (and prices) and allow producers to become more efficient, favouring economic growth and poverty alleviation.”

1.2.3 The Benefits of Development Corridors in Southern Africa

Development corridors “were first implemented in Southern Africa under the South African sponsored SDIs (Spatial Development Initiatives) after their liberation in 1994”.

11 www.rtfp.org
The NEPAD Secretariat and the African Development Bank have recently adopted development corridors as an important tool for configuring, prioritising and promoting inter-related infrastructure and large-scale economic sectoral investments in defined geographic areas (also referred to as Spatial Development Initiatives) as a means to:

- Promote trade and investment led economic growth;
- Optimise the utilisation of infrastructure;
- Encourage value-added processing (beneficiation); and
- Enhance the competitiveness of African economies.\(^{12}\)

A good example of a Southern African development corridor is the Maputo Development Corridor (MDC). The MDC links the South African provinces of Gauteng and Mpumalanga and the city and port of Maputo, in Mozambique.

The MDC is based on four key objectives:

- To rehabilitate the primary infrastructure network along the Corridor, notably road, rail, port and dredging, and border posts, with the participation of the private sector in order to have minimum impact on the fiscus
- To maximise investment in both the inherent potential of the Corridor area and in the added opportunities, which the infrastructure rehabilitation will create, including the provision of access to global capital and facilitation of regional markets and regional economic integration
- To maximise social development and employment opportunities and increase the participation of historically disadvantaged communities
- To ensure sustainability by developing policy, strategies and frameworks that ensures a holistic, participatory and environmentally-sustainable approach to development\(^{13}\)

The Rustenburg Spatial (South Africa) Development Framework asserts that the following are distinct advantages of economic corridors\(^{14}\):

**a. Economic and Financial**

- **Reduce transport subsidies.** By making public transport more viable and by opening up new public transport possibilities, government’s annual public transport subsidy is reduced.
- **Reduce use of non-renewable resources.** The concentrated mixing of high-density residential and high-intensity non-residential land use facilitates the location of a wide range in the same vicinity thereby reducing the length of freight and passenger trips. This reduces the use of fossil fuel.
- **Reduce transport costs for the poor.** The poor benefit through reduced public transport costs where public transport trips are reduced, shorter, more efficient and economically viable.

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\(^{12}\) Plan of Action for African Acceleration of Industrialisation - Promoting Resource-Based Industrialisation: A Way Forward, Paul Jourdan, August 2008


\(^{14}\) [www.rustenburg.gov.za](http://www.rustenburg.gov.za)
• **Attract new investment to a (municipal) area.** A (municipal) area could benefit where investors are enticed, through infrastructure provision and other incentives, to invest.

• **Increase economic opportunities.** Opportunities for a wide range of economic activities arise through the high accessibility and exposure of corridors, as well as improving the potential for complementary land uses.

• **Improve the efficiency of infrastructure.** Corridors facilitate the intensification, diversification and concentration of land uses and economic activities. This ensures the most efficient use of bulk infrastructure investment.

• **Linking to the global economy.** Corridors that are the focus of high-quality infrastructural investment are often able to draw direct international investment.

b. **Transport**

• **Integrate land use and transport.** Corridors enhance the integration of land use and transport, where this already exists as an indicator of successful towns or cities.

• **Increase the use, efficiency and quality of public transport.** Thresholds are lowered for viable, high-frequency and better quality public transport with the concentrated mixing of non-residential land use with higher density housing.

• **Increase/maximise accessibility.** The accessibility of the urban poor to a wide variety of land uses at higher densities on public transport routes is increased.

• **Increase/maximise mobility.** High volume, efficient movement between major nodes within a (municipal) area is facilitated. This lowers congestion levels and shortens travelling times.

• **Increase modal choice.** A far greater range of public transport modes arise through the creation of a greater and more diversified demand for public transport.

• **Increase modal integration.** A greater integration of public transport modes at nodal points in a corridor is likely as the volumes required to for an inter-modal facility are potentially reached.

• **Shorter and fewer.** Shorter trip lengths and the reduced need for travel result from the provision of a wide array of goods and services in a concentrated area.

• **Reduce peak travel times.** Peak travel times are reduced by reducing the need for travel and increasing the use of public transport.

c. **Social**

• **Alleviate poverty and reduce inequality and social exclusion.** Economic development in corridors reduces poverty; social exclusion is reduced through linking and integrating the more and the less affluent parts of towns and cities.

• **Improve access to social services.** Deprived groups can access major educational and health facilities served by public transport.

d. **Physical and Urban Form**

• **Restructure the urban landscape through spatial integration.** Segregated and fragmented urban areas within (municipal) areas can be restructured.

• **Redevelop blighted areas.** Deprived and blighted urban areas can be redeveloped where corridors run through them, thereby also reducing the costly rollout of new infrastructure.
• **Steer urban development.** Future urban development can be channelled towards corridors, where investment in infrastructure will be most cost-effective.

• **Create urbanity.** More dynamic, more life-enhancing, more choice-generating and more sustainable forms of human settlement are created.

• **Improve legibility of the urban landscape.** Urban areas are made more legible as corridors put in place a logical macro-structure of axes and nodes.

e. **Institutional**

• **Build partnerships.** Strong partnerships are developed between municipalities (government) and local communities through the planning and implementation of corridor projects.

f. **Environmental**

• **Reduce the need for transport and ensure more sustainable urban development.** Mixed land use results in a reduced need for travel and reduced trip lengths which result in sustainable urban development.

• **Reduced pollution.** Increased use of public transport lessens the use of private vehicles which decreases the emission of harmful gasses which alleviates the greenhouse effect and global warming.

• **Contain urban development/sprawl.** Concentrated land uses results in smaller environmental impact unlike in the case of low-density urban sprawl.

The above citations have been selected to provide insight into why economic corridors are developed in various regions across the world, and what are some of the general and specific objectives of the same.

From this one is able to ascertain that economic corridors as a strategy is a necessary approach to building economies at a local, regional and global level – within and between countries; it also facilitates the social development of people and geographic spaces that have otherwise not been developed for whatever reason.

### 1.3 Economic Corridors across the World

In this Section, brief overviews are presented of corridors across the globe. Two to three examples are given on each of the continents. In some instances, the corridors are generally described in terms of their links, transport modes, purpose/objectives, successes, challenges and funding sources. In other cases, such as the case of Brazil and New Zealand, an overview is provided of their general approach to corridor development within the respective countries, as opposed to interrogating a specific corridor.

In all examples, attempts were made to present some critical issues that may be useful for consideration for others embarking on corridor development. Maps have been attached to the various examples; these maps are not all of the same content and form.
1.3.1 North America

1.3.1.1 Alameda Corridor (Los Angeles-Long Beach, Southern California)

General Description of the Corridor

The Alameda Corridor is a 32 km freight rail expressway connecting the national rail system near downtown Los Angeles California to the ports of Los Angeles and Long Beach, running parallel to Alameda Street. The Alameda Corridor is owned by the Alameda Corridor Transportation Authority.

The project is well-known for its "Mid-Corridor Trench". This is a below-ground, triple-tracked rail line that is 16 km long, 10 m deep and 15 m wide that is shared by both the Burlington Northern and Santa Fe Railway and Union Pacific Railroad via trackage rights.

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16 [www.en.wikipedia.org/wiki/Expressway](http://www.en.wikipedia.org/wiki/Expressway). An expressway is a divided highway for high-speed traffic with at least partial control of access. The degree of access allowed varies between countries and even between regions within the same country. In some jurisdictions, expressways are divided arterial roads with limits on the frequency of driveways and intersecting cross-streets. In other jurisdictions, access to expressways is limited only to grade-separated interchanges, making them the full equivalent of freeways.

17 [www.en.wikipedia.org/wiki/Trackage_Rights](http://www.en.wikipedia.org/wiki/Trackage_Rights). Trackage rights or running rights is an arrangement where the company that owns the line retains all rights, but allows another company to operate over certain sections of its track. The agreement may specify whether the latter company can serve customers on the line. In some cases, the former company may opt to not run any trains over the line but still own it; this can also be done via a partial lease. Overhead trackage rights or incidental trackage rights refers to the case of the latter company not being allowed to serve customers along the line. It is only granted the right to "overfly" the right-of-way of the lessor, using the tracks of the lessor's railroad.

Trackage rights can be temporary or long-term as needed. Temporary rights agreements are typically made when some kind of disaster affects one railroad while a parallel railroad line is fully operational. The parallel railroad will often grant temporary rights to the affected railroad until the problem is resolved. Long-term agreements can be made to allow competing railroads access to potentially profitable shippers or to act as a bridge route between otherwise disconnected sections of another railroad.
Trains are allowed to bypass 145 km of early 20th century branch lines and the Santa Fe's historic Harbor Subdivision along a high-speed grade-separated corridor mainly built on the alignment of a former United Pacific line. This avoids more than 200 at-grade railroad crossings where cars and trucks previously had to wait for long freight trains to slowly pass. Many of those same rail lines were inadequately protected with little more than "wigwag"\textsuperscript{18} crossing signals dating from the original construction of the lines. With a maximum speed of 64 km/h, one important use of the corridor is to take cargo containers directly to the ports of Long Beach and Los Angeles while avoiding more than 200 at-grade railroad crossings where cars and trucks previously had to wait for long freight trains to slowly pass.

The Ports completed the purchase of Southern Pacific's Alameda Corridor line for USD 235 million in December 1994. The line went into operation on 15 April 2002; it reached a peak of 60 train movements per day in October 2006. The Corridor is credited with significantly relieving congestion on the Long Beach Freeway (I-710) and elsewhere in the region. During the 2007 calendar year, the line carried 17,824 trains carrying 4.7 million twenty-foot equivalent units of containers.

The California Department of Transport, the Port of Los Angeles and the Los Angeles County Metropolitan Transportation Authority have publicly announced plans to electrify the corridor, in order to reduce the troublingly high particulate\textsuperscript{19} emissions along the route.

**Transloading**

A key element of the Alameda Corridor is the practice of “transloading”\textsuperscript{20}. The bulk of the Corridor’s cargo comes in via ship from Asia.

In March 2004, BST Associates undertook a study for the Alameda Corridor Transportation Authority into the factors that impact the flow of containers in and through the Southern California area.

\textsuperscript{18} [www.en.wikipedia.org/wiki/Wigwag](http://www.en.wikipedia.org/wiki/Wigwag). Wigwag is the nickname given to a type of early, North American, 20th century, railroad grade crossing signal, so named due to the pendulum-like motion it used to signal the approach of a train. It is generally credited to Albert Hunt, a mechanical engineer at Southern California's Pacific Electric (PE) interurban streetcar railroad, who invented it in 1909 out of the necessity for a safer railroad grade crossing.

\textsuperscript{19} [www.en.wikipedia.org/wiki/Particulates](http://www.en.wikipedia.org/wiki/Particulates). Particulates, alternatively referred to as particulate matter (PM) or fine particles, are tiny particles of solid or liquid suspended in a gas or liquid. In contrast, aerosol refers to particles and the gas together. Sources of particulate matter can be manmade or natural.

\textsuperscript{20} [www.en.wikipedia.org/wiki/Transload](http://www.en.wikipedia.org/wiki/Transload). Transloading is the process that occurs when a shipment must be transferred from one mode of transportation to another. It is most commonly employed when one mode cannot be used for the entire trip, as for instance when goods must be shipped internationally from one inland point to another. Such a trip might require transport by truck to an airport, then by airplane overseas, and thence to another truck at its destination; or it might involve bulk material (such as coal) loaded to rail at the mine, and then transferred to ship at a port. Transloading is also required at railroad break of gauge points since the equipment between lines is not compatible. Since transfer requires handling of the goods, it causes expense and risk of damage. Therefore transloading facilities are designed with the intent of minimizing the handling. Due to differing capacities of the different modes, the facilities typically require some storage facility such as warehouses or rail yards. For bulk goods specialized material handling and storage are typically provided (as for example in grain elevators). Intermodal transport limits handling by using standardized containers which are handled as units, and which also serve for storage if needed.
The Study Report\textsuperscript{21} cites transload activities as including transfer of waterborne cargo from marine containers:

- These containers are then immediately shipped by truck and rail to final destinations; and
- Directly to warehouses and distribution centres, where consolidators later reload the cargo into domestic containers/trailers (mainly 48’/53’) for truck and railway shipment to final destinations.

While in storage in warehouses/distributions centres, transload operators can provide a variety of value added services\textsuperscript{22}, “including:

- Manifest verification – verify that the items on the manifest match the contents of the container,
- Labeling – attaching a label to an article,
- Palletizing – placing stock keeping units (SKUs) for a particular store(s) on a pallet in a secure manner for distribution,
- Shrink wrapping – wrapping the pallet with plastic to protect it and aid in its transit,
- Pick and pack – assemble an order of SKUs for a specific store(s) and pack it for shipment,
- DC (distribution centre) bypass – a direct move from the consolidator to a retail store(s),
- Merge in transit – package two different products together, and
- Reverse Logistics – returning unsold merchandise to the DC, amongst others”.

\textit{Distribution Centre (DC) Bypass}

An important feature of the Alameda Corridor is the DC Bypass\textsuperscript{23}. According to Mark Holmes, “Companies must continually think of ways to improve supply chain and distribution networks to bolster the bottom line and enhance service levels.” He says that “with so many products today manufactured overseas, the ability to maintain a streamlined network, despite market volatility, is a key competitive edge.”

Mark Holmes asserts that retail and consumer package goods companies find this particularly challenging since nearly one-third of what they ship is what he calls “obnoxious freight” – that is awkwardly shaped goods, very fragile items, high-value good requiring security, heavy products, and seasonal items.

\textsuperscript{21} \textit{Alameda Corridor Consolidation Activity Study}, BST Associates, March 2004
\textsuperscript{22} \textit{Alameda Corridor Consolidation Activity Study}, BST Associates, March 2004
\textsuperscript{23} \textit{www.inboundlogistics.com} – article: \textit{Optimize ‘Obnoxious Freight’ with DC Bypass}, Mark Holmes, February 2006. Businesses using DC bypass load products at point of origin; assign shipments by ultimate destination; clear customs in bulk; deconsolidate at ports; and ship directly to retail outlets or customers. As a result, inventory remains continuously in motion.
Such freight presents unique challenges for packing and shipping, and may be redressed through recent technology advancements, collaboration among trade partners, and improved third-party logistics services.

According to Holmes, the burden of shipping “obnoxious freight” can best be done through a DC bypass where time to market is expedited.

- Products are loaded at point of origin.
- Shipments are assigned by ultimate destination.
- Customs are cleared in bulk.
- Deconsolidation happens at ports.
- Products are shipped directly to retail outlets or customers.

Hence, the inventory remains constantly in motion and eliminates significant transport costs. Service and customer satisfaction is increased.

Holmes says that a DC bypass solution for “obnoxious freight” optimises the supply chain process, helping companies:

- “Reduce time to market.
- Improve order-to-cash cycles, response times, and inventory turns.
- Lessen the impact of seasonality and market fluctuations.
- Reduce physical assets and defer investments.
- Eliminate unnecessary handling, labour, and transportation, which reduce logistics costs, errors, loss, and product damage.
- Gain a streamlined, integrated approach to enhancing visibility.”

Hence, a DC bypass may be a vital component in the development of corridors.

1.3.1.2 Quebec-New York Economic Corridor (Canada-United States)

The Quebec-New York Corridor, straddling road, rail and water transport, is older than the Canadian-US history. Even today, the State of New York remains Quebec's number one trade partner in the United States.

However, the establishment of NAFTA\(^{24}\) is facilitating the rapid development of surrounding regions and thus “obliges the Quebec-New York Corridor to redouble its efforts to maintain a highly competitive area for North American and foreign investors.”\(^{25}\)

\(^{24}\) [www.en.wikipedia.org/wiki/North_American_Free_Trade_Agreement](http://www.en.wikipedia.org/wiki/North_American_Free_Trade_Agreement)

The North American Free Trade Agreement (NAFTA) is a trilateral trade bloc in North America created by the governments of the United States, Canada, and Mexico. The agreement creating the trade bloc came into force on January 1, 1994. It superseded the Canada-United States Free Trade Agreement between the U.S. and Canada. In terms of combined purchasing power parity GDP of its members, as of 2007 the trade block is the largest in the world and second largest by nominal GDP comparison.

Private Sector Collaboration

In 2001, business people from Quebec and New York committed to closer cooperation to increase the economic development of the region. This resulted in a formal agreement between the Federation of Quebec Chambers of Commerce and the Plattsburgh-North Country Chamber of Commerce.

The agreement signed by the two Chambers states that, “the Quebec-New York Corridor is a framework within which a proactive leadership consortium shall commit to the development of the full potential of the common economic region. The Corridor and its partners will maximize environmental, human and geographic resources, and promote commerce and industry throughout the Corridor to serve as global marketplace. We will work together through collaboration, cooperation, mutual support and commitment to enable the Quebec-New York Corridor to operate as a true regional economy.”

The Corridor business partners are especially proud of the successes that have been made in:

- Technology, particularly in the areas of nanotechnology, information highway, venture capital, optics/photonics, cyber-security, genomics and bio-technology. The objective is to make the Quebec-New York Corridor a world-class cross-border gateway region for advanced technology.
- Collaborative research projects, through supporting universities and research centres in these.

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• Developing an information highway through an ultra-high-speed network.
• Facilitating tourism and international sporting events between the two States.

The next priority area is that of energy.

Canada’s Commitment

In May 2004, Canada’s Transport Minister, Tony Valeri, addressed the Can-Am Border Trade Alliance Conference in Ontario. He affirmed the aptness of the Conference theme which was *The Canadian/US Border: Unified Focus*. He said that given that what happens on one side of the border has a decisive impact on the other side, “it’s increasingly inevitable that Canadians and Americans will tend to look at border issues through a similar lens – hence the need for a unified focus.”

Minister Valeri said that Canada and the United States were each others’ most important trading partner in that they did more business with one another that with any other country globally. The value of Canada-US trade, he said, continues to grow each year, with more than sixty percentage of that trade being moved cross-border by truck. According to Valeri "Our border sees approximately 13 million truck crossings every year – about 35,000 a day, or one every three seconds."

The Minister went on to clarify that as good as their transportation system was, Canada needed to improve its transportation system if it were to meet the challenges of global competitiveness and increased security risks and requirements. As a result, he said, Canada’s transportation policy must rest on four pillars, these being:

• A market-driven policy framework;
• A multimodal infrastructure strategy;
• An efficient and secure trade corridor policy; and
• Research and development to support transportation innovation.

Following this, the August 2005 Meeting of the of the Council of the Federation of Canada identified Canada’s transportation system as “vital to promoting economic growth, international competitiveness and the best standard of living for all Canadians”. In its document, *Looking to the Future: A Plan for Investing in Canada’s Transportation System*, the Council outlines a national transportation strategy by:

• Detailing provincial and territorial priorities;
• Recommending changes to the policy framework; and
• Calling for a new funding partnership with the federal government.

27 [www.tc.gc.ca/mediaroom/speeches](http://www.tc.gc.ca/mediaroom/speeches), Speaking Notes for Transport Minister Tony Valeri at the Can-Am Border Trade Alliance Ottawa, Ontario, a May 2004
28 [www.councilofthefederation.ca/pdfs/NTS_Booklet](http://www.councilofthefederation.ca/pdfs/NTS_Booklet), Looking to the Future: A Plan for Investing in Canada’s Transportation System, December 2005
Corridor Security Considerations

Both Juneau and Valeri raise concerns on Corridor security, especially in the light of the events of 9/11. Juneau recognises that following the 9/11 attacks security is a central issue with respect to the Corridor, and that there must be harmonisation between security and the efficient transportation of goods and passengers. At the same, he says, the paradox remains that while “Canada and the United States have one of the largest bilateral trading relationships in the world, security constraints at the border are incompatible with such high levels of trade.”

According to Minister Valeri, “the unforgettable events of September 11, 2001 created a new reality, a new normal.” He said that this compels them to view their vital transportation links, including border crossings, as potential targets. Hence, he added, all efforts must be increased to protect these links since the most efficient key trade corridors are of no use if they are not safe. He gave his reassurance that security remained one of the highest priorities of his government and alluded to working with their American partners to entrench the Smart Borders Action Plan. He said that the aim was to develop a balanced approach to border management, recognising the need for security on the one hand and the smooth flow of goods and people on the other.

Key Conclusions

According to Juneau, the following “five conclusions may be drawn on the Quebec-New York Corridor:

- The business community may be more effective than government because of their proactiveness and initiative. However, business needs governments since they make it easier to conclude agreements.
- Security is definitively a constraint but should be integrated in the border management. However, security should be absolutely compatible with efficiency.
- Local and sectoral actions have a large role to play in cross-border cooperation, especially when the times come to harmonise certain policy aspects. There is also a better reaction in times of crisis.
- The current border management doesn’t reflect the high level of trade and cooperation between the two countries.
- On long term, smart border initiatives like NEXUS and FAST programs can improve the border management and make it more compatible with the level of trade.

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30 www.tc.gc.ca/mediaroom/speeches, Speaking Notes for Transport Minister Tony Valeri at the Can-Am Border Trade Alliance Ottawa, Ontario, May 2004
31 www.wcog.org. The NEXUS Program is also jointly administered by US Customs and Border Protection and Canada Border Services Association and allows pre-approved passenger vehicle travellers to use an expedited lane and inspection booth to bypass often-lengthy queues at the border. NEXUS is in operation at Peace Arch/Douglas and Pacific Highway ports-of-entry.
32 www.wcog.org. The FAST Program is a joint US Customs and Border Protection and Canada Border Services Association for pre-approved commercial drivers, carriers, and importers that expedite their travel through the
1.3.2 Central America

1.3.2.1 Meso-American Biological Corridor (misnomer)* (Mexico-Panama)

_Intra-Regional Transport Challenges in Central America_

According to Sanchez and Wilmsmeier\(^33\), “Central America needs to facilitate regular, flexible, safe and affordable transport infrastructure and services in order to prevail over the existing bottlenecks and constrained intra-regional trade patterns. The need is widely recognised and the search for solutions is one of the main topics in political discussions on regional development. The construction of transport infrastructure and transport facilitation, however, is coupled with a substantial need for financial resources, concise development strategies, emissions and destruction of natural habitats.”

Sanchez and Wilmsmeier cite three key challenges facing Central American countries in their transport systems vis-à-vis economic development. These are\(^34\):

- Lack of sufficient transport infrastructure and high transport costs that have led to a decline in the competitiveness of the regional economies and sluggish economic growth rates;
- Lack of both an integrated transport policy and a common political vision for a regional diversified transport market, including sustainability issues, long-term planning, Intermodal and multimodal concepts, and criteria on resources allocation; and
- High vulnerability owing to geological, geomorphic and climatic regional conditions.

_Biological Corridors_

The Meso-American Biological Corridor (MBC) – which is not an economic or trade corridor! – is a good example of how countries with the Central American region can collaborate towards a single vision for sustainable development, lessons from which may be drawn for other joint ventures.

The MBC is a sustainable development concept that aligns conservation goals with that of local sustainable development initiatives throughout the region. Biological corridors constitute clusters of protected areas and intervening land, joining “natural vegetation (with) larger reserves…to allow wildlife more access of movement and access to a wider variety of natural vegetation.”\(^35\)

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\(^33\) www.informaworld.com . _Bridging Infrastructural Gaps in Central America: Prospects and Potential for Maritime Transport_, Ricardo J. Sanchez and Gordon Wilmsmeier, Chile Natural Resources and Infrastructure Division, September 2005

\(^34\) www.informaworld.com . _Bridging Infrastructural Gaps in Central America: Prospects and Potential for Maritime Transport_, Ricardo J. Sanchez and Gordon Wilmsmeier, Chile Natural Resources and Infrastructure Division, September 2005

\(^35\) www.ecoworld.com  
_The Mesoamerican Biological Corridor_, Jack Ewing, 19 December 2005
According to Jack Ewing, a noted wildlife author and owner of the Hacienda Baru Wildlife Refuge in southwest Costa Rica, “When groups of any particular species are confined in isolated patches of habitat with limited area, they become subjected to a variety of environmental stresses. The diversity of food plants may not be sufficient to provide sustenance through all of the seasons. Isolated populations of animals with limited gene pools tend to become inbred, resulting in loss of fertility, vigour and resistance to disease.”

**General Description of the Corridor**

The MBC\(^{36}\) is an initiative of Central America and Mexico and includes about 600 protected areas in territories in Southern Mexico, Belize, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. The initiative encompasses many projects and enjoys national and international funding and support from the World Bank, UNDP, USAID, UNESCO, the German Government, the Dutch Government, research projects, trust funds, the Global Environment Facility and national loan projects.

By the early 1990s it was agreed that biological corridors could be useful tools for increasing biodiversity and enhancing the ecology of large protected areas. Archie (Chuck) F. Carr III envisioned an “immense biological corridor that would connect the forests of southern Mexico to those of the rest of all the rest of Central America and eventually reach the Panama Canal, a biological bridge between continents.”\(^{37}\)

**Importance in Regional Economic Growth and Integration**

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\(^{36}\) [www.tbpa.net](http://www.tbpa.net)

When the Corridor began in the mid-1990s, there was a strong focus on protected areas. This has since evolved towards greater integration on conservation interests with those of economic and rural development. Virtually all of the 600 protected areas covering more than twenty percent of the Corridor have significant human populations, many of these being original indigenous inhabitants. As such, and given that there are millions of people who directly or indirectly depend on the protected areas of the MBC, it is widely recognised that conservation of the green areas of the Corridor requires a strong focus on the needs of local peoples.

In addition, the trans-boundary protected areas on every border in the region have been important in maintaining the relationships underlying the international partnerships that sustain the MBC. This has particularly been in promoting a culture of peace and cooperation in the region.

1.3.2.2 Plan Puebla Panama (Honduras-El Salvador)

General Description

The Honduran and Salvadoran governments have been hoping for ten years to create a land route between the Atlantic and Pacific oceans that could complement the services of the Panama Canal. The “Canal Seco” or “Dry Canal”, is a 371 kilometer land route, is now becoming a reality: “The road will link the Atlantic and Pacific Oceans and two of the most modern ports in the region, namely Puerto Cortés, Honduras in the Atlantic and Puerto La Unión, El Salvador in the Pacific. The critical part of the Logistic Corridor would start in Comayagua, a city located in the middle of Honduras. From there, the highway would follow a direct route to El Salvador, thus avoiding the Honduran capital and cutting the transit time from Honduras to El Salvador in half.”

www.centralamericatoday.com. Building a Dry Canal: Honduras’ and El Salvador’s New Land Route Between the Atlantic and Pacific will Complement the Panama Canal, Hana Sztarkman and Juan Pablo Carías, 2007
addition to attracting foreign investments to both countries, the project would also offer complementary services to the Panama Canal, hence improving distribution of goods in Guatemala, El Salvador, Honduras and Nicaragua.

While the Corridor would never rival the Panama Canal in terms of cargo handling capacity, it would be an important complement to the Canal in that it will improve the distribution of merchandise in the region and provide an alternate route for moving cargo between the two oceans. This could transform Central America into the most important logistics and distribution centre in the Americas.

The Corridor is expected to open in 2009 after much political effort, coordination, financing and work.

The Route to Development
The Presidents of Belize, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama agreed to create a social and economic development agenda for the region in order to enhance the quality of life for its inhabitants. The Corridor is part of Central America’s economic and infrastructure integration plans as espoused in the Pueblo-Panama Plan (PPP), which is to be coordinated by a Forum of the participating countries.

“The production strategy of the PPP is based on the logic of ‘economic corridors’, or ‘clusters’, locations where large-scale private investments are concentrated in the production of specific commodities, taking advantage of ‘economies of scale’, and oriented towards global markets, to which they are connected via advanced communication and transport infrastructures. The World Bank’s recommendations for the southern states include the adoption of policies that “facilitate clustering development”, with the focus on those products that are “active and successful in the export market” (World Bank 2003: 27). Coincidentally, the first of the Strategic Priorities of the Ministry of Tourism and Strategic Projects is "Economic Corridors and the Attraction of Investment."  

The infrastructure of the region, namely road networks, ports and airports, is a key priority of the PPP.

“According to a study by the US-based nonprofit InterAction, $7.7 billion in funding for the Plan Puebla Panamá had been designated as of March 2005; the amount is eventually expected to rise as high as $50 billion. Of this funding, 35% comes from national governments in the region, 24% from the Inter-American Development Bank (IDB), 15% from the private sector, 7.5% from the Central American Bank for Economic Integration (BCIE), 5% from the World Bank, 6.3% from other sources (the remaining funding could not be determined).”  

40 www.en.wikipedia.org/wiki/Puebla-Panama_Plan
The two ports linked by the Corridor are amongst the most important in the region, with both Honduras and El Salvador having a vested interest in building the Corridor. The goal of the Government of El Salvador is to “turn the country into a logistics and distribution centre with ‘added value’”\textsuperscript{41}, where, for instance, the country might receive unfinished merchandise to be finished in El Salvador and labelled as Salvadoran for tax-free re-export to the US under CAFTA-DR\textsuperscript{42}. This will be facilitated through the new port by El Salvador’s strategic geographic position on the Pacific coast allowing for easier access to Asian countries. This further positions El Salvador as a potential goods distribution hub in Central America.

On the Honduran side, the Dry Canal now provides the country with an exit to the Pacific for its exports where before it never had the resources to develop efficient ports on the Pacific coast. There is also an opportunity to improve the main highway between the capital city of Tegucigalpa and the industrial center of the country, the city of San Pedro Sula. Funding for Corridor project developments in Honduras comes from the Government, the Inter-American Development Bank, the World Bank, the Central American Bank for Economic Integration, and the Millennium Challenge Account.

**Projected Benefits of the Corridor**

The following are some of the projected benefits that the Corridor will bring:

- An income of USD 500 to USD 600 million to Honduras by way of port concessions;
- Competitive tariffs for port and for land cargo transportation;
- Significantly shortened handling times, from about eleven days (to cross the Panama Canal) to four or five days through the Dry Canal; and
- Reduced border crossing times by as much as fifty percent through a modernised, standardised, computerised border crossing procedure that addresses immigration, customs and quarantine.

\textsuperscript{41} \url{www.centralamericatoday.com} . *Building a Dry Canal: Honduras’ and El Salvador’s New Land Route Between the Atlantic and Pacific will Complement the Panama Canal*, Hana Sztarkman and Juan Pablo Carías, 2007

\textsuperscript{42} \url{www.en.wikipedia.org/wiki/Dominican_Republic_Central_America_Free_Trade_Agreement}

The Dominican Republic – Central America Free Trade Agreement, commonly called DR-CAFTA, is a free trade agreement (legally a treaty under international law, but not under US law). Originally, the agreement encompassed the United States and the Central American countries of Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua, and was called CAFTA. In 2004, the Dominican Republic joined the negotiations, and the agreement was renamed DR-CAFTA.
1.3.3 South America

1.3.3.1 Argentina-Chile Rail Transport Corridor

General Description

The Rio Turbio-Puerto Natales Railway Project system across the southern Andes from Argentina into Chile is an extension of the former Ramal Ferro Industriàl de Río Turbio (RFIRT) 75cm gauge. The project was reached through formal agreement between the Argentine and Chilean National Governments after a series of meetings. In August 2005, a special Bi-National Railway Transport Commission was set to address all political, legal, technical and financial aspects of the project.

“The extension will run from the Argentine Patagonian mining town of Río Turbio to the Chilean port of Puerto Bories and will be linked to the provincial capital town of Puerto Natales by a 5 km metre gauge steam operated rail passenger system. When complete the line will link the South Atlantic to the South Pacific forming a Bi-Oceanic, Trans-Patagonic and Trans-Continental rail transport corridor for passenger and freight services.”

Figure 6: Argentina-Chile Rail Transport Corridor
Efforts have been concentrated on the regeneration of the Argentine coal mining town of Río Turbio and surrounding area goes back to 2003. There has also been much emphasis to promote tourism in this part of the world.

The town of Río Turbio is in the southern Argentine province of Santa Cruz, approximately 2170 kilometres south west of the capital city of Buenos Aires.

The towns of Puerto Bories and Puerto Natales are in the southern Chilean province of the Última Esperanza. Puerto Natales is 2035 kilometres south of the capital city Santiago de Chile.

