

May 2011

An Economic Development Strategy for the Trans-Kalahari Corridor

Daniel John Brundige
Worcester Polytechnic Institute

Elizabeth Irene Dawson
Worcester Polytechnic Institute

Mackenzie N. Massey
Worcester Polytechnic Institute

Sasha Marie Moore
Worcester Polytechnic Institute

Follow this and additional works at: <https://digitalcommons.wpi.edu/iqp-all>

Repository Citation

Brundige, D. J., Dawson, E. I., Massey, M. N., & Moore, S. M. (2011). *An Economic Development Strategy for the Trans-Kalahari Corridor*. Retrieved from <https://digitalcommons.wpi.edu/iqp-all/2188>

This Unrestricted is brought to you for free and open access by the Interactive Qualifying Projects at Digital WPI. It has been accepted for inclusion in Interactive Qualifying Projects (All Years) by an authorized administrator of Digital WPI. For more information, please contact digitalwpi@wpi.edu.



An Economic Development Strategy for the Trans-Kalahari Corridor

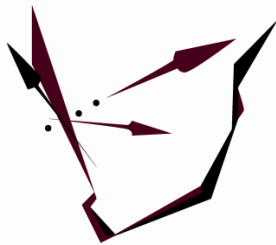
Daniel Brundige

Elizabeth Dawson

Mackenzie Massey

Sasha Moore

4 May 2011



WALVIS BAY
CORRIDOR
G R O U P



AN ECONOMIC DEVELOPMENT STRATEGY FOR THE TRANS-KALAHARI CORRIDOR

An Interactive Qualifying Project Report

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by

Daniel Brundige

Elizabeth Dawson

Mackenzie Massey

Sasha Moore

Date: 4 May 2011

Professor Ulrike Brisson, Ph. D., Major Advisor

Professor Ingrid Shockey, Ph. D., Co-Advisor

This report represents the work of one or more WPI undergraduate students submitted to the faculty as evidence of completion of a degree requirement. WPI routinely publishes these reports on its web site without editorial or peer review.

Abstract

The Walvis Bay Corridor Group will use this report as a strategy for transforming the Trans-Kalahari Corridor from a transport route to an economic development corridor. This report, compiled from interviews with government and private sector officials as well as town councils, will determine the current, planned, and envisioned projects that are under development along the Trans-Kalahari Corridor. Furthermore, it will provide recommendations for solutions to the socio-economic issues that will need to be overcome for corridor development.

Executive Summary

After gaining independence in 1990, Namibia established a National Development Plan with the objective of creating and maintaining economic growth, increasing employment opportunities, reducing poverty, and decreasing the inequalities in income distribution. The long term plan for this objective was Vision 2030, which established a goal of transforming Namibia from a low-income developing country to a high-income developed country by the year 2030. To achieve this goal, Namibia is promoting transportation to contribute to sustainable national development. Further improving the country's current transportation infrastructure will create sustainable economic growth and employment opportunities. With a more mature transportation infrastructure in place, the next step in establishing the country's position in the world economy is to create a national economy that can prosper along these transportation routes. This economic growth will come from transforming Namibia's trade corridors, specifically the corridors that extend from Walvis Bay, from transport routes to economic development corridors. Our goal for this project was to create an economic development strategy for the transformation of one of these corridors, the Trans-Kalahari Corridor (TKC).

Our project sponsor, the Walvis Bay Corridor Group (WBCG), was founded in 2000 with the purpose of increasing commercial importing and exporting through the Port of Walvis Bay and making the Walvis Bay Corridors the "leading trade route in Southern Africa" (Walvis Bay Corridor Group, N.D.). The Walvis Bay Port is located roughly midway on the Atlantic coastline of Namibia and is the country's largest commercial port. The corridors extending from the port cover a total of 11,621 km [7,221 miles] and reach Angola, Botswana, Democratic Republic of the Congo (DRC), South Africa, Zambia, and Zimbabwe. There are four major corridors extending from the Port of Walvis Bay: the Trans-Kalahari, the Trans-Caprivi, the Trans-Cunene, and the Trans-Oranje. Our focus for this project was the Namibian section of the Trans-Kalahari Corridor, which extends from Walvis Bay to the Botswana border through the communities of Swakopmund, Usakos, Karibib, Okahandja, Windhoek, and Gobabis.

The economic development plan that we developed for the TKC will be used to effectively transform the highway from a transportation route to an economic development corridor. This type of corridor takes advantage of the various economic opportunities that exist along its route. The corridor can provide businesses with steady income and they, in turn, can improve the effectiveness and reliability of the corridor by providing amenities and services for

travelers (de Beer, 2001). Corridor development requires a balance of the traffic flow with the quality of economic activity along the corridor. The most effective economic activity for a developing corridor is an anchor project. Anchor projects are a community's main features that serve to attract and develop spinoffs called cluster projects. In this way, identifying anchor projects can boost the local and national economy of Namibia and allow investments to attain maximum impact. This relationship was the reason it was especially important that we focused on anchor projects in our economic development strategy for the Trans-Kalahari Corridor.

Namibia's corridors will benefit from the co-operation of the various corridor stakeholders, including government agencies and town councils. Different stakeholders hold valuable information and provide unique services that can facilitate the growth of the manufacturing, tourism, agriculture, mining, energy, and infrastructure industries along the corridors. For this reason, we met with numerous stakeholders including the town councils of Gobabis, Okahandja, Karibib, Usakos, Swakopmund, and Walvis Bay, as well as representatives from the Ministry of Mines and Energy, Trans-Kalahari Corridor Secretariat, Namibian Ports Authority, Ministry of Trade and Industry, Namibian-German Centre for Logistics, Namibia Chamber of Commerce and Industry, and the border post officials at the Botswana border. We also met with the Namibian representative for the Gundle Plastics Company to get a baseline understanding of Namibian economics from the private sector. From these interviews we determined the different perspectives and perceptions of the corridor, as well as individual economic projects that each organization or town was developing along the TKC.

Our study was the first complete survey conducted of the TKC. From the data collected during our site evaluations of the corridor and interviews with relevant stakeholders we gained an understanding of the corridor's current condition, as well as the identifying projects that are under development. This data was compiled into an assessment of the economic development capacity along the TKC. A complete list of current economic projects under development can be found in Appendix B. We also evaluated these current projects to determine which industries still require the most expansion. Although these industries show potential, they do not currently have many projects under development along the TKC. We identified these industries as areas of focus for developing new projects.

In our meetings we discussed potential challenges inhibiting the economic development of the TKC. These problems included social, infrastructural, and financial issues that the

stakeholders believed needed to be overcome before the economic development of the TKC could occur. We analyzed each concern to determine its pertinence to the economic development of the TKC. Although we determined that most of the concerns still needed to be addressed, some perceived challenges were already being handled. Some stakeholders also proposed solutions to challenges. We analyzed the feasibility of each proposal, as some suggestions were not practical for the TKC at its current stage of development.

The social barriers included the education level of the small and medium enterprise (SME) community, the lack of regional integration, and the negative connotation associated with truck drivers. Several stakeholders were concerned that many Namibians do not possess the necessary business skills to establish and operate a business. Before encouraging Namibians to set up SMEs along the TKC, we must ensure that they receive the proper education so their businesses will succeed. Another social challenge is the lack of regional integration along the TKC. For economic development along the TKC to be successful there must be a unified development plan. This plan will need to be organized and lead by a single organization. As the Walvis Bay Corridor Group is a public-private-partnership and has ties to both government and private sector officials, they are the ideal choice for this position. Another social challenge will be to change the negative perception that most towns have towards truck drivers. Instead of seeing them as carriers of HIV, towns must realize that truck drivers bring needed economic benefits by supporting local grocery stores, take-aways, and so forth.

The infrastructural obstacles include the expansion of the Port of Walvis Bay and road damage caused by heavy transport. Many stakeholders feel that the Port of Walvis Bay should be expanded to increase its throughput volume capacity. However, this concern has already been addressed as a full port expansion is already underway. Several stakeholders are also concerned about the road damage caused by heavy transport vehicles traveling through the towns of the TKC. If traffic were diverted around towns by using a bypass system, the towns would lose the valuable business that the truck drivers provide. A delicate balance must be achieved between the infrastructural damage and the economic benefits that traffic flow through the town brings.

The financial challenges include financing for SMEs and the need for economic diversification. Many stakeholders believe that the lack of financial support for SMEs will be a deterrent to their development and growth. Incentives exist, but need to be better advertised to ensure that new SME owners would know where they can find help in financing their business.

Another concern of many stakeholders is the need for Namibia to diversify its economy. Since Namibia is already expanding into new industries as part of this corridor development we did not focus on economic diversification in our economic development strategy.

Many stakeholders also suggested solutions to some of these challenges. These solutions include the development of cluster projects, the creation of a dry port system and the promotion of alternative transportation methods. We analyzed these suggested proposals to determine the feasibility of their implementation along the TKC. Stakeholders suggested creating SME parks outside of anchor projects to provide needed services and products. An example of this type of cluster project is a mining village that provides take-aways and laundry services to mine workers. SME parks could decrease the local unemployment rate and create a symbiotic relationship with the anchor project. Several town councils suggested building dry ports to facilitate the transportation system. While dry ports would create employment opportunities in the towns, the additional unloading and loading procedures would diminish the overall efficiency of the TKC by increasing transportation time and costs. Finally, many stakeholders proposed using alternative transportation methods such as rail or air. The key to creating an effective trade route is to link road, rail, and air transport into one network, which achieves maximum efficiency at minimum transportation costs.

After analyzing this feedback, we compiled a list of recommendations for the WBCG that can be found below.

- The WBCG could lead and organize the development of the TKC.
- Educational workshops could be promoted for SME owners.
- Adequate truck stops could be developed along the TKC.
- The WBCG could address the negative perception of truck drivers.
- Bypass system feasibility could be considered for each town along the TKC.
- SME parks could be proposed around cluster projects.
- Road, rail, and air could be linked to achieve maximum transport efficiency.
- Twin cities could be established to aid in town planning.

Our report was designed to aid the WBCG in creating an economic development plan for the TKC. We collected data on the current status of the TKC as well as the economic projects that are currently under development. We also determined the obstacles that the WBCG will

need to overcome before economic development of the TKC can occur. Finally, we proposed solutions to these challenges. These recommendations form a strategy for the WBCG to use in creating an economic development plan. Furthermore, it is our hope that this strategy will help the WBCG to attract investors to establish economic projects along the TKC. It is these projects that will transform the Trans-Kalahari Corridor from a transportation route to an economically sound development corridor. Once the transformation of this corridor is underway, the TKC will be a catalyst for local and regional economic growth, increasing employment opportunities, reducing poverty, and decreasing the inequalities in income distribution as envisaged in Namibia's Vision 2030.

Acknowledgements

We would like to thank Mr. Gilbert Boois who was our onsite liaison at the WBCG. He provided valuable insight and advice during our study and assisted us with our meetings. We would also like to thank our colleagues at the Walvis Bay Corridor Group.

Mr. Johnny Smith

Mr. Edward Shivute

Mr. Mbahupu “Hippy” Tjivikua

Ms. Hilda “Mom” Massdorp.

Ms. Sylvia Maketo

We would also like to express our appreciation to those who availed themselves to meet with us and provided us important information about the economic development of Namibia.