### Bi-National Collaboration

“This is a very serious bi-national project with national government funding in place for final engineering, operating, financial, institutional and legal studies along with precise route choice.” The project was confirmed at the highest possible level the project to be **extremely important** to both countries at a meeting between Argentine President Dr. Nestor Kirchner and Chilean President Doña Michelle Bachelet, on 21 March 2006.

Argentina offered to contract out and pay for final, detailed studies on the route extension. A ‘Declaration of Acceptance’ was signed by both countries’ relevant ministers in Río Turbio on 15 June 2006.
Given that Puerto Bories is registered as a Chilean National Monument, an industrial port terminal was planned to the south of Puerto Natales to handle general freight and coal rail/sea transportation needs. Rail/sea passenger transportation (cruise liners) requirements will be addressed via an upgrade of the present Puerto Bories sea terminal along with a slightly widening/deepening of the fiord coastline so as to allow easy access for large ocean going liners.

**Rational Use of Energy**

With the current energy crisis (fuel oil rationing is already a reality in the Argentine province of Santa Cruz), it was agreed that future policy will be directed towards the rational use of energy. Rio Turbio, a mining town, has vast reserves of coal but no oil. Hence, coal will be used for all types of transport, power generation, building material manufacture, domestic heating in isolated parts of the region, etc.

Part of the plan is to return to service up to 11 stored, Mitsubishi built, 75cm gauge 2-10-2s. These machines, already previously modernised between 1957 and 1960, are to be brought up to 21st century levels of efficiency, reliability and environmental friendliness.

### 1.3.3.2 The Case of Brazil

*Why Brazil Needs Transportation/Export Corridors*  

“Brazil needs exports corridors so badly that it’s financing them in other countries.”

The Brazilian corridor projects include:

- A three-kilometre long bridge over the Orinoco River in Venezuela;
- Railroads in Chile and Ecuador;
- Highways in Colombia and Peru; and
- A bridge and port facility in Guyana.

![Figure 8: Brazil](image-url)

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44 [www.thefreelibrary.com](http://www.thefreelibrary.com) . Paving the way: Brazil needs exports corridors so badly that it’s financing them in other countries, Mike Ceaser, Freedom Magazines, 2005
Brazil is undertaking this route so that it can facilitate trade between itself and other South American countries – and a bridge, even in another country – will assist in getting its soy, metals and other products to Asia. Asian countries now receive almost USD 10 million worth of goods from Brazil, accounting for 10% of Brazil’s total exports.

This strategy will not only allow Brazil to get its products out of the country; it also enables Brazil to get much needed goods in from its neighbours.

Brazil’s State Development Bank is putting up much of the money needed for projects. This is in recognition of the fact that Brazil needs to improve its access to global markets. According to Paulo Totti, a spokesperson for the Bank, “Since Brazil is in the center of the Continent, it needs to have open doors to both oceans and the Caribbean.”

**Promoting Agricultural Expansion**

Northern and Center-West Brazil is expansive and contains vast areas of savannah and dry forest with seasonal rainfall. Lack of development has long delayed agricultural expansion here. The challenges of soil infertility have since been addressed, as has the development of suitable crops for the tropical environment.

The remaining hurdle is the lack of transportation in the area. To overcome this, the Brazilian Ministry of Transport proposed eight transportation corridors in the different territories.

- **The Extreme-West Corridor** is based on the Madeira River, and is a joint venture between Maggi Group (a private Brazilian company), the state of Amazonas and Petrogras (developed a loading facility at Porto Velho in western Rondonia) and a floating port at Itacoatiara on the Amazon River. The project is largely to transport soybeans down the Madeira River via barges onto ocean-going vessels.

- **The North Corridor** would develop the new agricultural frontier in Roraima. Located north of the equator, its rainy season would correspond approximately with the U.S. soybean production cycle (opposite that of most of Brazil). Output from Roraima could be shipped north by roadway BR174 into Venezuela, or south on the Branco and Negro Rivers to the Amazon where it could share port facilities with soybeans coming from the Center-West.

- **The North-West Corridor** is based around roadway BR163 and the Tapajos-Teles Pires waterway. BR163 runs north from Cuiaba, the capital of Mato Grosso to Santarem, a distance of 1,700 kilometers. The Tapajos-Teles Pires waterway would use barges and pushers to ship soybeans and fertilizer between Alta Floresta in northern Mato Grosso and Santarem.
• **The Center-North Corridor** is based around highway BR153, the Tocantins-Araguaia Waterway, and the North-South Railway. BR153 runs north-south through Tocantins and Goias, traveling just west of Brasilia. In the north it connects with BR010 which goes to the port of Sao Luis on the Atlantic Ocean. The Tocantins-Araguaia Waterway would connect eastern Mato Grosso, Tocantins, Goias, western Maranhao, and eastern Para to the port of Belem and the Atlantic Ocean.

• **The North-South railway** is being constructed to run from Anapolis in southern Goias to Acailandia in Maranhao, to Acailandia to Estreito. This has decreased the cost of shipping soybeans from Balsas in Southern Maranhao to Sao Luis, from USD 20.00/ton to USD 18/ton. The Federal Government is currently building the rail bridge across the Tocantins River at Estreito into the state of Tocantins. The state of Tocantins has put up money to extend the line southward from the bridge for an unknown distance. Developing the Center-North Corridor would greatly facilitate shipping soybeans and other commodities from much of the eastern Cerrado (savanna) to the Atlantic Ocean, and would facilitate importing fertilizer.

• **The North-East Corridor** is based on the Paranaiba waterway and the Sao Francisco River. The Paranaiba waterway would connect southern Piaui to the city of Terasina where soybeans could be transferred to rail and shipped to the Atlantic at Fortaleza. The Sao Francisco River has been dammed into a 1400 kilometer long waterway in the northeastern part of the country.

• **The East-Central Corridor** is an assortment of roadway, railway, and port projects in East-Central Brazil which have limited importance to the agricultural expansion areas of Brazil.

• **The South-East Corridor** is focused on transportation routes which feed Sao Paulo and Rio de Janeiro, but includes the Ferronorte Rail System and the Tiete-Parana Waterway. The Ferronorte Rail System is being built by private funds. In ten years, when the line has reached Cuiaba, and business is built up, officials predict the line will carry 17 million tons of cargo per year, and soybeans will be able to travel by rail from Cuiaba over 1,700 kilometers to the Port of Santos for export. The project includes continuing the railway westward to Porto Velho, Rondonia and northward to Santarem, Para. The Tiete-Parana Waterway has the potential to run from southern Goias to a point west of the city of Sao Paulo. Cargo on this route could then be transferred to rail and shipped to the port of Santos. Currently, the Tiete River part of the system is in use.
1.3.4 Australia/New Zealand

1.3.4.1 Perth-Darwin Auslink Corridor

The AusLink Corridors Strategy

“The AusLink Network is based on national and inter-regional transport corridors that include connections through urban areas; links to ports and airports; rail and road infrastructure; and intermodal facilities. Together, these are critical to national and regional economic growth, development and connectivity. For planning purposes, the AusLink national land transport network is divided into 24 corridors…”

Each corridor has its own strategy, aligned to the AusLink Guidelines, to guide national and state/territory government in decision making. The AusLink Guidelines are based on the Australian Transport Council National Guidelines for Transport System Management in Australia, which aim to ensure a more holistic, multi-modal approach to national transport planning and consideration of all relevant social, environmental and economic factors.

“Corridor strategies are subject to public consultation and must be endorsed by the Federal Minister for Infrastructure, Transport, Regional Development and Local Government. The strategy outcomes assist in formulating network improvement plans and investment strategies, including development of the next and subsequent national transport plans and investment programmes.”

The Perth-Darwin Corridor: Coastal Route Assessment

The AusLink national land transport network includes all core transport infrastructure required to serve the needs of corridors of national significance. While the Perth-Darwin AusLink Corridor is included in the AusLink land transport network, its existing infrastructure was not adequate to meet the needs of the Corridor.

“The Perth-Darwin Corridor is the most geographically extensive of all of the AusLink corridors. The Great Northern Highway Route is the only transport artery serving the Corridor that has been included in the AusLink network…It plays a vital role in serving some of the most economically important areas in Australia.”

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However, this Route is considerably far from many of the important economic generators, export gateways, and population centres within the Corridor and cannot be economically served by it. As a result, a second complementary route called the Coastal Route was required. The Coastal Route is vital to the viability of existing, developing and future export industries in the region. It accounts for one-third of total Australian port exports, and carries the same scale of freight as the as Great Northern Highway Route. The scale of heavy vehicle traffic levels between the two are comparable; and with higher light vehicle traffic levels on the Coastal Route.

"The Coastal Route is critical to communities, government and private services, the natural environment and major export industries that have no alternative transport. Furthermore, the Route is also strategically important for national defence, immigration, customs and quarantines."

The Coastal Route rates well against the three criteria used by the Australian Government when assessing "proposals for the inclusion of links in the national network.

- **Interregional freight volumes and passenger flows.** The Coastal Route plays a vital role in the carriage of interregional freight volumes and passenger flows.

- **The population and economic significance of centres proposed to be linked.** The Coastal Route serves a large proportion of the regional population and major economic activity centres along the Perth-Darwin Corridor.

- **The strategic trading importance of individual links and export gateways.** The Coastal Route plays a vital role in facilitating and enhancing Australia's international trade by serving as the only main connection from the points of production of major mining, fishing and agricultural commodities to three existing (and possibly two more future) major export ports along the North West coast of Western Australia. Ports served by the Coastal Route account for nearly fifteen percent by value of Australian exports.

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Are Two Links Necessary?

Including the Coastal Route in the AusLink network would mean that there is more than one infrastructure link serving the Corridor. This, however, fits in with the AusLink network recognition that more than one transport infrastructure link is generally required to meet the diverse needs of an inter-capital corridor. The issue is not whether or not the transport modes are the same or different – what is important is whether or not the links serve the economic and social needs of the Australian community.

“Serving a corridor with both a rail and a road link is justified, not because each corridor should have a road and a rail link, but because the road and rail links each have a distinct contribution to make to meeting the transport needs and, at the same time, having both provides the overall transport network with some resilience.”

1.3.4.2 The Case of New Zealand

The Link between Corridors and Utilities

When looking at New Zealand, rather than describe a specific corridor, it may be useful to examine the vital link between corridors and utilities, something which has been given considerable attention and has even been legislated to ensure effectiveness and efficiency in its integration.

“Efficient and accessible roads and utility services are vital for New Zealand to maintain and improve its standard of living and economic growth. The road, motorway and rail corridors provide physical space in which a variety of transport, utility, amenity and public functions take place, often in competition for space.

As the intensity of use of the corridors increases, the likelihood of the performance of one asset or network compromising the performance of another also increases (e.g. when telecommunication cables are co-located with power cables.)

Figure 10: New Zealand
The New Zealand Government believes that road and utility networks are both vital to the public good and economic development. As a result, unreasonable restrictions on either the road or utility systems and their future development would have adverse impact on communities.

They caution that it is important that works are done in a manner that

- Minimises the impact on business and the community;
- Reduces the frequency of digging up roads; and
- Maintains the integrity of the road and utility service assets.

In tandem with this, they call for the recognition of emergency repairs to roads and the demand for customer service connections.

They further caution that a "money-go-round" in relation to charges and allocation of costs be avoided. Either way, consumers will ultimately bear the costs through service charges of rates. What may help is to subject utility providers to competitive pressures with better incentives to minimise costs.

**Having the Right Legislative Framework**

While it is necessary for good cooperation and coordination between the relevant parties, the right legislative framework is imperative to ensuring lasting solutions to any challenges.

New Zealand proposes that a two-stage process be affected to ensure this:

- First, that appropriate amendments be made to existing legislature; and
- Second, an omnibus state is promulgated to cover utility access to the road, motorway and rail corridors.

The following are some of the **key elements**\(^54\) that are recommended as essential to a preferred policy on the matter.

(a) **Definition of “road”**, so as to ensure that all relevant spaces are provided with the necessary utilities and amenities;

(b) **Relative priority of users of the road corridor** against other utility consumers given that the road facilitates free universal access at all times, including the physical access to most properties;

(c) **Guardianship of the road corridor** must be assigned to an appropriate public body with a clearly defined statutory responsibility for managing road corridors and ensuring balance between roads and all utilities so as to protect public interest. Such a road controlling authority must be vested with appropriate capacity, capability and

funding/cost recovery mechanisms, with collaboration between authorities and the power to outsource roles and functions.

(d) **Management of the road corridor.** Statutory powers must be ascribed to the party assigned with representing public interest so as to ensure that utility providers maintain public health or safety and the efficient and sustainable use and management of the corridor – including

- setting reasonable conditions on utilities, including the allocation of costs
- specifying codes of practice and standards that apply to works and assets in the corridor
- promoting the shared use of poles, ducts, trenches, etc. where appropriate
- setting policies applicable when the effective capacity of the road reserve is reached, including when additional or augmented utility services would degrade or limit existing services or the road to an unreasonable degree
- requiring decommissioned, unused or obsolete utility assets and facilities to be removed in whole or part
- requiring the maintenance, repair or relocation of utility assets and facilities

(e) **Codes of practice or standards.** Appropriate and nationally consistent standards and codes of practice must be referenced in reasonable conditions by the road controlling authorities via consultation and collaboration through industry forums and processes before being promulgated as law. At the very least, adopted codes and standards would establish the minimum levels of performance.

(f) **Resolution of disputes.** There must be a low-cost and time-bound process for resolving disputes between parties, while providing for escalation when necessary. Mediation and arbitration mechanisms and processes are also necessary, and prescripts should be provided on the whether or not work continues in this time.

(g) **Notification of affected parties.** There must be consistency in the requirements for the notification of affected parties prior to works commencing on the road corridor. This will aid in managing potential risks from work in the road. One may need to consider whether or not this equally applies to minor road maintenance and emergency works.

(h) **Utility information base.** Adequate provisions must be made to ensure the timely lodging, collation and availability of accurate information of the location and nature of works, networks and facilities, as well as identifying the responsible utility operator. This is to minimise, if not altogether eliminate, damage to networks and installations, and worker injury. It also provides road controlling authorities/local authorities the opportunity to build up comprehensive geospatial information regarding their assets on the road. Standardised information requirement facilitate cost-effectiveness; and this functioned may be outsourced.

(i) **Setting reasonable conditions.** There must be balance between rights of access by utilities to the road corridor and the ability of the corridor “manager” to set conditions to such access. The process and criteria for setting reasonable conditions must be consistent so as to increase certainty as per acceptable means of compliance and to
minimise compliance costs. The purpose of reasonable conditions on works in the road is to provide for the management of:

- safe and efficient traffic flow
- health and safety of workers
- damage to property (including the road)
- compensation for damage
- disruption to the community, including businesses
- coordination with other installation works
- coordination with road construction works
- timely installation of networks
- guarding against anti-competitive conditions

The road corridor manager must set these conditions in consultation with and input from applicants and affected parties.

(j) **Cost sharing.** There must be national consistent guidelines for cost sharing, with a legislative framework that ensures equity and the ability to appeal disputed cost sharing conditions. Cost sharing impacts on the assets of the works, upgrading, etc. of one party by another through the relocation or replacement of assets. This is separate from administration and processing charges. Here, one should also define whole-of-life costs.

(k) **Access to the rail corridor.** As with road corridors, access to rail corridors must also be determined so as to diminish unduly restrictions and delays. Generally, rail corridors are not considered to be analogous to the road corridor due to various legal, physical and operational characteristics in particular, protection must be ensured for the rail track and for the rail corridor in locations where space is specifically restricted of activities in the corridor are subject to additional risk factors. Legislation should provide that utilities have access to the rail corridor as of right but not to the rail track (or the space above or below it). Such access should be subject to reasonable conditions which are unique for each rail corridor.

The same should apply to:

- the nature and works of utility networks along the rail corridor
- codes of practice and standards
- cost allocations
- dispute resolution processes

(l) **Access to motorway corridors.** It is necessary to define the nature of the access right of utilities to the motorway corridor and the extent to which access and location of assets and works can be conditioned or determined. As with the rail corridor, the motorway corridor is not considered to be analogous to the road corridor due to legal, physical and operational characteristics. Hence, additional protections must be effected for the motorway carriageway and for the corridor in locations where space outside the carriageway is particularly restricted or subject to additional risk factors. Legislation
should provide that utilities have access to the motorway corridor as of right but not to the rail track (or the space above or below it). Such access should be subject to reasonable conditions which are unique for each motorway corridor.

The same should apply to:
- the nature and works of utility networks along the motorway corridor
- codes of practice and standards
- cost allocations
- dispute resolution processes

(m) **Interference and hazards.** Legislation may be provided for the mitigation of interference and hazards. Alternatively, the respective road, rail or motorway corridor manager can set reasonable conditions that include the ability to require adherence to the relevant national codes and standards.

### 1.3.5 Europe

#### 1.3.5.1 Dublin-Belfast Corridor

**Defining the Parameters of the Corridor**

A workshop in Louth County in October 2003 attended by representatives from the local authorities and other interested bodies along the Dublin-Belfast Corridor ascribed the following definitions to the Corridor:

- It was primarily a rail corridor providing rail linkages between Dublin and Belfast with a necklace of stations between the two cities.
- Secondly it was an economic corridor with many large multinational companies in and around the Corridor locale.
- The catchment area for the Corridor itself constantly changes as a result of improvements in infrastructure.
- The development of the East-West Link was vital to future development, providing a link from the existing Corridor through the Central Border area and towards the West.
- It was vital to concurrently develop the key drivers of growth on both sides of the Border as the catchment area straddled the North and the South.
- The Corridor should also be seen as a potential link to the Euro route with possible links to Scotland and Liverpool via high speed trains and ferries.
Population Considerations

Certain considerations with regards to local populations must be made when addressing existing and future developments to the Corridor:

- There is presently considerable population in and around the Corridor. This raises the question as to whether or not there will be further population concentration in this area or redistribution across the region; this has implications for housing and other infrastructure and services development.
- Any redistribution of population must be done in a planned and cohesive manner, and should ease the pressure off Dublin and Belfast.
- Future economic development will have a significant impact on population growth since people follow jobs.
- Places where people can work, rest and play must be strategically thought out to ensure balance between workplace proximity and quality of life.

The Corridor within the Context of the Spatial Development Strategies

Strategic spatial planning north and south of the border is a recent phenomenon, with the advent of the Regional Development Strategy for the Northern Ireland and the National Spatial Strategy for the Republic. Previously, area plans in the north and local authority plans in the south shared only the characteristics of being “relatively autonomous, locally-focused and preoccupied with functional regulation.”

These plans were also inclined to take on a promotional role, particularly south of the border, hence the emergence of the Dublin-Belfast Corridor. However, within a climate of wider spatial planning awareness, the opportunity exists to take leverage a very positive initiative, largely to

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56 [www.qub.ac.uk](http://www.qub.ac.uk) - A Review of Local Planning within the Dublin-Belfast Corridor, Malachy McEldowney and Derry O’Connell
advertise the accessibility of strategic junction sites for economic development and employment growth on both sides along the Corridor.

**What the Corridor Means for Belfast’s Status within the Region and Europe?**

McEldowney and O’Connell cite the following as key points to consider with regards to the Dublin-Belfast Corridor:

- **Given that the Dublin-Belfast Corridor is the most important gateway in the region, Belfast may be less reliant on proclaiming its attachment to a strategic corridor than lesser urban areas. Notwithstanding, the indirect implications of many of the key Corridor issues are significant:** 
  
  "...The Belfast Metropolitan Area Plan will aim to secure the long-term status of the Belfast Metropolitan Area as one of Europe’s successful metropolitan regions – one where the political developments of recent years provide a much more favourable context for development than in the past."

- **The Corridor also positively places Belfast as a city consistent with the aspirations of the European Spatial Development Perspective and the United Kingdom Urban Renaissance; the city’s role as an international city and regional capital is confirmed. Belfast is also located at the centre of the Regional Development Strategy’s ambition to “create an outward-looking, dynamic and liveable region with a strong sense of its place in the wider world…where diversity is a source of strength rather than division.”**

- **There is a problem of employment growth in comparison with UK generally. The Regional Development Strategy notes that there is “the need to identify and safeguard Strategic Employment Locations…which will attract and accommodate major inwards investment projects as well as expanding local enterprises…accessibility to the Regional Strategic Transport Network will be an important factor in their identification.”**

- **The significance of Belfast Harbour as a freight and passenger port is emphasised:**
  
  “…Belfast Harbour caters for nearly 10,000 shipping arrivals per year and is the largest ferry point in Northern Ireland handling over 35,000 freight vehicles, 2 million passengers and over 450,000 passenger cars each year…”

- **The existence of a series of economic focal points is also stressed:**
  
  “…Belfast has a number of vital economic, employment and commercial locations outside the city centre including the Port and Harbour Estate, City Airport, Queen’s University, the Odyssey Centre and the major hospitals.”

Undoubtedly, the Dublin-Belfast Corridor is generally perceived as a “good thing”. “It provides planners with a basis for selectivity, which has been a traditional planning modus operandi; it chimes with the concept of sustainability, which is a current planning article of faith; it presents a coherent and positive image, which is increasingly what planners aspire to.”

McEldowney and O’Connell assert that local planning should be dominated by local requirements and that emphasis must be placed on what the locality is “getting out” of a strategic proposal for corridor development.
1.3.5.2 Hungary-Ukraine Corridor V

Corridors as Part of Extended European Networks

The advent of the European Union has necessitated all partner countries on the Continent to reconsider how transit corridors were previously viewed. Efforts are underway to look for network connections where previously this may not have occurred.

“While the creation of the trans-European network (TEN)\(^{57}\) solved a territorial problem in the EU area (namely the internal interconnection of the networks between separate countries), the extension of this network hasn’t been based on the same principles; instead there was an extension of the of the east-west corridor elements of the TEN network. The crossing structure of these extended elements is occasional, and does not fit to the local interests of the extended TEN areas.”

Two things are therefore important for further EU extensions and the new neighbourhood area:

- The mistakes committed in the Central European area are not to be repeated; and
- Necessary corrections of earlier mistaken planning of the marked Central European corridors are essential.

Solutions must reside within the network context of the corridors at interregional levels and within an integrated view of local, regional and interregional levels.

Historical Discontinuities in the Corridor

The Hungary-Ukraine Corridor No. 5 is one of the ten Helsinki or Pan-European Corridors rectified in the Third Pan-European Conference in Helsinki in 1997. The Corridor has a direct border crossing between the two countries by the Tisza bridges, both for the rail and road connection. The railway crossing is important as it is this section where the change of gauges between standard gauge and broad gauge must be arranged. Previously this inoperability discontinuity was solved mainly by reloading the goods onto different wagons; today different technical solutions that change or just readjust the axles works fine.

\(^{57}\) [www.en.wikipedia.org/wiki/Trans-European_transport_networks](http://www.en.wikipedia.org/wiki/Trans-European_transport_networks) The Trans-European Transport Networks are a planned set road, rail, air and water transport networks designed to serve the entire continent of Europe. The TEN-T networks are part of a wider system of Trans-European Networks (TENs), including a telecommunications network (eTEN) and a proposed energy network (TEN-E or Ten-Energy). The European Commission adopted the first action plans on trans-European networks (transport, energy and telecommunications) in 1990. The transport network is known as TEN-T. TEN-T envisages coordinated improvements to primary roads, railways, inland waterways, airports, seaports, inland ports and traffic management systems, so as to provide integrated and intermodal long-distance high-speed routes for the movement of people and freight throughout Europe. A decision to adopt TEN-T was made by the European Parliament and Council in July 1996\(^{52}\), and as a result of this, the EU works to promote the networks by a combination of leadership, coordination, issuance of guidelines, and the funding of aspects of development through a series of projects.
Another discontinuity is the pavement quality when crossing the road bridge exactly where the future Schengen border is situated – one can see the two sides of the envisioned border at the middle of the bridge over the River Tisza between Zahony and Chop. Trans-border cooperation just does not exist!

Apart from the road and rail tracks, a further discontinuity that may result in problems with cooperation or future planning is that of the maps that have been used. The maps used by the EU are not compatible with the neighbouring area maps.

These discontinuities are well worth considering when developing extensions on existing corridors anywhere or for entirely new corridors.

*Trade Development and Combined Transport on the Corridor*\(^{58}\)

In April 2004, government officials and sector specialists attended a *Conference on Revitalising the Silk Road – Trade Development and Combined Transport on Corridor V of the EU*. The Conference participants agreed and adopted a number of resolutions to:

- Strengthen overland transport between key points;
- Avail competitive services to maintain the key role of the Corridor;

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\(^{58}\) *Conference on Revitalising the Silk Road – Trade Development and Combined Transport on Corridor V of the EU: Recommendations and Positions Agreed and Adopted by the Conference Participants*
• Ensure that the competent authorities of countries along the Corridor develop and implement a strategy to increase traffic volume to the Far East as well;
• Affirm the Schengen border as a long-term facility with necessary rail gauge changes
• Recognise and develop the Tisza River as an international waterway and navigation route and to establish connections with relevant airports to ensure transmodal services;
• Establish an a standalone logistical marketing and communication centre independent of logistical businesses to heighten the role of the logistical region in international markets; and
• Ensure that infrastructural developments occur in compliance with the EU’s transport policy to shift road freight traffic to rail by bringing main road and rail routes closer together.

The Role of Hungarian Customs in Non-Proliferation and Export Controls

Hungarian border posts serve as many as eight neighbouring countries with more than that number of points. As such, it is imperative that Hungarian Customs are able to meet the challenges of its various roles and functions in this regard. This has necessitated various developments in Hungarian Customs structure and functioning.

The main aims of the developments at external border points as serviced by the Hungarian Customs are:

• Closed/covered examining halls with proper technical equipment;
• Safe car parks for hazardous freight
• Detection of nuclear and radioactive materials
• Proper IT background
• Dry and refrigerated warehouses
• Weighing stations/scales
• Phytosanitary, veterinary and sanitary stations
• End of transit routes
• Open for international freight and passenger traffic
• Non-stop opening hours
• Physical separation of freight and passenger traffic
• Separate cars, buses and trucks
• Sufficient parking for trucks

59 www.exportcontrol.org. The Role of Hungarian Customs in Non-Proliferation and Export Controls, presentation by Major General Dr Janos Nagy, Commissioner: Hungarian Customs and Finance Guard
### 1.3.5.3 RMD/Europa Canal (Rhine-Main-Danube)

**Key Dimensions**

“The Rhine-Main-Danube Canal (also called Main-Danube Canal, RMD Canal or Europa Canal), located in Bavaria, Germany, connects the Main and the Danube rivers across the European Watershed, running from Bamberg via Nuremberg to Kelheim. The canal connects the North Sea and Atlantic Ocean to the Black Sea, providing a navigable artery between the Rhine delta (at Rotterdam in the Netherlands) and the Danube Delta in eastern Romania. The present canal was completed in 1992 and is 171 km long.”

The cross-section of the waterway is normally trapezoidal; it is 31 m wide at the bottom, 55 m wide at the water surface, 4 m deep in water, and has a side grade of 1:3. The channel is a Waterway Class Vb with the largest authorised vehicles being 190 m long and 11.45 m wide. The channel in the Kelheim-bound Bamberg lock is 2.70 m deep.

In the few sections with a rectangular profile, the width is usually 43 m. The canal is 171 km long; and the summit attitude (between the Hilpoltstein and Bachhausen locks) is 406 m above sea level. Along the course of the canal are 16 locks with lifting heights of up to 25 m, of which thirteen are designed to conserve water.

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The height difference along the north ramp of the canal — from the Main at Bamberg to the crest attitude — is 175 m, with 11 locks. From the crest attitude down to the Altmühl at Dietfurt is a drop of 51 m, through three locks. The further difference in altitude of 17 m along the Altmühl, with two more locks, makes a total of 68 m for the south ramp. This means that the Danube end of the canal is 107 m above the level of the Main end.

The 16 locks are managed from four remote control centres (Neuses since 2007, and Kriegenbrunn, Hilpoltstein, and Dietfurt from the beginning of 2007), staffed with one (night shift) and two (day shift) employees. The locks were modernised from 2001 to 2007, replacing the outdated relay technology with computers and a programmable logic controller, with a cost of approximately USD 1.3 million per lock.

**Impact on Ecology**

The Corridor presents some ecological paradoxes.

One the one hand, the Main-Danube Canal makes it possible for animals to spread from Western to Eastern Europe or in the opposite direction. These are so-called invasive species, which, due to competition with the species already living there, lack of predators, etc., often cause difficulties in the ecosystem of their new home. On the other hand, there exists the possibility that they will fit into the existing ecosystem and their introduction lead to an enrichment of the resident wildlife.

In order to maintain navigable water levels for the waterway in the Main, Regnitz, and Rednitz valleys, water must be diverted via the Altmühlüberleiter canal & tunnel from the upper Altmühl to the Brombachsee reservoirs. This crosses the European Watershed between the drainage basins of the Danube and Rhine. If, however, this was not done, the Canal would otherwise require 250,000 truck trips annually, or as an alternative, 3,000 freight trains on the Deutsche Bahn rail network to carry the traffic currently carried by the waterway.

**Protection, Conservation and Rehabilitation**

The scientist Grigore Antipa said that, “Entire life of the Romanian people is linked with the Danube... The Danube River is our contact with nations from the middle of Europe; it also opens the way to Oceans of the worlds for trade with the most afar countries. Our biggest riches are with no doubt the Danube River, even considering only its role of international thoroughfare of trade and navigation.”

In the River Corridor along the Lower Danube Basin (in Romania) exists no few than 111 localities with about 1.6 million inhabitants, of which three towns each have more than
100,000 people. These populations are in direct relation with the water volumes transported by the Danube, as well as with their physical, chemical features.

Within this territory are a series of protected natural areas with a surface area of 715,000 ha aimed at conserving and protecting birds and with forests with original aspects and some samples of distinct landscape. The Danube Delta is renowned for its projects on wetlands protection, biodiversity conservation and ecological restoration. As a result, there have been positive economic gains made through important quantities of fish, rush and game; ecotourism; ecological education; and improved living conditions for local people.

All involved parties within the EU have the responsibility to work together to ensure the protection of the Danube River Corridor. This includes states, regions, local collectivities and non-governmental organisations.

1.3.6 Asia

1.3.6.1 Delhi-Mumbai Industrial Corridor (India)

General Overview

The Delhi-Mumbai Industrial Corridor (DMIC) Project is an ambitious venture aimed at developing an Industrial Zone spanning across seven Indian states in India and is sponsored by the Government of India. There will be major infrastructural and industrial development of industrial clusters and rail, road, port, air connectivity all along the Corridor route.

The Corridor has been conceived as a “Global Manufacturing and Trading Hub” and is expected to double employment potential, triple industrial output and quadruple exports from the region in five years. It is expected to generate 3 million new jobs of which most will be in the manufacturing/processing sectors.

The project will be funded through private-public partnerships and foreign investment of which Japan will be a major investor.

The 1,483 km long Corridor will run through the states of Delhi, Haryana, Uttar Pradesh, Rajasthan, Gujarat, Madhya Pradesh and Maharashtra. It will include a 4,000 MW power plant, three sea ports and six airports, as well as connectivity with the existing ports. The project will be implemented by the DMIC Development Corporation, an autonomous body comprising of government and private sector representatives.

Special purpose vehicles will implement the project, which is expected to deliver a 2-3-4-5 benefit that is to double employment (2), triple industrial output (3) and quadruple exports (4) from the region in five years (5).

“The proposed high-speed connectivity between Delhi and Mumbai offers immense opportunities for development of an industrial corridor along the alignment of the connecting infrastructure. A band of 150 km (influence region) has been chosen on both sides of the Freight Corridor to be developed as the Delhi-Mumbai Industrial Corridor. The vision for DMIC is to create a strong economic base in this band with a globally competitive environment and state-of-the-art infrastructure to activate local commerce, enhance foreign investments and attain sustainable development. In addition to the influence region, DMIC would also include development of requisite feeder rail/road connectivity to hinterland/markets and select ports along the western coast.”