Town Councils

Gobabis

Okahandja

Karibib

Usakos

Swakopmund

Walvis Bay

Government Agencies

Ministry of Mines &

Energy

Ministry of Trade &

Industry

Ministry of Agriculture,

Water, & Forestry

Trans-Kalahari Corridor

Secretariat

Namibia Ports Authority

Customs Officials

Business

Namibian-German Centre
for Logistics

Chamber of Mines

Namibia Chamber of
Commerce & Industry

Johan Struwig

We extend our thanks to Mr. Israel Kazembire Zemburuka at the Polytechnic of Namibia who welcomed us to Namibia.

We would also like to thank our advisors and other faculty from WPI who guided us and provided advice during PQP and while onsite.

Professor Ulrike Brisson

Professor Ingrid Shockey

Ms. Christine Drew

Authorship

This report has been carried out and written equally by the four listed authors.

Table of Contents

Abstract.....	i
Executive Summary.....	ii
Acknowledgements.....	vii
Authorship.....	viii
Table of Contents.....	ix
Table of Figures.....	xiii
Glossary of Acronyms & Terminology.....	xiv
Chapter 1. Introduction.....	1
Chapter 2. Literature Review.....	4
2.1 A Brief History of the Port of Walvis Bay.....	4
2.1.1 Walvis Bay Corridor Group.....	5
2.2 The Walvis Bay Corridors.....	6
2.2.1 Trans-Kalahari Corridor.....	7
2.2.2 Trans-Caprivi Corridor.....	7
2.2.3 Trans-Cunene Corridor.....	7
2.2.4 Trans-Oranje Corridor.....	8
2.3 Efficiency and Reliability of Corridors.....	8
2.4 Corridor Services and Amenities for Travelers.....	9
2.4.1 Security.....	10
2.4.2 Food.....	10
2.4.3 Lodging.....	10
2.4.4 Fuel.....	11
2.4.5 Parking.....	11
2.4.6 Maintenance.....	11
2.4.7 Entertainment.....	12
2.5 Traffic Laws.....	12
2.6 Anchor Projects for Business Interests.....	13
2.6.1 Sungate.....	14

2.6.2 Gecko	16
2.6.3 Port Expansion	17
2.6.4 Trans-Kalahari Railway	18
2.6.5 Uranium Mines	18
2.7 Aid Provided by Namibian Government Agencies	18
2.8 Case Studies in Economic Development on the Maputo Corridor	20
2.8.1 Maputo Corridor Initiative	20
2.8.2 Nelspruit: City Planning	21
2.9 Case Study on Transportation Synergy in the Netherlands	21
2.10 Summary	22
Chapter 3. Methodology	23
3.1 Determination of Current Economic Status	23
3.2 Assessment of Current Economic Status	24
3.3 Identification of New Economic Projects	25
3.4 Timeline	26
Chapter 4. Results and Analysis	27
4.1 Trans-Kalahari Corridor Development Stakeholders	27
4.1.1 Government Sectors	27
4.1.2 Private Sector	28
4.1.3 Town Councils	29
4.2 Assessment of Existing and Planned Development Sites	30
4.2.1 Manufacturing Sector Sites	30
4.2.2 Tourism Sector Sites	32
4.2.3 Agricultural Sector	33
4.2.4 Mining Sector	34
4.2.5 Energy Sector	37
4.2.6 Evaluation of Infrastructure	38
4.2.7 Development Sector Summary and Analysis	41

4.3 Identification of Problems Perceived by Stakeholders	42
4.3.1 Social Barriers.....	42
4.3.2 Infrastructure Obstacles	45
4.3.3 Financial Challenges	46
4.4 Identification and Analysis of Improvement Proposals from Stakeholders	48
4.4.1 Development of Cluster Projects	48
4.4.2 Creation of a Dry Port System	49
4.4.3 Promotion of Alternative Transportation Methods.....	49
4.4.4 Town Capacity Building	51
4.5 Summary	51
Chapter 5. Recommendations and Conclusions.....	52
5.1 Recommendations.....	52
5.1.1 Regional Integration by Improved Communication	52
5.1.2 Education Level in the SME Community	53
5.1.3 Unsafe Driving Practices	53
5.1.4 Public Perception of Truck Drivers	53
5.1.5 Road Damage from Heavy Transport.....	54
5.1.6 SME Development Around Anchor Projects.....	55
5.1.7 Promotion of Alternative Transportation Methods.....	55
5.1.8 Town Capacity Building.....	56
5.1.9 Summary	57
5.2 Conclusion	57
References.....	59
Appendix A: Interview Questions	63
Appendix B: Compiled List of Projects.....	64
Appendix C: Map of All Pending Projects	65
Appendix D: Map of Pending Manufacturing Projects	66
Appendix E: Map of Pending Tourism Projects.....	67
Appendix F: Map of Pending Agriculture Projects	68

Appendix G: Map of Pending Mining Projects	69
Appendix H: Map of Pending Energy Projects.....	70
Appendix I: Map of Pending Infrastructure Projects	71
Appendix J: Meeting Minutes for Namibian-German Centre for Logistics	72
Appendix K: Meeting Minutes for Ministry of Mines and Energy	74
Appendix L: Meeting Minutes for Trans-Kalahari Corridor Secretariat	76
Appendix M: Meeting Minutes for Ministry of Trade and Industry	78
Appendix N: Meeting Minutes for Chamber of Mines.....	81
Appendix O: Meeting Minutes for Botswana Border Post.....	83
Appendix P: Meeting Minutes for Namibian Ports Authority.....	85
Appendix Q: Meeting Minutes for Namibia Chamber of Commerce and Industry	87
Appendix R: Meeting Minutes for Ministry of Agriculture, Water, and Forestry	90
Appendix S: Meeting Minutes for Gundle Plastics Company.....	91
Appendix T: Meeting Minutes for Municipality of Okahandja.....	92
Appendix U: Meeting Minutes for Municipality of Gobabis	96
Appendix V: Meeting Minutes for Municipality of Karibib	98
Appendix W: Meeting Minutes for Municipality of Usakos	100
Appendix X: Meeting Minutes for Municipality of Walvis Bay	102
Appendix Y: Meeting Minutes for Municipality of Swakopmund.....	105

Table of Figures

Figure 1: Port of Walvis Bay (Bruyn, 2010).....	5
Figure 2: Walvis Bay Corridors (Walvis Bay Corridor Group, N.D.).....	6
Figure 3: Future Traffic Regulations (The Road Traffic and Transport Regulations, 2001).	13
Figure 4: Sungate: a mixture of industrial use, residential use, educational use and open space (Accolade Properties Namibia, N.D.).....	14
Figure 5: Sungate location. (Accolade Properties Namibia, N.D.).....	15
Figure 6: Erongo region is located in the central part of the western coastline of Namibia directly west of Windhoek (Arroukatchee, N.D.).	16
Figure 7: SDI schematic for the TKC	25
Figure 8: Gantt chart showing our projected timeline	26
Figure 9: Locations of towns along the TKC.....	29
Figure 10: Area behind the dune belt that will become the new industrial park for Walvis Bay.	31
Figure 11: Rössing Uranium Mine	35
Figure 12: Ohorongo Cement in Transit.....	36
Figure 13: Coal power plant outside of Windhoek.....	38
Figure 15: Road construction along the TKC	39
Figure 16: New road surface between Karibib and Okahandja	39
Figure 14: Botswana- Namibia Border Post	40
Figure 17: Dredging Crane at Walvis Bay Port	45
Figure 18: SME Park in the town of Usakos	47

Glossary of Acronyms & Terminology

ANSA	A partnership between the government of Angola, Namibia, & South Africa
AfDB	African Development Bank
CEO	Chief Executive Officer
DRC	Democratic Republic of Congo
Dry port	A hub for cargo in transit. Trucks (or trains) are unloaded and cargo is loaded onto a new truck (or train) to take the cargo to the next port or final destination.
EPL	Exclusive Processing License
EPZ	Exclusive Processing Zone
LED	Local Economic Development
MAWF	Ministry of Agriculture, Water, & Forestry
MET	Ministry of Environment & Tourism
MF	Ministry of Finance
MME	Ministry of Mines & Energy
MTI	Ministry of Trade & Industry
NamPort	Namibia Ports Authority
NCCI	Namibia Chamber of Commerce & Industry
NDP	National Development Plan
NGCL	Namibian-German Centre for Logistics
NIC	Namibia Investment Centre
Ramsar-listed	Internationally protected wetland region
SAD 500	Single Administrative Document
SADC Region	South African Development Community. It is comprised of Angola, Botswana, Democratic Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe.
SME	Small & Medium Enterprise
TEU	Twenty Foot Equivalent Units. 1 TEU = 1 standard shipping container
TKC	Trans-Kalahari Corridor
TKCS	Trans-Kalahari Corridor Secretariat
TKR	Trans-Kalahari Railway
VAT	Value Added Tax
WBCG	Walvis Bay Corridor Group

Chapter 1. Introduction

After gaining independence in 1990, Namibia established a National Development Plan with the objective of creating and maintaining economic growth, increasing employment opportunities, reducing poverty, and decreasing the inequalities in income distribution. The long term plan for this objective was Vision 2030, which established a goal of transforming Namibia from a low-income developing country to a high-income developed country by the year 2030. In order to achieve this goal, several short-term plans were created. The First National Development Plan (NDP1) was established for the first decade of Namibia's independence. This plan called for an annual growth rate of 5%. However, due to adverse climate conditions and smaller returns on capital investments, a growth rate of only 3.8% was achieved. Consequently, Namibia created the Second National Development Plan (NDP2) for 2001 to 2006. This plan was aimed at achieving higher outputs and incomes by making use of Namibia's natural resources. Currently, Namibia is assessing the achievements of NDP2 and is developing their plan for NDP3 (Harmon L. M., 2011).

As part of NDP2, Namibia promoted transport to contribute to sustainable national development. The idea was that by further developing their current transportation infrastructure, they could create and sustain economic growth and employment opportunities while reducing poverty and income inequality. With a more mature transport infrastructure in place, the next step in establishing the country's position in the world economy is to develop an economy that can prosper along these routes. This progression will come from transforming the transportation corridors into economic development corridors by the involvement and cooperation of stakeholders including government officials, private sector officials, and town councils.

Economic development corridors take advantage of the economic opportunities that exist along its route. According to a recent report, they "are usually medium-term initiatives involving multiple stakeholders working towards a series of inter-related goals to bring about local and regional economic development." (Econogistics (Pty) Ltd, 2011). A successful economic development corridor sustainably attracts new industries and expands on the pre-existing ones.

The Walvis Bay Port is located roughly midway on the Atlantic coastline of Namibia. The port handles 3,000 ships per year on average, correlating to 5 million tonnes [5.5 million tons] of goods and products each year. The port's throughput capacity makes it Namibia's largest commercial port, with the potential to reach Angola, Botswana, South Africa, Zambia, and

Zimbabwe with fuel, food, construction materials, and so forth (Namibian Port Authority, 2009). The port has been expanding rapidly resulting in an increase in employment opportunities. A recent report calculated that “deepening the port was expected to double the traffic thereby causing 200 additional jobs plus spin-offs for port-related firms. With an average of 3 dependents per worker, these jobs could support 800 Namibians...” (Harmon L. M., 2011). This statistic shows how important providing projects that create jobs are to the economy of Namibia.

The Walvis Bay Corridor Group (WBCG) is a partnership of public and private organizations that formed with the goal of transforming the Port of Walvis Bay into the primary southern African trade hub. The WBCG is composed of national organizations such as the Namibia Chamber of Commerce and Industry, the Roads Authority, and TransNamib Holdings LTD. The Swedish International Development Association and the United Nations Conference on Trade and Development are two of the WBCG’s international partners. The WBCG’s public-private partnership provides the unique opportunity to employ resources from both the public transport authorities as well as the private operators (Walvis Bay Corridor Group, N.D.). These projects require resources that no individual agency or company would be able to provide, which is why these Public-Private-Partnerships are vital to the success of Namibia.

Located north and west of South Africa’s ports, the Port of Walvis Bay is an excellent location for reducing the travel time of cargo on ships. Over the last few years the WBCG has been expanding their services rapidly in order to attract new clients seeking to take advantage of these more efficient routes. The bay is promoted in Europe and the Americas as an alternative to South Africa for shipping to Botswana. Arriving in Walvis Bay can save five to seven transportation days over a South African port (Walvis Bay Corridor Group exhibits at Global Expo, 2010). This decrease in transportation time is achieved by using the Trans-Kalahari Corridor that extends from Walvis Bay to Botswana. Shorter shipping times are advantageous when dealing with time sensitive deliveries. Time savings are also attractive for businesses looking to transport goods to the region at a reduced cost, as shorter shipping times lower transportation costs. The WBCG supports other corridors that have the same time-savings potential for shipping to surrounding countries.

The WBCG has been evaluating the Trans-Kalahari, Trans-Caprivi, Trans-Cunene, and the Trans-Oranje Corridors to understand how to make these highways more successful. Many of these are still lacking the required amenities for truckers, travelers, and consumers. These basic

amenities include: food, fuel, lodging, toilets, health services, and so forth. The mission of the WBCG is to ensure that the corridors are safe, reliable, and appealing transportation routes. Furthermore, they see an opportunity to take advantage of potential links with entrepreneurs and existing (but isolated) industries that operate within range of the corridors. The WBCG works to bring local sustainable businesses to the corridors to be catalysts for future development (Walvis Bay Corridor Group, N.D.). These kinds of partnerships will provide support for the local economy and services that are much needed by travelers, especially trade workers.

The successes of the WBCG clearly show that they are achieving their goals. Between 2001 and 2004, use of the Trans-Kalahari Corridor tripled while the Port of Walvis Bay doubled its container throughput. In 2004, the WBCG connected Namibia and Zambia by building the Katimo Mulilo Bridge on the Trans-Capriivi Corridor (Walvis Bay Corridor Group, N.D.). The goal of our project was to continue this progress by creating an economic development strategy for the Trans-Kalahari Corridor. To accomplish this goal, we identified the stakeholders of the Trans-Kalahari Corridor (TKC), which included government officials, private sector officials, and town councils. We determined the current projects that are under development along the TKC in the areas of manufacturing, tourism, agriculture, mining, energy, and infrastructure. We then compiled the common concerns from the stakeholders in order to better understand the issues associated with the corridor. Next, we documented the solutions that the stakeholders brainstormed to fix the issues. We analyzed the stakeholder concerns and solutions to determine what problems needed addressing and then proposed solutions to these problems. The WBCG can use these recommendations to determine where to focus their attention in order to find support and investors.

We accomplished our goals through a careful assessment of the Trans-Kalahari Corridor. Previous studies gave us a point to build on; these evaluations provided us with baseline information on the features that will ensure the corridor is convenient, efficient, and that operations along it run smoothly. We evaluated the resources that are either available or needed that can encourage development along the highway. In doing so, we have a broadened view of the corridors' potential, leading to an effective economic development plan.

Chapter 2. Literature Review

In order to understand this project on the development of the Walvis Bay corridors, we have familiarized ourselves with the different corridors that extend from Walvis Bay to Angola, Botswana and Zambia, as well as with the needs of the travelers of the corridors, Namibian industries and government agencies. To this end, we researched the history of Namibia and Walvis Bay itself as well as our sponsoring agency, the Walvis Bay Corridor Group. We also investigated several case studies of other development projects in order to find models for Walvis Bay. Next, we evaluated the Trans-Kalahari Corridor, which spans across Namibia to Botswana from Walvis Bay. We examined how these types of corridors tend to expand and the best methods of promoting their development. We researched the specific needs of travelers on these corridors, in terms of the amenities that they might require. We also researched projects and government agencies to determine more of what the corridor already offers. Finally, the impending impact that traffic laws will have on these corridors is an important topic to consider when thinking about placement of economic hubs. This chapter will discuss the resources that we assessed in order to examine these topics in depth. To begin, we will review the background of the Walvis Bay Port.

2.1 A Brief History of the Port of Walvis Bay

There is very little known about the area that is now Namibia before its colonization by Germany in 1884. As a result of the Berlin Congo Conference, Germany began its occupation and colonization of Namibia (History of Namibia, 2011). German presence as a colonial power in Namibia did not last long, ending in 1919 but the impact that it had on the country is still prominent in today's Namibian culture. After Germany, South Africa gained control of Namibia in 1915, and attempted to make it a colony but was denied by the United Nations and the International Court of Justice. As oppression and colonialism continued and grew under South African rule, the first call for independence came in the 1950s. After living under apartheid for some 70 years or so, Namibia gained independence in 1990.

The Port of Walvis Bay was first discovered by Europeans in 1487 by Bartolomeu Dias, a Portuguese explorer. Portugal never officially took claim to Walvis Bay, and in 1840 Great Britain annexed it in its African conquest (Njeru, 2011). South Africa took control of Walvis Bay when it took control of Namibia in the early 1900s. Although Namibia gained its independence

in 1990, South Africa maintained control of the Walvis Bay Port. It was not until 1994 that the port was finally turned over to Namibia. Today the port is a busy industrial hub, linking transportation routes from all over the world (see Figure 1 below).



Figure 1: Port of Walvis Bay (Bruyn, 2010)

Several trade corridors extend from the port of Walvis Bay through Namibia to the neighboring countries. It is on these transportation routes that we will focus our project.

2.1.1 Walvis Bay Corridor Group

The Walvis Bay Corridor Group (WBCG) was founded in 2000 with the purpose of increasing commercial importing and exporting through Walvis Bay and making the Walvis Bay corridors the “leading trade route in Southern Africa” (Walvis Bay Corridor Group, N.D.). As a result of the WBCG’s establishment, importing and exporting traffic doubled from 2001 to 2004 (Achievements of the Walvis Bay Corridor Group, N.D.).

The WBCG is especially interested in this project, as the expansion of these trade corridors will mean more demand for shipments through the Walvis Bay Port. More cargo shipments lead to more jobs which reduce poverty, thus increasing the quality of life for the average Namibian. Right now there is weekly and bi-weekly service provided to and from Europe, South Africa, Angola, West Africa and Asia by the Maersk, OACL, and Mitsui OSK lines (Namibian Port Authority, 2009). The Walvis Bay Corridors provide trade access to

Namibia and many other South African countries including Angola, Botswana, Democratic Republic of the Congo, South Africa, Zambia and Zimbabwe.

The Port of Walvis Bay has the capacity to handle a variety of cargo types including bulk, break-bulk, containerized, and petroleum products. At this time, the majority of the cargo imported through Walvis Bay is containerized cargo, with petroleum being the next, followed by bulk or break-bulk cargo. Bulk and break-bulk cargo is what is mostly exported from the Port of Walvis Bay, but containerized cargo is also widely exported.

2.2 The Walvis Bay Corridors

The corridors extending from Walvis Bay range from the port to Johannesburg, Lubumbashi, and Lubango; they cover a total of 11,621 km [7,221 miles]. Figure 2 indicates (in red) the routes that extend from Walvis Bay. Here, we discuss each of the primary routes in greater depth.



Figure 2: Walvis Bay Corridors (Walvis Bay Corridor Group, N.D.).

In the above figure are the corridors that extend from the Port of Walvis Bay. These corridors expand in all directions heading through southern Africa to Angola, Botswana, DRC, South Africa, Zambia and Zimbabwe.

2.2.1 Trans-Kalahari Corridor

The Trans-Kalahari Corridor was opened in 1998 after 8 years, and an initial investment of N\$850 million [US\$127 million]. It is entirely paved and travels 1,900 km [1,180 miles] from Walvis Bay through Botswana and into Johannesburg. In combination with the Maputo Corridor to the east, the entire breadth of southern Africa can be reached. All destinations along this corridor, including Francistown, Gaborone, Gobabis, and Windhoek, are within a 2-day transit time. There have been some recent improvements to the corridor. The Trans-Kalahari Corridor Management Committee introduced a Single Administration Document (SAD 500) for use at border points along the corridor that shortens traffic clearance to 20 to 30 minutes. This procedure is being administered to other corridors in the region (Walvis Bay Corridor Group, N.D.).

2.2.2 Trans-Caprivi Corridor

This corridor extends through Zambia into the southern Democratic Republic of the Congo (DRC). It makes use of the Katima Mulilo Bridge, which was constructed in 2004, to extend the former Trans-Caprivi Highway, originally established in 1999, to 2,690 km [1,670 miles]. A railway also extends from Walvis Bay along the corridor to the town of Grootfontein, where transshipment facilities are available. The maximum transit time along the entire corridor from Walvis Bay to the DRC is 4-5 days (Walvis Bay Corridor Group, N.D.).

2.2.3 Trans-Cunene Corridor

Branching off from the Trans-Caprivi via a junction at Grootfontein is the Trans-Cunene Corridor. It extends north through the Namibian cities of Tsumeb, Ondangwa, Oshikango, and into Lubango, Angola. It runs 1,550 km [960 miles] from Walvis Bay to Lubango and takes about 4 days to travel. The aforementioned railway extends along this corridor from Grootfontein to Oshikango (Walvis Bay Corridor Group, N.D.).

2.2.4 Trans-Oranje Corridor

The Trans-Oranje Corridor is entirely paved and links the Walvis Bay Port to the Lüderitz port to the south. The road then travels east from the Lüderitz Port to Johannesburg over a total distance of 1,680 km [1,040 miles], which can be reached in 2-3 days. Construction is underway for a 40 km railway between the city of Aus and the Port of Lüderitz, providing a link from the port to the corridor for both passenger and cargo use (Walvis Bay Corridor Group, N.D.).

2.3 Efficiency and Reliability of Corridors

To create an economic development plan for the Walvis Bay corridors, we investigated how corridors develop and expand, and the subsequent needs for the users including truckers, travelers, and business owners. First, for a corridor to be effective it must be worthwhile: able to provide reduced transportation time and shipping costs. If a corridor has a higher transportation time or cost than another trade route, it will not be used. The reliability of a corridor can be measured in terms of how consistent transportation times and costs are (Adzibgey, Kunaka, & Mitiku, 2007). Contributing to both worth and reliability, are access to amenities and services that can make the experience more comfortable, more efficient, or more profitable.