An Indo-Japanese Partnership

The DMIC is a massive USD 50 billion project that aims to boost industrial and economic development in India. It is planned on the lines of the Tokyo-Osaka Industrial Corridor and will be funded through public-private partnerships between India and Japan. The Corridor Memorandum of Understanding was signed by the two countries’ premiers, Indian Prime Minister Manmohan Singh and Japanese Prime Minister Shinzo Abe, in Tokyo in December.
2006. The DMIC is a seven-year development project, and will enjoy the oversight of the Department of Industrial Policy and Development of India.

Japan will provide significant investment and assistance in this key infrastructure project through what is the first-of-a-kind bilateral partnership between India and any other country. Japanese businesses have long been extending credit to India, with the country being the fourth largest investor in India. This, however, has failed to transform itself into reciprocated businesses opportunities for Japanese firms. The DMIC will create special investment opportunities for such businesses.

The Japanese Minister of Economy, Trade and Industry Mr. Akira Amari says that “The Corridor should be beneficial to both the countries in terms of development of ports, business parks and infrastructure. Japan is committed to a huge investment for the Project.” Both governments will each initially invest USD 2 billion for the development of phase one, which will build 150 km at each end of the dedicated railway freight corridor.

**Freight Corridors with Unique Transportation**

There will be dedicated freight corridor networks between Delhi and Mumbai, and between Ludhiana and Kolkata. End terminals will be at Dadri, in the National Capital Region of Delhi, and Jawaharlal Nehru Airport, near Mumbai. The corridors will be dedicated to long-haul, fast movement of freight, reaching speeds of up to 100 km/hour. This would free existing track space for short-haul freight and passenger traffic.

The East-West Corridor will focus on the movement of bulk commodities such as coal and steel, where there is substantial movement between the coalfields and steel plants in the East to the power stations and industries in the West and North. This Freight Corridor will use open wagons with electric locomotives for traction.

The North-South Corridor will service industry, manufacturing and exports, hence handling container traffic, where flat wagons will carry double stack containers. This is a global pioneering alternative, with similar initiatives being undertaken only in China (electric traction) and the United States (flat wagons with diesel traction).
1.3.6.2 Greater Mekong Sub-region *(GMS) Economic Corridor Programme* *(Southeast Asia)*

*General Description*\(^{67}\)

The GMS Economic Cooperation Programme launched 1992, as a collaboration between Thailand, Vietnam, southern People's Republic of China, Laos, Cambodia and Myanmar; the last three countries are deemed Least Development Countries by UN definition.

The backbone of the GMS is transport corridors, which are to be converted into key economic development corridors through investment in infrastructure, facilitation and logistics.

The corridors are:

- The East West Corridor connecting Thailand, Laos and Vietnam;
- The Southern Corridor connecting Thailand, Cambodia and Vietnam; and
- The North South Corridor connecting southern China through Laos or Myanmar to Thailand.

![Figure 15: Greater Mekong Programme](www.gtkp.org)

\(^{67}\) [www.gtkp.org](http://www.gtkp.org) . Greater Mekong Programme
“The strategic thrust of the program is to strengthen infrastructure linkages, to facilitate cross-border trade and investment, to increase private sector participation, to develop labour competencies and to protect the environment in the process.

The action plan involves nine infrastructure and economic sectors with a vision of creating a more integrated, prosperous and harmonious sub region. Thirty-five transport projects have been identified (1992-2005) – 10 road, 8 rail, 10 water, 6 air and 1 institutional. In addition to Asian Development Bank funding, other donors such as Japan Bank for International Cooperation have also invested in GMS infrastructure.”

**Flagship Objectives**

The East-West Economic Corridor flagship initiative seeks to:

(a) Further strengthen economic cooperation and facilitate trade, investment, and development between and among Lao PDR, Myanmar, Thailand and Viet Nam;
(b) Reduce transport costs in the project influence area, and make the movement of goods and passengers more efficient; and
(c) Reduce poverty, support development of rural and border areas, increase the earnings of low-income groups, provide employment opportunities for women, and promote tourism.

The EWEC is also expected to provide focused support for development opportunities, including in agro-industry and tourism.

In addition, the three of the five strategic thrusts of the GMS Strategic Framework are directly supported, these being:

(a) Strengthening connectivity through a multisectoral approach;
(b) Facilitating cross-border trade and investment; and
(c) Enhancing private sector participation in development and improving its competitiveness.

The goal of this is to develop a highly efficient transport system that allows goods and people to move around the Sub region without significant impediment or excessive cost or delay.

**Facilitating Cross-Border Management**

“Non-physical impediments to regional movement are difficult border formalities, restrictive visa requirements and vehicle entry, varying vehicle and driver standards and lack of effective transit regimes. To eliminate these non-physical barriers on the selected routes, the GMS Cross-Border Transport Agreement (CBTA) was negotiated and has now been ratified by all 6

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68 www.danang.gov.vn  
69 www.gtkp.org : Greater Mekong Programme
GMS countries. Twenty annexes and protocols have been added on implementing facilitation of cross border movement of goods and persons, a single stop/single window inspection system, harmonization and integration of systems, exchange of traffic rights and transit traffic provisions."

From Transport to Economic Corridors

Revised action plans emphasize the broadening of the scope of the programme to include economic corridor initiatives by:

- “Strengthening other related infrastructure (e.g., power supply, water, sanitation and rural roads);
- Facilitating trade, investment and tourism;
- Improving trade logistics;
- Achieving sustainable use and conservation of natural resources;
- Developing biodiversity conservation corridors; and
- Mitigating negative externalities associated with increased connectivity."

Effectiveness of the GMS Corridors

Amongst others, the following benefits have been identified:

- The greatest economic benefits have been for the populations of Thailand and Vietnam;
- The Lao People’s Democratic Republic, being landlocked, now enjoys closer access to the harbours;
- Yuman Province also has better access to harbours; and
- The East-West Economic Corridor now connects Danang on the Pacific Ocean and Mawlamyine on the Indian Ocean, saving time needed for passage via the Malacca Strait. This can serve as an important route between China and India, and large parts of the BRIC (Brazil, Russia, India and China);

In addition, gains have been made in:

- Transportation;
- Energy;
- Telecommunications;
- Tourism;
- Trade facilitation;
- Agriculture; and
- Private investment and industrial estates.

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70 [www.gtkp.org](http://www.gtkp.org). Greater Mekong Programme
72 [www.danang.gov.vn](http://www.danang.gov.vn)
1.3.7 Africa

1.3.7.1 Central Corridor (Tanzania to Rwanda, Burundi, Uganda, Democratic Republic of Congo)

General Description

The Central Corridor is a road network that connects Tanzania to Rwanda, Burundi, Uganda and the Democratic Republic of the Congo (DRC). It is anticipated that the link road will be upgraded and completed by 2010.

The Tanzanian Government initiated the project to facilitate transport from Dar-es-Salaam to its northern and western neighbours.

According to Mr. Dieter Schelling, the World Bank’s Task team Leader for the Roads Project, “the Central Transport Corridor is critical in promoting regional integration, trade and investment because it opens up areas of main economic activities, such as mining, tourism, agriculture and manufacturing, in addition to serving four landlocked neighbouring countries.”

Figure 16: Central Corridor

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**Funding Roads Upgrade and Rehabilitation**

In 2001 the EU provided a grant of Euros 132 million in response to a proposal for funding by the Tanzanian Government to rehabilitate and upgrade some 169 km of road. This spanned the road from Mwanza/Shinyanga Border to Tinde, and the road from Nzega to Isaka and on to the borders of Rwanda and Burundi. In fifteen years, the EU has made available nearly Euros 450 million for Tanzanian road projects.

On 7 May 2004, the World Bank approved an International Development Association credit line of USD 122 million. This was for the upgrading of strategic roads in mainland Tanzania and Zanzibar. Included amongst the roads to be upgraded was 110 km Singida-Shelui section of the Central Transport Corridor.

“These roads were to facilitate movement between the industrial and port capital of Dar es Salaam and Tanzania’s interior and also provide the missing link to important commercial towns such as Singida, Nzega, Shinyanga and Mwanza.” As important, it would also open up the landlocked countries of Rwanda, Burundi, Uganda and the DRC, facilitating new opportunities for Tanzania to trade with these neighbours.

**Political Commitment from the Highest Level**

In order for the Central Transport Corridor, as with all key regional networks, political commitment must come from the highest level.

Dr. Milton Makongoro Mahanga, the Tanzanian Deputy Minister for Infrastructure Development, stated, “I reaffirm the commitment of our country to fulfil its international obligation as emphasised by various UN resolutions, particularly the Almaty Programme of Action.” Further, during an official visit to Burundi in June 2007, the Tanzanian President reassured Burundi of its commitment to facilitate transit traffic to Burundi.

Finally, the five Transport Ministers of the respective member states of the Corridor signed an agreement on 2 September 2005 to establish the Central Corridor Transit Transport Facilitation Agency to monitor and facilitate movement of transit traffic along the Corridor.

**The Almaty Declaration and Programme of Action**

Given their limited capacity and dependence on a very limited number of commodities for their export earning, landlocked developing countries (LDCs) as a group constitute the poorest of developing countries.

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The International Ministerial Conference of Landlocked and Transit Developing Countries and Donor Countries and International Financial and Development Institutions on Transit Transport Cooperation convened in Almaty, Kazakhstan in from 25-29 August 2003. The theme of the Conference was “Addressing the Special Needs of Landlocked Developing Countries within a New Global Framework for Transit Transport Cooperation for Landlocked and Transit Developing Countries.”

The objective of the Almaty Programme of Action is “to address the special needs of landlocked developing countries and establish a new global framework for action for developing efficient transit transport systems in landlocked and transit developing countries, taking into account the interests of both the landlocked and transit developing countries.”

The Programme of Action thus aims to (a) secure access to and from the sea by all means of transport; (b) reduce costs and improve services so as to increase the competitiveness of their exports; (c) reduce the delivered costs of imports; (d) address problems of delays and uncertainties in trade routes; (e) develop adequate national networks; (f) reduce loss, damage and deterioration en route; (g) open the way for export expansion; and (h) improve the safety of road transport and the security of people along the corridors.”

The five priorities of the Almaty Programme of Action are:

- Fundamental transit policy issues: reducing customs bureaucracy and fees, designed to cut costs and travel days for landlocked countries’ exports.
- Infrastructure development and maintenance: projects will reflect local transport modes. In Africa, road is the predominant mode of transport; in South Asia, rail is more common.
- International trade and trade facilitation: to give preferential treatment to landlocked countries’ goods, making them more competitive.
- International support measures: donor countries will lend know-how and money to landlocked and transit countries for infrastructure and policy improvements.
- Implementation and review: monitoring and follow-up on agreements with measurable criteria, such as travel days and costs, will be used, with anticipated annual reviews before the General Assembly.

Midterm Review of the Almaty Programme of Action 2007 - 2008

“The African regional review meeting was convened from 18 to 20 June 2008 in Addis Ababa at the Headquarters of the Economic Commission for Africa.

76 http://www.un.org/special-rep/ohrlls/lldc/default.htm#ALMATY . Landlocked Developing Countries
77 www.unohrlls.org
The review meeting was preceded by a one day seminar on multilateral conventions in the area of transit trade that are included in the 2008 UN Treaty event.

The African regional review meeting was attended by more than 80 participants from almost all the landlocked and transit developing countries of Africa, as well as donor countries, international, regional and sub-regional organizations.

The meeting adopted the final outcome document in the form of a report, which contains specific action-oriented measures with the objective, inter alia, to ensure uniform and effective implementation of regional and sub-regional instruments by member countries, reduce rent-seeking behaviour and port and border delays that contribute significantly to transit costs, enhance the participation of relevant national and regional private sector associations in facilitation efforts, strengthen the capacity of governments to design and implement public-private partnership agreements in general, in particular create appropriate oversight mechanisms to monitor the implementation of railway and other concessions, and improve the layout of infrastructure at borders and introduce shared facilities.

1.3.7.2 Northern Corridor (Mombasa-Great Lakes Region)

General Description

“The Northern is the transport corridor linking the Great Lakes countries of Burundi, the DRC, Rwanda and Uganda to the Kenyan sea port of Mombasa, the corridor also services Northern Tanzania, Southern Sudan and Ethiopia.”

Figure 17: Northern Corridor - Inland Waterways

[Map of the Northern Corridor showing inland waterways]
Following the signing of the Northern Corridor Transit Agreement (The Treaty) by Burundi, Kenya, Rwanda and Uganda, the Northern Corridor Transit Transport Coordination Authority (NCTTCA) was set up in the mid-1980s. Upon ratifying the Treaty in 1987, the DRC became a contracting state to the NCTTCA.
The Corridor Sub region constitutes a significant portion of the COMESA\textsuperscript{79} region. The COMESA population is 380 million people, of which some 20 million people (almost 30\%) live in the Northern Corridor Sub region. The combined GDP of the Corridor countries is 18\% of the COMESA GDP. Intra-COMESA trade amongst the Corridor countries accounted for 30\% of COMESA imports and 42\% of exports in 2003 alone.

**Existing Infrastructure**

The Northern Corridor infrastructure as at March 2006 consisted of:

- A main road network of some 7,000 km of which 60\% is paved and 40\% unpaved;
- Rail networks in Kenya and Uganda of 1,920 km and 1,241 km respectively;
- A 320 km oil pipeline in Kenya;
- A port in Mombasa, with 16 deep-water berths, a large container terminal, two bulk cargo terminals and two petroleum jetties;
- An inland port at Bujumbura, and inland dry ports and container depots in Nairobi, Kisumu, Eldoret, Kampala, and Kigali;
- Inland waterways at Lakes Victoria, Tanganyika, Kivu, Albert and Edward, as well as the Congo and Akagera Rivers; and
- ICT and telecommunications infrastructure.

In addition, the TTCA was mandated to transform the Northern Transport Corridor into an economic development corridor; all major border posts across the Corridor are also to be converted into one-stop border posts. A Regional Cargo Tracking System is being developed as a management tool.

**The Northern Corridor Transit Agreement\textsuperscript{80}**

The Transit Agreement was concluded in 1987, and is a comprehensive, thoroughly detailed document that governs relations amongst the participating countries. It must be read in conjunction with a series of protocols and other records, including:

1. Bujumbura Declaration
2. Nairobi Declaration
3. Kigali Declaration
4. Annex – Northern Corridor Transit Transport Coordination Authority
5. Protocol No. 1 – Maritime Port Facilities

\textsuperscript{79} [www.en.wikipedia.org/wiki/Common_Market_for_Eastern_and_Southern_Africa](http://www.en.wikipedia.org/wiki/Common_Market_for_Eastern_and_Southern_Africa) . The Common Market for Eastern and Southern Africa is a preferential trading area with nineteen member states stretching from Libya to Zimbabwe. COMESA was formed in December 1994, replacing a Preferential Trade Area which had existed since 1981. Nine of the member states formed a free trade area in 2000, with Rwanda and Burundi joining the FTA in 2004 and the Comoros and Libya in 2006. COMESA is one of the pillars of the African Economic Community. In 2008, COMESA agreed to an expanded free-trade zone including members of two other African trade blocs, the East African Community (EAC) and the Southern Africa Development Community (SADC).

\textsuperscript{80} [www.gtkp.com](http://www.gtkp.com) . Northern Corridor Transit Agreement, Bujumbura (February 1985), Nairobi (November 1985) and Kigali (May 1987)
The primary purpose and objective of the Agreement is to "agree that the Northern Corridor as defined in (the) Agreement provides a most effective route for the surface transport of goods between their respective countries and the sea and that the purpose of (the) Agreement is to promote its use. The contracting parties agree to grant each other the right of transit in order to facilitate movement of goods through their respective territories and to provide all possible facilities for traffic in transit between them, in accordance with the provisions of (the) Agreement, its Annex and Protocols."

The Northern Corridor Transit Transportation Coordination Authority

The governance structure of the NCTTCA comprises three principal organs, namely:

- The Authority – a Council of Ministers of transportation of the member states;
- The Executive Board – an Intergovernmental Committee of Permanent Secretaries and other senior government officials; and
- The Secretariat – the executing organ headed by an Executive Secretary and headquartered in Mombasa, Kenya.

The mandate of the NCTTCA, as stipulated in the Transit Agreement, includes:

- Safeguarding the freedom of transit and right of access to and from the sea for the landlocked countries;
- Ensuring implementation of and compliance with the provisions of the Transit Agreement;
- Joint promotion and coordination of the development of regional transport infrastructure;

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81 www.ttcanc.org

Investment Opportunities in the Northern Corridor with Emphasis in Transport Infrastructure, a paper prepared by the TTCA Secretariat for presentation at the COMESA Business Summit, Kampala, June 2004
• Reduction of transport costs through the removal of all barriers to traffic using the corridor;
• Harmonisation of transit transport policies and technical standards in order to facilitate operations along the corridor;
• Promotion of regional consensus on all matters relating to the management of the corridor and which are of mutual benefit to the members states; and
• Cooperation with other international organisations.

Cooperation with International Organisations

While no specific reference could be found on progress made by the NCTTCA on cooperation with international organisations vis-à-vis expediting its mandate, the fifty-ninth session of the UN General Assembly held in August 2004 made significant headway in mobilising the support of UN agencies and other relevant international and regional organisations to landlocked countries within the Northern Corridor System as per the Almaty Programme of Action.

The Sub-Saharan Transport Policy Programme was launched in 1987 as a joint initiative between the Economic Commission for Africa and the World Bank. One of the Programme’s transit transport facilitation activities is to establish observatories of abnormal practices along transit corridors such as the Northern Corridor.

In addition, UNCTAD, through its Automated Systems for Customs Data (ASYCUD) programme, is undertaking a number of projects that include customs transit matters in landlocked developing countries. These countries include some that are connected via the Northern Corridor, these being Burundi, Ethiopia, Rwanda and Uganda.

1.3.7.3 North-South Corridor

General Description

The North-South Corridor extends between the port of Dar es Salaam in Tanzania to the Copper belts of Zambia and the DRC, and down through Zimbabwe and Botswana to the ports in South Africa (taking in ‘spur’ connections to the Great Lakes in the north and to Malawi in the east).

The Corridor is a highly flexible road and rail corridor which carries large volumes of regional trade, in particular exports from South Africa to neighbouring countries. With few exceptions, the roads are mostly in good condition. However, railway services are generally unpredictable and will require substantial investment to be more competitive with road transport.

82 www.un.org
UN General Assembly 59th (05 August 2004) Session Report of the Secretary-General

84 www.rtfp.org/north_south.php. North-South Corridor
The majority of the exports from the DRC, Zambia and the southern Great Lakes region pass through the port of Dar es Salaam. Here, too, is a mixture of both well and poorly maintained infrastructure.

Figure 20: North-South Corridor

Figure 21: North-South Corridor
**Objectives of the Corridor Programme**

These are to:

- Address the transport/transit corridor in a holistic manner (where regulatory, administrative and infrastructural constraints to transport/transit are addressed together);
- Ensure that interventions aimed at reducing costs and time are done sequentially so that there is a “knock-on” effect in terms of savings along the entire route;
- Develop a GIS database to allow all information to be looked at in tandem so that fully informed decisions can be made;
- Support regional trade policy regulation and trade facilitation initiatives; and
- Strengthen national, regional and inter-regional initiatives.

**Objectives of the Dar es Salaam Corridor Committee**

These are set out in the Committee’s Constitution as:

(a) To encourage the establishment of business and spatial development along the corridor and actively market the corridor in order to attract investment, improve international and domestic traffic levels and promote national and regional economic growth;

(b) To support operational planning by Members through proactive collection, processing and dissemination of traffic data, analysis of competitive corridors and business information;

(c) To ensure that an open and competitive environment is maintained among corridors;

(d) To facilitate mutually-beneficial business partnerships between Members;

(e) To create a strategic, high-level partnership between senior government officials and business leaders;

(f) To encourage the upgrading of port, rail, lake, road and border post infrastructure;

(g) To promote the sustained maintenance of infrastructure;

(h) To encourage a reduction in cost associated with moving freight along the corridor;

(i) To encourage the implementation of SADC railway and road traffic standards and the implementation of national legal and regulatory harmonization;

(j) To support the implementation of existing bilateral road transport agreements concluded by the corridor states;

(k) To encourage the implementation of improved customs transit procedures and the implementation of joint customs controls and juxtaposed customs offices at land borders and seaports;

(l) To lobby for improved services and facilities along the corridor to encourage commercial and tourist activity as well as increased transport efficiency and traffic;

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85 www.gtkp.com  Constitution of the Dar es Salaam Corridor Committee, October 2003
(m) To establish productive working relationships with other SADC corridors and institutions; and
(n) To seek Membership, where appropriate, in the SADC and other regional committees that share similar objectives.

Regional Collaboration

In October 2008, three Regional Economic Communities (RECs), the East African Community (EAC), SADC and the Common Market for Eastern and Southern Africa (COMESA), met in a Tripartite Summit in Kampala, Uganda.

It was agreed that the RECs would be put the following in place within one year:

• A joint programme for the implementation of a single airspace;
• A joint plan for an accelerated and seamless interregional ICT broadband network;
• Harmonised regional transport and energy master plans; and
• A joint financing and implementation infrastructure.

Participating countries, including those along the North-South Corridor, would be involved in the above.

The North-South Corridor is being driven by all three RECs, and supported by the British Government and other international agencies. It is estimated that the total cost of implementing all its projects and programmes will be about USD 1 billion over five to ten years through grants, concessionary loans and private investment.

The Corridor was selected for this programme as it was the busiest in the region in terms of value and volume of freight.

1.3.7.4 Walvis Bay Development Corridor

General Description

In 1994 it was decided to develop Walvis Bay as a hub port for south-western and central African countries. This logically led to planning for ways to converge a network of corridors on the Atlantic Ocean port. The Walvis Bay Corridor Group (WBCG), the road and rail agglomeration responsible for developing the Walvis Bay Corridor (as well as the Trans Kalahari Corridor, Trans Caprivi corridor and Trans Cunene Corridor) sought:

• The encouragement of economic growth along the Corridor’s routes,
• The facilitation of interregional trade and maritime transport; and

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87 www.encyclopedia.com  Walvis Bay Corridor Group--desert pioneers: the Walvis Bay Corridor Group is an ambitious project that links several transport and logistics systems in southern and central Africa all eventually converging on the port of Walvis Bay in Namibia, Tom Nevine, African News, 1 December 2006
• Offered Walvis Bay as an attractive alternative for South African importers and exporters.

Figure 22: Walvis Bay Corridor

The WBCG is a joint operation of transport stakeholders from public and private sector and include members include from trucking, forwarding and port user industries, parastatals Namport and TransNamib, and the government departments of Transport, Trade and Customs. The Group is intent on maximising the Walvis Bay Corridor (WBC) and its respective routes by bringing together:

• Frameworks for cross border transport and trade;
• The development of business opportunities to attract cargo from traditional routes; and
• Upgrading capacity for the transport and corridor sector.

The WBC is a network of routes linking the Port of Walvis Bay with landlocked countries and regions of Southern Africa and vice-versa. This provides SADC direct access to transatlantic trade routes. The Corridor capitalises on its location and the proximity to transatlantic markets and on time, costs and reliability savings. The WBC also supports Namibia to achieve its national development objective to become the western gateway to SADC.

*The Port of Walvis Bay*

Walvis Bay is strategically located half way down the coast of Namibia, with direct access to principal shipping routes. This makes it a natural gateway for international trade. It is

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88 www.nampprt.com
Namibia's largest commercial port, annually receiving approximately 1,000 vessel calls and handling about 2.5 million tonnes of cargo. The Bay is a sheltered deepwater harbour benefiting from a temperate climate. Hence, no delays are caused by bad weather.

Given Namport's Mission to provide efficient and effective port and related services, and to handle increasing levels of throughput, they have steadily improved its cargo-handling facilities and remain committed to infrastructure development.

The container terminal can accommodate grounds slots for 380 containers and provides for 210 reefer container plug points. Some 150,000 containers per annum can be hosted, providing various business development opportunities to facilitate imports and export containers. Namport's technical services division, Namtech, provides onsite reefer repair services.

The striking Container Terminal Entrance Building houses the General Containerized Operating System (GCOS), enabling the Container Terminal to render efficient and streamlined services to Port clients. The GCOS computerises aspects such as gate control, ship to shore operations and container yard planning.

There have been substantial investments in cargo handling equipment, reducing port time for container vessels by 50%. Infrastructure has been upgraded to transform Walvis Bay into a Hub Port for Southern Africa over the next five to ten years, as well as to ensure consistently high levels of service to clients.

The Pelican Point Lighthouse has been fully automated and the lighthouse personnel transferred to other departments within Namport, who retains ownership of the lighthouse and access thereto, including the jetty.

**The Sungate Project**

Sungate property development project is a 408 ha mixed-use infrastructural development initiative situated directly opposite the Hosea Kutako International Airport in Windhoek. The project is driven by the vision to establish a hub of trade and industry at strategically located sites along trade corridors in the SADC Region. Sungate is situated along the Trans-Kalahari Corridor and is underpinned by a spirit of entrepreneurial innovation and leadership. These are key characteristics representative of what should constitute a NEPAD project.

Sungate is a partnership between South African and Namibian entrepreneurs, and enjoys the support of the Government of Namibia. Given its strategic association with the Walvis Bay Corridor sites, Sungate has added long-term economic benefit to the region. According to [www.nepadbusinessfoundation.org](http://www.nepadbusinessfoundation.org), NBF Ithuba Business Forum: Walvis Bay Development Corridor and Sungate Project.
Peter Collins, Marketing Director of Accolade Properties Namibia, the company responsible for the property development project, “Sungate is the key to unlocking commercially viable infrastructural development on trade corridors in Namibia and sub-Saharan Africa.”

Envisioned as a gateway to business, with mixed-use property rights, the project is especially viable because of the expected growth in trade facilitated by the Walvis Bay Corridor. There will be light industrial space, commercial enterprises, hotel and entertainment facilities, warehousing and service industries, and residential amenities.

Estimated at a total value of N$11 billion, it is expected to create an influx of job opportunities for locals with the necessary expertise. The operation of the Sungate project should start by mid 2009.

**Servicing Southern Africa**

Given that the two legs of the corridor are the Trans-Kalahari highway, linking Walvis Bay with Botswana and Gauteng, and the TransCaprivi highway to the north, that provides links to southern Angola, Zambia and Zimbabwe, the Walvis Bay Corridor is a natural extension of the N4/Maputo Corridor, forming an east-west link across Southern Africa.

Johnny Smith, Assistant Marketing Manager for Namport, which owns Walvis Bay and Luderitz, says, “Because of Namibia’s relatively small market it was considered essential to develop Walvis Bay as a regional port to cater for the landlocked Botswana, Zambian and southern Angolan markets.”

He added that their key priorities at present were the Botswana and Gauteng markets, and that, while they did not see themselves as competitors to Portnet, they believed that they could provide a service to clients with a quicker route to Europe and the Americas.

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90 [www.eprop.co.za](http://www.eprop.co.za)  *Business Day, 20 March 2002*
2. Part II: Economic Corridors within NEPAD and SADC

2.1 NEPAD/SADC Strategy

2.1.1 Background

As was stated before in this report the NEPAD Secretariat and the African Development Bank have adopted development corridors as an important tool for configuring, prioritising and promoting inter-related infrastructure and large-scale economic sectoral investments in defined geographic areas (also referred to as Spatial Development Initiatives or SDIs) as a means to:

• Promote trade and investment led economic growth;
• Optimise the utilisation of infrastructure;
• Encourage value-added processing (beneficiation); and
• Enhance the competitiveness of African economies.  

In this Corridor Benchmarking Report an overview is given of Economic Corridors within the NEPAD and SADC sphere of influence. By reviewing the past, recent and current lessons learned around the development of corridors, freight logistics and the logistics chain much could be gleaned from which to inform the future corridor developments in the areas under review in this report.

2.1.2 Competition vs Co-operation: SADC’s Regional Development Corridors

In the report “Competition vs Co-operation: SADC’s Regional Development Corridors” it was stated that neoclassical microeconomic theory leads to the structure-conduct-performance (SCP) paradigm, which implies that more competition is better than less competition. However, in some cases voluntary cooperation might lead to greater economic welfare than competition. This possibility is considered with reference to the regional development corridors (RDCs) identified in the Southern African Development Community (SADC).

Inter-corridor competition, that is competition between different RDCs, requires that passengers and transporters must have a choice of corridors between a given origin and ultimate destination and that those corridors must be managed by different entities. If one corridor becomes less effective or efficient, users will switch to another corridor, forcing those in charge of the former to revamp their corridor.

In the absence of inter-corridor competition, intra-corridor competition of the right kind may go some way in promoting effectiveness and efficiency. Such competition requires intermodal competition along

every section of the corridor, for example, between road and rail transport. Once again, each mode must be managed by different entities. However, intra-corridor competition between successive sections of the corridor is unlikely to achieve effectiveness or efficiency. Co-operation from end to end is needed to ensure that the corridor functions properly. This is obvious when transhipment from one transport mode to another is required. For example, where a railway ends, transhipment to lorries or waterborne vessels might be required. Smooth transhipment requires precise co-operation between the railway authority and the owners or operators of the next transport mode. The two parties should for instance use the same specifications for containers and they should agree on and adhere to transhipment times. They are customers of one another, not competitors. It is less obvious however, that co-operation between transport firms of the same type, e.g. railway companies, that provide successive services along a corridor, is also likely to bring about higher economic welfare than competition between them. From the point of view of the SCP paradigm, this result was unexpected.

Reference was also made earlier in this report to development corridors that “were first implemented in Southern Africa under the South African sponsored SDIs (Spatial Development Initiatives) after their liberation in 1994”.

2.1.3 NEPAD after Independence

A paper92 “Regional Programme of Action for Economic Development and Regional Integration” was presented at the International Conference on the Great Lakes Region in October 2005.

The paper stated that Africa was poorly serviced with road and that the road density was on average 5 km per 100 square km, which was low when compared with other developing regions, such as Latin America and Asia with 12 km and 18 km respectively. This difference was partly the result of different levels of development in general, but it also reflected the basic geographic fact that Africa was a very large continent, often with vast distances between the main population and production centres. Connecting the different parts of Africa through road networks was thus, in the best of circumstances, a Herculean task.

Decades of under capitalization, poor management and general neglect of the railways have propelled road transport to the most important means of transport in Africa, by far. Road transport accounted for over 80% of all freight and passenger movements in Africa by 2005 and there were no signs that this position would be threatened during a foreseeable future.

At the time of independence of its states from colonial powers, Africa inherited transport and communication structures that were outward looking rather than geared to improved trade and transport with neighbouring African countries. One of the early goals of the independent African nations was to

break this pattern of dependence and create new, closer African ties. The formulation of the Trans African highways programme (TAH) concept in 1970 formed an integral part of this political vision of closer pan-African integration and co-operation.

The work on integration and increased co-operation in Africa had in many ways been a slow and painful process. However, the establishment by the African Union of the NEPAD provided new encouragement as well as concrete proposals for actions in the fields of African integration and co-operation. African countries were expected to focus on the expansion of roads and road transport in the future, both at national and sub-regional levels as a basis for regional co-operation and integration.

The paper continued to analyse the Lagos-Mombasa Trans African Highway that provided a road connection between the East African port of Mombasa with the ports of Nigeria and Cameroon in West and Central Africa. Thus, it provided access to most of the landlocked countries of Central Africa. The flow of traffic along this highway and the condition of different sections of the road reflected the limited trade between East and West Africa.

The paper reflected on the very large amounts of funds required to complete the Highway and the relative lack of investment funds for major infrastructure development initiatives that made it difficult to source funds for the missing links. Priority at the country, sub-regional and regional basis had been given to least cost solutions and projects with limited total costs. Workshops had to be convened by various Governments to create awareness for the private sector on the new PPP funding arrangements such as BOT and BOOT in order to achieve greater private sector participation. There was however, a need for common definition of routine and periodic maintenance as well as for rehabilitation and new construction.

The deduction one needed to make from the paper was that regional bodies such as NEPAD had a major role to play in leading, directing and supporting countries in developing corridors.
2.1.4 SADC Draft Report: Study on the Corridor / SDI Programme\textsuperscript{93}

An evaluation was done of the Development Corridors and SDIs in the SADC Region. The current and potential regional corridor traffic flows in million tonnes per annum (by the year 2002):

Figure 23: Corridor Traffic Flows (2002)

An imbalance was reported between “ton km” (particularly multi-modal) supply and demand (below).