For most of the land-locked sub-Saharan countries, shipping costs make up over 20% of the total cost of imported goods, while as a comparison the US ratio is only 2.2%. Currently in sub-Saharan Africa, the infrastructure problems of the corridors themselves cause 25% of transportation delays. The other 75% of delays are a result of the lack of efficient services along the corridors, especially at border crossings. Currently, there are multiple checkpoints that truckers need to go through at the border in order to be permitted to pass. This system could be made more efficient by implementing a one stop border post system. A pilot study of the one stop border post (OSBP) system was conducted by the Trans Kalahari Corridor Management Committee at the border stop between Namibia and Botswana for two months between December 2008 and January 2009. This pilot provided time savings that proved the OSPB system could be a success. As a result, new trials are being set up for the border crossing between Botswana and South Africa (Harmon, Simataa, & van der Merwe, 2009). By continuing to increase the efficiency of corridor services and border stops, Namibia will be able to decrease transportation times and reduce costs for their corridors.

2.4 Corridor Services and Amenities for Travelers

As we looked at the best way to improve the effectiveness of these corridors, we had to view them as economic development corridors instead of just transportation routes. The idea of a development corridor takes advantage of the various economic opportunities that exist along its route. These opportunities could be farms supplying food, businesses offering goods or repairs, or small settlements that could provide amenities to the travelers of the corridor. The corridors would provide these small businesses with steady income and they, in turn, could improve the effectiveness and reliability of the corridor (de Beer, 2001). Thus, corridor development requires a balance of the traffic flow on the corridor, with the quality of economic activity along the corridor. As the amount of traffic along a corridor increases, the integrity of the economic infrastructure will increase. As a result, demand for land will improve along the corridor. In turn, this demand will create an increase in traffic along the corridor, resulting in a cycle that sustainably increases the economic value of the corridor and the surrounding land (Marrian, Freeman, & Ziv, 2001).

An excellent model from neighboring South Africa indicates the potential that Namibia has to remarket the corridors. The South African Transport Conference considered the viability of a trans-continental highway that would stretch from Walvis Bay, Namibia to Maputo, Mozambique. They examined the possibility of turning the existing road into a tourist highway called the Trans Africa Tourism Highway. This route would span across southern Africa, traversing regions of various environments, cultures, and wild life. Tourists traveling this route would undergo an extremely diversified tourist experience. Similar tourist highways have been implemented with great success in the US and other countries (de Beer, 2001). This model is just one way of tapping into the local resources that co-exist along the corridor, as a way of increasing the traffic usage and desirability of the corridor.

In order to determine which economic opportunities along the corridor routes will be the most beneficial to the development of the corridors, it is important to examine the needs of the travelers of the corridors. Small businesses can be designed to be more attractive to travelers and in return will receive the most income from the travelers of the corridor. It is these businesses that will promote the expansion of the corridors the most. For this reason, we will describe the essential needs of the consumers.

2.4.1 Security

A major concern that was revealed in a preliminary study last year, is that corridor drivers feel unsafe parking their trucks for the night with no security (Adams, T, 2009 p. 34). High-risk thefts include fuel siphoned from the trucks, and the taking of essential vehicle parts including tires and headlights. Sometimes even the trucks themselves have been stolen, but more commonly thieves break into the trucks to obtain the goods within. Truck drivers would feel more secure and able to enjoy the amenities if they could park inside fenced areas, especially if those areas had guards on duty both day and night. Furthermore, tourists worry about their safety when traveling in foreign countries. Heightened security in the tourist areas would set their worries at ease, allowing for increased growth in Namibia's tourist industry.

2.4.2 Food

The most important amenity to consumers would be the availability of quality food and water. There should be an adequate number and range of food services along the main corridors to ensure safer traveling by truckers and tourists alike. Truck drivers may prefer to hold out for a place that has "real" food (Ray, 2007). Therefore, restaurants that offer reasonably priced meals will be favorable for long haul drivers. Truck drivers have high interest in having healthful choices at restaurants (Whitfield Jacobson, Prawitz, & Lukaszuk, 2007). Namibia truck stops offer "take-aways", which are small hot food stands. They are cheaper than restaurants and provide healthier alternatives than found in convenience stores (Rickard, 2009). As anywhere in the world, food services should be diverse and be of good quality to keep the travelers happy.

2.4.3 Lodging

It is required by Namibian law that truck drivers stop for nine hours out of every twenty-four hours (The Road Traffic and Transport Regulations, 2002). A study in Israel found that about thirty percent of their truck drivers have fallen asleep at the wheel and thirteen percent suffered a crash due to drowsiness (Sabbagh-Ehrlich, Friedman, & Richter, 2005). It was found, in the Traffic Psychology and Behavior study that truck drivers in fatigue related crashes are often awake for more than twelve hours a day and get less than six hours of sleep in every twenty four hours (2006, p. 65). These statistics re-enforce the need for lodging along the main routes that are convenient, affordable, and comfortable for drivers. Concerns that are raised with

lodging development again include secure parking, the cost and availability for amenities such as laundry, shower, and toilet facilities for drivers and travelers.

Lodging for tourists would need to include a well-rounded source of facilities. The lodgings would need to be able to provide for families with any age of children, for the elderly, and for the average man and woman. They would have to provide the basic amenities including food, toilets, showers, and comfortable and clean sleeping areas as well as a variety of sources for entertainment and leisure.

2.4.4 Fuel

Fuel is a commodity that must be available and reliable along major trade routes. Therefore, fueling facilities be readily accessible by large trade vehicles. The facilities must be large enough to fill multiple trucks simultaneously and can house extra parking for the drivers who also need to rest. There is also the potential to provide truckers with other services while they are already stopped, such as clean toilets or a snack. Take-away food stands would likely be very popular since the drivers are already stopped, making it convenient to purchase food.

2.4.5 Parking

The quality of parking spaces and their availability at truck stops can deter truckers from stopping along the corridor in developing communities (Adams, Srivastava, Wang, & Ogard, 2009). Any stop expecting to host cargo trucks will need adequate space to park and turn the large vehicles. These stops include the restaurants, hotels, fuel stations, mechanic shops and any other services located along a main corridor. These parking areas must also be well lit at night and fenced in to be safe for the drivers to park. The Cool Ideas Truck Stop near Middleburg South Africa can park 130 trucks safely for the night (Cool Ideas Truck Stop, 2010).

2.4.6 Maintenance

It is important that the safety of the trucks themselves is taken seriously. Often trade vehicle maintenance is neglected due to a lack of facilities or a lack of driver's perception. A truck that is not maintained is at a higher risk for mechanical problems than a well-maintained truck (Adams, Srivastava, Wang, & Ogard, 2009). Maintenance service also leads to safer conditions for the drivers since they run a low risk of brake failure, flat tires from wear, and so forth. Commercial trucks exceed the expected amount of travel on their vehicles tires; causing the tires to crack, lose tread, or spring a leak in a shorter time-span than predicted (Carboni,

Beretta, & Finzi, 2003). Truck drivers are required to pay hefty fines in Namibia if their truck is not up to the current safety standards (The Road Traffic and Transport Regulations, 2002). These fines create motivation for the drivers to keep their vehicles safe since it is less expensive to maintain the vehicle than to get a fine and still have to fix the issue. The maintenance shops should be located conveniently so the drivers do not have to navigate through towns to find them, as at the Cool Ideas Truck Stop (2010). It would also be a benefit to have road-side assistance available to drivers traveling the corridor in the case of a vehicle breakdown between towns.

2.4.7 Entertainment

Petrol or rest stations can provide many services that are outside of the basic driver's needs. These extra amenities might include movie rooms, arcades, or even a chapel (Driver Services, 2011). These services allow time for truck drivers to relax, enjoy themselves and escape from their work. Being able to relax during their non-driving time will help drivers to concentrate when they are back on the road. Tourist may also need the break since they could be driving long hours to get to their final destination.

2.5 Traffic Laws

Finally, we considered the impact of traffic regulations on the development of the trade corridors. Traffic laws will affect the number of times truckers must stop along their routes, as well as how long they have to stop. These laws will determine how many truck stops would be needed along the trade corridors, as well as what sort of amenities each truck stop would need to have. In turn, plotting amenities in increments along the corridor will enforce the traffic laws about resting by providing services at certain hour/mile stops.

The road regulations limiting the flow of goods along the trade corridors extending from Walvis Bay are not yet in effect. Once in effect, the locations, duration, and frequency of stops made along the corridors are liable to significant change. We examined their implications for use in our plan for current or future economic development.

Figure 3 contains relevant examples pertaining to any vehicle transporting goods in excess of 3500kg.

- May only drive a maximum of five hours continuously
- May only drive a maximum of 14 hours in a 24 hour period
- Must rest a minimum of 15 minutes at any one time
- Must rest a minimum of 30 minutes accumulated during a period of 5.5 hours
- Must rest a minimum continuous period of nine hours in a 24 hour period.

Figure 3: Future Traffic Regulations (The Road Traffic and Transport Regulations, 2001).

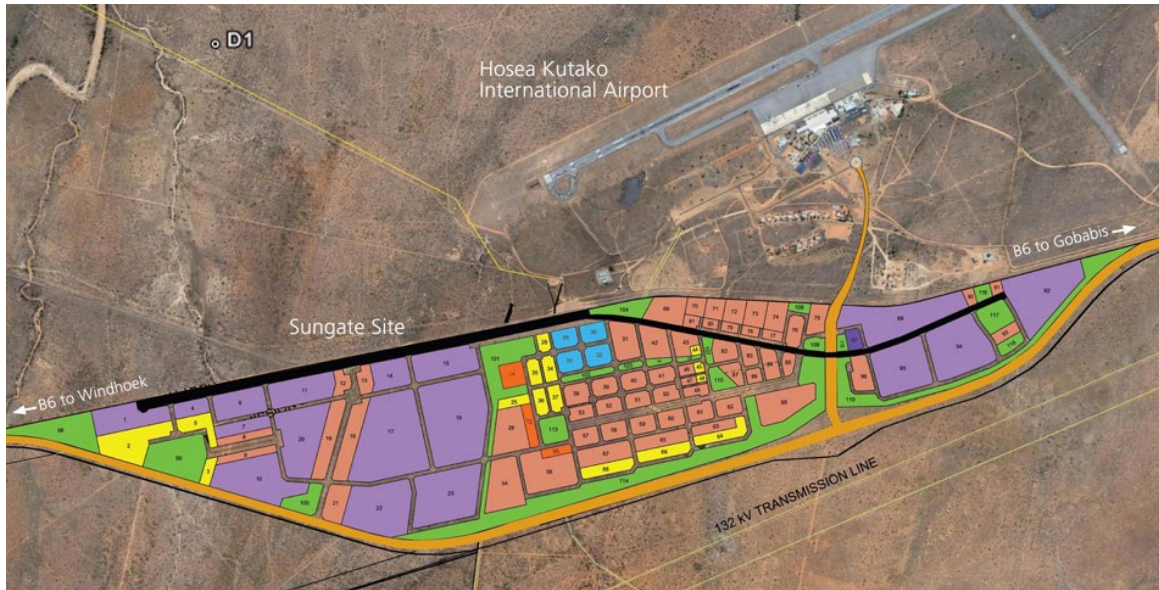
Current traffic regulations will also play a role in further development along the corridors. For instance, the N\$2000 [US\$300] fine issued both for non-roadworthy vehicles and cell phone use may in turn require more service stations, or businesses to be established in areas with higher signal strength (Menges, 2010).