Figure 24: Imbalance between Supply and Demand

\textsuperscript{93} SADC Draft Final Report: Study on the Corridor/SDI Programme
The report identified an exciting new expanded focus of freight logistics (shown below) where it was found that pre-2004 focus was only placed on the “red” blocks and that the post-2004 focus was on “red”, “yellow” and “green” with interface and integration with the “blue” blocks.

![Diagram of the New Expanded Focus of Freight Logistics]

**Figure 25: New Expanded Focus on Freight Logistics**

2.1.5 The Maputo Development Corridor

A current and actual example of a Southern African development corridor is the Maputo Development Corridor (MDC). The MDC links the South African provinces of Gauteng and Mpumalanga and the city and port of Maputo, in Mozambique and is based on five key objectives:

- To rehabilitate the primary infrastructure network along the Corridor, notably road, rail, port and dredging, and border posts, with the participation of the private sector in order to have minimum impact on the fiscus
- To maximise investment in both the inherent potential of the Corridor area and in the added opportunities, which the infrastructure rehabilitation will create, including the provision of access to global capital and facilitation of regional markets and regional economic integration
- To maximise social development and employment opportunities and increase the participation of historically disadvantaged communities
- To ensure sustainability by developing policy, strategies and frameworks that ensures a holistic, participatory and environmentally-sustainable approach to development
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The Maputo Corridor as a Cluster

In a paper by Ms Emmy Bosten in November 2005 the Business Potential of the Maputo Corridor was viewed from a Cluster Perspective. The paper stated that the Maputo Corridor ran through one of the most highly industrialised and productive regions of Southern Africa. Johannesburg and Pretoria form the western axis of the Corridor with their large concentration of manufacturing, processing, mining and smelting industries. Then, moving eastwards to Mozambique, one of the fastest growing economies in the world over the last decade, the corridor passes vast industrial and primary production areas containing steel mills, petro-chemicals, quarries, mines, smelters and plantations of forests, sugar cane, bananas and citrus. Just 92 km beyond the frontier is the Mozambican deep-water port of Maputo, which has traditionally provided the nearest facilities for the importers and exporters of the region. The Swaziland production areas also use the Maputo Corridor for export purposes, with citrus, timber and sugar being the predominant cargoes at the time in 2005.

Ms Boston continued by referring to the Maputo Corridor as one of the most successful examples of the so-called Spatial Development Initiatives (SDIs) in Southern Africa. In this cross-border SDI, which is the shortest distance to the sea from the industrial belt in the South African Gauteng Province, substantial investments were carried out over the five years until 2005. That was done mainly in large-scale infrastructure projects such as the toll road from Johannesburg to Maputo, as well as the rehabilitation of the Port of Maputo itself. And since also the investment in the upgrading of the railway connection between South Africa and Maputo is underway, it is generally stated that the most important conditions are created for business to flourish.

However, there were strong opinions expressed by businesses along the corridor that more efforts were required to stimulate true business development and to improve the competitiveness of the region. Not only in terms of physical completion of the Maputo Corridor infrastructure, but also in terms of improved and modernised cross-border transport logistics and the development of innovative business concepts, which in turn involved a wide variety of stakeholders in both the private and public sectors, such as customs, shipping lines, migration services, railway service providers, transporters, etc.

The Maputo Corridor Logistics Initiative (MCLI), a section 21 organisation, was referred to as having been created by the private sectors of South Africa and Mozambique and launched in February 2004 to speed up the elimination of the current non-physical barriers for trade and developing the Maputo Corridor into the first choice by exporters and importers along the Maputo Corridor.

Theories on cluster developments were specifically in the paper since the Maputo Corridor could be classified as a cluster according to Porter’s definition: ‘A cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities’. Porter stated further that clusters consist of firms with a common geographical

95 Business Potential of the Maputo Corridor was viewed from a Cluster Perspective, Ms Emmy Bosten, Nov 2005
background that shared certain knowledge resources that provided competitive advantage to them as a group.

The cluster concept evolved over time. What made up a cluster shifted from a merely geographical point of view to a focus on the organisational knowledge that resided in the cluster and more specifically the capacity to generate knowledge and to make effective use of it by the firms involved. The more capability the cluster obtained in these fields, the more productive, efficient, innovative and competitive it could become. Networking was a key feature in that regard, but needed to have a clear purpose. Without a clear drive the network would collapse. The paper summarized the main features of lessons learned from a decade of cluster developments elsewhere in the world and how they could be applied in the case of the Maputo Corridor. The research data were gathered mainly through participation in the so-called Focus Work Groups on Rail, Road, Shipping and Institutional Framework and Marketing Issues, whereas additional interviews were held with other key players in the Corridor.

Before the war paralysed all economic activity in Mozambique in 1978 the Maputo Corridor was the flourishing transportation link between the industrial belt in and around Johannesburg in South Africa and the Port of Maputo in Mozambique as the shortest distance to the sea. Goods were mostly transported by rail and an annual throughput of more than 12 million tonnes was achieved in the best years. The facilities were modern for those days and enough rolling stock and vessels available. In the worst years during and just after the war throughput fell to a historic deep point of just over 2 million tonnes per year.

When the war ended in 1993 it didn’t take too long for the Mozambique and South African governments to design a joint recovery programme to facilitate investment-led growth, as well as to pilot some institutional models to support joint planning and integrated development. The cross-border Spatial Development Initiative (SDI) for the Maputo Corridor was launched in 1995 and aimed at unlocking the economic potential of particular areas in South Africa and Mozambique through investment in infrastructure and anchor projects. The model was later expanded to other development corridors in the region. SDI is essentially a methodology rather than a policy, with applications facilitating growth and development through the identification of strategic investment opportunities. In the case of the Maputo Corridor several potential infrastructure investments were identified and realised.

However, there were two big differences compared to the pre-war situation: the deepwater port of Richard’s Bay was built in South Africa to handle large volumes of bulk cargo and the Port of Durban, although further away from the industrial production areas, had taken over the majority of general cargo handling from the Port of Maputo. Road- and rail links to these ports are good and without any border crossings in the middle.
The MCLI

In a presentation\textsuperscript{96} by Ms Brenda Horne, the CEO of the MCLI on the MCLI being a Public Private Partnership she addressed the “Focus on the Optimisation of Transport Infrastructure Investment to support the Maputo Corridor to improve regional competitiveness, co-operation and integration”.

The importance of transport in the broader sense of regional competitiveness was discussed in terms of four broad support issues that are most relevant to any corridor development:

- Support for Regional Economic Growth with private sector investment in the production sector
- Support for competitiveness by reducing cost of production and trade, including transport cost
- Support for the outcomes of the World Bank Study that investigated East & Southern African Competitiveness that is severely affected by opportunity costs due to delays at border posts, ports, weighbridges and customs procedures
- Support for actions to address the most effective measures to reduce cost being Road & Rail & Port Rehabilitation, Fuel Costs and by addressing cause of Border crossing delays

The MCLI viewed the Maputo Corridor as a re-established and proven transportation route for regional trade as well as for trade with international markets for SA, Zimbabwe, Swaziland, Botswana through Mozambique, depicted diagrammatically as below:

\textbf{Figure 26: The Maputo Corridor}

\textsuperscript{96} “The Maputo Corridor Logistics Initiative, a Public Private Partnership: Focus on the Optimisation of Transport Infrastructure Investment to support the Maputo Corridor to improve regional competitiveness, co-operation and integration”, Ms Brenda Horne, CEO of the Maputo Corridor Logistics Initiative, 14 May 2009
The MCLI identified a number of South African Industries located along the Maputo Corridor to confirm the opportunities for involvement by public and private enterprise from South Africa and other regional states.

![South African Industries along the Maputo Corridor](image)

Figure 27: South African Industries along the Maputo Corridor

The Status of the Maputo Corridor historically was compared with the current situation as at and as at May 2007 which in turn provided a view of the broader South African imperatives for modern day development of corridors:

<table>
<thead>
<tr>
<th>Historical Issues</th>
<th>Current Situation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political Issues (War, etc.)</td>
<td>Political Stability &amp; Will</td>
</tr>
<tr>
<td>Very Bad condition of road to Maputo</td>
<td>New N4 toll road – TRAC PPP – SA &amp; MOZ</td>
</tr>
<tr>
<td>Lack of sufficient rail capacity &amp; Long rail journey due to delays on Mozambique side</td>
<td>Rail rehabilitation now completed 2008 CFM invested in new rolling stock &amp; locomotives – Excellent Cooperation TRF &amp; CFM</td>
</tr>
<tr>
<td>Border Issues</td>
<td>Waiting time at border reduced Working hours extended 06h00 – 22h00 24 Hour One Stop Border Post – in Making</td>
</tr>
<tr>
<td>Limited Direct Shipping opportunities</td>
<td>Introduction of direct container shipments in 2008 - MOL &amp; Nile Dutch– Far East service &amp; Hoëgh Auto Liners – 50 ships p/m</td>
</tr>
<tr>
<td>Port Access, Draft, Marine Services and Infrastructure rehabilitation limitations in Maputo Port</td>
<td>MPDC invested &gt; $70M – with further $500M to follow port master plan development</td>
</tr>
</tbody>
</table>
The MCLI overview of the summary of major projects related to the MDC showed $5bn of investments along the MDC including the development of the N4 Toll Road, the Port of Maputo Terminals, rail investment, energy investment, investment in Mozal and the Temane Gas pipeline to SA:

<table>
<thead>
<tr>
<th>Major Infrastructure /Plant Investment Values</th>
<th>Contract SMME</th>
<th>Contract Value SAR</th>
<th>Jobs Perm, Temp Casual</th>
<th>People Trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>N4 Toll Road</td>
<td>RZ$ 250 MIL</td>
<td>RZ$ 304 M</td>
<td>6220 Perm Jobs</td>
<td>20,260</td>
</tr>
<tr>
<td></td>
<td>R2 B spent-</td>
<td></td>
<td>71% woman, 84% Black</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R3B next 25yrs</td>
<td>50pa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port of Maputo &amp; Terminals</td>
<td>US$ 46 MIL</td>
<td>SAR &gt;R20Mpa</td>
<td>2,000 &amp; indirect</td>
<td>450 full</td>
</tr>
<tr>
<td></td>
<td>of US$ 70 MIL</td>
<td></td>
<td>(1 job impacts 8 people)</td>
<td>time staff</td>
</tr>
<tr>
<td>2009 investment plans</td>
<td>US$ 15 MIL Terminals</td>
<td></td>
<td></td>
<td>trained in</td>
</tr>
<tr>
<td></td>
<td>Further &gt; $300M</td>
<td></td>
<td></td>
<td>ops &amp;</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>safety/seconds</td>
</tr>
<tr>
<td>Rail</td>
<td>US$ 20 MIL</td>
<td>SAR 100 M</td>
<td>3,000 during</td>
<td>$3M training</td>
</tr>
<tr>
<td></td>
<td>Initial CFM &gt;</td>
<td></td>
<td>construction</td>
<td>budget</td>
</tr>
<tr>
<td></td>
<td>50 Locos $30M</td>
<td></td>
<td>1,000 Moz’s</td>
<td></td>
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<tr>
<td></td>
<td>Rolling Stock</td>
<td></td>
<td>$4.680M PA</td>
<td></td>
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<tr>
<td></td>
<td>$970 wagons</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$30M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy</td>
<td>US$ 100 Mil</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mozal</td>
<td>US$ 2.5 BIL</td>
<td>200</td>
<td>9,000 &amp; 1,000 perm</td>
<td></td>
</tr>
<tr>
<td>Temane Gas pipeline to SA SASOL 1,000KM</td>
<td>US$ 1.4 BIL</td>
<td>900 M</td>
<td>3,000 during</td>
<td></td>
</tr>
<tr>
<td>(2007 double capacity = $250 M)</td>
<td>$498M royalties &amp; taxes</td>
<td></td>
<td>construction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>over 25 year</td>
<td></td>
<td>1,000 Moz’s</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MORE THAN $3 BN</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Double capacity $250M</td>
<td></td>
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</tbody>
</table>

MCLI’s overview of the rehabilitation of the N4 Road Route and Infrastructure supported the notion of progress that was made regarding the Maputo Corridor:

- 1997 a 30 year concession granted to TRAC
  - “Double” PPP (Two governments involved)
  - PPP’s used to contribute to infrastructure using private funding and to relieve the burden on tax based revenues
- TRAC has obligations to:
  - Finance
  - Design
  - Construct
  - Maintain
- Status
  - Road from Ressano Garcia border to Maputo is new.
  - Travelling time greatly reduced.
– TRAC obliged to continuously maintain the road.
– Spent R2 Billion on the road by 2007
– Planned to spend at least another R3 Billion over next 25 years
– Continuous adding of lanes & resurfacing

• The project has been successful in all aspects, namely:
  – As a constructed road
  – Involvement in Social Development in both RSA and Mozambique
  – In stimulating and being a catalyst for economic development
  – Volume increase of 5-7% p.a. - freight – 10%

MCLI’s overview of the work done on the Maputo Corridor Ressano Garcia Line also supported the notion of progress that was made regarding the Maputo Corridor:

• 2007 – , 1.7m tonne transit cargo from SA, i.e.. 4.5-5 trains per 24 hrs
• Line has design capacity for 9m tpa, i.e.. 16-18 trains per 24hrs.
• CFM upgraded programme on the Moz section of the line (92 kms from the border to the port)
• 20 tonne axle loads and throughput of approx 13m tonne pa (2010-11).
• Now excellent cooperation between CFM and Transnet Freight Rail
• Rehabilitation fully completed 2008
• CFM rebuilt rolling stock ahead of growing demand for railway transport from the region to the port of Maputo.
• 150 wagons rehabilitated in-house. 820 would be rebuilt by a specialized foreign contractor to be selected through a public tender - US$ 30M.
• Rehabilitate more than fifty locomotives at US$ 30 M

MCLI identified areas where continued work was still needed to ensure sustained regional competitiveness:

• Cargo owners had to be encouraged to work together to commit to use the corridor, to contribute to the economies of scale and to eventual lower costs
• Continuous improvement of border operational hours, procedures and infrastructure was to be enforced
• The scope and competitiveness of transport services had to be increased by additional capacity, higher service levels and more competitive rates for rail, port, terminals shipping lines and road haulers
• Information services had to be put in place and enhanced continually
• The promotion of the corridor had to be coordinated
2.1.6 The North-South Corridor

The North-South Corridor extends between the port of Dar es Salaam in Tanzania to the Copper belts of Zambia and the DRC, and down through Zimbabwe and Botswana to the ports in South Africa (taking in ‘spur’ connections to the Great Lakes in the north and to Malawi in the east).

The Corridor is a highly flexible road and rail corridor which carries large volumes of regional trade, in particular exports from South Africa to neighbouring countries. With few exceptions, the roads are mostly in good condition. However, railway services are generally unpredictable and will require substantial investment to be more competitive with road transport.

The majority of the exports from the DRC, Zambia and the southern Great Lakes region pass through the port of Dar es Salaam. Here, too, is a mixture of both well and poorly maintained infrastructure. The Dar es Salaam Corridor Committee accepted a Constitution of which an extract is repeated here:

(a) To encourage the establishment of business and spatial development along the corridor and actively market the corridor in order to attract investment, improve international and domestic traffic levels and promote national and regional economic growth;
(b) To encourage the upgrading of port, rail, lake, road and border post infrastructure;
(c) To promote the sustained maintenance of infrastructure;
(d) To encourage a reduction in cost associated with moving freight along the corridor;
(e) To encourage the implementation of SADC railway and road traffic standards and the implementation of national legal and regulatory harmonization;
(f) To support the implementation of existing bilateral road transport agreements concluded by the corridor states;
(g) To encourage the implementation of improved customs transit procedures and the implementation of joint customs controls and juxtaposed customs offices at land borders and seaports;
(h) To lobby for improved services and facilities along the corridor to encourage commercial and tourist activity as well as increased transport efficiency and traffic;
(i) To establish productive working relationships with other SADC corridors and institutions; and
(j) To seek Membership, where appropriate, in the SADC and other regional committees that share similar objectives.
2.1.7 The Walvis Bay Corridor

In 1994 it was decided to develop Walvis Bay as a hub port for south-western and central African countries. This logically led to planning for ways to converge a network of corridors on the Atlantic Ocean port. The Walvis Bay Corridor Group (WBCG), the road and rail agglomeration responsible for developing the Walvis Bay Corridor (as well as the Trans Kalahari Corridor, Trans Caprivi corridor and Trans Cunene Corridor) sought:

- The encouragement of economic growth along the Corridor’s routes,
- The facilitation of interregional trade and maritime transport; and
- Offered Walvis Bay as an attractive alternative for South African importers and exporters.

The WBCG is a joint operation of transport stakeholders from public and private sector and include members from trucking, forwarding and port user industries, parastatals Namport and TransNamib, and the government departments of Transport, Trade and Customs. The Group is intent on maximising the Walvis Bay Corridor (WBC) and its respective routes by bringing together:

- Frameworks for cross border transport and trade;
- The development of business opportunities to attract cargo from traditional routes; and
- Upgrading capacity for the transport and corridor sector.

The WBC is a network of routes linking the Port of Walvis Bay with landlocked countries and regions of Southern Africa and vice-versa. This provides SADC direct access to transatlantic trade routes. The Corridor capitalises on its location and the proximity to transatlantic markets and on time, costs and reliability savings. The WBC also supports Namibia to achieve its national development objective to become the western gateway to SADC.

2.1.8 The Trans-Kalahari Corridor

The Technical Report on the feasibility Study for the Establishment of a One-Stop Border Post on the Trans Kalahari Corridor (Botswana – Namibia Border): Windhoek, was issued in July / August 2008. In the report the establishment of the Trans Kalahari Corridor Management Committee (TKCMC) in 2003 was discussed. That took place with the signing of the Memorandum of Understanding which had the goal of improving Trans Kalahari Corridor operations and implementing the SADC Transport and Trade Protocols’ commitment to regional Corridor performance. The success of the Corridor was known to depend on rapid transport of goods at a competitive rate with minimum constraints posed by the need to transit three countries and two sets of borders. The TKCMC MOU committed the three member countries, Botswana, Namibia and South Africa to improving border operations through simplifying and harmonizing customs procedures, adopting common transit procedures, facilitating pre-clearance of

goods and implementing joint border controls and management. The fact that all three countries were members of the Southern Africa Customs Union provided a major potential advantage in realizing this objective. Nevertheless, it was critical that existing procedures on the Corridor borders continued to be streamlined and that there was ICT interconnectivity of the border agencies (customs, but also others) – in effect, the borders were to be made virtually seamless.

A paper\(^98\) was submitted to the Namibia Trade and Poverty Programme by Ms Lynn M. Harmon of the Corridor Development Consultants (the CDC) titled ‘Final Report : Economic Benefits of Port and Corridor Development’, 04 July 2007. A number of corridors was identified and discussed in the paper, including the Trans Kalahari Corridor (the TKC).

The paper found that the Trans Kalahari Highway was completed and commissioned in 1998. This highway linked the Port to Botswana and Gauteng Province, the industrial hub of South Africa which was estimated to produce about 37% of South Africa’s GDP and 28% of GDP for the SADC region. The highway was a potential artery between this industrial heartland and European and American markets.

Figure 29: The Trans Kalahari Corridor

The potential traffic development was considerable, yet the traffic had been slow to materialize. Nevertheless local traffic had grown considerably leading to greater connectedness of small Botswana and Namibian communities with positive economic impact. Realization of the transcontinental potential would foster greater development along the route.

Already several service areas were developed to meet the needs of both the freight and tourist traffic. Gobabis, in eastern Namibia, was also realizing development serving that traffic. Local leaders hoped to promote Gobabis as a tourism destination in addition to a service and accommodation role along the route.

Development on the Trans Kalahari route was what was explored in the C2C Study as well as the Trans Kgalagadi Study, conducted by Botswana.

The Trans Kalahari Corridor was also a rail corridor. The railway connected the Port with the capital city, Windhoek, in a daily freight and passenger service. The railway continued east to Gobabis on the outskirts of the Kalahari in eastern Namibia three times a week. It was originally intended to connect to the Botswana Railway in eastern Botswana and to Spoornet in South Africa through Mafeking and Gauteng Province. However, by 2007 the link was never built. At and since the time of the study, there was considerable interest in that service from the automotive industry in Rosslyn and some mineral exporting companies.

2.1.9 The Trans-Caprivi Corridor

A paper that was submitted to the Namibia Trade and Poverty Programme by Ms Lynn M. Harmon of the Corridor Development Consultants (the CDC) titled "Final Report: Economic Benefits of Port and Corridor Development", 04 July 2007 also covered the Trans Caprivi Corridor.

![Figure 30: Map of the Caprivi Strip with Road Segments](image)

The paper found that the Trans Caprivi Highway linked the Port of Walvis Bay to the inland areas of Zambia (Livingstone, Lusaka, Ndola and Kitwe) and South Eastern Democratic Republic of Congo (Lubumbashi area) via the bridge across the Zambezi at Katima Mulilo which was completed in 2008. Since completion of the bridge and rehabilitation of the road between Sesheke and Livingstone, exports from Zambia on the TCC had increased by 79%, imports to Zambia 48% and northbound transit cargo to DRC by 81%. Average tonnage per month was 7,563 plus transit copper for the smelter at Tsumeb which was operating at capacity by 2007 and at increased capacity in 2008. It provided an alternative route to overseas markets for these landlocked areas rather than the current reliance on the North South Corridor to Durban, which was highly congested, and the Dar es Salaam Corridor. With the investment in increased copper production by 2007, the demand for the route grew dramatically in the years following 2007. The route also provided an important outlet to regional and international markets for secondary hubs along the Trans Caprivi Highway, such as Katima Mulilo, Rundu, Tsumeb and...
Grootfontein. Since much of the Namibian population was centered in the North, expansion of these secondary hubs provided important opportunities for new economic activity.

TransNamib operated a rail service from the Port of Walvis Bay to Tsumeb and Grootfontein. Southbound cargo was primarily blister copper from the Ongopolo smelter at Tsumeb which processed Namibian, Zambian and DRC copper and ships it by rail to Walvis Bay for shipment overseas, mostly to India and China. Inbound, it handled primarily salt, rice, steel and petroleum products. Longer term development of rail traffic on the route depended on track work in the Kranzberg to Tsumeb section and the acquisition of additional locomotives and wagons.

2.1.10 The Trans-Cunene Corridor

The paper\textsuperscript{100} that was submitted to the Namibia Trade and Poverty Programme by Ms Lynn M. Harmon of the Corridor Development Consultants (the CDC) titled ?Final Report : Economic Benefits of Port and Corridor Development ?, 04 July 2007 also covered the Trans Cunene Corridor.

The \textit{Trans Cunene Corridor} was both a road and a rail corridor. Since the cessation of hostilities in Angola, import traffic through the Port of Walvis Bay was the fastest growing Corridor traffic, representing 92% of the corridor traffic through the Port of Walvis Bay by 2007. In 2005/6, the TCuC carried 1269 twelve (12) meter containers and 612 six (6) meter containers. This Corridor traversed one of the most densely populated parts of Namibia and also has the potential for major economic development. It led to Ondangwa and Oshakati which served as distribution centers for the North. The northern extension of the TransNamib railway was completed to Ondangwa and was completed to Oshikango by 2007/8. On the border between Namibia and Angola, Oshikango was becoming a major wholesale and retail center for trade with Angola. It had 28 active bonded warehouses and an EPZ serving this market by 2007. A railway extension from Ondangwa to Oshikati was planned by 2007.

2.1.11 Other Corridors

In considering corridors it is worthwhile to note that there are South African Corridors that are not known as formal corridors e.g. the N1, N2 and N3 highways

In a Financial Mail article\textsuperscript{101} “Developers Head North" by Mr Ian Fife, a number of new Corridor developments were identified. He determined that developers were turning northwards from South Africa’s limping market to a welcoming Africa. Pinnacle Point was found to have aimed to launch a secondary listing in Nigeria where it wanted to build a golf estate near Lagos. This seemed to support the trend where the Johannesburg-based Renaissance Africa was buying up land near Harare, Nairobi and Uganda for future urban development.


\textsuperscript{101} “Developers Head North", Financial Mail, Ian Fife, 2 April 2009.
In another move the Johannesburg developer Accolade announced its mixed-urban hub Sungate next to the Windhoek Airport. The development would boast offices, shops, hotels, leisure facilities, housing, warehousing and factories to be three times bigger than the Sandton CBD within ten years. The improvements made it a R22bn development with its primary role being a trade hub along the Walvis Bay Corridor.

Apart from the development along the Walvis Bay Corridor the Trans Kalahari usage increased with additional routes being developed in the Lobito Corridor (between DRC and Zambia), the Mtwara Corridor (linking Southern Tanzania with Malawi, Zambia and Mozambique across Lake Malawi).

The forwarding company DHL was able to move “super-max abnormal loads” 2300 km from Walvis Bay to the Konkola copper mine in Chingola, Zambia, in four weeks via the Trans-Caprivi Corridor.
2.2 Business Case Development for SDIs and Corridors

2.2.1 Post-colonisation and Post-apartheid Challenges and SDIs

Other issues that need to be considered when considering the development of corridors in South and Southern Africa are the post-colonisation and post-apartheid challenges in Africa regarding economic and social development, infrastructure, etc. The concept of development corridors “were first implemented in Southern Africa under the South African sponsored SDIs (Spatial Development Initiatives) after their liberation in 1994”. In a report 102 on *The Impact of the Maputo development Corridor on Wealth Creation within the Region it serves* it was stated that the Spatial Development Initiatives (SDI's) that were conceived by Cabinet was an attempt to improve investment in those areas where the greatest potential for growth existed.

![Spatial Development Initiatives (SDIs)](image)

Figure 31: Spatial Development Initiatives (SDIs)

The MDC was initiated for a number of specific objectives, these objectives according to Schutte and Fransisco (2004) constituted a mixture of “enabling factors” (e.g. investment in transport infrastructure and institutional arrangements with the aim of creating an enabling environment for economic growth and development) and “desired outcomes” (e.g. positive macro- and socio-economic impacts that were sustainable in terms of their impact on the environment.

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102 *The Impact of the Maputo development Corridor on Wealth Creation within the Region it serves*, Dr Maléne (M.M.) Campbell, Mr Johan Maritz and Prof Dries (AC) Hauptfleisch, April 209
The Maputo Development Corridor was a typical axis development between two big centres but taking economics into consideration, as Maputo was the closest harbour to Gauteng and in the 1970s 40% of the export from Gauteng went through this port, this faded away due to socio-political reasons. (Jourdan, 1998, 720) The Maputo Development Corridor along the N4 toll road between the north-eastern provinces of South Africa and Maputo (the capital and main port of Mozambique) was initiated in 1996. A Development Corridor could be seen as a concept to elevate an area to a certain level of development. One of the objectives of this project was investment in transport infrastructure in order to create an enabling environment for economic growth and development. The project was also in line with the 1995 Spatial Development Initiatives of the South African Government that attempted to improve investment in those areas were the greatest potential for growth existed. The paper comprised of a literature review on economic wealth creation within the broader region that the N4 toll road and the corridor served.

The research revealed that the areas closer to the N4 corridor had higher growth in terms of economic output as measured by Gross Valued Added than those further removed. There was a stronger correlation between growth in employment and proximity to the road corridor for the manufacturing-, construction-, trade and transport sectors. Analysis done also shows that income per capita has grown at a faster rate in areas closer to the corridor that areas further removed.

2.2.2 The Business Case for SDIs

Introduction

In a report on “SDIs: The Business Case” it was stated that a Regional Spatial Development Initiative (an SDI) programme is an investment facilitation initiative of the South African Department of Trade and Industry (the dti). It was reported that the programme focused on high potential resource areas within the region with the following basic characteristics:

- Political commitment to the programme.
- Conducive policy and regulatory environment in place, or is emerging.
- The underlying resource base has the potential to attract investors.
- Key infrastructure components are in place, or almost in place.
- Collectively, there is a strong “business case” for the development of the SDI area.

It was reported that an SDI would seek to create the conditions and opportunities for successful new fixed investment within a specific area. Importantly the programme is negotiated with the countries in which the SDI is implemented and the host countries take full ownership of the programme. The dti through the Regional SDI Support programme, provides financial, contracting and technical support to the countries.

103 “SDIs: The Business Case”, Jurgens van Zyl, 14 April 2009
**SDIs, development corridors and transport corridors**

The Regional SDI programme often includes more than one country and in many cases based on existing transport and logistics linkages between 2, or more countries. In some of the SDI programmes the transport link of land-locked countries to a functioning port is a key consideration. In such cases the focus is on identifying and preparing investment projects that could make the investment in the transport infrastructure more feasible. Clearly such SDI programmes make an important contribution to the economic and infrastructure integration of the region. Good examples of these are the Maputo Corridor between SA and Mozambique and the Nacala Corridor which improves access to the Nacala port for both Malawi and Zambia. Other SDI programmes simply focus on the investment opportunities within high potential areas where the pure transport function is less important, such as the Limpopo and Zambezi Valley SDI’s.

The nature of the SDI programme and the underlying approaches therefore both requires a high level of economic, regulatory, policy and logistical integration. A key outcome of the initiative however is that it by necessity fosters integration at all these level through implementing the programme. The programmes are structured in such a manner that these matters are more readily dealt with within a more focussed project environment.

**The Business Case**

The SDI approach was seen to be different from a long-term comprehensive development strategy. Its basic point of departure was that private sector investment provided the essential kick-start to a sustainable investment process. The SDI programme was to be convinced of the competitive opportunities the region offered to investors, and there was substantial evidence that returns on investment in the region outperformed those in many other developing and developed regions.

The report developed ways by which an SDI programme could develop a compelling business case?

- **Firstly**, the programme acknowledges the sharp differences within the region, especially in terms of resource and infrastructure endowment. The SDI approach is to focus on areas with the best chance of attracting new investment.

- **Secondly**, the programme is constantly improving its investor intelligence to identify sectors, industries and investment opportunities based on real demand and, perhaps more importantly, to accurately match investment opportunities to appropriate investors.

- **Thirdly**, the approach is not simply to prepare a long list of investments, but to ensure integration of the programme at various levels:
  - The SDI needs to be consistent and integrated with regional, national and local priorities and strategies.
  - Key infrastructure components need to be available and/or investment in new infrastructure needs to be co-ordinated with investor requirements.
  - The SDI ensures strong linkages and complementarities not only between projects, but also between investment projects and infrastructure.
The total investment programme (by both public and private sectors) needs to contribute towards further economic integration of the SADC region.

- **The fourth** underlying element of the business case is to facilitate strong agglomeration by ensuring a critical mass of private sector investment, matched by appropriate infrastructure.

- **Fifthly,** the SDI programme is taking deliberate measures to increase development impact by:
  - Engaging investors to improve employment creation in investment projects.
  - Facilitating effective skills transfer to local workers and managers.
  - Increasing opportunities for local businesses to participate in new investments and improving their capacity to do so.

- **Finally,** the SDI programme works closely with other agencies to provide comprehensive support to new investors.

### Challenges

These elements contribute towards formulating a strong business case. However, nothing builds the business case like new investment. Identifying and developing an initial cluster of high impact projects therefore remains a key component of the SDI approach. It was found that lead investments do more to attract further investment than almost any public sector measure.

The report found that a number of challenges that could be listed in preparing and communicating the business case for a particular SDI were simply not sufficient. The Regional SDI Support Programme and its partners typically would face new challenges, especially to ensure that the development impact of investments is experienced more widely and deeply within society. Specific attention needed to be paid to the following issues in the Regional SDI Programme:

- Implementing measures to ensure new investments are accompanied by employment creation. Investors need to be encouraged and supported to design, plan and implement new projects with maximum job creation in mind.

- Similarly, new investments create opportunities for the establishment of local support and service businesses. Experience has shown that this requires a deliberate effort and does not happen automatically.

- Ensuring effective skills transfers.

- Improving economic integration of the region and especially trade flows between SADC countries.

- The FDI process needs to be managed deliberately to achieve these objectives. Ensuring a sustainable development impact requires a greater effort from investors, but makes business sense over the longer term. Responsible investors typically respond with understanding, commitment and innovation to the particular challenges of the region.
2.2.3 African Acceleration of Industrialisation

In a paper\(^\text{104}\) by Mr Paul Jordan, *Plan of Action for African Acceleration of Industrialisation - Promoting Resource-Based Industrialisation: A Way Forward* (2008), a number of conclusions were drawn with clear reference to the effective future development of corridors:

- The commodities boom (as at 2008) was likely to continue for up to 30 years if China, India and other emerging economies continued to stimulate demand and increase the global resources intensity of use. This would ultimately fall off as these economies mature (at a GDP/capita of around $15k to $20k). However, there were a further 3 billion people in economies that have yet to commence on the resources intensive phase of growth;

- Africa was generally well-endowed with natural resources, but the resource endowment of many African states was poorly known, particularly for mineral resources. Consequently an important area for aid intervention would be to assist African states in the assessment of their potential natural resource assets;

- To avoid the “resource curse” African states needed to “deepen” the resources sector through the equitable garnering of resource rents for investment into physical and human infrastructure and through the development of up-, side- and down-stream resources linkages into the local & regional economies. The equitable sharing of resource rents was to be facilitated through flexible tax regimes based on profitability (rate of return) rather than profit (as is used in the oil & gas sector) and the possible use of auctions for known resource potential in order to flush out the real market value;

- However, effective resource rent usage and resource sector deepening was critically dependent on governance, particularly the effective operation of key institutions to enable economic activity. The capacitation of African states in the critical areas of economic governance, particularly resources governance, was set to become a priority for assistance initiatives;

- The use of foreign Trans-National Corporations (TNCs) to realise Africa’s resources potential, rather than relying predominantly on domestic capital, whilst bringing in scarce capital & skills, carried several risks, particularly around the deepening of the sector through linkages into the local economy and the building of a competitive advantage through investments into HRD and R&D. These risks could be overcome through effective resource governance, particularly resource contracts/leases/licenses, and interventions to stimulate the local resource linkages industries;

- In most African states, the development of their resources comparative advantage was critically constrained by bad or non-existent infrastructure;

- The provision of the requisite infrastructure, to realise African resource and resource-based industrial potential, required capital far in excess of the capacity of African economies,

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\(^{104}\) *Plan of Action for African Acceleration of Industrialisation- Promoting Resource-Based Industrialisation: A Way Forward*, Paul Jourdan, August 2008
necessitating the use of PPPs to acquire the necessary capital and skills from the international market. In this regard the building of appropriate state PPP configuration and administration/registration capacity was to be a key target for African governments as well as bilateral & multilateral assistance;

- The establishment of a continental network of Development Corridors, to realise Africa’s huge resources potential, was a possible method of constructing the requisite infrastructure, through PPPs based on synchronising the resources infrastructure usage (revenue streams) with resource and other investments to provide such usage (“use-or-pay” contracts to underpin capital raising);

- Cross-border Development Corridors provided an opportunity for “collective self-reliance” through the multilateral governance of economic activity and the management & regulation of joint infrastructure. This could be further strengthened through regional authorities & entities to manage and regulate regional infrastructure. In this regard methods of capacitating & strengthening RECs (Regional Economic Communities) in this regard needed to be pursued;

- A Development Corridor work-flow should consecutively move from DC identification, to DC operations, to investments projects processes, to “densification & deepening” and on to establishing ongoing DC investment facilitation capacities (entities).

- The selection of a Development Corridor was regarded as being key to its subsequent chances of success and was to be based on the inherent economic potential, infrastructure needs, policy & regulatory constraints, enhancement of regional integration, impact on poverty alleviation, SMME development potential (densification & deepening) and potential accountability and transparency constraints.

- The selection of a Pilot DC was to be based on the same criteria, but in addition the existence of possible anchor projects was important, as was whether not there was already a political commitment to the proposed pilot DC. The following were possible pilot DC candidates that were identified: Central SDI, Northern DC, Tazara (Dar es Salaam) DC, Gulf of Guinea DC and the Zambese/Sena SDI.

- There were numerous lessons from Development Corridors that could inform future “DC best practice” which included: the criticality of inherent economic potential, the importance central (HoS) DC buy-in & coordination, the de-politisation of key appointments (DC Project Manager and sub-contractors), adequate resources for project preparation, the integrity of cross-border infrastructure, the criticality of DC densification & deepening and the establishment of ongoing DC capacities.

- A Resource-based African Industrialisation & Development Strategy (RAIDS) based on using Africa’s significant resources endowment (comparative advantage) to catalyse growth in other sectors, was expected to provide a viable component of an integrated and sustainable growth & development strategy for Africa, through:
  - the use of resource rents for reinvestment into physical & human infrastructure;
  - the establishment of resource DCs to facilitate the provision of infrastructure for use by other sectors;
- the maximisation of resource sector linkages by building integrated resource industrial clusters (up-, side- & down-stream linkages);
- the development of high-level skills within the industrial clusters, through investment into HRD and R&D, to incrementally build a competitive advantage off its resources comparative advantage, and
- *Generic diversified African industrialisation* based on the resource linkages industrial clusters/nuclei.
2.3 Economic Benefits of Port and Corridor Development

2.3.1 Introduction

A paper was submitted to the Namibia Trade and Poverty Programme by Ms Lynn M. Harmon of the Corridor Development Consultants (the CDC) titled "Final Report: Economic Benefits of Port and Corridor Development," 04 July 2007. It was stated in the paper that it was a major objective for Namibia in its 1st and 2nd National Development Plan to become a transport and logistics hub. The objective sought to capture the competitive advantage of its location and natural port on the south west coast of Africa.

Investment in transport and logistics was seen as spurring economic and commercial growth for the country. Ideally, this was true both for the port and along the corridors that radiate from it to Botswana, South Africa, Zambia, Zimbabwe, DRC and Angola. The purpose of the study on which the paper was based was to identify the data on the economic impact of the investment already captured in existing reports and to identify available methodologies for further assessing the impact of transport and logistics development on the national economy. The latter have definitive value for other Corridor-type developments across the world and indeed in Southern Africa.

The study found that transport costs in (Southern) Africa account for approximately 13% of the value of imported goods, and 21% for landlocked countries, as compared to only 5% as the global average. Research further suggested that cutting transport costs by half (in line with the Millennium Development Goals) would increase trade by a factor of 5. Therefore investments in transport were found to have a significant potential return for the economy as a whole.

Ports were regarded as being engines of national economies. Port investments were necessary to maintain the competitiveness of a port such as Walvis Bay in taking advantage of its strategic West Coast of Africa location for attracting transit traffic and encouraging growth in manufacturing and diversification of the Namibian economy. Economic growth and diversification was expected to strengthen Namibia's ability to meet education, health and other needs of its population.

Ports were also dependent on the strength of their inland transportation to deliver goods from point of origin to destinations. Therefore it was the strength of the whole transport system that would determine the economic impact the corridors could have on the economy.

To adequately measure the benefits of transportation projects, it was found to be important to have baseline data on key indicators before the project would start and a plan for the type of analysis to be conducted during and after the project. It was also useful to meet with stakeholders on the Corridor to
understand their perception of the opportunities and constraints they would have in realizing economic benefits from the project. In that way, constraints could be addressed as the project was being implemented.

The paper identified a number of indicators to measure economic benefit from transportation investment to include the following:

- reduced transport operating costs;
- time savings on transport services;
- reduced frequency and severity of transport-related accidents;
- increased access and mobility;
- job and income benefits gained from transport construction and maintenance;
- revenue, jobs and income providing supplies to the project;
- jobs and income generated from operating new infrastructure or the expansion of transport services;
- government revenues gained from taxing construction contracts and individuals hired;
- indirect jobs providing services to construction workers;
- backward and forward linkages to other businesses that develop because of the project;
- the multiplier effect of additional workers with purchasing power in the local economy; and
- cost savings from improved infrastructure

### 2.3.2 National Development Goals

The study on which the paper was based found that, during the first decade of its independence, Namibia’s overall objective focused on four medium-long term goals:

- Revive and sustain economic growth;
- Create more employment opportunities;
- Reduce inequalities in income distribution; and
- Reduce poverty

The results of the study showed that the First National Development Plan (NDP1) projected an average annual growth rate of 5%. Instead, 3.8% was achieved. Underlying circumstances of adverse climate conditions could explain this phenomenon, but it also seemed to reflect lower levels of return on capital. The lower levels of return were determined to flow from the maturity of the mining sector and size of the public sector.

As a result, the Second National Development Plan (NDP2), 2001/2 – 2005/6, recognized the political stability and social achievements of the first decade of independence and set investment and productivity goals to achieve higher outputs and incomes through efficient and effective utilization of the country’s resources.
The result was that the longer term vision was established by Namibians in their Vision 2030 which set forth the broad objective of transforming Namibia from a developing, lower-middle income country to a developed, high-income country by the year 2030. Vision 2030 was developed through a broad consultative process. NDP2 was geared to achieving the medium-term objectives of Vision 2030 by the following:

- Revive and sustain economic growth;
- Create more employment opportunities;
- Reduce inequalities in income distribution;
- Reduce poverty;
- Reduce regional development inequalities;
- Promote gender equality and equity;
- Promote economic empowerment; and
- Combat the further spread of HIV/AIDS.

In addition, to these stated goals, NDP2 established a firm commitment to the further development of specific sectors of the economy and to social and political development of the Namibian people. It also established the central role that the private sector had in achieving the development objectives. Household, corporate and public sector savings were needed, along with donor support, to realize the objectives of NDP2. National development targets were set for realizing the goals established in NDP2.

The study found that, during the 1990s, Namibia carried out several reviews of its overall transport strategy and began a process of restructuring the various modes. As a coastal country with a west coast seaport, Namibia saw multimodal development as a key objective for its development. The increasing containerization of trade in the region also lent itself to the further development of an efficient multi-modal system. The Walvis Bay Corridor concept provided for the effective development of a transport logistics chain using the Port of Walvis Bay. Government facilitated this development directly and through the Walvis Bay Corridor Group, a public-private partnership to market and facilitate transport on the Walvis Bay Corridor. The goal of NDP2 for transport was to contribute to sustainable national development through transport that was equitably distributed across regions, serving the entire population, was environmentally friendly and contributed to economic growth, employment, poverty alleviation and reduction of income inequality. It set targets for the development of each mode and for the greater utilization of the Port of Walvis Bay and the regional corridors. The promotion of improved border facilities, increased computerization at border controls and other means to promote Namibia’s role in regional transport networks was a core of NDP2 goals for transport.

### 2.3.3 Traffic and Economic Benefit Data

The paper reported that the most of the studies that involved Corridor Development in Namibia had either been far ranging explorations of economic/commercial opportunities along Corridors, Corridor
Development strategies or analyses done as part of a project appraisal for a specific infrastructure investment.

This paper reviewed the data that was available in previous studies on the traffic at the port and on the development Corridors and on economic benefits that resulted from investment in the port and Corridors. Feasibility studies that were conducted prior to approval of development projects were reviewed with a brief preliminary analysis of whether the projections made prior to development did realize. Studies done to analyze Corridor development or monitor traffic and business opportunities along Corridors were also reviewed. The objective was to see what baseline data existed as input for doing a more comprehensive analysis of the economic benefits of the port and Corridors.

2.3.4 Corridor Analytical Studies

The study\textsuperscript{106} that was conducted by Ms Lynn M. Harmon found that studies in various parts of the world have sought to define transport corridors, their performance and the role of institutions in managing them.

\textit{First Reference Study on Best Practices in Corridor Management}

The first analytical study\textsuperscript{107} that was referred to by Ms Harmon was \textit{Best Practices in Corridor Management}, by John Arnold, Gerald Ollivier and Jean Francois Arvis, Trade Logistics Group, World Bank, February 2005. This study defined transport corridors and their roles. It provided tools for analyzing Corridor performance and a description of the various types of instruments to improve performance and institutions to manage corridors.

The study defined Corridors in terms of gateways at both ends, a series of links between areas of economic activity and nodes that interconnect transport services. Most corridors were constructed across several countries for the purpose of facilitating regional economic growth. They were generally based on old routes that were made more permanent and efficient. Corridors were built for several reasons including to increase economic activity, to increase activity at an international gateway (for example a port), to facilitate bilateral and multi-country trade, and to foster the development of an economic union. This study provided some very useful recommendations of how to analyze corridor services/performance:

- \textit{Cost and Time}: Corridors were found to include several alternative routes or the analyst could wish to compare several alternative corridors regarding time and cost. Costs should be measured in terms of out-of-pocket costs as well as loss or damage of cargo. Time had to be measured in terms of time spent between one point and another including all delays caused by congestion and frequency of service.

\textsuperscript{106} \textit{Final Report : Economic Benefits of Port and Corridor Development}\textsuperscript{ Ms Lynn M. Harmon, Corridor Development Consultant, 04 July 2007

\textsuperscript{107} \textit{Best Practices in Corridor Management}, by John Arnold, Gerald Ollivier and Jean Francois Arvis, Trade Logistics Group, World Bank, February 2005
Generally the time included actual movement on the route and time spent at nodes where goods are transferred, inspected or other physical or regulatory requirements. Discretionary delays, such as goods being stored, processed, consolidated or deconsolidated, repacked, or labelled, should not be included in the analysis. Improvements in time could be achieved and modelled for both the links and at the nodes. The analysis can also determine which investments/improvements offer the greatest potential time savings.

Costs can be analyzed in the same way. Cost savings can be achieved in both fixed and variable costs. They could derive from usage of larger transport units, policy changes that reduce barriers to market entry, etc. Cost savings at nodes can result from greater competition among logistics service providers, improvements in technology and infrastructure at the nodes, and regulatory changes regarding procedures at the nodes.

- **Reliability**: With application of "just in time" and "just in sequence" to many manufacturing operations, competitiveness of a route depended not only on average time and cost, but also on the consistency of meeting delivery times. Reliability refers to the variation in transit time for a specific form of shipment on a specific origin-destination pair. The variation could be affected by both controllable factors and uncontrollable factors. Shippers and consignees accommodated the uncertainty by adding slack time to the orders. If reliability was improved the slack time allowed could be reduced and bunching of arrivals and departures could be avoided making operations more efficient. The benefit could be calculated by using probability to estimate the slack time required for different levels of reliability. The alternative to shipper adding slack timewise for transporters to add slack time to increase their ability to operate on a fixed schedule. This increased the cost of transport by reducing vehicle utilization, but was offset by savings at the nodes, i.e. savings achieved through better logistics operations and less time waiting for transport.

- **Flexibility**: Greater flexibility was being introduced into the production chain which in turn affected the demand for transport and logistics services. Manufacturers were changing designs more rapidly and responding to changes up to the time of shipment. Retailers were responding to rapid changes in product lines and consumer demand. These changes required more flexible supply chains. The availability of multiple routes and modes was one source of flexibility, but more important was the availability of different types and qualities of service. This factor led to the development of logistics integrators (4PLs). Global competition was reducing production costs and making logistics services a more important competitive factor.

Therefore, improving corridor performance had to include all these supply chain factors. A generalized cost function could be achieved by the following:

- **direct cost + value of time (average transit time + variation in time x the reliability criteria)**

- **The marginal value of time** could be estimated as the reduction in costs resulting from a reduction in transit time or the willingness to pay for a faster service. The lowest value of time was calculated as the daily cost of financing good in transit or inventory. For
goods valued at the US$2000 – 5000 per tonne range, this amounted to $.75 to $2.50 per day per tonne. It was also possible to measure the specific impact. For example, the benefit to a garment manufacturer, who, by reducing shipping time by 2 weeks, could successfully enter a niche market, could be calculated as the profits earned from the new business. The benefits to a producer of perishable goods could be the additional earnings from lengthening the time within which goods could be sold.

Reliability could be measured as the cost of penalties for later deliveries or the cancellation of orders. Improvements in reliability may be add to the transport cost, but reduced the slack time allowed. The model was also very sensitive to total volumes so any reduction in orders could affect the viability of introducing improvements in reliability. It had to be remembered that costs in the corridor were only a fraction of the total delivered cost of the product. Transport costs typically amounted to 10% of the delivered product cost. If the corridor accounted for half of this, and an improvement was introduce that reduced cost by 25% of which half is passed to the buyer, then the impact was only 0.6%.

The concept of Corridors was seen as a powerful tool for improving trade. The concept included not only the infrastructure but also the transport and logistics services. It provided a means of focusing public and private attention on the impact of high costs, delays, unreliability and rigidity. It limited the scope for attention and focused on the commercial requirements of trade-led growth. The mechanisms available were capital investment, new legislation and regulatory reform.

Second Reference Study on Benefits from Road Construction and Rehabilitation

Road infrastructure economic benefits were traditionally measured in terms of savings in vehicle operating costs and time savings. Both new construction and rehabilitation could be measured in terms of jobs created, wages generated and additional revenue to government:

- **jobs created and wages generated** – This benefit is often sizeable. The Roads Authority is committed to hiring the unskilled and semi-skilled labor locally so as to spread this benefit to various parts of the country. Both technical and general employment skills are learned through working on projects. Government can also incorporate special construction training programs in conjunction with road projects and encourage NGOs to provide assistance with getting a next job to insure that a household retains a wage earner for its support. Some rural roads lend themselves to labor-based construction. Where appropriate, these projects have a larger employment benefit.

- **contractor headquarters** -- Major road projects need contractor headquarters with significant support jobs that will be hired locally and equipment and furnishings which should be bought locally. Government should plan to get maximum benefit from these opportunities to generate employment. It must, however, not hamper the contractor as this can cause cost overruns and reduced quality.

- **purchase of supplies produced locally** – In Namibia, sand, gravel and other road building materials available near the road site are not paid for. Nevertheless, if local people do the
quarrying they are paid. In addition, materials that are manufactured or assembled in Namibia have an economic benefit in jobs, wages, purchase of materials, services, etc. This benefit should be quantified.

- **wells** -- Road projects use a lot of water and contractors generally bore wells along the length of the road right of way. Some wells must be kept for road maintenance, however, many can be turned over to local communities to provide scarce drinking water, enable a vegetable garden, etc.

- **community development** -- When road crews are in an area, they are often willing to use their equipment to level a sports field, improve the road to a school, etc. Such community assistance should be encouraged and noted as a project benefit.

- **service centers** -- Roads need service centers designed to the needs of hauliers, motorists and tourists for road services, sale of handicrafts, food, small retail operations, etc. It is possible for the government to construct the building shell to be made available to the local community to develop and operate. For this and other local economic development efforts, local residents should be linked to SME loan programs as well as financial and management advising to insure success.

- **government revenue benefit** -- The contractor will owe taxes on the contract generally. Workers will owe individual income taxes. Roads often bring business development that generates addition tax revenue in the form of business taxes and VAT.

- **business development** -- Wholesalers, retailers and other businesses are generally built at crossroads convenient to customers and resupply routes. An industrial survey at the beginning of the project provides baseline data from which to estimate the impact of the new infrastructure in generating new businesses and expanded existing businesses.

- **transport operators** -- Once an area is connected by road for the first time, residents will begin to organize truck and van services. Access for the new operators to financing institutions will be important.

### 2.3.5 Conclusion

The study that was conducted by Ms Harmon concluded that transport availability had a major impact on mobility, access to goods and services and economic growth. Virtually every economic and social sector depended on transport in some way. Corridors were economic growth areas where public sector investment could spur business investment and economic development. While this was widely believed, there were few regional studies to demonstrate the economic benefit of corridor development. The study analysis was critical to transport planners as they decided where to invest limited resources most effectively. It was equally critical to policy-makers when they sought to mobilize funds for transport projects.
2.4 Conditions and Opportunities: Assessment Criteria

2.4.1 The Sub-Saharan Africa Transport Policy Program (the SSATP)

The Sub-Saharan Africa Transport Policy Program (the SSATP) is an international partnership to facilitate policy development and related capacity building in the transport sector in Sub-Saharan Africa. The SSATP accepts sound policies lead to safe, reliable and cost-effective transport, freeing people to lift themselves out of poverty, and helping countries to compete internationally. The SSATP is a partnership of the following parties and institutions:

- 35 Sub-Saharan Africa (SSA) Countries
- 8 Regional Economic Communities
- 2 African institutions, i.e. UNECA, AU/NEPAD
- 10 active donors with the EC (main donor), Denmark, France, Ireland, Norway, Sweden, United Kingdom, Islamic Development Bank, African Development Bank and The World Bank (host)
- Numerous public and private State and regional organizations

2.4.2 The SSATP Study

In May 2008 a study was commissioned by the SSATP to determine “Lessons of Corridor Performance Measurement”. The resultant paper aimed at presenting the methodological lessons of several corridor performance measurements carried out in Africa. In evaluating assessment criteria the study accepted various steps in the logistics chain as shown diagrammatically below:

![Diagram of the Logistics Chain](image)

Figure 32: The Logistics Chain

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Based on the then experience the authors concluded that, while road drivers’ trip questionnaires may be useful, the core of monitoring activities should mostly rely on existing consolidated data (customs and port data) and limited surveys (freight forwarders, major trucking companies, truckers and transport unions), to benchmark corridor performance.

In considering the assessment criteria and approach that should be considered for application a number of matters typical to SADC / NEPAD countries were considered including the following:

- Developing countries that are landlocked face many challenges to compete effectively in the world markets. They experience high trade transaction costs, with logistics representing a significant proportion of the GDP, which at times can more than double that of other emerging economies or treble that of developed countries. This problem impacts Sub-Saharan Africa more than any other region, as it includes fifteen land locked countries.

- International transport corridors serve the foreign trade of a single country or of several adjoining countries. They are composed of national segments, also serving domestic traffic. As a result they serve competing demands, and are subject to conflicting objectives for their development, multiple jurisdictions responsible for maintenance and uncoordinated sources of funding for both development and maintenance. Co-operation between States, through corridor-based actions and improved dialogue, can lead to significant transit benefits for landlocked countries.

- Given the challenges facing landlocked countries, sensitizing and influencing policy makers on how to improve access requires accurate and specific data on impediments to the smooth flow of traffic. Appropriate data can assist in pinpointing those components of the regional systems that are not working well so that infrastructure, regulatory or institutional reform interventions, or simply operations improvements can be better targeted. It is therefore critical that data on corridor operations be collected systematically.

The study found that the performance of a corridor could be evaluated from two main perspectives:

- An **infrastructure perspective**, which considers the physical capacity of links and nodes in a corridor as well as their use. This approach is often used when deciding on requirements for additional capacity but provides little insight into the effect of corridor performance on trade.

- A **service perspective**, which examines the quality of the services provided for goods moving on the various routes. Performance is measured in terms of average time and cost for transport units moving through this corridor. These may be broken down into time and cost for specific links and nodes (Arnold 2006). In terms of trade facilitation, the second perspective probably gives the most interesting results, as it allows benchmarking of several corridors with similar length/characteristics or, for a given corridor, helps reach the optimal transit time that should be expected given the infrastructure and services performance.
2.4.3  The Northern Corridor as Pilot Application

The Northern Corridor is defined as the transport infrastructure, facilities and services radiating from the port of Mombasa to the landlocked countries in the Great Lakes region. The corridor covers the transport routes from the port of Mombasa to Uganda, Rwanda, Burundi, and Eastern DRC, as well as Northern Tanzania and Southern Sudan. Various modes of transport and modal combinations, which include roads, railways and inland waterways, are applicable and used along the corridor. Among Northern Corridor Countries only Kenya and Uganda are connected by rail, although multimodal combinations are possible from other countries.

The study report presented the methodological lessons of transport corridor performance measurement and the first results of a pilot applied to the Northern Corridor. Road transport data proved the most difficult to collect. Based on our monitoring experiences in Africa, the study group concluded that, while road drivers' trip diaries may be useful, the key issue was to frequently collect and disseminate statistically significant data at a sustainable cost.

At the current cost of the various approaches, a recurrent survey of trucking companies or operators, and, to a lesser extent, freight forwarders would prefer physical surveys for a functional corridor monitoring tool. The core of monitoring activities should however rely mostly on existing consolidated data (customs and port data) and limited surveys (freight forwarders, major trucking companies, truckers and transport unions).

More specifically, the approaches tried in Africa have shown that with limited costs incurred, trends in IT development in Customs and Ports made it easier to produce statistically significant time data, allowing an appropriate evaluation of transit time and reliability. Cost data required freight forwarders or transporters inputs and proved less easy to collect.

Expensive and detailed surveys were needed to do a micro analysis of bribes and illegal stops, but when a specific problem is targeted specific surveys with appropriate champions could succeed at limited costs, as was done on the North South Corridor at some key border crossings. Some detailed monitoring of bribes and illegal checkpoints has been done in West Africa at a substantial cost, leading to results such as these presented in the report that could then be used to sensitize or influence decision makers.

Usefulness of transport corridor performance measurement was demonstrated but the issue of their sustainability remained to be fully tested. That was an area, in which donors could make the difference by continuing or launching initiatives because that was an area, which did not have sustained funding sources. If this move was not undertaken, regional trade and transit facilitation projects would have difficulties to materialize into successes.
2.5 The Effectiveness of Rail Concessions in the SADC Region

2.5.1 Freight Monitoring and the Corridors

By March 2009 a report was issued by the South African Global Competitiveness Hub where it was found that the Southern Africa region remained among the poorest of the world. The region accounted for less than one per cent of global merchandise trade. Aggregate GDP in the Southern African Development Community (SADC) was $188 billion in real terms, which yielded a GDP per capita of approximately $1,000. Foreign direct investment flowed to the region have declined over the past decade.

The region’s ability to compete effectively in the global economy was found to have been constrained by a number of factors, including the trade policy environment and domestic regulatory policies that result in increased transaction costs. Trade policies remain generally mercantilist, which resulted in anti-export bias. Constraints in trade facilitation, including customs valuation and clearances, government procedures and cross-border transport were found to be widespread. Restrictive policies suppressed foreign investment in many key service sectors.

The region was found to be characterized by a multiplicity of regional integration agreements and bilateral agreements, and was engaged in trade negotiations at the multilateral and bilateral level. These included the Doha Development Round, the EPA negotiations, the mid-term review of the SADC Trade Protocol and negotiations for a free trade agreement between the US and SACU. The African Growth and Opportunities Act (AGOA) stimulated an increase in apparel exports to the United States. The trade negotiations provide opportunities for increased economic growth providing the countries are able to compete in the global economy. The project supported the Southern African countries to transform the opportunities into results.

Railways in Southern Africa constituted one of the most integrated networks linking some 12 mainland SADC countries, with a route network of more than 22,000 kilometres. Around the 1970s, railways carried most of the internal as well as exports and imports amounting to about 250 million tonnes, with the railway market share exceeding the 50% mark, and enjoyed recognized levels of efficiencies.

According to the report the railways had been reliable forms of transportation for both passengers and goods for decades, on a selective basis, the performance of railways in some countries started declining.

Levels of efficiencies declined to ultimately low levels of performance, followed by requests for increased levels of subsidy by central governments. However, due to alleged persistent government interference in the running of railways, as well as poor management thereof, the commercialized

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110 The National Freight Monitoring Framework, Department of Transport, July 2009
railways performance still declined. This trend then called for a new strategy aimed at institutionalizing sustainable reforms of the railways and their performance to rid them of unwarranted interference, and an institutional framework coupled with investment to put the railways on the path to long term viability.

Following the aforementioned performance, and financed viability challenges of railways, the World Bank and its partners then advocated for private sector participation in the operations of railways through various models of concessioning of railways for private sector consortia for periods ranging from 20 to 30 years.

Pursuant to this initiative, SADC railways pursued the path of concessioning although a number of Member States, especially those whose performance were satisfactory, namely Spoornet, Swaziland Railways, Trans Namib, Botswana Railways, that continued to entertain state participation in the management and operation of railways as a basis for the running of the railway business. However, other States, namely Malawi, Zambia, Mozambique acceded to the concept of concessioning and by March 2009, the United Republic of Tanzania had finalized concession agreements for Tanzania Railways Corporation.

The SADC Railways with its concessioning process were assisted through funding from the United States Agency for International Development (USAID), under the SADC Transport Efficiency Programme (STEP) component. The Southern Africa Transport and Communications Commission Technical Unit ((SATCC) - TU) formulated some guidelines for concession options for the region. The guidelines constituted a model on the basis of which, SADC Member States could formulate their concessioning frameworks. Customized frameworks were also developed through SATCC-TU for the railway concessioning frameworks for Namibia, Zimbabwe, Zambia and Tanzania.

Following the concessioning of some railways in Southern Africa, a number of challenges seemed to have emerged, among them, declining performance in certain areas, declining state of infrastructure, massive retrenchments, reduced business cooperation amongst railways in certain areas, reduced frequencies of passenger services. However, the Sates subsidies to railways had been eliminated, thereby bringing about fiscal relief to the States concerned. As a result of the reduced capacity of such railways, some traditional rail traffic has since moved on to the road, causing immense damage to road pavements.

Due to the fact that the performance of the concessioned railways has been below the expectations of the states, the SADC Ministers responsible for Transport approved the study on the “Review of the Effectiveness of Rail Concessions in the SADC Region”. To this end, the Southern African Development Community (SADC) Secretariat commissioned a study to address the request of the Ministers and the Member States.

The study report was issued by March 2009 and found amongst others that, following the concessioning of some railways in Southern Africa, a number of challenges seemed to have emerged.
Amongst the challenges was declining performance in certain areas, declining state of infrastructure, massive retrenchments, reduced business cooperation amongst railways in certain areas, reduced frequencies of passenger services. However, the States’ subsidies to railways had been eliminated, thereby bringing about fiscal relief to the States concerned. As a result of the reduced capacity of such railways, some traditional rail traffic moved on to the road by late 2008 and early 2009, causing immense damage to road pavements. The background of this provided more of the justification for the study.

The concessioned railways in the Southern Africa Development Community (SADC) region were each evaluated to determine if performance, both operational and financial, had improved since concessioning. Reasons for failure to achieve expectations were also examined. Several common causes were furnished in the report based on the findings of those concessions believed to have been most lacking in performance. These common causes were:

1. Failure to enact enabling legislation and to establish a Railway Regulator prior to concession. This was found to be the case in Zambia, Mozambique and Malawi. To a lesser extent the same was true in Zimbabwe, but that concession is unique in its concession process.

2. Failure to have a clear understanding of the roles and responsibilities of the concessionaire and government as relates to infrastructure rehabilitation and investment. This was found to be the case in Zambia, Mozambique and Malawi.

3. In the absence of enabling legislation and regulator, several concessions depended upon contract language to govern concession obligations. In most cases the contract language did not anticipate every circumstance and eventuality that might arise. Clear definition of “investment”, “maintenance” and “force majeure” are but of few of the areas of dispute. This was found to be the case in Zambia and Malawi.

4. Failure by the parties to establish clear Public Service Obligations (PSO) of both parties due to lack of clear definition of PSO and because of trying to defer the date for reaching agreement to a point in the future, all passenger operations in those countries are now matters of dispute and dissatisfaction. This is true in Malawi where the date for agreement was put off for five years, and in Zambia where standards weren’t clear and where supposed passenger subsidies haven’t been forthcoming.

5. Failure to have a sound business plan that would support capital investment (Malawi).

6. Timeliness and sequencing of the concession process from time of announcement of intent to finalization of the concession. This was found to be true in Zambia, Mozambique, and Tanzania. The lengthy process had an adverse impact on employee morale, asset deterioration and business shrinkage.

7. Splitting concessions into units, one of which was attractive and one of which was not. This has led to a common concessionaire focusing only on the attractive and having de facto abandoned the unattractive, yet very necessary business. This was especially true in Zambia.

8. Granting a privately negotiated concession that contained clearly anti-competitive clauses which have severely impacted other railways within the region’s network. This was the case with the concession in Zimbabwe.
Each of the concessioned railways was studied and the results and findings are contained in the body of this report. Where possible, interested stakeholders were interviewed and were given the opportunity to present data outlining performance and their own views of the areas of dispute.

2.5.2 Freight Monitoring and the Corridors

The National Freight Monitoring Framework study that was conducted by the Department of Transport identified a requirement for consolidated information on the movement of freight within South Africa. Furthermore, the existing data collation process utilized a variety of data sources, with most of the data being collected and stored manually. The desired state was stated as being the automation of the entire process. In addressing these shortcomings, the Department embarked on an initiative aimed at monitoring freight movement on the country’s transport network. The main objectives were to:

- Track container and other general cargo movement in the South African transport system
- Control overloading of freight on various forms of carriers
- Ensure licensing enforcement
- Identify and manage hot spots
- Integrate information captured with other existing systems in order to enable reliable and real-time decision-making and reporting capability
- Enforce Mandatory/Force Filing at source i.e. declaration of manifests, and realize the benefits
- Ensure compliance with the Container Safety Initiative (CSI) and the International Ships & Port Security (ISPS) Code and for profiling Cargo Operators/Owners.