2.6 Anchor Projects for Business Interests

Currently there are five anchor projects along the Trans-Kalahari Corridor. These are a community's main project that will attract other developments and allow for other projects to build from. Their aim is to boost the local and national economy of Namibia. These projects range from a business and industrial park to uranium mines and the expansion of the Port of Walvis Bay.

2.6.1 Sungate

Sungate is a commercial project located next to the Hosea Kutako International Airport 40 km east of Windhoek, Namibia, and contains 408 hectares of hotel, residential, business, and industrial developments (see Figure 4 below) (Heita, 2010).



Key

 Light Industrial	 Residential	 B6 Highway (existing route)
 Special for Business, Light Industrial, Institutional and Residential	 Service Station	 B6 Highway (new route)
 Institutional	 Open Space	 General Residential

Figure 4: Sungate: a mixture of industrial use, residential use, educational use and open space (Accolade Properties Namibia, N.D.)

It was initiated in 2007 when the zoning restrictions for the Kapps Farm Area between Windhoek and the Hosea Kutako International Airport were lifted. This change in zoning allowed the land to be developed for mixed-use industries rather than only agriculture. Sungate’s infrastructure, variety of industries, and its large useable area allows it to be self-maintainable and to grow naturally as the need for space increases (Accolade Properties Namibia, N.D.).

Sungate is located at the center of trade and transport in Namibia, and the whole of southern Africa. For this reason, it is considered the “new gateway to Africa” (Accolade

Properties Namibia, N.D.). It is found on the Trans-Kalahari Corridor, thus industries are able to import supplies and export products from the Port of Walvis Bay. Additionally, its proximity to the Hosea Kutako International Airport provides another link for sending supplies and goods for Sungate industries, as well as providing nearby tourist accommodations for travelers. Sungate is easily accessible to the different transportation routes shown in **Error! Reference source not found.**



Figure 5: Sungate location. (Accolade Properties Namibia, N.D.)

The Sungate project consists of various types of mixed-use industries including hotels, service stations, institutional, and retail businesses. It has separate commercial, retail, residential, leisure and light industrial sectors. The map below shows the different space allotments for each sector as well as Sungate’s proximity to the Hosea Kutako International Airport and the B6 Highway, which forms part of the Trans-Kalahari Corridor (Accolade Properties Namibia, N.D.).

This project is the first of its kind and could spur similar project developments throughout southern Africa. Projects like these can lead to further our goal of an economic development corridor because they establish new industries along the corridor. The varied nature of the industries comprising Sungate provides diversification of the economy along the Trans-Kalahari

Corridor. Sungate also attracts new industries and investors to establish in Namibia, further expanding the country's economy (Accolade Properties Namibia, N.D.).

2.6.2 Gecko

The Gecko Group of Companies is focused on developing Namibia's mining industry in the Erongo region. This region is located west of Windhoek, on the Atlantic coast of Namibia, as seen in Figure 6. Thus, these mines are potential economic opportunities for the Trans-Kalahari Corridor (Water Profile of Namibia, 2008).



Figure 6: Erongo region is located in the central part of the western coastline of Namibia directly west of Windhoek (Arroukatchee, N.D.).

Currently, Gecko is planning to build two new chemical plants for the uranium mines in this region. Uranium mines require chemical reagents such as sulfuric acid, caustic soda, soda ash, and bicarbonate that would be produced by these plants. They are also planning to construct a desalination plant to provide four million cubic meters [1.06 billion gallons] of water a year for mining purposes (Weidlich, 2010). Fresh water is a necessary resource for the mining industry and since fresh water is scarce in Namibia, desalination plants are needed and water is used in the mineral extraction process of mining. It is estimated that mining will use 40 million cubic

meters [10.6 billion gallons] of water annually by 2015, over 8% of Namibia's total water demand (Water Profile of Namibia, 2008).

The Gecko Group's focus on expanding the mining industry in the Erongo region will provide new economic opportunities for the Trans-Kalahari Corridor. The Group can make use of the Trans-Kalahari Corridor by shipping mining products to related industries elsewhere in the country or to Walvis Bay for exporting overseas. Therefore, this Group was instrumental to our project to further develop the Trans-Kalahari Corridor.

2.6.3 Port Expansion

Walvis Bay is not only Namibia's largest port but serves as a major shipping hub for all of southern Africa. As trade increases between southern Africa and the rest of the world, there has been demand for port growth. The Namibia Port Authority (Namport) has approved a plan to expand and deepen the Walvis Bay Port to increase annual throughput capacity to 500,000 TEU (Twenty Foot Equivalent Units) (Njini, 2008). Currently, the port has three main berths, each of which will be upgraded and adjacent areas deepened to 14 meters [46 feet]. A previous port expansion occurred in 1999 deepening the outer entrance channel to 12.8 meters [42 feet]; the current port expansion also plans to deepen the outer channel to 14.4 meters [47.2 feet]. Currently, the Bay can only berth 3,500 TEU container vessels. This expansion was in an effort to allow larger ships to dock (Dredging Today, 2010).

Although trade through the port of Walvis Bay is growing, expansion of the port ensures efficiency and lack of congestion. Cargo shipping through Walvis Bay is processed quickly enough to allow arrival in Johannesburg within two days. Goods from Europe and the Americas can save one week of transportation time to South Africa by shipping through Walvis Bay and using the Trans-Kalahari Corridor rather than shipping through Cape Town. Even goods shipped through the Indian Ocean can see shorter transport times by travelling around the Cape and using the port of Walvis Bay due to the congestion of South African ports (Dredging Today, 2010).

This steady increase in expansion will provide a low risk environment for the potential businesses that require goods shipped at a rapid pace. The increase in throughput capabilities will also increase the number of businesses that can take advantage of the port of Walvis Bay. The increase in trade through the port will also increase incoming revenue for all businesses connected to the port. This fact was particularly important for us to advertise to potential

businesses to assure them that a choice to expand to the Walvis Bay Corridors would be successful.

2.6.4 Trans-Kalahari Railway

The Trans-Kalahari Corridor has an associated railway, the Trans-Kalahari Railway, which parallels the corridor running from Walvis Bay to Gobabis, through Windhoek. There is currently a N\$9.4 billion [US\$1.4 billion] plan to expand the railway into Botswana to increase the efficiency of trade along this route. The Railway will then expand to the Lobaste Coal Mine, enhancing this asset to Botswana and establishing it as an asset to Namibia. Currently, the railway is used to carry goods, cargo, and people within Namibia but once expanded it will allow for international travel and trade.

2.6.5 Uranium Mines

One industry that will benefit greatly from an international railway is the Namibian uranium industry (Reporter, 2010). Uranium was discovered in Namibia in 1928, but it was not until 1976 that this natural resource started being mined. In a short period of time, Namibia has become one of the largest Uranium exporters. Now Namibia is the world's fourth largest producer of uranium, which is mined here and shipped all over the world to places such as Germany, Spain, and Japan. It is estimated that Namibia contains enough uranium to allow it to be the number one producer in the world. There are two main Namibian uranium mines: the Husab and Trekkopje mines, both located near Walvis Bay and Swakopmund. The Husab mine is the fifth largest in the world and the Trekkopje is the tenth. Namibia exports uranium as yellow cake, the most basic form of shippable uranium (Uranium in Namibia, 2011).

2.7 Aid Provided by Namibian Government Agencies

A way that Namibia's corridors are going to become more developed are through the co-operation of the agencies governing the related areas. Different bodies of the government hold valuable information and provide services that could facilitate the growth of manufacturing, tourism, agriculture, energy and mining along the corridors.

The Ministry of Trade and Industry is the main body in charge of Namibia's domestic and foreign relations dealing with trade. The primary role of this organization is to boost the trade and industrial development and to promote and attract foreign investment in Namibia's economy. There are many divisions of the Ministry in order to better concentrate on all the

aspects behind trade and industry. One division is concerned with industrial development, of which there are two types. The first type is local materials which include agricultural products, minerals, and animal skins. The second type is imported goods which consist of electronic, car and computer parts and so forth.

Another area of focus for the Ministry is the development of small and medium enterprises (SMEs). The Trade and Investment Development Program (TIDP) focuses on the development and promotion of trade with foreign nations such as the United States.

Finally, the Ministry also promotes investment. Foreign investment is needed to improve both the level of fixed gross investment and capital formation. They offer tax exemptions and special incentives to manufacturers, SME's, and exporters. They used to offer a large number of programs to aid those beginning in business such as Young Entrepreneurs Assistance Scheme, Rural Women Development Scheme, SME Start-up Assistance Scheme, and Small Builders Bridging Fund (MTI, 2000).

The Namibia Chamber of Commerce and Industry (NCCI) assists in connecting people and businesses involved in commerce and industry. The NCCI shares information between industries to facilitate the communication and cooperation of these businesses. They also offer a number of workshops, seminars, conferences and mentor programs for businesses that are attempting to establish and/or expand (NCCI, 2011).

The Ministry of Mines and Energy regulates the diamond, energy and other mining areas throughout Namibia. One of their goals is to protect the international image of Namibian diamonds by preventing smuggling and promoting efficient transportation, handling and monitoring. They protect the energy supply and ensure that it is regulated and distributed evenly. There is a push to use more renewable resources to supplement the energy sources currently being used. The Ministry also supports the mining of natural minerals and its integration into Namibia's economy (MME, 2006).

In sum, these agencies work together to promote the growth of Namibia's national economy. Each agency has its own role to fill in order to ensure the smooth running of the country and inter-governmental cooperation.

2.8 Case Studies in Economic Development on the Maputo Corridor

To better understand the condition of trade corridors and what can be done to promote economic development along them, we evaluated two case studies from southern Africa of similar background and status. The first case study, the Maputo Development Corridor (MDC), comes from South Africa and Mozambique where the quality of the Maputo Corridor had been deteriorating. South Africa was looking for a strategy to revitalize it. The Maputo Corridor and Namibia have similar economies and the conditions of this case are very similar. The second case study specifically examines the city of Nelspruit, along the Maputo Corridor. This South African community was targeted for development through the MDC Initiative.

2.8.1 Maputo Corridor Initiative

The Maputo Development Corridor (MDC) Initiative was created to improve the trade corridor from Gauteng, South Africa to Maputo, Mozambique. In addition to re-establishing the route, they investigated strategies to develop areas along the corridor which were previously underdeveloped but had the potential to grow a sustainable economy. Prior to the 1970s, the Maputo Corridor was a leading trade route in southern Africa but it deteriorated after the onset of a civil war in Mozambique and the South African government became destabilized (Driver & de Barros, 2000).

In the early 1990s the MDC was founded to bring the Maputo Corridor back to where it was at its peak. For the MDC to be successful it had to be an international effort. Mozambique and South Africa agreed to work together to create a more efficient border. To cross the border, it previously took from 2-6 hours, with the border closing at 7 p.m. (Driver & de Barros, 2000). In order to make the corridor viable, they realized the border crossing must be made more efficient. The MDC improved the border infrastructure by building a new border post. They opened the borders 24 hours a day, which maximized the productivity of the borders.