The end goal for the Department is to have access to real time freight traffic information on a national basis, delivered by technically reliable tracking systems. This will enable organizational planning and management, road safety management and decision making at various levels of Government. The report discussed freight movements by corridor, mode, type and tonnage within South Africa. The aim was to produce concise and consolidated views of the available information on freight data by 2009. The corridors that were assessed were as follows:

- Gauteng - Durban corridor
- Gauteng - Cape Town corridor
- Gauteng - Beitbridge corridor
- Gauteng - Port Elizabeth corridor
- Gauteng - Maputo corridor
- Gauteng - Lobatse – Walvis Bay corridor
- Gauteng - East London corridor.

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111 The National Freight Monitoring Framework, Department of Transport, July 2009
With the initiation of the National Freight Logistics Strategy (NFLS), the dearth of freight related information was identified by the Department of Transport as one of the impeding factors in the effective investment, development, utilisation and maintenance of transport infrastructure within South Africa. This identification yielded a requirement for a National Freight Monitoring Framework (NFMF) to meet the legislated directives and recommendations of the Department either directly or indirectly. The target of the NFMF is to form the basis from which to achieve complete freight transit and storage life-cycle insight using monitoring processes and technology to improve management, planning and regulatory functions of the Department and key stakeholders.

The NFMF aimed to address the challenges faced in capturing, processing and presenting freight information for intelligence and decision support to both the Department and its stakeholders. The information gathered was to play a critical role in the ability to provide the Department with accurate and reliable intelligence on the movement of goods and services within the country. Other benefits were to be the monitoring of freight overloading, licensing enforcement, identification of hot spots and/or bottlenecks in freight traffic transport thereby enabling planning to mitigate these. A key necessity of the NFMF was compliance with the Container Safety Initiative (CSI) and the International Ships and Port Security (ISPS) Codes.

The framework had to encompass all modes of transport being road, rail, aviation, maritime and pipeline. The proposed pilot was to be developed practically with the utilisation of the right vendors, technologies and solution integrators to allow the Department to collect data at source via monitoring devices attached to trucks, trailers, containers and wagons. This information was to be relayed into a database to provide real time critical intelligence, and then to be loaded into existing applications for action. In working towards the development of a NFMF, three critical components were identified as the foundation of the framework. These components included Freight Information Flows, Intelligence and Decision Support and contributed towards achieving the desired end goal. The first item addressed in building the framework was gaining insight into the current landscape in terms of the available freight information across all modes of transport. Thereafter the challenges facing both the department and the respective stakeholders were investigated. Further investigations into the solutions available globally and thereafter - what was recommended in terms of a practical approach to delivering in small manageable steps with the right vendors and solution integrators - was elaborated.

The benefits that were foreseen of having implemented the NFMF successfully were the implementation of the solutions to include allowance for the understanding of freight trends for example, the increasing growth of traffic and congestion, re-routing and capacity planning capabilities and others. The solution would also allow for identification of deficiencies in infrastructure and the accurate forecasting of the state of infrastructure for planning and budget prioritization. The Department would have the ability to utilize modern and efficient transport technologies to integrate intelligently with existing automated and manual processes. The solution would cater for the provision of high quality cargo flow information and statistics for long distance haulage and changes of the freight logistics life-cycle - presenting integrated data across local and provincial government divides resulting in corridor
centric data. The solution would also support the Department on National, Provincial and Local Government level with execution of daily tasks in relation to freight movement and logistics. As demonstrated within various sections of this document, the NFMF would allow for a single, consolidated oversight into freight movement and incorporate access to all identified stakeholders.

Further to having completed the theoretical approach to development of the framework i.e. research and investigations, the next iteration was to be the practical testing of the technology. This would be demonstrated through the successes of a Pilot phase. The purpose of the pilot was to learn what would work and what did not in the most cost effective fashion possible. It was both about proving the value of the data and the feasibility of the technology used to capture, process and present freight information.

The requirement was for the entire freight information life cycle to be demonstrated on a small cost scale. This would involve a limited number of transport industry volunteers filing electronic manifests and tagging vehicles and freight containers that were related to these manifests. These tags were to be tracked as they would move up and down the Gauteng-Durban corridor. The data produced from the freight movement tracking was to be correlated together with the respective electronic manifest filed (and weigh-bridge data) to present a data set that allowed a number of freight information flows, intelligence, and decision support functions to operate.

The ability to produce freight intelligence and decision supported views of the freight information flows through interfaces such as GIS, Graphs, Dashboards (Dials & Indicators), Tables and Cubes, was central to effectively proving the true value of the correlated freight monitoring information.

Finally it was advised that the ability to perform all of the above functions while demonstrating the principles of data integrity and privacy had to be included in the prototype. Information security remained the most important challenge facing the successful participation of transport industry stakeholders and their sharing of freight information.

The Pilot over the Gauteng-Durban corridor would include all modes of freight transport. It was advised that this corridor should be used based on its priority as the largest corridor in terms of freight movement. The pilot would be expected to run as a full production strength system that could be measured in its entirety before roll-out to the remainder of the national corridors.

Another requirement was for legislation to ensure that a suitable number of industry participants were filing manifests and co-operating in vehicle and container tracking exercises. If this was not achieved the risk of building a production strength solution capable of handling 5000 vehicles a day on the corridor for a small audience of volunteers could result in the project being labelled as a failure. It was important to add that the holistic nature of this undertaking would make it a world first and, as such posed potential unseen risk.
2.6 Funding of Corridor Management Institutions

In a paper\textsuperscript{112} that was published in August 2008 the authors reported to the Sub-Saharan Africa Transport Policy Program (the SSATP) on the topic of the Study of Sustainable Funding of a Corridor Management Institution (a CMI). It was reported that the Maputo Corridor Logistics Initiative (MCLI) requested the Southern Africa Global Competitiveness Hub (called the Hub) to fund or produce a study on a sustainable funding model for the MCLI based on the user-pay principle.

The Hub embarked on the study cognizant of the challenges of sustainable funding of corridor management institutions and the fact that the Northern Corridor (NCTTCA) had overcome this challenge. The study was to identify the characteristics and key factors for a sustainable corridor management funding regime and to design a generic model or mechanism for sustainable funding of corridor management institutions such as the MCLI. The design was to be based on a literature review on corridor management and the mechanism used by the NCTTCA. The goal was to come up with a model that could be applied not only to MCLI but to other corridors that the Hub is working on such as the Dar es Salaam and Trans Kalahari Corridors. The study entailed both interviews and literature review.

The findings of the study are summarised below:

- “Corridors with corridor management institutions are better equipped to monitor corridor performance and address non-tariff barriers along the corridor in a proactive manner, through strategies for continued improvements of corridor performance. The coordination that the corridor management institutions has to undertake in the corridor requires a public-private partnership to address a wide range of issues including investment in infrastructure, regulation of transport and trade, and facilitate private sector participation and professionalism in the logistics industry.

- “The overarching goal of a CMI is to reduce the cost of doing business along the corridor in such a way that the cost of sustaining the institution is less than the cost-savings or benefits it provides to the corridor users. The CMI achieves these benefits through implementation of strategies and making interventions that: reduce transit times and cost of shipment through the corridor; improve the quality of service and infrastructure in the corridor.

- “However, at the inception of a CMI it is unlikely that the cost-benefit analysis for the CMI would be positive and this may be one of the reasons why donor funding is usually required at this stage. In the absence of donor funding at this stage a CMI is usually funded by governments or volunteers who are corridor champions such as ports authorities or major users of the corridor. Unfortunately these mechanisms for funding are not sustainable as donors and governments have other priorities and voluntary contribution is simply not reliable.

\textsuperscript{112} Sub-Saharan Africa Transport Policy Program Report: Study of Sustainable Funding of the Corridor Management Institutions, Godwin Punungwe, August 2008
• “The shipper is the lifeline of the corridor who feeds it with the tonnage which enables all stakeholders along the corridor chain to be in business, by handling the shipper’s tonnage. The shipper needs his/her consignment to be transported to its destination in the safest manner, shortest possible time and at least possible cost. The demand for services from all the players along the corridor chain are derived from this need and their performance (efficiency) is measured by the degree to which they meet these expectations of the shipper .For effectiveness and efficiency corridor institutions need a sustainable and reliable source of income to enable them to plan and implement measures to improve corridor operations. From NCTTCA experience and from literature it seems the only way for reliable and sustainable funding of corridor management institutions is through the “user-pay principle”, that is those who benefit from the activities and interventions of the CMI should pay for its sustainability. The tonnage levy used on the Northern Corridor (NCTTCA), although not a perfect mechanism has provided sustainable funding for the CMI i.e. NCTTCA.

• “A tonnage linked usage levy would ensure sustainability of the CMI while maintaining pressure on the CMI to continue delivering benefits if those who pay have influence on what the CMI does. Ideally a levy, based on the tonnage and distance can be introduced based on a rate per ton -km. Such a levy could be collected at the port by Port Authorities or by Customs at international borders and transferred to the CMI.

• “Ultimately though, it is the shipper who will pay for the sustainability of the CMI as any contributions by other key stakeholders are likely to be passed onto as charges to the shipper. It is therefore important to come up with a simple and practical method of calculating the tonnage levy that takes distance of the corridor used into account. It is also important to come up with a simple and practical mechanism for collecting the levy, preferably automated to avoid leakage, to minimize the cost of collection .and cover as many users of the corridor as practically as possible.

• “To apply the user -pay principle there are a number of conditions necessary to create the enabling environment. Hereunder are some of them:
  o There must be an understanding and acceptance among all key stakeholders of the corridor of the need to use the user-pay principle.
  o Application of the user-pay principle should be authorized by the governments concerned.
  o The timing of its introduction is crucial for its acceptance by the governments and other key stakeholders.
  o The resultant charges should be perceived to be lower than the benefits the shippers and other service providers obtain.
  o In order for shippers and corridor management institutions to assess costs and benefits, it is important to have an effective corridor performance monitoring system.
  o CMI funders must have a say on what the CMI does and how it spends the money.

• “The levy system of funding the Northern Corridor has been extremely successful in resolving the funding problems it faced in the 1990s and currently its budget of approximately US$1.2m is met without much difficulty. This system has proven to be a sustainable and reliable way of funding this corridor management institution. However, there is need to improve this system so that those
who fund the CMI have greater say in what it does; free-riders are eliminated; and that benefits are passed onto to shippers as the ultimate financiers of the CMI.

- “For other corridors to apply the user-pay principle for sustainable funding of their CMI such as the MCLI, they must first create the enabling environment for the use of this principle. Thereafter prepare a strategic plan approved by the key stakeholders from whom the annual work plan and budget are based to determine the usage fee/levy and decide on the collection mechanism and framework to implement the mechanism.

- “MCLI is funded by annual membership contributions from its approximately 103 members. Membership contribution is mainly determined by the size of organization measured in terms of number of employees a company employs. In addition, public listed companies pay more than non-listed companies.

- “However, the nine Founding Members of MCLI which now includes South African Department of Transport, that secures the difference between the general membership contribution and the operational budget, contribute 75% of MCLI funding and the rest of other categories of membership contribute only 25% of MCLI budget. Consequently the Founding Members are the Executive Members of the MCLI Board that directs what activities MCLI undertakes and approves its operating and capital expenditure.

- “Conclusions from consultations with the MCLI are as follows:
  o MCLI must be maintained and sustained.
  o The user-pay principle is supported for the long-term funding of the MCLI but it cannot be implemented now.
  o Government funding outside of direct funding MCLI membership funding cannot be relied upon for sustainability.
  o Membership funding will have to be secured and committed to for MCLI to continue (beyond .......) until such time as the user-pay principle can be applied.

- “Recommendations to MCLI are:
  o For the immediate sustenance of the MCLI (with effect ...), general members increase their contributions by 25% and Founding Members continue securing the difference to meet MCLI’s operational budget based on Board approved strategy and operational activities.
  o MCLI embarks on program to implement the user-pay principle guided by the implementation approach discussed earlier in this report. This entails establishing the enabling environment for the implementation of this principle and steps in determining the usage rate and the collection mechanism.
  o The user-pay principle should be introduced as soon as practicable"
In the report a comparison was made of the Northern Corridor and the Maputo Corridor. The report recommended that the issues that were raised had to be addressed:

<table>
<thead>
<tr>
<th>Factor</th>
<th>Northern Corridor</th>
<th>Issues for Maputo Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legal framework</td>
<td>Treaty – 5 signatories</td>
<td>Section 21 company: MZ, SA, SW MDC established by MZ and SA</td>
</tr>
<tr>
<td></td>
<td>Revised 2007 not yet in force</td>
<td></td>
</tr>
<tr>
<td>Policy organs</td>
<td>Authority – ministers</td>
<td>Board of Directors - predominantly private sector</td>
</tr>
<tr>
<td></td>
<td>Executive board – permanent secretaries</td>
<td>Executive Committee - financial management of the company</td>
</tr>
<tr>
<td></td>
<td>Weak link between policy</td>
<td>Opportunity for the ideal link between financing and decision making</td>
</tr>
<tr>
<td></td>
<td>decision making and financiers</td>
<td></td>
</tr>
<tr>
<td>Stakeholder</td>
<td>Stakeholders consultative forum in place</td>
<td>MCLI is by definition a PPP, driven by private sector.</td>
</tr>
<tr>
<td>involvement</td>
<td></td>
<td>Involvement of stakeholders is key to adoption and success of usage levy</td>
</tr>
<tr>
<td>Location of CMI</td>
<td>Kenya, also place of collection of levy</td>
<td>South Africa, levy will have to be collected in SA, SW and MZ; by rail, road and port?</td>
</tr>
<tr>
<td>Collection agents</td>
<td>Ports Authority plus Customs under revised agreement.</td>
<td>DP World, TRAC, CFM, and TFR. Will have to sign MoUs. Do concession agreements or framework allow for this?</td>
</tr>
<tr>
<td></td>
<td>MoUs signed, with provision of collection fee.</td>
<td></td>
</tr>
<tr>
<td>Equity</td>
<td>Traffic to Treaty non-signatory states not covered</td>
<td>Port is in major point of demand in MZ, will traffic be excluded?</td>
</tr>
<tr>
<td></td>
<td>presently</td>
<td>Design system to capture traffic even to non-MCLI member countries such as Zimbabwe?</td>
</tr>
<tr>
<td>Funding</td>
<td>Mixture of contribution and levy</td>
<td>Have contributions by state departments and levy for traffic?</td>
</tr>
<tr>
<td>Review of levy</td>
<td>Provides for annual review but not being done</td>
<td>Design system to allow for annual review, with commitment to reduce levy levels as traffic rises. Leave infrastructure development o dedicated entities (concessionaires).</td>
</tr>
<tr>
<td>Indicators of</td>
<td>System under development, presently unquantified link</td>
<td>Establish robust performance measurement system to monitor impact of interventions</td>
</tr>
<tr>
<td>performance</td>
<td>between interventions and impacts</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Northern and Maputo Corridor Comparison
2.7 Institutional Arrangements for Corridors

2.7.1 Institutional Aspects of the Maputo Development Corridor

Working Paper
In a working paper that was published in April 2001 the author reported to the Development Policy Research Unit (the DPRU) of the University of Cape Town Sub-Saharan Africa Transport Policy Program (the SSATP) on the topic of the “Institutional Aspects of the Maputo Development Corridor”.

The working paper mapped and assessed the institutional and organisational structure of the Maputo Development Corridor (MDC), the actors and stakeholders who were involved in the policy and decision-making processes, and drew lessons for future development corridors and spatial development initiatives (SDIs) in the broader Southern African region.

Institutional Structure
The analysis revealed that the institutional structure of the MDC was based on such aspects as ‘political champions’, ‘fast-tracking’ of project design and implementation, the crowding-in of private investment and a minimalist approach to institutions - was designed for the facilitation of ‘bankable’ private investments projects and public-private partnerships (PPPs). It also revealed that the MDC contained several institutional and organisational weaknesses which had negative consequences for broader ‘development’ goals, job creation and the integration of provincial and local governments and communities in the process. These drawbacks in combination with the radically different conditions prevailing in the neighbouring countries suggested that the MDC approach needed to be considerably revised if it was to be applied to regional SDIs, especially if these were aiming beyond transport routes and huge investment initiatives.

Methodology
A part of the report was used to consider as to whether the South African SDI methodology could be applied to the broader Southern African Development Community (SADC) region. The South African government was found to be enthusiastic about the potential of SDIs. Government also offered to aid regional SDIs throughout the SADC region by transferring the lessons learned and the skills gained during the execution of the SDIs in South Africa. It was found that the mandate of the DBSA, as well as the IDC, have been extended to cover the whole SADC region, and these institutions were likely to be involved in one way or the other in the implementation of regional SDIs. However, South Africa’s engagement in the region and in promoting such SDIs was found to be very contentious and sensitive.

The Mbeki government did not seem to be willing to pursue the regional issues as much as the earlier players did. As a consequence, instead of the hub-and-spoke approach to regional SDIs originally advocated by South Africa, the analysts witnessed a backing off by South Africa, seemingly in favour of a more multilateral/regional approach to SDIs, probably within the framework of SADC.
Lessons for future development

The analysts had a difficult task to draw lessons for future development corridors and SDIs in Southern Africa. They admitted to the latter being somewhat speculative, since it depended not only on the interpretation of the MDC as such, but also on the qualities and objectives of the particular regional SDI which was talked about. In drawing such lessons it was logical to concentrate on key aspects that were emphasised in the analysis of the MDC.

One main lesson of the MDC was that any SDI seems to require considerable political commitment and political will provided by the political champions. Considering the centralised decision-making structure in most SADC countries, it appeared that the political champions had to be in the highest centres of decision-making, preferably a key minister or even the president. A weak champion was expected to ruin the whole process, since otherwise decisions and policies might not be taken or implemented. It was likely that serious problems would arise if the political champion was not in charge of one of the main line departments driving the process.

The issue of excessive politicisation of corridor institutions was investigated. It was found that the pitfall of reducing everything to economics had to be avoided, especially the trend in the MDC whereby ‘development’ and ‘sound economic principles’ were reduced to ‘bankable investment projects’.

The network structure

There were found to be certain strengths with the network structure, such as that it ensured a quick and flexible planning and decision-making process. The structure would draw together capacities and policy-makers in a loosely organised and flexible network, which innovatively enhanced interdepartmental coordination. The network structure was particularly interesting in light of the fact that the MDC, as a governance mechanism, involved a more limited number of partners and was more flexible, thus offering greater scope for experimentation and speed in changing operations. Conventional state-driven regional ventures proved to be rather cumbersome and rigid. Having stated this, it was stated that it had to be more deeply assessed whether the fluid, loosely structured and informal network structure was suitable for the existing bureaucratic and institutional realities in South Africa’s neighbouring countries.

As suggested by the experience of Mozambique in the case of the MDC, patterns of decision-making about major resources were often centralised which may lead to problems with practical implementation within a network structure. By the same token, the interdepartmental coordination and cooperation in the South African SDI programme may not be working in some of the other SADC countries, where often the presidents need to get things going. The network structure required that the institutions and capacities were strong, capable and competent, which was not the case in Mpumalanga and Mozambique (and to some extent not on the central national level in South Africa either). Therefore the actors in these locations were found to have experienced problems. Due to the fact that the institutional capacities in many neighbouring countries were weaker than in South Africa (including Mpumalanga)
the viability of the network structure had to be more deeply assessed. In the process of building regional SDIs, it seemed that there had to be a stronger focus on both formal and informal institutional capacity building than what had been the case in the MDC. A closely related proposition was to create a more structured ‘organisation’ that took responsibility for the process, provided a legal and regulatory framework and became a recognised ‘driver’.

**Risk of stagnation**

In view of the clear risk that many large-scale projects tend to stagnate, *fast-tracking* was found to be a positive consideration in the sense that it maintained momentum and provided stakeholders with a link between input and outcome. However, the institutional limitations and political realities in the SADC countries suggested that it might be very difficult to sustain the high speed emphasised in the SDI methodology. Instead of a multiplier effect and kick-start, a fast-tracked SDI faced the risk of being yet another major project with no or few local links and disentangled from the realities on the ground. As suggested by the MDC, the high speed may also have negative repercussions on the quality of investment.

The report also identified a need to diversify the picture of what type of SDI one was trying to create. There were in fact a number of different types of SDIs, each with very different characteristics and each situated in dramatically different contexts. Some had a very high potential, while others had a lower potential. Some were simply transport routes, while others were similar to the MDC, (although none seem to have as good potential as the MDC). The argument raised here was that there was a need to specify the differences and similarities between the regional SDIs in order to not create an illusion that they all have the same potential or will be able to generate large-scale ‘development’.

**The national-provincial relations**

The *national-provincial relation* constituted a weak link in the MDC. In the case of the MDC, this lack of *provincial and local participation* led to a lack of ownership as well as a ‘democratic deficit’. As suggested by the case of the MDC a top-down and centralised strategy was both ineffective and met with resistance. The handing over and exit strategy did not work satisfactorily in the case of the MDC. In other regional SDIs these aspects needed to be rethought. It was a fact that the provincial and local levels were much weaker in the SADC region than in South Africa, which made it an even greater challenge to try to build local participation and give ownership at the provincial and local levels. It was clear that there was a need for a *new* regional SDI methodology. The best solution was to find a sound balance between top-down and bottom-up strategies which would allow a certain degree of provincial and local participation at earlier stages in the process. This would also imply making institution- and capacity-building an integral part of the SDI from the outset. However, unless there was commitment and resources for empowering the provincial and local levels and people living in the particular SDI area one radical alternative might be to ‘keep’ the SDI as a top-down and centralistic programme. No false illusions should be made that the provincial and local actors suddenly would have the capacity and commitment to carry out a programme they only had been involved in at the very latest stages and in the exit strategy.
2.7.2 Institutional Arrangements for Transport Corridor Management (Sub-Saharan)

In a working paper\(^{113}\) by the authors (Yao Adzigbey, Charles Kunaka and Tesfamichael Nahusenay Mitiku) who were appointed by the Sub-Saharan Transport Policy Program the “Institutional Arrangements for the Transport Corridor Management in Sub-Saharan Africa” were discussed.

The study found that Corridor management institutions were emerging as strategic institutions for promoting and developing the various transit corridors across Africa. The corridor institutions address all aspects of transport and transit of goods throughout a given corridor, typically based on an agreement signed by all participating countries and private sector stakeholders. Corridor agreements deal with a wide range of issues such as infrastructure, customs, bottlenecks and user charges. The institutional characteristics of some of the existing arrangements are discussed in the report.

Multi Corridor Management

The working paper reported that a number of transit and transport corridor arrangements were operational in Sub-Sahara Africa in an attempt to put in place an operational instrument to manage the trade routes for efficiency and cost effectiveness. While various corridor initiatives pursued a local development agenda, their overall objective was to contribute to the increased competitiveness and cost effectiveness of the Sub-Saharan region in the global economy. In the interest of the entire sub-region, this objective should be pursued through coordinated and collaborative efforts, rather than local and individual competitive efforts. In principle, the underlying objective for a broad approach to corridor management groups is to provide an instrument for networking as well as ensuring “healthy competition” and knowledge sharing about “best practices”.

The establishment of multi-corridor management groups or associations was better coordinated by Regional Economic Communities (the REC). In the interim period, the REC-TCC could play a role in the establishment of the multi corridor groups. This section proposes principles that could be considered during the establishment of the groups/associations.

Comparisons between different corridor agencies could stimulate increased productivity. It was therefore necessary to define an appropriate mechanism to facilitate sharing of experiences and best practices in corridor development among the various corridor development initiatives.

\(^{113}\) “Institutional Arrangements for the Transport Corridor Management in Sub-Saharan Africa”, Yao Adzigbey, Charles Kunaka and Tesfamichael Nahusenay Mitiku
**Mutual Collaboration**

Based on interactive as well as collaborative approaches, mutual collaboration among the different corridor groups could be undertaken to:

- ensure that an open and consultative mechanism was maintained among corridors;
- facilitate mutually-beneficial business partnerships between members;
- map out other supporting institutions or mechanism in support of inter-regional corridor coordination or consultation, in order to avoid possible overlaps;
- determine resource requirements and recommend possible resource mobilization strategies.

The idea of establishing a regional mechanism for consultation and coordination was first presented by the Walvis Bay Corridor Group (WBCG) at a Regional Spatial Development Initiative Regional Coordination Committee (RESDICC) meeting in Dar es-Salam in May 2005. In March 2006, the key players in regional transport made a resolution to develop a regional consultative mechanism for corridor management groups. It was then decided to develop an appropriate mechanism for inter-corridor exchange of best practices and experiences.

It was expected that this development would result in an effective forum for sharing of ideas and dissemination of innovative approaches to enhancing the performance of regional corridors. The multi-corridor arrangements lay the ground for the establishment of a multinational corporate entity, owned by member states preferably through public-private partnership owning, and leading the management and operation of transport infrastructure and services in the corridor network.

**Driver of regional cooperation and coordination**

With the medium-term objectives of the African Action Plan and the NEPAD initiative, more especially by strengthening the integration of Africa, at least at regional level, the multi-Corridor Group could become an important driver of regional cooperation and coordination in transport corridor development, management and marketing seeking to establish an international best practice in Sub-Sahara Africa.

The multi-corridor management or arrangements could bridge the RECs and national boundaries:

- To establish a mechanism to exchange experiences and good practices within a network of corridors. Data a various corridors could be collected periodically and the results used to benchmark the performance of each corridor and to assess the effectiveness of the initiatives that would have been undertaken. In addition, attitudinal surveys could be developed to obtain users opinions as to the success of efforts to improve performance. The efforts may not only provide a basis for assessing performance and evaluating the impacts of various initiatives but, equally provide a greater level of transparency;
- To promote mutually-beneficial business partnerships by encouraging competition between and within modes; and
- To encourage the creation of umbrella group for corridor management arrangements, possibly at regional or continental level (such as a Federation of Corridor Management Groups).
Apparent Strengths and Weaknesses

The Apparent Strengths and Weaknesses of Existing Corridor Management Groups were determined by the authors in considering institutional arrangements for Corridor Institutions:

- **Northern Corridor**: The Northern Corridor is an interstate body that has been particularly effective in driving the implementation of regional transit regimes at national level. Its status was clearly an important consideration with its funding mechanism. However, the very same status would appear to have engendered overtly political considerations in the TTCA decision making processes, which can slow down the pace of implementation of activities. Recent moves to involve the private sector are likely to improve the operational dynamics of the TTCA.

- **Central Corridor**: The CCTTFA is a new entity largely based on arrangements that are similar to the TTCA. This instrument is clear on the role of the various stakeholders in achieving the expected results. The funding regime also helps to emphasize the critical role that donor funding can play in getting corridor institutions off the ground.

- **Dar es Salaam Corridor**: This Corridor is the only one of the corridors reviewed that intends to have a body founded on a Constitution. This would appear to be a major constraint to getting the corridor body fully functional. Zambia, one of the main parties to the Constitution, is still to sign the document four years after it was negotiated. The approval process has taken a long time. The delayed signature of the Constitution by the state parties has however not completely prevented key stakeholders from developing an action plan and lobbying for reforms which could enhance corridor operations.

- **Walvis Bay Corridor**: The Corridor Group is one of the most active and aggressive corridor bodies in Africa. It is business development oriented and has been able to commission various pieces of forward looking research and feasibility studies. The Group is dominated by a few large private sector stakeholders. It underscores the link between infrastructure development and the need to increase volumes to justify some of the investments that have been made or are being contemplated.

- **Maputo Corridor**: The MCLI is very much similar to the WBCG. It is a very vibrant corridor body that has played a key role in concentrating energy on a few strategic issues that can help in unlocking the full potential of the corridor. However, after starting as predominantly private sector driven initiative, the MCLI is now part of a process to revive a Corridor Committee where the governments have a much stronger influence. While this is important, hopefully it will not slow the pace at which the private sector has been trying to drive issues.

- **Abidjan-Lagos Corridor**: ALCO started off as a single issue corridor entity, with a high level of recognition. At the same time, it has a significant local level reach through NGOs. More recently, initiatives have started to broaden the range of issues tackled by ALCO, to include trade facilitation measures. These developments serve to underscore the importance of having a broad perspective on cross border issues as they relate to transit movements. The ALCO experience also brings to the fore the important contribution that donor funding can make to the initial establishment of multi-state corridor initiatives. It is not always the case that all countries would be willing to fund corridor based initiatives right from the beginning, before some of the benefits have been demonstrated.
Governance Arrangements

The team investigated the objective of a Corridor Management Institution. It was found that the legal instrument establishing corridor management groups provides the framework for coordination of operational activities and set-out responsibilities of all parties.

The governance arrangements proposed below serves as an instrument to set up transport corridor management groups. It deals mainly with organizational arrangements and operational practices. The modes of operation were found to consist of the following mechanisms for discharging responsibilities of corridor management groups to include, but not be limited to:

- Monitoring performance of transport operation along the corridor;
- Disseminating results of monitoring through conferences, publications and media
- at all levels (regional and local, television, radio and websites);
- Sensitizing corridor member state authorities;
- Supporting common/standard procedures and regulations development and implementation
- Supporting capacity building initiatives of key institutions engaged in transport operations (Customs, clearing and forwarding agents, insurance companies, transport infrastructure management agencies, transport operators, etc.); and
- Networking with international, regional, and local partners affiliated with transport corridor management.

Corridor management arrangements

The authors of the paper established that transport corridor management issues are diverse and involve several stakeholders. Thus the setting-up of an effective mechanism for corridor management should reflect the issues and ways of engaging key stakeholders from public and private sectors. The review of the existing corridor management arrangements in the previous section showed how the different options—public sector dominated, private sector dominated or a partnership of both—are functioning. Based on the lessons drawn from the existing arrangements and consultation with practitioners in corridor management this document intends to indicate a practicable configuration of corridor management groups.

Often, government services such as Customs or immigration were assumed to be solely responsible for the constraints along corridors. However, private sector entities involved in goods transit also contribute to the problem. For example, trucks that have undergone customs clearance procedures are stalled for days, due to the failure of transit agents or shippers, or the provision of required payments or bonds. Likewise, goods at ports are stranded due to the absence of documents required for clearance, supposed to be provided by the cargo owners. That is why, improving the efficiency of the public institutions alone or focusing only on the issues associated to the private sector as a priority would not lead to a well performing transport corridor.
The analysis of the existing corridor management arrangements showed that six of the nine corridor/border post group models were in practice based on a three-tier system: an umbrella body, a coordination committee, and a secretariat managing operational activities.

The other three operated differently: i) the SADC model calls for a joint corridor management group, without explicitly identifying the tiers, ii) the Central corridor adopted a structure with four tiers (an umbrella organ—Interstate Council of Ministers, an executive board, a stakeholders consultative committee and a secretariat), and iii) the Beit Bridge task team has a coordination committee (border post facilitation committee) and an operational arm/secretariat.

**Funding Options**

The working group determined that stakeholder concerns and interests were often reflected in the parties that decided to take the lead in establishing corridor groups. This is apparent in the origins and funding arrangements for the groups that were reviewed. Clearly, there were several instruments used to finance existing corridor groups as summarized in the table below.