To improve the poor infrastructure of the region, the MDC relied upon a public-private partnership with the Greater Nelspruit Utility Company. By creating a partnership to develop the Maputo Corridor, funding opportunities increased. One partner in this project is the Trans African Concessions (TRAC). TRAC was contracted to update and maintain the roads and, in turn, were given a 30-year permit to collect tolls and get back what they had invested in the upgrading. Since the development of the Maputo Corridor, there has been an increase in tonnage of cargo by 185% (United States Agency of International Development, 2008).

2.8.2 Nelspruit: City Planning

The city of Nelspruit in South Africa employed different programs and initiatives to develop and improve the infrastructure of a community along the route. Two key programs and initiatives that they used are the Land Reform for Agricultural Development (LRAD) and the Local Economic Development (LED) Initiative. The Land Reform for Agricultural Development was a grant source to establish farms in the area surrounding Nelspruit. LRAD provides grants for prospective farmers to purchase either already established farms or land for new farms. These grants could range anywhere from N\$20,000 [US\$3000] to as much as N\$100,000 [US\$15,000] (Adams & Moila, N.D.). As a result of these grants, 240 farms were established in the area and some of these farms secured contracts to provide produce internationally which created a steady cash flow into the community. In some cases, farmers lacking the skills to effectively run farms were provided with a training course.

At the same time, the Local Economic Development Initiative sponsored community-driven initiatives and ideas that would develop and grow the local economy. One such instance is the Shabalala Multi-purpose Centre. The Centre provided many services and goods, and a broad range of industries such as a furniture workshop, arts & craft vendors, as well as a bakery (Adams & Moila, N.D.). Although this centre provided an employment source for the local community, the majority of the profits ended up in the hands of those who were already wealthy. Because most of the businesses are owned by the upper-class, very little of the profits made it to the lower-class population.

Though the city of Nelspruit is one of the best examples of economic development in sub Saharan Africa, there were still some unintended impacts. By utilizing community driven ideas and initiatives, there was much more buy-in from the local community and the outputs from the projects were significantly more useful to the community. However, many of the people that the initiative was intended to benefit never saw the full impact of the program because of the economic structure.

2.9 Case Study on Transportation Synergy in the Netherlands

The Netherlands offers a unique insight into how different modes of transportation can be incorporated into one efficient means of trade. The Port of Rotterdam and Schiphol Airport are linked by railroad and this relationship opens up opportunities for trade that might otherwise have been difficult. The synergy of these two ports allows for both passengers and freight to get

to their destinations more quickly. The port co-operation exists for the logistics service providers and shippers to move produce, meats, oil, chemicals, machinery, electronics and maritime products to their final locations. Though sea transportation is slow but inexpensive and transportation by air is fast but expensive, being able to combine the two or to choose one over the other allows for the most economically efficient shipping available (Kolkman, N.D.). This study helped us understand how different modes of transportation can work together efficiently. The Trans-Kalahari Corridor has an associated railway which supports the corridor and vice versa. The Hosea Kutako International Airport is also found along this corridor, providing a third mode of transportation. For these reasons this study was especially pertinent to our project.

2.10 Summary

We have determined that in order to transform the Trans-Kalahari from a trade corridor to an economic development corridor, we had to find, enable, and expand industries along the corridor. We have researched relevant projects to develop a better sense of what was useful and what mistakes to not recreate. We explored current projects already underway in order to discover opportunities that already exist along the corridor which could be further expanded, or used as economic hubs to encourage nearby developments. We used this information to supplement a plan to strengthen Namibia's national economy by creating economic development corridors. In this next chapter, we discuss how this information was used and what strategies we employed to create this plan for the Trans-Kalahari Corridor.

Chapter 3. Methodology

The purpose of this project was to create an economic development corridor that will accelerate and diversify the economy of Namibia by creating jobs, reducing poverty, increasing corridor security and paving the way to increasing Namibia's stance in the global market. Economic development will occur through improved infrastructure, the involvement of stakeholders, and establishing public-private-partnerships. Economic diversification will come as a result of developing the interrelations of the mining, agricultural, tourism, manufacturing, and energy industries along the Trans-Kalahari Corridor (TKC). Our first objective was to determine the current economic projects under development along the TKC in order to understand the current economic status of the corridor. Our second objective was to assess the current economic projects to determine an investment prioritization for the WBCG. Our third objective was to assess the current economic status of the TKC to determine the types of projects that are needed along the corridor. These recommended projects were compiled into a list of suggestions that were presented to the WBCG for their use in finding funding for economic development along the TKC.

3.1 Determination of Current Economic Status

In order to determine the current economic projects along the TKC we first interviewed several government and private sector officials. We met with representatives from the Namibian German Center for Logistics, the Ministry of Mines and Energy, the Trans-Kalahari Corridor Secretariat, the Ministry of Trade and Industry, the Chamber of Mines, the Botswana border post, the Namibia Ports Authority, the Namibia Chamber of Commerce and Industry, and the Ministry of Agriculture, Water, and Forestry. We conducted semi-standardized interviews, as discussed in "Qualitative Research Methods for the Social Sciences" by Bruce Berg (2007). This interview technique allowed us to be flexible while staying on task. We were able to change the formatting of the interview when necessary by adjusting the question order or addressing new concerns that arose during the interviews. Appendix A contains a list of the questions that were prepared for these interviews.

From these interviews we determined the different economic projects that each organization was developing along the TKC, as well as the status of each project. It was important to consider how long each project would take to complete, as this would be the time-

span needed before these projects could begin to provide a positive economic impact on the corridor. During these discussions we also determined each organization's views regarding the potential challenges inhibiting the economic development of the TKC. This gave us clues as to the obstacles that we would need to address in our economic development recommendations. We also determined whether each organization offered programs or incentives to SME owners looking to set up along the corridor. This information will be important for the WBCG to publicize in order to attract new businesses to the TKC.

We also interviewed town councils along the TKC in order to get their perspective on the economic development of the corridor. To do so, we traveled along the TKC, stopping at the municipalities of Gobabis, Okahandja, Karibib, Usakos, Swakopmund, and Walvis Bay. In each town we interviewed the town council to determine the economic projects that are currently under development in their town. We also determined their main economic sectors, as well as the sectors that most need expansion. This helped us to assess the economic potentials of each town and the sectors on which to focus new projects. The data we collected from these interviews was compiled into a complete list of current economic developments along the TKC.

3.2 Assessment of Current Economic Status

After determining the current economic status of the TKC, we evaluated the current projects under development and identified new potential projects. To achieve this objective, we used Spatial Development Initiatives (SDI). This concept was developed in South Africa in 1996 in order to promote the development of the country. The SDI approach is currently used by the New Partnership for Africa's Development (NEPAD) Secretariat and the African Development Bank (AfDB) to promote economic growth in the entire SADC Region.

The SDI concept focuses on the stimulation of trade, investments, infrastructure, and value-addition processes as a way to drive economic growth. In using this approach, we will determine the ability of current corridor projects to spur additional economic developments. In the SDI model, these projects are called anchor projects, and are especially important to our study as they provide a way for investments to achieve maximum impact. Anchor projects support a series of spin-off projects called cluster projects.

In Figure 7 below it can be seen how these anchor projects and cluster projects are tied together and create a network of projects that support each other. Investments in an anchor project also support the development of the cluster projects (Econogistics (Pty) Ltd, 2011). As investment sources in developing countries like Namibia are exceedingly scarce, this approach was crucial.

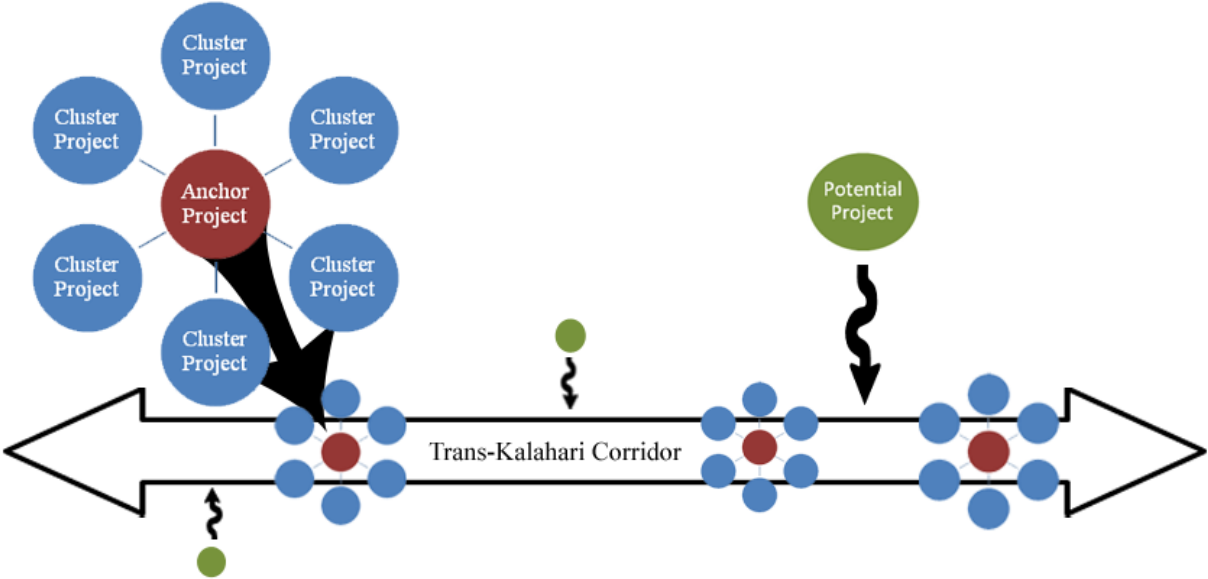


Figure 7: SDI schematic for the TKC

We evaluated each current economic project to determine its impact on the economic growth of the corridors. We based our assessments on the project’s ability to increase the economic diversification of its region, utilize natural abundant resources, and create local beneficiation. We also considered sustainability, both environmental and financial, in our evaluations. These evaluations led us to determine the most effective investment prioritization for the WBCG.

3.3 Identification of New Economic Projects

We looked at the different regions’ economic potentials along the TKC to identify possible new projects to be developed. For these investigations we considered the economic sectors currently active in each region of the corridor and the economic sectors that need to be expanded. We determined the types of projects that would best increase the economic diversification of each region. From our examination of the current economic status of the regions along the TKC, we also identified projects that would best support local beneficiation. To determine this, we looked at projects that would encourage value-adding processing to the

economic developments that currently exist along the corridor. Finally, we considered cluster projects that could be developed from existing anchor projects. These projects would increase the impact from investments in the anchor project. We compiled a list of these potential projects that is included in our recommendation section.

3.4 Timeline

We created a project timeline for the course of eight weeks. In week one, we met with the WBCG. We conducted the additional background research that was needed before we started collecting data. In week two, we began to conduct interviews with the government and private sector officials, which continued into week three. During week four we traveled the Trans-Kalahari Corridor, completing our onsite assessment, and met with the town councils of the towns along the corridor. For weeks five and six we evaluated the current economic projects identified to us by the government and private sector officials and town councils. We also identified potential viable projects that would add to the economic development of the TKC. We wrote our final report between weeks five and eight. Finally, we presented our findings to the WBCG at the end of week eight.