<table>
<thead>
<tr>
<th>Corridor</th>
<th>Funding arrangements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern</td>
<td>Tonnage levy on imports collected at the port and budget allocation from the government. Both public and private sectors work closely in implementing the funding regime</td>
</tr>
<tr>
<td>Dar es Salaam</td>
<td>Membership fees based on equal contributions by committee members. The Tanzania Harbours Authority is the key coordinator for the group</td>
</tr>
<tr>
<td>Walvis Bay</td>
<td>Membership fee by group members and equal contributions by the signatories to the TKC MoU. NamPort and the private sector initiated the group</td>
</tr>
<tr>
<td>Maputo</td>
<td>Membership fees. The private sector has established a non profit company for the corridor. South Africa Department of Transport is providing most of the funding through a subsidy</td>
</tr>
<tr>
<td>Central</td>
<td>The African Development Bank grant for startup costs and equal state contributions thereafter. TRC seconded staff to get the corridor secretariat off the ground</td>
</tr>
<tr>
<td>Abidjan – Lagos</td>
<td>The World Bank grant as part of the funding for a project, given its health focus which would normally be a public sector responsibility</td>
</tr>
</tbody>
</table>

Table 3: Funding Arrangements per Corridor

### 2.8 How to make Corridors Work within NEPAD/SADC

#### 2.8.1 The Research Paper

In a paper[^114] that was published in October 2007 the authors referred to the Sub-Saharan Africa Transport Policy Program (the SSATP) and concluded that corridor efficiency was important to the competitiveness of most African economies, especially those that are landlocked. Corridors could be defined as a collection of routes linking several economic centers, countries and ports. While some

were only road transport corridors, most of them included more than one mode of transport.

According to the authors the SSATP placed emphasis on the facilitation of inter-State trade along corridors. It particularly focused on identifying impediments to the efficient movement of traffic and sought to promote appropriate strategies for minimizing hurdles to such movement. This objective was also consistent with the Millennium Development Goals (MDGs) and the Almaty Plan of Action. Some of the contributory factors to the problems faced along corridors could be traced to the absence of appropriate institutions able to coordinate, in a proactive manner, interventions to remove obstacles to movement. Corridors with corridor management institutions have sometimes shown significant improvements in their operations. The institutions were instrumental in facilitating dialogue between corridor stakeholders and harmonizing procedures and documentation used in transport and transit operations along the corridor, resulting in reduced transit time and cost.

The concept paper reviewed the legal and institutional options for establishing corridor management groups and proposed a framework for establishing such groups along all major transport corridors. If the reasons for establishing corridor institutions were generally similar, the manner in which the existing institutions were established was not uniform. Examples of legal instruments include treaties (Northern Corridor), multilateral agreements (Central Corridor), Memoranda of understanding (Trans Kalahari), Constitutions (Dar es Salaam) and company registration (Maputo). The instrument that was chosen was influenced by the key drivers behind the establishment of the institution. Still, all the corridor management arrangements demonstrate the value of involving all stakeholders, both from the public and private sectors.

2.8.2 Recommendations

Recommendations for the structuring of Transport Corridor Management:

- Following the study that the paper was based on a three-tier corridor management institution was proposed for regional transport corridors without any arrangement. The institutional hierarchy would comprise of a stakeholders group, a core group and a secretariat.

- A stakeholders group was proposed as the preferred option for the key consultative body. It would comprise representatives of customs, immigration, transport and logistics operators, rail and road agencies, port authorities, transport regulation and road safety agencies, ministries of health for each State and regional level institutions. The second tier would be an executive group made up of members nominated to represent specific constituencies as the main operational group. The core group can also establish such working groups as may be required to address specific issues. The stakeholders group and the core group would be supported by a secretariat - the main coordinating and technical body of a corridor group. A three member team of core staff is proposed as the minimum for a functional secretariat.

- The funding of any proposed corridor management institution is an aspect that has to be carefully considered. Funding arrangements for existing corridor groups include membership fees, contributions by governments, traffic-based usage fees, or donor support. The
sustainability of most corridor institutions is a challenge, though the traffic-based usage fee arrangement seems to be the most appropriate as it also places demands to deliver benefits to the shippers who ultimately meet the costs. It is envisaged that in the first instance membership contributions or donor funding would be necessary to establish a group.

- Generally, the funding mechanism of a corridor group would be influenced by its legal instrument. Once established, the group would be able to develop an action plan and deliver some results making it possible to introduce a usage-based funding mechanism such as a tonnage levy. A usage fee would maintain pressure on the core group and the secretariat to deliver tangible benefits for corridor stakeholders to justify its funding. If it is introduced, the usage fee mode of collection must be simple to administer.

- Corridor management arrangements should be designed to advocate modernization of border agencies, in particular Customs administrations. Focus could be on those aspects that negatively impact corridor efficiency such as institutional reforms, simplification of procedures, while promoting improvement in training and investment to upgrade information technology and border crossing facilities.

The paper provides a realistic set of lessons learned and pertinent recommendations for NEPAD and SADC to consider in either developing corridors or advising interested parties to develop corridors themselves.

2.8.3 Lessons Learned

Some lessons emerged from the existing corridor management arrangements across Sub-Saharan Africa that would be most helpful in determining the most effective and efficient way of developing and implementing corridors within NEPAD and SADC:

- Corridor group interventions were problem solving in nature, the operational procedures should encourage the stated objective and should retain flexibility necessary to be responsive.

- Working groups could be formed on an ad hoc basis to address specific issues and should be disbanded once the stated and contracted objective was met.

- Corridor issues by their nature were often solved by interactions between many public entities and participatory processes should be fostered.

- Ownership and power sharing should be encouraged by the organizational design and operating procedures.

- The group organization should ensure public-private interaction at all levels.

- Most existing arrangements have been established with donor funding and their financial sustainability has remained a key challenge.

In the end, tailoring the arrangement to the corridor context will be needed if ownership is to be secured.
3. Part III: Case Studies of more successful Economic Corridors

3.1 India: Delhi-Mumbai Industrial Corridor

3.1.1 Corridor Description

In section 1.3 of this benchmarking report the Delhi-Mumbai Industrial Corridor (DMIC) is a dedicated freight corridor network between Delhi and Mumbai and between Ludhiana and Kolkata, covering a total length of 1,515 kilometres.

The Corridor runs through six states, namely Uttar Pradesh, the National Capital Region\textsuperscript{115} (NCR) of Delhi, Haryana, Rajasthan, Gujarat and Maharashtra. End terminals are at Dadri in the NCR of Delhi and Jawaharlal Nehru Port near Mumbai. Both the East-West Corridor and the North-West Corridor will be dedicated to long-haul, fast movement of freight and passenger traffic.

The East-West Corridor will primarily be for the movement of bulk commodities such as coal and steel, between the coalfields and steel plants in the East to the power stations and industries in the West and North. Open wagons with electric locomotives for traction will be used. The North-West Corridor will cater to industry, manufacturing and exports through the handling of container traffic. The Indian Railways and Indian Government have opted for flat wagons that can carry double stack containers, a first in the world.

\textbf{Figure 33: The Corridor Routes}

\textsuperscript{115} The NCR is the metropolitan area of Delhi which encompasses satellite cities such as Faridabad, Gurgaon, Ghaziabad and Noida.
**Infrastructure Activities Required in the Corridor**

- Twenty new / upgraded rail links (totalling 1,950 kilometres)
- Five metro / suburban railways systems for inter-city connectivity (with a route length of 330 kilometres)
- Twenty seven road links (covering 1,840 kilometres to be built by state governments)
- Eleven road links (covering 1,650 kilometres to be built by the National Highways Authority of India)
- Eight multi-modal logistics parks with railway sidings (about 400 hectares in size)
- Seven new ports
- Six existing ports to be enlarged and modernised
- Nineteen rail links and 26 road links to improve port connectivity
- Seven existing non-metro airports to be upgraded
- Four new international airports
- 492 kilometres of high speed rail linkage between Mumbai and Ahmedabad
- Electric power (to meet the shortage of 75 billion kwH units in 2014)

**Investment Regions and Industrial Areas**

High impact / market driven nodes have been identified within the DMIC to provide transparent and investment-friendly facility regimes. These will be self-sustained industrial townships, with world-class infrastructure and road and rail connectivity for freight movement to-and-from ports and logistics hubs served by domestic and international air connectivity, reliable power and quality social infrastructure. This will create a globally-competitive environment for setting up businesses.

An Investment Region (IR) would be a specifically delineated industrial region spanning a minimum area of 20,000 hectares; an Industrial Area (IA) will cover a minimum expanse of 10,000 hectares.

Wide consultation with the relevant state governments and central ministries has resulted in the identification of 9 IRs and 15 IAs across the six states covered by the Corridor. The first phase of the DMIC implementation from 2008 to 2012 will develop 6 IRs and 6 IAs; the rest will be development in the four years thereafter.

There are already several industrial belts across the region. These include:

- Uttar Pradesh: General Manufacturing
- Haryana: Automobile, Electronics and Handloom
- Rajasthan: Marble, Leather and Textile
- Gujarat: Engineering, Gems and Jewellery, Chemicals
- Maharashtra: Auto/Auto Components, Textile, Pharma and Aluminium

The development of the IRs and IAs will include developing new industrial clusters, upgrading existing industrial estates and clusters; and providing for efficient infrastructure and logistics. This includes road and rail connectivity to ports and markets; the development of new ports and port infrastructure; upgrading and modernising airports; power generation and transmission; and the development of integrated townships.
3.1.2 Partnerships and Funding

The DMIC is driven by the Government of India in partnership with the Japanese Government. A memorandum of understanding was signed between the Indian Ministry of Commerce and Industry and the Japanese Ministry of Trade and Industry in December 2006 to give effect to this venture. The Japanese have been involved from the inception in the planning and feasibility studies, as well as concessional financing through its government-to-government programmes. The total cost of the project is estimated at Rs16,000 crore; the Japan International Cooperation Agency sets this figure considerably higher at Rs28,000 crore. The initial USD 250 million required as project development funds was contributed equally by the Indian Government as a budget grant and the Japanese Bank for International Cooperation as an untied loan. Additional funding will be sought from Indian and foreign investors, and bilateral and multilateral institutions.

3.1.3 Institutional Arrangements

A four-tier system was established to implement the DMIC:

a. Overall guidance, planning and approvals would be done by an apex body comprising the Indian Finance Minister, relevant central government ministers and the chief ministers of the six DMIC states.

b. Coordination of project development, finance and implementation would be driven by the DMIC Development Corporation (DMICDC), headed full-time by a Chairman / Managing Director and represented by central government, state governments and financial institutions.

c. Coordination between the DMICDC and various states government entities and the project implementation agencies / special purpose vehicles (SPVs) would link with a state-level coordination entity / nodal agency.

d. Project specific SPVs owned by the state governments, Board of Directors and central governments and / or their agencies would actually implement the projects within the DMIC.

"The conditions include a comprehensive sovereign guarantee by India that will also extend to penal interest and overdue charges in case of late repayments as well as payment of components. Following these developments, the Central Government is reportedly looking out for additional partners from countries like Singapore, Taiwan, Malaysia and Korea."

117 Rs.1 crore is approximately USD 240 million
The DMICDC has been incorporated with 49% equity to the central government; 41% to the Infrastructure Leasing and Financing Corporation (also appointed as the project management consultant; and 10% to the Industrial Development Finance Corporation.

### 3.1.4 Challenges and Benefits

Implementing the DMIC is a complex undertaking. It demands a rigorous detailing of all aspects of the project prior to implementation. This includes engineering, environmental, social and financial issues. The involvement of several ministries and multiple state governments necessitates an effective framework for coordination.

Given that the DMIC spans some 60 projects, a strategy for the mobilisation of finances is critical. India has a track record of project delays and cost overruns when it comes to inter-ministerial coordination and project execution by state agencies in similar projects; the same is probable in this instance. Public participation processes around land acquisition, rehabilitation of people and environmental safeguards may also slow the pace of implementation.

On the upside, the construction of the freight corridor is likely to spurt unplanned industrialisation and development in-and-around the identified IRs and IAs, in turn spurring the execution of the Corridor projects.
3.1.5 Progress

It appears that the Indian Government had begun preliminary work on the proposed industrial corridor along the Railways' Delhi-Mumbai dedicated freight route at the end of March 2007. More recently, it seems that the DMIC has hit a road block, with Japan setting tough conditions to finance the project.\footnote{www.steelguru.com, 26 May 2007}

3.2 South East Asia: Greater Mekong Sub-region Economic Corridors Programme (Vietnam)

3.2.1 Corridor Description

As was stated earlier in section 1.3 of this benchmarking report the backbone of the Greater Mekong Sub-region (the GMS) is the three transport corridors, which are to be converted into key economic development corridors through investment in infrastructure, facilitation and logistics. The corridors are:

- The East West Corridor connecting Thailand, Laos and Vietnam;
- The Southern Corridor connecting Thailand, Cambodia and Vietnam; and
- The North South Corridor connecting southern China through Laos or Myanmar to Thailand.

3.2.2 Partnerships and Funding

The GMS Economic Cooperation Programme launched in 1992 is a collaboration between Thailand, Vietnam, southern People’s Republic of China, Laos, Cambodia and Myanmar; the last three countries are deemed Least Development Countries by UN definition.

The strategic thrust of the program was stated as being aimed at strengthening infrastructure linkages, to facilitate cross-border trade and investment, to increase private sector participation, to develop labour competencies and to protect the environment in the process.

3.2.3 Institutional Arrangements

The institutional arrangements for the GMS are aimed at eliminating non-physical barriers on the selected corridor routes that are impeding regional movement across borders. The GMS Cross-Border Transport Agreement (CBTA) was negotiated and has now been ratified by all 6 GMS countries. Twenty annexes and protocols have been added on implementing facilitation of cross border movement of goods and persons, a single stop/single window inspection system, harmonization and integration of systems, exchange of traffic rights and transit traffic provisions. The action plan to move from a transport to an economic corridor application involves nine infrastructure and economic sectors with a vision of creating a more integrated, prosperous and harmonious sub-region. Thirty-five transport
projects have been identified (1992-2005) – 10 road, 8 rail, 10 water, 6 air and 1 institutional. In addition to Asian Development Bank funding, other donors such as Japan Bank for International Cooperation have also invested in GMS infrastructure.”

### 3.2.4 Challenges and Benefits

Amongst others, the following benefits have been identified:

- The greatest economic benefits have been for the populations of Thailand and Vietnam;
- The Lao People’s Democratic Republic, being landlocked, now enjoys closer access to the harbours;
- Yuman Province also has better access to harbours; and
- The East-West Economic Corridor now connects Danang on the Pacific Ocean and Mawlamyine on the Indian Ocean, saving time needed for passage via the Malacca Strait. This can serve as an important route between China and India, and large parts of the BRIC (Brazil, Russia, India and China);

In addition, gains have been made in\(^{119}\):

- Transportation;
- Energy;
- Telecommunications;
- Tourism;
- Trade facilitation;
- Agriculture; and
- Private investment and industrial estates.

### 3.2.5 Progress

In progressing from transport to economic corridors the revised action plans emphasize the broadening of the scope of the programme to include economic corridor initiatives by:

- “Strengthening other related infrastructure (e.g., power supply, water, sanitation and rural roads);
- Facilitating trade, investment and tourism;
- Improving trade logistics;
- Achieving sustainable use and conservation of natural resources;
- Developing biodiversity conservation corridors; and
- Mitigating negative externalities associated with increased connectivity.”

\(^{119}\) [www.danang.gov.vn](http://www.danang.gov.vn)
3.3 Africa: Northern Corridor (Mombasa-Nairobi – Great Lakes)

3.3.1 Corridor Description

As was stated in section 1.3 of this benchmarking report the Northern Corridor of Africa is the transport corridor linking the Great Lakes countries of Burundi, the DRC, Rwanda and Uganda to the Kenyan sea port of Mombasa, the corridor also services Northern Tanzania, Southern Sudan and Ethiopia.

The Northern Corridor infrastructure as at March 2006 consisted of:

- A main road network of some 7,000 km of which 60% is paved and 40% unpaved;
- Rail networks in Kenya and Uganda of 1,920 km and 1,241 km respectively;
- A 320 km oil pipeline in Kenya;
- A port in Mombasa, with 16 deep-water berths, a large container terminal, two bulk cargo terminals and two petroleum jetties;
- An inland port at Bujumbura, and inland dry ports and container depots in Nairobi, Kisumu, Eldoret, Kampala and Kigali;
- Inland waterways at Lakes Victoria, Tanganyika, Kivu, Albert and Edward, as well as the Congo and Akagera Rivers; and
- ICT and telecommunications Infrastructure.

3.3.2 Partnerships and Funding

Following the signing of the Northern Corridor Transit Agreement (The Treaty) by Burundi, Kenya, Rwanda and Uganda, the Northern Corridor Transit Transport Coordination Authority (NCTTCA) was set up in the mid-1980s. Upon ratifying the Treaty in 1987, the DRC became a contracting state to the NCTTCA.

The Corridor Sub region constitutes a significant portion of the COMESA120 region. The COMESA population is 380 million people, of which some 20 million people (almost 30%) live in the Northern Corridor Sub region. The combined GDP of the Corridor countries is 18% of the COMESA GDP. Intra-COMESA trade amongst the Corridor countries accounted for 30% of COMESA imports and 42% of exports in 2003 alone.

The Transit Agreement was concluded in 1987, and is a comprehensive, thoroughly detailed document that governs relations amongst the participating countries. It must be read in conjunction with a series of

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120 [www.en.wikipedia.org/wiki/Common_Market_for_Eastern_and_Southern_Africa](http://www.en.wikipedia.org/wiki/Common_Market_for_Eastern_and_Southern_Africa). The Common Market for Eastern and Southern Africa is a preferential trading area with nineteen member states stretching from Libya to Zimbabwe. COMESA was formed in December 1994, replacing a Preferential Trade Area which had existed since 1981. Nine of the member states formed a free trade area in 2000, with Rwanda and Burundi joining the FTA in 2004 and the Comoros and Libya in 2006. COMESA is one of the pillars of the African Economic Community. In 2008, COMESA agreed to an expanded free-trade zone including members of two other African trade blocs, the East African Community (EAC) and the Southern Africa Development Community (SADC).
protocols and other records. The primary purpose and objective of the Agreement is to for the contracting parties to “agree that the Northern Corridor as defined in (the) Agreement provides a most effective route for the surface transport of goods between their respective countries and the sea and that the purpose of (the) Agreement is to promote its use. The contracting parties agree to grant each other the right of transit in order to facilitate movement of goods through their respective territories and to provide all possible facilities for traffic in transit between them, in accordance with the provisions of (the) Agreement, its Annex and Protocols.”

3.3.3 Institutional Arrangements

The governance structure of the Northern Corridor Transit Transportation Coordination Authority\(^{121}\) (the NCTTCA) comprises three principal organs, namely:

- The Authority – a Council of Ministers of transportation of the member states;
- The Executive Board – an Intergovernmental Committee of Permanent Secretaries and other senior government officials; and
- The Secretariat – the executing organ headed by an Executive Secretary and headquartered in Mombasa, Kenya.

The mandate of the NCTTCA, as stipulated in the Transit Agreement, includes:

- Safeguarding the freedom of transit and right of access to and from the sea for the landlocked countries;
- Ensuring implementation of and compliance with the provisions of the Transit Agreement;
- Joint promotion and coordination of the development of regional transport infrastructure;
- Reduction of transport costs through the removal of all barriers to traffic using the corridor;
- Harmonisation of transit transport policies and technical standards in order to facilitate operations along the corridor;
- Promotion of regional consensus on all matters relating to the management of the corridor and which are of mutual benefit to the members states; and
- Cooperation with other international organisations

3.3.4 Challenges and Benefits

The TTCA was mandated to transform the Northern Transport Corridor into an economic development corridor; all major border posts across the Corridor are also to be converted into one-stop border posts. A Regional Cargo Tracking System is being developed as a management tool.

\(^{121}\) www.ttcanc.org

*Investment Opportunities in the Northern Corridor with Emphasis in Transport Infrastructure*, a paper prepared by the TTCA Secretariat for presentation at the COMESA Business Summit, Kampala, June 2004
3.3.5 Progress

While no specific reference could be found on progress made by the NCTTCA on cooperation with international organisations vis-à-vis expediting its mandate, the fifty-ninth session of the UN General Assembly held in August 2004 made significant headway in mobilising the support of UN agencies and other relevant international and regional organisations to landlocked countries within the Northern Corridor System\(^{122}\) as per the Almaty Programme of Action.

The Sub-Saharan Transport Policy Programme was launched in 1987 as a joint initiative between the Economic Commission for Africa and the World Bank. One of the Programme’s transit transport facilitation activities is to establish observatories of abnormal practices along transit corridors such as the Northern Corridor.

In addition, UNCTAD, through its Automated Systems for Customs Data (ASYCUD) programme, is undertaking a number of projects that include customs transit matters in landlocked developing countries. These countries include some that are connected via the Northern Corridor, these being Burundi, Ethiopia, Rwanda and Uganda.

3.4 Africa: Central Corridor (Dar es Salaam – Great Lakes)

3.4.1 Corridor Description

As was stated in section 1.3 of this benchmarking report the Central Corridor in Africa is a road network that connects Tanzania to Rwanda, Burundi, Uganda and the Democratic Republic of the Congo (DRC). It was anticipated that the link road would be upgraded and completed by 2010.

3.4.2 Partnerships and Funding

The Tanzanian Government initiated the project to facilitate transport from Dar-es-Salaam to its northern and western neighbours.

In 2001 the EU provided a grant of Euros 132 million in response to a proposal for funding by the Tanzanian Government to rehabilitate and upgrade some 169 km of road. This spanned the road from Mwanza/Shinyanga Border to Tinde, and the road from Nzega to Isaka and on to the borders of Rwanda and Burundi. In fifteen years, the EU has made available nearly Euros 450 million for Tanzanian road projects.
On 7 May 2004, the World Bank approved an International Development Association credit line of USD 122 million. This was for the upgrading of strategic roads in mainland Tanzania and Zanzibar. Included amongst the roads to be upgraded was 110 km Singida-Shelui section of the Central Transport Corridor.

In order for the Central Transport Corridor, as with all key regional networks, political commitment must come from the highest level. Dr. Milton Makongoro Mahanga, the Tanzanian Deputy Minister for Infrastructure Development, stated the intention of his government to fulfil its international obligation as emphasised by various UN resolutions, particularly the Almaty Programme of Action. Further, during an official visit to Burundi in June 2007, the Tanzanian President reassured Burundi of its commitment to facilitate transit traffic to Burundi.

3.4.3 Institutional Arrangements

The five Transport Ministers of the respective member states of the Corridor signed an agreement on 2 September 2005 to establish the Central Corridor Transit Transport Facilitation Agency to monitor and facilitate movement of transit traffic along the Corridor.

3.4.4 Challenges and Benefits

Given their limited capacity and dependence on a very limited number of commodities for their export earning, landlocked developing countries (LDCs) as a group constitute the poorest of developing countries.

The International Ministerial Conference of Landlocked and Transit Developing Countries and Donor Countries and International Financial and Development Institutions on Transit Transport Cooperation convened in Almaty, Kazakhstan in from 25-29 August 2003. The theme of the Conference was “Addressing the Special Needs of Landlocked Developing Countries within a New Global Framework for Transit Transport Cooperation for Landlocked and Transit Developing Countries.”

The objective of the Almaty Programme of Action is “to address the special needs of landlocked developing countries and establish a new global framework for action for developing efficient transit transport systems in landlocked and transit developing countries, taking into account the interests of both the landlocked and transit developing countries.

3.4.5 Progress

The African regional review meeting of the Almaty Programme of Action was convened from 18 to 20 June 2008 in Addis Ababa at the Headquarters of the Economic Commission for Africa. The meeting
was preceded by a one day seminar on multilateral conventions in the area of transit trade that are included in the 2008 UN Treaty event.

The meeting adopted the final outcome document in the form of a report, which contained specific action-oriented measures and which created appropriate oversight mechanisms to monitor the implementation of railway and other concessions, and improve the layout of infrastructure at borders and introduce shared facilities.

3.5 Lessons Learned

A number of lessons were learned in reviewing the issues the selected corridors were faced with and which needed to be taken to heart for the development and implementation of any corridor, i.e.:

- **Fundamental transit policy issues**: reducing customs bureaucracy and fees, designed to cut costs and travel days for landlocked countries' exports.

- **Infrastructure development and maintenance issues**: projects will reflect local transport modes. In Africa, road is the predominant mode of transport; in South Asia, rail is more common.

- **International trade and trade facilitation issues**: to give preferential treatment to landlocked countries' goods, making them more competitive.

- **International support measures**: donor countries will lend know-how and money to landlocked and transit countries for infrastructure and policy improvements.

- **Implementation and review issues**: monitoring and follow-up on agreements with measurable criteria, such as travel days and costs, will be used, with anticipated annual reviews before international and regional bodies such as the United Nations, NEPAD and SADC.
4. Part IV: Corridor Assessment Tool

4.1 Why an Assessment Tool?

*Sustainable Transport Networks for Economic and Social Benefits*

According to the UN Economic and Social Commission for Asia and the Pacific (ESCAP)\(^{123}\) Committee on Transport (29 – 31 October 2008, Bangkok), “transport plays a crucial role in the economic and trade development of countries and consequently in the welfare of their people. The ability of industries to produce goods and services is dependent on transport to bring raw materials, spare parts, labour and energy from different locations and to deliver manufactured goods, agricultural products and services to domestic consumers and international markets. Beyond and through this primary task of moving people and goods, transport also has a significant impact on the lives of many people through increased employment opportunities as well as better accessibility to social infrastructure and services.’

Given this, therefore, economic and social benefits from transport infrastructure investment far surpass those that are captured directly in traditional cost-benefit analyses of investment projects. According to ESCAP, “the transport sector also has impacts beyond the intrinsic mission of moving people and goods as it contributes to the development of other sectors of the economy and provides social outreach to populations.” However, like all human endeavours, transport development has both positive and negative impact on the economy, the environment and society.

The ultimate litmus test of a successful economic corridor resides in the sustainability of the transport networks on which it hinges.

Hence, it is imperative that any transport network – including those within economic corridors – must be sustainable in order to ensure the sustained economic and social benefits that derive there from. This has particular bearing for developing countries that face the challenges of economic growth, job creation, social development and poverty eradication, amongst others; South Africa is one such country.


UNESCAP or ESCAP, located in Bangkok, Thailand, is the regional arm of the United Nations Secretariat for the Asian and Pacific region. It was established in 1947 to encourage economic cooperation among its member states. The name was changed to the current in 1974. It is one of five regional commissions under the administrative direction of United Nations headquarters. The ESCAP has 53 member states and nine associate members, and reports to the UN Economic and Social Council (ECOSOC). As well as countries in Asia and the Pacific, it includes France, the Netherlands, the United Kingdom and the United States. ESCAP’s regional focus is managing globalization through programs in environmentally sustainable development, trade, and human rights.
A wider range of developmental issues may be required when addressing sustainable transport, as espoused in the following figure, developed by ESCAP, to illustrate some of these wide-ranging impacts, and should be something that all developers of economic corridors take into consideration in the planning and implementation of their projects.

Figure 35: Schematic Illustration of transport, economy, environment and society

ESCAP identified some outcomes/impact as a result of a sustainable transport network. These are:

- Accessibility to resources, markets and services through improved quality of transport connections and savings in time and cost;
- Balanced spatial development through rural entrepreneurship and trade and the demand for unskilled labour during construction;
- Multiplier effect of transport on the economy through direct employment in operations and non-direct jobs created in industries associated with planning, development and operation.
- Development impact of international transport facilitation through relevant policies, improved border crossing movements, etc.

The World Commission on Environment and Development and the Organisation for Economic Co-operation and Development adopted a definition of sustainable development that cited four

124 www.en.wikipedia.org/wiki/UN_World_Commission_on_Environment_and_Development
principal items that constitute “sustainable transport”, i.e. (i) access/congestion; (ii) health; (iii) ecology/pollution and (iv) climate change and the ozone layer. A definition of a sustainable transport system rests on OECD definitions and additional ESCAP elements:

Table 4: Definition of a Sustainable Transport System

<table>
<thead>
<tr>
<th>OECD definition</th>
<th>Access / congestion</th>
<th>(i) Provides for safe, economically viable and socially acceptable access to people, places, goods and services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>(ii) Meets generally accepted objectives for health and environmental quality, for example, those set by the World Health Organisation (WHO) for air pollutants and noise</td>
<td></td>
</tr>
<tr>
<td>Ecology/pollution</td>
<td>(iii) Protects ecosystems by avoiding exceeding critical loads and levels for ecosystem integrity, for example, those defined by the Economic Commission for Europe (ECE) for acidification, eutrophication and ground-level ozone</td>
<td></td>
</tr>
<tr>
<td>Climate change and ozone layer</td>
<td>(iv) Does not aggravate adverse global phenomena, such as climate change and stratospheric ozone depletion</td>
<td></td>
</tr>
<tr>
<td>Resources</td>
<td>(ix) Optimizes natural resource use to sustainable levels in terms of energy, land and materials use</td>
<td></td>
</tr>
<tr>
<td>Asset Management</td>
<td>(x) Adopts and implements appropriate maintenance, rehabilitation and disposal systems over the whole life cycle of each asset</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>(xi) Promotes the use of technologies that are compatible with levels of development</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>(xii) Supports research and development into existing and alternative transport related technologies</td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td>(xiii) Ensures sound financial structures and efficient pricing systems that support economically viable infrastructure facilities and services</td>
<td></td>
</tr>
<tr>
<td>Balanced spatial growth</td>
<td>(xiv) Ensures long-term economic growth that is geared towards benefiting all parts of the country, including urban and rural areas as well as the hinterland and border regions</td>
<td></td>
</tr>
</tbody>
</table>

The United Nations Conference (or Commission) on Environment and Development, also known as the Rio Summit, Earth Summit (or, in Portuguese, Eco '92) was a major United Nations conference held in Rio de Janeiro from June 3 to June 14, 1992. 172 governments participated, with 108 sending their heads of state or government. Some 2,400 representatives of non-governmental organizations (NGOs) attended, with 17,000 people at the parallel Forum, who had so-called Consultative Status. The issues addressed included (i) systematic scrutiny of patterns of production NGO “Global— particularly the production of toxic components, such as lead in gasoline, or poisonous waste including radioactive chemicals; (ii) alternative sources of energy to replace the use of fossil fuels which are linked to global climate change; (iii) new reliance on public transportation systems in order to reduce vehicle emissions, congestion in cities and the health problems caused by polluted air and smog; and (iv) the growing scarcity of water.

125 http://en.wikipedia.org/wiki/Oecd

The Organisation for Economic Co-operation and Development (OECD) (in French: Organisation de coopération et de développement économiques, OCDE) is an international organisation of 30 countries that accept the principles of representative democracy and free-market economy. Most OECD members are high-income economies with a high HDI and are regarded as developed countries. It originated in 1948 as the Organisation for European Economic Co-operation (OEEC), led by Robert Marjolin of France, to help administer the Marshall Plan for the reconstruction of Europe after World War II. Later, its membership was extended to non-European states. In 1961, it was reformed into the Organisation for Economic Co-operation and Development by the Convention on the Organisation for Economic Co-operation and Development. The OECD’s headquarters are at the Château de la Muette in Paris.
Facilitates the smooth flow of goods and people across national border, including for transit, thereby supporting regional economic integration and contributing to peace, stability and good-neighbourly relations among countries.

Assessing the Social and Economic Effects of Transportation Projects

In 2001, the National Cooperative Highway Research Program (NCHRP)\textsuperscript{126} developed a Guidebook for Assessing the Social and Economic Effects of Transportation Projects to assist transportation planning practitioners to accurately assess the social and economic effects of transportation investments on communities.

The lack of sufficient methods, tools, and techniques for the scale, context, and complexity of projects meant that planners and decision makers had limited information and understanding of the full range of effects that may be attributed to a transportation project's development. These limitations result in challenges for government and funding recipients to conduct social and economic analyses of their programmes and projects.

In a country such as South Africa, where there still exists huge infrastructural and developmental disparities between urban and rural communities, spiralling unemployment, increasing poverty, and irreversible damage to the environment, it becomes imperative for us to take full cognisance of the social and economic effects of economic (and transport) corridor development projects on our own local communities.

This, in turn, demands a whole new set of capabilities from planners and decision makers to predict and assess these effects.

The Guidebook defines 11 general types of social and economic effects and provides insights into, and evaluations of, the methods, tools, and techniques available to assess them. These effects include:

(i) Changes in travel time;
(ii) Safety;
(iii) Changes in vehicle operating costs;
(iv) Transportation choice;
(v) Accessibility;
(vi) Community cohesion;
(vii) Economic development;
(viii) Traffic noise;

\textsuperscript{126} The National Cooperative Highway Research Program (NCHRP) was initiated in 1962 by the highway administrators of the American Association of State Highway and Transportation officials as an objective national highway research program employing modern scientific techniques best studied through a coordinated program of cooperative research by highway departments individually or in cooperation with their state universities and other. This program is supported on a continuing basis by funds from participating member states of the Association and it receives the full cooperation and support of the Federal Highway Administration, United States Department of Transport. (Final Report 456: NCHRP Project 25 – 19, 2001 – www.nationalacademies.org)
(ix) Visual quality;
(x) Property values; and
(xi) Distributive effects.