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
Task	13-Mar	20-Mar	27-Mar	3-Apr	10-Apr	17-Apr	24-Apr	1-May
Re-established Problem Statement	█							
Additional Background Research	█							
Government and Private Sector Meetings		█						
Town Council Meetings			█					
Onsite Assessment of Corridor				█				
Evaluation of Current Economic Projects					█			
Identification of Potential Economic Projects					█			
Writing of Final Report					█			
Report Findings to WBCG							█	

Figure 8: Gantt chart showing our projected timeline

Figure 8 above shows our project timeline. Each of the main tasks that we completed is indicated, along with the duration it took to complete.

Chapter 4. Results and Analysis

The Trans-Kalahari Corridor had never been fully surveyed prior to our project. Our site assessment determined the present situation of the corridor in terms of the projects that currently exists along the corridor and the projects that should be added. To complete this assessment, we met with the CEOs of town councils and municipalities as well as other relevant stakeholders. In this chapter we have reported the findings from these meetings. We assembled a list of the existing projects in proximity to the corridor. We also discussed the perceived social, infrastructural, and financial challenges to economic development as well as the solutions to these problems as proposed by the stakeholders. Our meeting minutes can be found in Appendices J through Y.

4.1 Trans-Kalahari Corridor Development Stakeholders

The following are the government agencies, private sector officials, and town councils that are pertinent to this study of the Trans-Kalahari Corridor.

4.1.1 Government Sectors

The Ministry of Mines and Energy (MME)

The MME is responsible for overseeing the mining industry, the fastest growing industry in Namibia. There are several mines located along the TKC which have the potential to contribute to the economic growth of the corridor.

The Trans-Kalahari Corridor Secretariat (TKCS)

The TKCS is the body in charge of the Trans-Kalahari Corridor and all operations that occur along it. It is a partnership of the Namibian, Botswana, and South African governments that spearheads developments along the TKC.

The Ministry of Trade and Industry (MTI)

The MTI is responsible for overseeing Namibia's trade and industry interests. They are made up of different sectors such as the Namibia Investment Centre (NIC), which offers support to SMEs looking to set up along the TKC.

Border Post

The Namibian section of the Trans-Kalahari Corridor ends on the eastern border of Namibia with a compact border post. The border post controls the efficiency of the border crossing process and keeps track of all border travelers.

The Namibian Ports Authority (NamPort)

NamPort oversees the two ports of Namibia: the Port of Lüderitz and the Port of Walvis Bay. They are responsible for the port facilities, the cargo throughput, and for providing efficient and effective trade.

The Ministry of Agriculture, Water & Forestry (MAWF)

The MAWF is responsible for the operations pertaining to the three sectors of agriculture, water, and forestry. Agriculture is an industry that should be expanded along the TKC.

4.1.2 Private Sector

The Namibian German Centre for Logistics (NGCL)

The NGCL is a logistics center of excellence for research, education, and practice. They work as business educators and transportation logistics consultants.

The Chamber of Mines

The Chamber of Mines is responsible for overseeing the private sector of the mining industry. The Chamber promotes the development of Namibia's mines.

The Namibian Chamber of Commerce and Industry (NCCI)

The NCCI is responsible for overseeing all of the business undertakings throughout the country. They are the private sector affiliate of the MTI, responsible for advocating businesses in Namibia. The NCCI ensures Namibia's environment is conducive for business development and works to promote Namibia in the world economy.

Gundle Plastics Company

The Gundle Plastics Company is a South African company in the process of expanding to Namibia. They provided us with a foreign company's perspective on the attraction of the Namibian market as well as the process of expanding to Namibia and setting up a business along the TKC.

4.1.3 Town Councils

Figure 9 below shows the location of each town along the Trans-Kalahari Corridor.

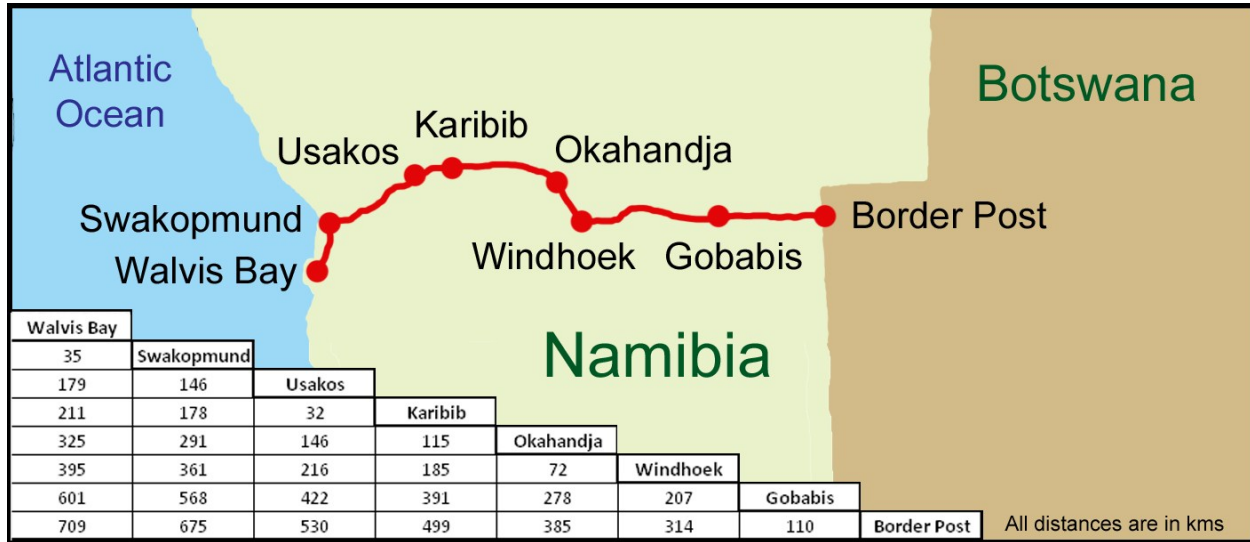


Figure 9: Locations of towns along the TKC

Okahandja

The town of Okahandja aims to become an economic hub and serve as a gateway to all destinations in Namibia by road or rail. It is located 72 km [43 miles] north of Windhoek and 325 km [195 miles] away from Walvis Bay along the TKC.

Gobabis

Gobabis' economy is currently based on agriculture as the town is surrounded by vast farmlands. It is located 207 km [125 miles] east of Windhoek and 601 km [361 miles] away from Walvis Bay.

Karibib

The town of Karibib is focused on the mining industry and is the place where both the Trans-Cunene and the Trans-Capriivi Corridors branch off from the TKC. It is located 185 km [111 miles] west of Windhoek and 211 km [127 miles] away from Walvis Bay.

Usakos

The mainstay of the town of Usakos is the mining industry. It is located 216 km [130 miles] west of Windhoek and 179 km [108 miles] away from Walvis Bay.

Walvis Bay

Walvis Bay is home to the port and is the start and end of Namibia's transport corridors. The city's economy is based on tourism and fishing. Walvis Bay is located 395 km [237 miles] west of Windhoek.

Swakopmund

The main industry of Swakopmund is tourism due to its location in the Namib Desert. It is located 361 km [217 miles] west of Windhoek and 35 km [21 miles] away from Walvis Bay.

4.2 Assessment of Existing and Planned Development Sites

This section contains a list of the current economic development projects along the TKC. These projects were identified from our interviews and site assessments along the Trans-Kalahari Corridor. Originally we planned to rank these projects in terms of feasibility. The idea was that the WBCG would use our ranked list as a suggestion for determining the projects for which the WBCG could find investors. However, since most of the projects already had investors, this was no longer necessary. Instead, our list is separated into the different industries that they support: manufacturing, tourism, agriculture, mining, energy, and infrastructure. These projects include plastics manufacturers, vegetable farms, and mineral mining. A compilation of these projects can be found in Appendix B. We begin with our findings from the manufacturing sector.

4.2.1 Manufacturing Sector Sites

The manufacturing industry is important to the development of the TKC as it will increase the volume of traffic flowing through the region. This will bring more business to the local economies along the way. Projects in the manufacturing industry mostly include the construction of new plants. As with the establishment of any new business, opening these plants will increase the local employment opportunities, thus decreasing poverty. The construction of a new manufacturing plant requires a high capital investment from the manufacturing company. For this reason, a known client base should be in place before establishing a new plant. This client base must be large enough to support the expected output of the factory. Additionally, an important factor for a foreign company looking to expand their business into a new country is the stability of that country. Namibia has been politically stable for over 20 years, unlike many nearby countries such as Angola. Finally, in order for a company to successfully establish in a

new country or location, the company must also be stable and have a positive reputation. Here we list some of the manufacturing potential from our findings.

Dune 7 Industrial Park:

There are plans for construction of a heavy industrial park near Dune 7 in Walvis Bay. This area (shown in Figure 10) has been chosen so that the park will have the least negative effect



Figure 10: Area behind the dune belt that will become the new industrial park for Walvis Bay

on the environment. Some of the businesses that will be part of this park include a container terminal for storing goods and a German steel plant. Additionally the municipality of Walvis Bay will construct a coal-fired power plant in this new park.

Mining Equipment Manufacturing:

A Chinese company is working to set up a mining equipment manufacturing plant in Karibib. This plant would produce equipment for use in Namibian mines, cutting the costs of equipment importation. There would also be maintenance and repair facilities in the plant to fix and service the mining equipment. The land that the investors have requested has not yet been approved.

Plastics Manufacturing:

Gundle Plastics Company is an example of a manufacturer that plans to build a plastics manufacturing plant in Namibia along the Trans-Kalahari Corridor. Gundle managers have not picked a specific location for their plant as they are still in the preliminary stages of determining potential clients for their product in Namibia. They have determined that there is a significant market for their product, because despite the low population of Namibia, it has high buying power. The plastic sheeting produced by Gundle is used by most industries in Namibia, from packaging food products to cement lining to wrapping palettes of mining products.

Brewery:

There are plans for a N\$350 million [US\$ 52.6 million] brewing facility, owned by SABMiller Brewery, to be built in the town of Okahandja. The brewery has been allotted a 350 hectare [865 acre] plot of land by the town of Okahandja on which to construct their plant. This location was chosen to be in the vicinity of the raw materials to reduce transport cost. Infrastructure construction is already underway on this land. This new brewery will bring in many new jobs for both unskilled and semi-skilled laborers, of which there are many in Okahandja. The plant plans to export to the entire Southern African Development Community (SADC).

Glass Manufacturing Plant:

A glass manufacturing facility is currently already under construction near Okahandja. Although this construction has been slow, it has now reached roof level. The estimated final cost of this plant is N\$410 million [US\$ 61.7 million]. Before the plant can start production however, it still needs to purchase machinery.

Corrugated Steel Plant:

Investors have been found for a corrugated steel manufacturing plant in Okahandja. The corrugated steel would be used for roof sheets, for which there is a large market throughout Namibia. Although the town of Okahandja has approved land for this plant, construction has yet to commence.

4.2.2 Tourism Sector Sites

Currently, most of the tourism industry situated along the TKC is adventure tourism located near the coast, or game farms located further inland. However, Namibia is home to nine different ethnic groups, including the Himba, Herero, and San. Cultural tourism therefore could

be developed along the TKC. Connected with the move towards cultural tourism is the physical movement of the tourists themselves. This would bring many more tourists to previously ignored areas of the country, and would expand the opportunities for landlocked towns to benefit from them. As the move to cultural tourism is just taking off, there are few projects currently underway. Two of these are listed below.