An assessment of probable social and economic effects is only one of several key components in assessing the full range of effects. Hence, it is important to begin by placing the analysis of social and economic effects in the broader context of overall impact analysis.

The following figure\textsuperscript{127} presents the sequence of steps in a comprehensive impact assessment, with strong emphasis on the importance of community involvement in all steps of the impact assessment process.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure36}
\caption{Components of a comprehensive project impact analysis}
\end{figure}

\textsuperscript{127} NCHRP \textit{Guidebook for Assessing the Social and Economic Effects of Transportation}, 2001
Figure 27 presents the general types of social and economic effects that should be addressed, proceeding from the premise that the ultimate purpose of economic corridor and transportation system developments is to enhance quality of life.

![Diagram of inter-relationships among social and economic effects]

**Methodologies to Assess Project Impact**

A range of methodologies may be used when assessing projects. These include estimating the impact to be achieved from project implementation, evaluating the benefit achieved as a result of the project, evaluating projects after their implementation, and those for project planning and economic analysis of projects done as part of project appraisal studies.

Specific methodologies are also used for calculating development impact used in project appraisals; some development banks and bilateral donors have their own methodologies to link projects to direct results in job creation and poverty alleviation.

Methodologies also differ between developing countries and developed countries, where it is widely assumed that in developed countries with fairly established transport networks, the benefit to be achieved is more marginal than in a developing country where an area may be made accessible for the first time.128

Irrespective, it is necessary and useful to develop an Assessment Tool that considers the general and peculiar features of each corridor in order to ascertain a path of least resistance and what have been the key impacts on various factors/environs in-and-around the corridor.

128 [www.gtkp.com](http://www.gtkp.com)  *Achieving Economic Impact*
This enables the alignment and re-alignment of different aspects regarding the development and sustainability of the corridor and its related elements, thereby facilitating a SDI that has the best and most to offer to its various users and stakeholders.

Any such Assessment Tool must be appropriate, relevant and user-friendly – providing information and feedback that is usable.

**Cost/Benefit Analysis and Multi-criteria Analysis Tools**

One may use a Cost/Benefit Analysis (CBA) tool or a Multi-criteria (MCA) tool, or both.

“A Cost/Benefit Analysis is a systematic approach to estimating the strengths and weaknesses of technology alternatives that satisfy agency business requirements. This tool will help individuals prepare cost/benefit comparisons with recommendations on how to gather information, present costs, determine benefits, identify risks and draw economically sound conclusions.”

An MCA, on the other hand, “describes any structured approach used to determine overall preferences among alternative options, where the options accomplish several objectives. In MCA, desirable objectives are specified and corresponding attributes or indicators are identified. The actual measurement of indicators need not be in monetary terms, but are often based on the quantitative analysis (through scoring, ranking and weighting) of a wide range of qualitative impact categories and criteria. Different environmental and social indicators may be developed side by side with economic costs and benefits.

Explicit recognition is given to the fact that a variety of both monetary and non-monetary objectives may influence policy decisions. MCA provides techniques for comparing and ranking different outcomes, even though a variety of indicators are used. MCA includes a range of related techniques, some of which follow this entry.

Multi-criteria analysis or multi-objective decision making is a type of decision analysis tool that is particularly applicable to cases where a single-criterion approach (such as cost-benefit analysis) falls short, especially where significant environmental and social impacts cannot be assigned monetary values. MCA allows decision makers to include a full range of social, environmental, technical, economic, and financial criteria.”

For our purposes, for now, we shall attempt to present a simple Assessment Tool along the lines of an MCA.

---

129 According to WordWeb, an agency is an administrative unit of government or a business that serves other businesses. Every agency has its own set of business requirements that it must fulfil in order to achieve its various goals/objectives; these include, amongst others, legal requirements, management and administrative needs, customer expectations, social considerations, etc.


131 [www.unfccc.int](www.unfccc.int)
4.2 Key indicators of the Assessment Tool

The first element of the Assessment Tool must consider the range of transport network strategies along the corridor.

Table 5: Range of Transport Network Strategies along the Corridor

<table>
<thead>
<tr>
<th>Strategies</th>
<th>Description</th>
<th>Additional Lane(s)</th>
<th>Traffic Using New Facility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Rail</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Light Rail Transit (LRT)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus Rapid Transit (BRT)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bus/Minibus Taxi Lanes (BMT)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Occupancy Vehicle Lanes (HOV)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High Occupancy Toll Lanes (HOT)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collector-Distributor Roads (C-D Roads)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Freeway Lanes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycle Lanes</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following table provides criteria to be included in the evaluation and the way of measuring the impacts.

Table 6: Evaluation Criteria

<table>
<thead>
<tr>
<th>Criteria Cluster</th>
<th>Criteria</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spatial</td>
<td>Impact on land use patterns</td>
<td>Qualitative assessment</td>
</tr>
<tr>
<td></td>
<td>Accessibility of CBD, strategic sites and ports</td>
<td>Volume / capacity (V/C) ratio</td>
</tr>
<tr>
<td></td>
<td>Land use requirements for additional transport infrastructure</td>
<td>Qualitative assessment</td>
</tr>
<tr>
<td></td>
<td>*Increase in population density</td>
<td>Quantitative Assessment</td>
</tr>
<tr>
<td></td>
<td>*Increase in recreational areas within citizens’ reach</td>
<td>Quantitative &amp; Qualitative Assessment</td>
</tr>
<tr>
<td>Transport</td>
<td>Public transport use</td>
<td>Passengers per hour (date): AM peak inbound</td>
</tr>
<tr>
<td></td>
<td>Increase in public transport use per hour</td>
<td>Percentage change (date): AM peak inbound</td>
</tr>
<tr>
<td></td>
<td>Travel speed – general traffic lanes</td>
<td>Km / hour</td>
</tr>
<tr>
<td></td>
<td>Travel speed – rail</td>
<td>Km / hour</td>
</tr>
<tr>
<td></td>
<td>Travel speed – road public transport</td>
<td>Km / hour</td>
</tr>
<tr>
<td></td>
<td>Enforcement</td>
<td>Qualitative assessment</td>
</tr>
<tr>
<td></td>
<td>Public transport reliability, frequency, etc.</td>
<td>Weighted headway in minutes</td>
</tr>
<tr>
<td></td>
<td>Freight transport</td>
<td>Qualitative assessment</td>
</tr>
</tbody>
</table>

132 [www.up.ac.za](http://www.up.ac.za)  Assessment for the Improvement Strategies for the N1 Corridor between Bellville and Cape Town, Dr Vanderschuren, Mr Frieslaar and Ms Lane

133 [www.up.ac.za](http://www.up.ac.za)  Assessment for the Improvement Strategies for the N1 Corridor between Bellville and Cape Town, Dr Vanderschuren, Mr Frieslaar and Ms Lane
<table>
<thead>
<tr>
<th>Social/Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private car trip reduction</td>
</tr>
<tr>
<td>Parking demand</td>
</tr>
<tr>
<td>Utilisation of spare rail capacity</td>
</tr>
<tr>
<td>Utilisation of spare freeway capacity</td>
</tr>
<tr>
<td>Fuel consumption, alternative fuels and pollution</td>
</tr>
<tr>
<td>Water bodies</td>
</tr>
<tr>
<td>Non-motorised transport</td>
</tr>
<tr>
<td>Safety (accident rates)</td>
</tr>
<tr>
<td>Security</td>
</tr>
<tr>
<td>Annual subsidy</td>
</tr>
<tr>
<td>*Impact on marine water resources</td>
</tr>
<tr>
<td>*Impact on fresh water resources</td>
</tr>
<tr>
<td>*Increased consumption in industrial water use</td>
</tr>
<tr>
<td>*Efficiency in recycling industrial and other waste water</td>
</tr>
<tr>
<td>*Efficiency in disposal of municipal, industrial and toxic waste</td>
</tr>
<tr>
<td>*Impact on mineral and other natural resources</td>
</tr>
<tr>
<td>*Impact on soil depletion</td>
</tr>
<tr>
<td>Socio-Economic</td>
</tr>
<tr>
<td>*Decreased unemployment</td>
</tr>
<tr>
<td>*Increased gross domestic product (GDP)</td>
</tr>
<tr>
<td>*Increased foreign direct investment (FDI)</td>
</tr>
<tr>
<td>*Increased industrial production</td>
</tr>
<tr>
<td>*New housing starts</td>
</tr>
<tr>
<td>*Increased retail sales</td>
</tr>
<tr>
<td>*Increased broadband internet penetration</td>
</tr>
<tr>
<td>*Growth of small and medium enterprises (SMEs)</td>
</tr>
<tr>
<td>*Number of new businesses</td>
</tr>
<tr>
<td>*Development of black economic enterprises (BEEs)</td>
</tr>
<tr>
<td>*New jobs created</td>
</tr>
<tr>
<td>*Increased per capita personal income</td>
</tr>
<tr>
<td>*Increased household income (poverty alleviation)</td>
</tr>
<tr>
<td>*Measurable skills development</td>
</tr>
<tr>
<td>Socio-Economic</td>
</tr>
<tr>
<td>*Increased productivity</td>
</tr>
</tbody>
</table>
Additional criteria (*) have been added to the original matrix; these criteria are far from exhaustive and should be modified as is appropriate to and relevant for the project.

*Weighting the Criteria and the Criteria Clusters*\(^\text{134}\)

In order to increase confidence in the outputs, all criteria within a cluster as well as the clusters themselves may be weighted.

An example of a weighting table for the Criteria Clusters is provided; the same may be developed for the individual criteria within each cluster. It must be noted that this table has been modified to accommodate additional criteria, resulting an amendments to the weights. The original criteria and weights are denoted with an asterisk (*). Explanatory notes to the approach adopted and a rationale for the same follow the table.

**Table 7: Criteria Clusters - Applied Weighting**

<table>
<thead>
<tr>
<th>Criteria Cluster</th>
<th>Weighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Spatial</td>
<td>15</td>
</tr>
<tr>
<td>*Transport</td>
<td>25</td>
</tr>
<tr>
<td>*Social Environmental</td>
<td>15</td>
</tr>
<tr>
<td>Socio-Economic</td>
<td>25</td>
</tr>
<tr>
<td>Bilateral, Multilateral &amp; Regional Agreements &amp; Impact</td>
<td>5</td>
</tr>
<tr>
<td>*Costs (Financial)</td>
<td>15</td>
</tr>
</tbody>
</table>

\(^{134}\) www.up.ac.za Assessment for the Improvement Strategies for the N1 Corridor between Bellville and Cape Town, Dr Vanderschuren, Mr Frieslaar and Ms Lane
South Africa is a developing country that manifests first world elements in what is largely as third world territory. As such, there are multiple priorities and challenges competing for scarce financial resources and technical capabilities.

Capital and human investments in one invariably impact on the other – government and private sector are constantly dancing on shifting rugs, if not have the carpet pulled from under their feet.

Throw into this mix a fairly vocal civil society and organised labour and one has the recipe for a potent mix!

How does one, therefore, prioritise? The answer may lie in the question: where does one initially make major capital investments in infrastructural developments that will have concomitant effects on a number of other development priorities in the country?

One answer to this question certainly is economic corridors!

Successful economic corridors
- Build on existing transport and other infrastructure
- Foster public-private partnerships with civil society consultation and participation
- Grow the economy through strengthening existing industries and businesses and grow new ones
- Creates mixed land use zones that enhances spatial and facilities/services development in a range of sectors
- Advances the objectives of regional spatial development initiatives and aspirations
- And, very important, addresses some of the social goals of job creation, poverty alleviation, and improved quality of life, amongst others.

Getting these right will inadvertently have positive spinoffs on costs, which is a key consideration but which should not be the most paramount. This will work itself out if the other key criteria are properly addressed. In fact, this approach may save money on the final analysis. Herein lays the crux of the rationale behind the above applied weighting.

As much as it is important to heavily weight criteria such as spatial, transport and social environmental factors, socio-economic variables demand high priority in South Africa.

Fundamental to government’s growth and development strategy across all sectors is the quest for decreasing unemployment, creating more jobs, eradicating poverty and building a better life for all.

Add to this the need for increased social integration across race and class and greater parity in rural and urban development resulting in any infrastructure development project becoming a seemingly insurmountable challenge in balancing key priorities on the social and economic development front.

The only way to do this is to do it right and right from the start.
Hence, corridor development planners and decision makers must factor in the key social and economic development criteria at the outset of undertaking any such venture. This in turn creates an environment that is conducive for developing a baseline against which to continually measure impact through the implementation phase and beyond. It is only when this is done can one sincerely claim any victories for having improved the lives of our people through massive public and private sector spending.

A model is presented for the key criteria clusters and how to weigh each cluster. Weighting disparate criterion within any one cluster should be determined with the respective projects.

**Combinations of the identified alternative transport strategies**

Once the appropriate criteria have been evaluated the impacts measured and the different weightings applied a spreadsheet of the transport operations model is developed for the final analysis of the various alternatives.

Various combinations are then identified of the alternative transport strategies, as follows:

- Alternative 0: Do nothing
- Alternative 1: The first alternative identified as a viable and sustainable combination
- Alternative 2: The second alternative identified as a viable and sustainable combination
- Alternative 3: The third alternative identified as a viable and sustainable combination
- Etc.

At this juncture, one is able to determine the viability and sustainability of the different alternatives and decide which to adopt and implement.

Care should be taken to identify risks associated with a particular alternative.

**Improving the Probability of Corridor Development**

Romano del Mistro from the University of Pretoria’s Department of Civil Engineering presented a set of objectives and performance measures for corridors.
### Table 8: Objectives and Performance Measures for Corridors

<table>
<thead>
<tr>
<th>Objective</th>
<th>Possible Performance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ECONOMIC AND FINANCIAL</strong></td>
<td></td>
</tr>
<tr>
<td>Reduce transport subsidies</td>
<td>Subsidy / year to region</td>
</tr>
<tr>
<td>Reduce overall expenditure on transport and use of non-renewable resources</td>
<td>Subsidy / person in region / year</td>
</tr>
<tr>
<td>Reduce transport costs for the poor</td>
<td>Capital cost / passenger</td>
</tr>
<tr>
<td>Attract a new investment to a metropolitan area</td>
<td>Capital cost / passenger km</td>
</tr>
<tr>
<td>Increase economic opportunities</td>
<td>Number of jobs (excluding relocations) in corridor</td>
</tr>
<tr>
<td>Improve the efficiency of infrastructure</td>
<td>Number of SMMEs in corridor</td>
</tr>
<tr>
<td>Linking into the global economy</td>
<td>Infrastructure operating cost/person in corridor</td>
</tr>
<tr>
<td></td>
<td>Infrastructure operating cost/person in region</td>
</tr>
<tr>
<td></td>
<td>Number of plants, regional head offices, etc. of multinationals in corridor</td>
</tr>
<tr>
<td></td>
<td>Value of exports from corridor</td>
</tr>
<tr>
<td><strong>TRANSPORT</strong></td>
<td></td>
</tr>
<tr>
<td>Integrate land use and transport</td>
<td>Average motorised travel distance / person in the region / day</td>
</tr>
<tr>
<td>Increase the use, efficiency and quality of public transport</td>
<td>Modal split in corridor</td>
</tr>
<tr>
<td>Increase / maximise accessibility</td>
<td>Modal split in the region</td>
</tr>
<tr>
<td>Increase / maximise mobility</td>
<td>Average travel time in corridor</td>
</tr>
<tr>
<td></td>
<td>Average travel time in the region</td>
</tr>
<tr>
<td>Increase modal choice</td>
<td>Percentage of population with choice of public transport modes</td>
</tr>
<tr>
<td>Increase modal integration</td>
<td>Number of interchanges / trip in and from corridor</td>
</tr>
<tr>
<td>Shorter, fewer and safer trips</td>
<td>Number of non-motorised trips / day</td>
</tr>
<tr>
<td>Achieve peak travel times equal to off-peak travel times</td>
<td>Ratio of average peak hour / average off-peak hour travel times in corridor</td>
</tr>
<tr>
<td></td>
<td>Ratio of average peak hour / average off-peak hour travel times in the region</td>
</tr>
<tr>
<td><strong>SOCIAL</strong></td>
<td></td>
</tr>
<tr>
<td>Alleviate poverty and reduce inequality and social exclusion</td>
<td>Number of jobs in corridor for designated groups</td>
</tr>
<tr>
<td>Provide for the transport needs of special groups, such as the disabled and the elderly</td>
<td>Average travel costs for designated groups in corridor</td>
</tr>
<tr>
<td></td>
<td>Improved security</td>
</tr>
<tr>
<td></td>
<td>Improve the quality of life</td>
</tr>
<tr>
<td></td>
<td>Education indicators of designated groups in the corridor</td>
</tr>
<tr>
<td></td>
<td>Improve access to social services</td>
</tr>
<tr>
<td></td>
<td>Average travel time for designated groups to the specified basket of social services</td>
</tr>
<tr>
<td></td>
<td>Average travel costs for designated groups to the specified basket of social services</td>
</tr>
</tbody>
</table>
Table 6: Objectives and Performance Measures ... (cont)

<table>
<thead>
<tr>
<th>OBJECTIVE</th>
<th>POSSIBLE PERFORMANCE MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHYSICAL / URBAN FORM</strong></td>
<td></td>
</tr>
<tr>
<td>Restructure the Apartheid landscape through spatial integration</td>
<td>Area of non-residential land within 1 hour travel distance for designated group within</td>
</tr>
<tr>
<td></td>
<td>Number of jobs for designated group within 1 hour travel distance</td>
</tr>
<tr>
<td>Redevelop blighted areas</td>
<td>Vacancy ratios in corridor</td>
</tr>
<tr>
<td></td>
<td>Private spend / ha in corridor</td>
</tr>
<tr>
<td>Steer urban development</td>
<td>Ratio of development in corridor to the region</td>
</tr>
<tr>
<td>Create “urbanity”</td>
<td>Residential density in corridor</td>
</tr>
<tr>
<td></td>
<td>Ratio of residential / non-residential use in corridor</td>
</tr>
<tr>
<td>Improve legibility and the aesthetic quality of the urban landscape</td>
<td></td>
</tr>
<tr>
<td><strong>INSTITUTIONAL</strong></td>
<td></td>
</tr>
<tr>
<td>Improve inter-governmental cooperation</td>
<td>Spheres in stakeholder group in corridor initiative</td>
</tr>
<tr>
<td>Build partnerships</td>
<td>Number of participating stakeholders in corridor initiative</td>
</tr>
<tr>
<td><strong>ENVIRONMENTAL</strong></td>
<td></td>
</tr>
<tr>
<td>Reduce the need for motorised transport and ensure more sustainable urban development</td>
<td>Vehicle-km travelled / person in corridor</td>
</tr>
<tr>
<td></td>
<td>Vehicle-km travelled / person in the region</td>
</tr>
<tr>
<td>Reduce pollution</td>
<td>Quantity of particulates, SO2, Cox, etc.</td>
</tr>
<tr>
<td>Contain urban development / sprawl</td>
<td>Ration of residential density in corridor to the region</td>
</tr>
<tr>
<td></td>
<td>Area of non-urban land converted to urban uses</td>
</tr>
</tbody>
</table>

**Recommendation on Type of Assessment Tools to Use**

It may be wise to use more MCA-type tools than CBA-type within the Southern African context as the former are generally a more holistic approach to project assessment.

It is best, through trial-and-error, to develop a MCA tool that is corridor project specific for most reliable outputs, where a vast amount of relevant qualitative and quantitative criteria may be used.

The table attempts to consolidate the range of assessment criteria presented up to now and to suggest possible performance measures for these.
Table 9: Assessment Criteria and Performance Measures for Economic Corridors

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>PERFORMANCE MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPATIAL (PHYSICAL/URBAN FORM)</strong></td>
<td></td>
</tr>
<tr>
<td>Restructure the Apartheid landscape through spatial integration</td>
<td>Area of non-residential land within 1 hour travel distance for designated group</td>
</tr>
<tr>
<td></td>
<td>Number of jobs for designated group within 1 hour travel distance</td>
</tr>
<tr>
<td>Redevelop blighted areas</td>
<td>Vacancy ratios in corridor</td>
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<td>Private spend / ha in corridor</td>
</tr>
<tr>
<td>Create “urbanity”</td>
<td>Residential density in corridor</td>
</tr>
<tr>
<td></td>
<td>Ratio of residential / non-residential land use in corridor</td>
</tr>
<tr>
<td>Improve legibility and the aesthetic quality of the urban landscape</td>
<td>Qualitative assessment of new urban landscape</td>
</tr>
<tr>
<td>Impact on land use patterns</td>
<td>Qualitative assessment &amp; impact analysis</td>
</tr>
<tr>
<td>Accessibility of CBD, strategic sites and ports</td>
<td>Volume / capacity (V/C) ratio</td>
</tr>
<tr>
<td>Land use requirements for additional transport infrastructure</td>
<td>Qualitative assessment</td>
</tr>
<tr>
<td>Increase in population density</td>
<td>Quantitative Assessment &amp; comparative analysis</td>
</tr>
<tr>
<td>Increase in recreational areas within citizens’ reach</td>
<td>Quantitative &amp; Qualitative Assessment &amp; utilisations ratios &amp; patterns</td>
</tr>
<tr>
<td><strong>TRANSPORT</strong></td>
<td></td>
</tr>
<tr>
<td>Integrate land use and transport</td>
<td>Average motorised travel distance / person in the region / day</td>
</tr>
<tr>
<td>Increase the use, efficiency and quality of public transport</td>
<td>Modal split in corridor</td>
</tr>
<tr>
<td></td>
<td>Modal split in the region</td>
</tr>
<tr>
<td>Increase / maximise accessibility</td>
<td>Average travel time in corridor</td>
</tr>
<tr>
<td></td>
<td>Average travel time in the region</td>
</tr>
<tr>
<td>Increase / maximise mobility</td>
<td>Average travel speed in the region</td>
</tr>
<tr>
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<td>Percentage of population with choice of public transport modes</td>
</tr>
<tr>
<td>Increase modal integration</td>
<td>Number of interchanges / trip in and-to-and-from corridor</td>
</tr>
<tr>
<td>Shorter, fewer and safer trips</td>
<td>Number of non-motorised trips / day</td>
</tr>
<tr>
<td>Achieve peak travel times equal to off-peak travel times</td>
<td>Ratio of average peak hour / average off-peak hour travel times in corridor</td>
</tr>
<tr>
<td></td>
<td>Ratio of average peak hour / average off-peak hour travel times in the region</td>
</tr>
<tr>
<td>Public transport use</td>
<td>Passengers per hour (date): AM peak inbound</td>
</tr>
<tr>
<td>Increase in public transport use per hour</td>
<td>Percentage change (date): AM peak inbound</td>
</tr>
<tr>
<td>Travel speed – general traffic lanes</td>
<td>Km / hour</td>
</tr>
<tr>
<td></td>
<td>Km / hour</td>
</tr>
<tr>
<td>Travel speed – rail</td>
<td>Km / hour</td>
</tr>
<tr>
<td>Travel speed – road public transport</td>
<td>Km / hour</td>
</tr>
<tr>
<td>Enforcement</td>
<td>Qualitative assessment</td>
</tr>
<tr>
<td>Public transport reliability, frequency, etc.</td>
<td>Weighted headway in minutes</td>
</tr>
<tr>
<td>Freight transport</td>
<td>Qualitative assessment</td>
</tr>
<tr>
<td>Private car trip reduction</td>
<td>Percentage change (date): AM peak inbound</td>
</tr>
<tr>
<td>Parking demand</td>
<td>Percentage change (date): AM peak inbound</td>
</tr>
<tr>
<td>Utilisation of spare rail capacity</td>
<td>Qualitative assessment</td>
</tr>
<tr>
<td>Utilisation of spare freeway capacity</td>
<td>Qualitative assessment</td>
</tr>
</tbody>
</table>
**Table 7: Assessment Criteria ...**

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>PERFORMANCE MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOCIAL ENVIRONMENTAL</strong></td>
<td></td>
</tr>
</tbody>
</table>
| Reduce the need for motorised transport and ensure more sustainable urban development | Vehicle-km travelled / person in corridor  
Vehicle-km travelled / person in the region |
| Reduce pollution                                                                    | Quantity of particulates, SO2, Cox, etc.                                             |
| Contain urban development / sprawl                                                   | Ration of residential density in corridor to the region  
Area of non-urban land converted to urban uses |
| Fuel consumption, alternative fuels and pollution                                    | Kg CO reduction in (date): AM peak inbound                                           |
| Water bodies                                                                        | Qualitative assessment                                                                |
| Non-motorised transport                                                              | Qualitative assessment                                                                |
| Safety (accident rates)                                                              | Qualitative assessment                                                                |
| Security                                                                            | Qualitative assessment                                                                |
| Annual subsidy                                                                       | Million ZAR                                                                            |
| *Impact on marine water resources                                                   | Percentage change (date) & Qualitative Assessment                                     |
| *Impact on fresh water resources                                                    | Percentage change (date) & Qualitative Assessment                                     |
| *Increased consumption in industrial water use                                      | Percentage change (date) & Qualitative Assessment                                     |
| *Efficiency in recycling industrial and other waste water                            | Percentage change (date) & Qualitative Assessment                                     |
| *Efficiency in disposal of municipal, industrial and toxic waste                    | Percentage change (date) & Qualitative Assessment                                     |
| *Impact on mineral and other natural resources                                     | Percentage change (date) & Qualitative Assessment                                     |
| *Impact on soil depletion                                                            | Percentage change (date) & Qualitative Assessment                                     |
| **Socio-Economic**                                                                  |                                                                                      |
| Alleviate poverty and reduce inequality and social exclusion                        | Number of jobs in corridor for designated groups  
Average travel costs for designated groups in corridor |
| Provide for the transport needs of special groups, such as the disabled and the elderly | Quantitative & qualitative assessment and utilisation ratios |
| Improved security                                                                    | Qualitative assessment & crime                                                       |
| Improve the quality of life                                                          | Education indicators of designated groups in the corridor                             |
| Improve access to social services                                                    | Average travel time for designated groups to the specified basked of social services  
Average travel costs for designated groups to the specified basked of social services |
| Attract a new investment to a metropolitan area                                       | Spin-off investment                                                                   |
| Increase economic opportunities                                                      | Number of jobs (excluding relocations) in corridor  
Number of SMMEs in corridor                                                          |
| Improve the efficiency of infrastructure                                             | Infrastructure operating cost/person in corridor  
Infrastructure operating cost/person in region                                        |
| Linking into the global economy                                                      | Number of plants, regional head offices, etc. of multinationals in corridor  
Value of exports from corridor                                                        |
| *Decreased unemployment                                                              | Quantitative Assessment                                                                |
| *Increased gross domestic product (GDP)                                              | Percentage change (date)                                                              |
| *Increased foreign direct investment (FDI)                                            | Percentage change (date) & Qualitative Assessment                                     |
| *Increased industrial production                                                     | Quantitative Assessment                                                                |
| *New housing starts                                                                  | Quantitative & Qualitative Assessment                                                 |
| *Increased retail sales                                                              | Quantitative & Qualitative Assessment                                                 |
| *Increased broadband internet penetration                                            | Percentage change (date)                                                              |
Table 7: Assessment Criteria ... (cont)

<table>
<thead>
<tr>
<th>ASSESSMENT CRITERIA</th>
<th>PERFORMANCE MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ASSESSMENT CRITERIA</strong></td>
<td><strong>PERFORMANCE MEASURES</strong></td>
</tr>
<tr>
<td><strong>Socio-Economic (continued)</strong></td>
<td><strong>(continued)</strong></td>
</tr>
<tr>
<td><strong>Growth of small and medium enterprises (SMEs)</strong></td>
<td>Percentage change (date) &amp; type</td>
</tr>
<tr>
<td><strong>Number of new businesses</strong></td>
<td>Percentage change (date) &amp; type</td>
</tr>
<tr>
<td><strong>Development of black economic enterprises (BEEs)</strong></td>
<td>Percentage change (date) &amp; type</td>
</tr>
<tr>
<td><strong>New jobs created</strong></td>
<td>Percentage change (date) &amp; type</td>
</tr>
<tr>
<td><strong>Increased per capita personal income</strong></td>
<td>Percentage change (date) &amp; amounts</td>
</tr>
<tr>
<td><strong>Increased household income (poverty alleviation)</strong></td>
<td>Percentage change (date) &amp; amounts</td>
</tr>
<tr>
<td><strong>Measurable skills development</strong></td>
<td>Percentage change (date) &amp; description</td>
</tr>
<tr>
<td><strong>Increased productivity</strong></td>
<td>Percentage change (date) &amp; description</td>
</tr>
<tr>
<td><strong>Improved community relations</strong></td>
<td>Qualitative Assessment</td>
</tr>
<tr>
<td><strong>Increase in health and social welfare facilities and services</strong></td>
<td>Percentage change (date) &amp; Qualitative Assessment</td>
</tr>
<tr>
<td><strong>Increase in education facilities</strong></td>
<td>Percentage change (date) &amp; Qualitative Assessment</td>
</tr>
<tr>
<td><strong>Changes in urban/rural migration rate</strong></td>
<td>Percentage change (date)</td>
</tr>
<tr>
<td><strong>Institutional (including governance, coordination, management, bilateral, multilateral &amp; regional agreements &amp; impact)</strong></td>
<td><strong>Institutional (including governance, coordination, management, bilateral, multilateral &amp; regional agreements &amp; impact)</strong></td>
</tr>
<tr>
<td>Improve inter-governmental cooperation</td>
<td>Spheres in stakeholder group in corridor initiative</td>
</tr>
<tr>
<td>Build partnerships</td>
<td>Number of participating stakeholders in corridor initiative</td>
</tr>
<tr>
<td><strong>Structures, operations &amp; performance vis-à-vis governance, coordination &amp; management</strong></td>
<td>Qualitative Assessment &amp; Performance Appraisal</td>
</tr>
<tr>
<td><strong>Integrated government (intra-governmental cooperation)</strong></td>
<td>Qualitative Assessment &amp; Performance Appraisal</td>
</tr>
<tr>
<td><strong>New country-to-country agreements (project financing, institutional arrangements, border management, safety &amp; security, etc.)</strong></td>
<td>Number &amp; Qualitative Assessment</td>
</tr>
<tr>
<td><strong>New multi-country agreements (project financing, institutional arrangements, border management, safety &amp; security, etc.)</strong></td>
<td>Number &amp; Qualitative Assessment</td>
</tr>
<tr>
<td><strong>Impact on SADC &amp; NEPAD regional spatial development, trade, safety &amp; security objectives</strong></td>
<td>Qualitative Assessment</td>
</tr>
<tr>
<td><strong>Costs (financial)</strong></td>
<td><strong>Costs (financial)</strong></td>
</tr>
<tr>
<td>Reduce transport subsidies</td>
<td>Subsidy / year to region</td>
</tr>
<tr>
<td>Reduce overall expenditure on transport and use of non-renewable resources</td>
<td>Subsidy / person in region / year</td>
</tr>
<tr>
<td>Reduce transport costs for the poor</td>
<td>Capital cost / passenger</td>
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<tr>
<td></td>
<td>Capital cost / passenger km</td>
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<td></td>
<td>Cost / public transport passenger</td>
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<tr>
<td></td>
<td>Million ZAR</td>
</tr>
<tr>
<td>Annual subsidy</td>
<td>Million ZAR</td>
</tr>
</tbody>
</table>

This table must be applied with the appropriate weighting of the criteria clusters and, as necessary, the weighting of the individual respective criteria.
5. Conclusion

The Benchmarking Study on the Corridor Research covered aspects of SDIs and Corridors in all its shapes and sizes across the world, in Africa and within Southern Africa.

The Report provides a referencing opportunity to all wishing to evaluate the reasons, criteria and lessons learned within other SDI and Corridor developments.

6. Bibliography/References

The footnotes that appear throughout the benchmarking report serve as bibliography / references for the report.