Walvis Bay Apartheid Museum:

The municipality of Walvis Bay would like to see the construction of a new Apartheid Museum, but has yet to find investors. The estimated final cost for the museum is N\$80 million [US\$ 12 million]. Until investors can be found, construction will be far away.

Gobabis Game Park:

An entrepreneur requested land to construct a game park in Gobabis, but was rejected by the town. However, the CEO of Gobabis still hopes that the town will be convinced to approve the request soon.

4.2.3 Agricultural Sector

Although there is currently little in the agricultural industry along the TKC, there is significant potential. Most of Namibia's produce comes from South Africa; Namibia only produces 11% of the agricultural products it consumes. The MAWF has created the Green Scheme with the goal of increasing this percentage to 30%. New agricultural projects along the TKC could be the first step to achieving this goal. This will increase the traffic flow along the TKC bringing more business to the local communities. Some examples of local agricultural ventures are listed here.

Royal Chicken Trading CC:

The Royal Chicken Trading CC is creating a new agricultural farm in Karibib. This farm is now in the advanced stages of development. Once completed, the farm will have a 200 hectare [494 acre] chicken farm, a 20 hectare [49 acre] organic vegetable farm, 30 hectares [74 acres] of oats, 30 hectares [74 acres] of barley, 30 hectares [74 acres] of maize, 10 hectares [25 acres] of citrus fruit trees, as well as an olive grove with 3000 trees. These agricultural products will be exported throughout Namibia and sold locally in Karibib.

Strategic Food Reserve Facilities:

The MAWF has created a project to construct storage facilities (silos) in strategic locations in Namibia. These silos will allow local farmers to store their produce until it can be shipped to market. This project will increase the cash flow to farming communities since farmers will be able to produce and sell more food products. A beneficial location for these silos along the TKC is Okahandja. There is a large farming community surrounding Okahandja. Currently, these farms provide produce for Okahandja and the surrounding communities, but lack the necessary facilities to export their produce further. If proper cold storage facilities were constructed in Okahandja, these farms would be able to ship their products across Namibia, using the Walvis Bay corridors.

4.2.4 Mining Sector

Mining has been an integral part of Namibia's economy since its independence twenty-one years ago. The mining industry creates employment for the local communities and brings the miners to local businesses such as take-aways. The mines all use the TKC in order to transport their goods for export and for importing equipment. The industry is fast growing as there are currently plans to create new mines and expand on existing ones. Uranium is one of Namibia's biggest exports since Namibia is the fourth largest producer in the world. In addition to uranium, Namibia's other mines produce copper, gold, minerals, and cement. Here we describe some of the most significant mining operations that exist or are planned along the TKC.

Gecko Mining:

The Gecko Group of Companies has requested land outside of Swakopmund to use to construct an industrial park. This park will be used to support the local mines. The facility will have chemical plants to produce the necessary chemicals for the mining industry. A desalination plant will also be constructed to supply water to the mines. In addition, the industrial park will have a power plant to generate its own electricity. Gecko will export its products using a jetty that will extend into the Atlantic Ocean. The municipality has approved land for Gecko at Mile 14 outside of Swakopmund.

Rössing Uranium:

The Rössing Uranium Mine (shown in Figure 11), owned by Rio Tinto, was built in the



Figure 11: Rössing Uranium Mine

1970's with the help of numerous stakeholders including the countries of Iran and South Africa and has been in production continuously since then. The mine currently has a N\$485 million [US\$73 million] expansion plan. This plan will increase the production ability of the mine and expand their facilities.

Trekkopje:

One of the more recent mining developments is the Areva owned uranium mine Trekkopje. The mine has already taken its first steps towards opening. It has its investors lined up and a desalination plant in operation. The investment into this mine so far is N\$6.6 billion [US\$1 billion]. This will be the first mine in Namibia to use heat bleaching in order to process the uranium. The Trekkopje mine has received its mining license and is expected to begin operation by early 2013.

Husab Uranium Mine:

The Swakop Uranium Company is attempting to establish the Husab mine in the town of Arandis in the Erongo region. They are currently applying for a mining license from the Ministry of Mines and Energy. The mine already has investors since the profit to be gained from such an investment is great. So far, there has been N\$11.3 billion [US\$1.7 billion] invested into this mining prospect. The MME has already selected a location for this mine which is expected to open in 2014.

Valencia:

Valencia is a uranium mine near Usakos that is co-owned by Forsysmetals and Westport Resources. The Valencia mine offers SME training for citizens of Usakos.

Karibib Calcium Carbide:

There are plans for a calcium carbide mine to be established near Karibib. This mine would produce acetyl gas. A N\$95 million [US\$14.3 million] prefeasibility study is currently underway to determine the costs and logistics of establishing this mine. Funding is still needed to cover the cost of the actual mine.

Granite Recycling Facility:

The MME would like to construct a granite recycling facility that would crush granite for exportation to Europe. This granite would then be used in toothpaste and tires. The MME has requested a piece of land containing granite on the outskirts of Karibib.

Ohorongo Cement:

Ohorongo Cement has established a very large mine in the Erongo region north of Swakopmund. Figure 12 (below) is a shipment of cement awaiting departure from Okahandja.



Figure 12: Ohorongo Cement in Transit

The investment behind this mine was N\$2.44 billion [US\$358 million] and they plan to produce 700,000 tonnes [772,000 tons] per annum. Of this amount only 300,000 tonnes [331,000 tons] will be exported and the rest will be used locally.

Okahandja Copper Mine:

A copper mine has been planned for construction outside of Okahandja. Although it has been approved for an exclusive processing license (EPL), construction has not yet started.

4.2.5 Energy Sector

As Namibia expands, its energy requirements increase as well. This will mean more power plants, which create employment for unskilled and skilled laborers. There are few power plants existing and even fewer alternative energy sources. Although Namibia mines uranium, it does not have the facilities necessary to convert uranium oxide into the form that is useable for nuclear power plants. This is an option that has been researched by MME, but has been found impractical for Namibia's situation. For the time being, Namibia will continue to use coal and diesel burning plants.

There are two new power plants that are proposed near Walvis Bay, a 400 MW diesel plant and a 24 MW coal powered plant. The coal-fired plant will serve as a backup to the current pre-existing diesel plant. Together the coal plant and the pre-existing diesel plant will produce 50 MW to be used for the city of Walvis Bay.

Another coal power plant will be constructed at Mile 6 outside of Swakopmund. This location is just north of the point where Swakopmund's bypass reconnects with the TKC. A desalination plant will also need to be constructed to provide water to this coal plant.

The photograph below depicts the coal-powered plant just outside of Windhoek along the TKC.



Figure 13: Coal power plant outside of Windhoek

In terms of alternative energy, the town of Okahandja has approved thirty hectares of land to use for a solar power plant. The power this plant will produce will be sold to NamPower and used to power the town of Okahandja both during the day and at night. Any excess power will be exported to the rest of Namibia.

4.2.6 Evaluation of Infrastructure

Although Namibia has created a mature infrastructure system as part of NDP2, there are still improvements to be made. Some of these improvements focus on the road infrastructure while others focus on rail or air. These expansions directly benefit the Trans-Kalahari Corridor by creating ease of transport for tourists, locals, and the manufacturing, agricultural, mining, and energy industries. The infrastructure projects will also create jobs, mainly for unskilled and semi-skilled laborers. Here we list some of the critical components of pending infrastructure development and management along the TKC.

Trade Information System:

The NGCL is creating a trade information system with the partnership of NamPort and the Ministry of Finance. This online database of real time trade information includes port data, transportation flow statistics, and cargo tracking. This information will be accessible to prospective investors, current operators, and government agencies.

Karibib-Okahandja Road Expansion:

The town council of Karibib has approved the expansion of the road between Karibib and Okahandja. This initiative is in an effort to not only create jobs but also a road that is safer and easier to drive.



Figure 14: Road construction along the TKC

The figure above illustrates road construction that is already underway between Karibib and Okahandja.

Figure 16 (below) illustrates the improved road surface between Karibib and Okahandja. In this portion of the TKC, the shoulder of the road has been expanded.



Figure 15: New road surface between Karibib and Okahandja

Okahandja Military Academy:

Okahandja has been chosen as the site for the construction of a Namibia Military Academy. This academy is a N\$200 million [US\$30 million] investment by the government of Namibia, and will be used for the training of officers.

Okahandja Regional Airport:

There are plans for a regional airport to be built in Okahandja. Currently, however, there has not been enough investment in the project. If enough investors do support this project, it will provide an important addition to the Trans-Kalahari Corridor. The Namibian government has requested the construction of a military runway be constructed to be combined with their Military Academy in Okahandja. This means that the Namibian government will provide some amount of money for the construction of the airport.

Gobabis Truck Stop:

The town of Gobabis has already approved land for a truck stop, but construction has not yet begun. This project will be privately funded; investors have already been found. A weighbridge will also be constructed, funded by the town municipality.

Border Post Renovations:

There are plans to renovate the current border post facilities (shown in Figure 13) between Namibia and Botswana along the TKC. These updates will include a backup generator



Figure 16: Botswana- Namibia Border Post

so that if the border post loses electricity during the rainy season there will be no delays to travelers crossing the border. In addition, the current facilities will be enlarged and updated. These renovations are scheduled to start in 2012.

4.2.7 Development Sector Summary and Analysis

This compilation gives an overview of the projects that are being developed along the Trans-Kalahari Corridor. There is much room for expansion in the tourism and agriculture industries with mining already at the forefront of Namibia's economy. As some of these projects become reality there will be more jobs available and new businesses will be brought in to the local communities that are in the TKC region.

In general, we found that as with any business, manufacturing facilities are desired in towns where a customer base is available. As an incentive for potential manufacturers, the expenditure involved in establishing a new facility is overcome by the relief in shipping cost in a relatively short period of time. When raw materials are accessible in the area then net profits are achieved quickly.

Currently, tourism is mainly centered in the coastal region of Namibia along the TKC. Walvis Bay and Swakopmund offer adventure tourism due to the varied landscapes and coastal access. The tourism sector could broaden to reflect a trend towards cultural tourism featuring traditional villages, museums, or experiences. Gobabis would be an ideal location for these cultural tourism developments since nine of the Namibian cultural groups reside in the Omaheke region.

In terms of land-based resources, agriculture is not prominent along the TKC with only a few prospects near Okahandja and Gobabis. The Trans-Caprivi and Trans-Cunene Corridors are better prospects for major agricultural developments. Since we are concentrating on the Trans-Kalahari, we do not focus on this industry in great detail for developing Namibia's economy. Mining, however, has been expanding increasingly over the last few years. Uranium mining has taken center stage in Namibia with multiple projects in development. All uranium mined from current sources is sold to foreign countries prior to it being mined. Consequently, uranium and other mining operations along the TKC will make Namibia a major global market contender.

Many new power plants requiring stable energy sources are planned to become operational in the next few years. Namibia has wind capacity near the coast, a plentiful amount of sunlight throughout most of the country, and a large abundance of uranium among other energy sources at their disposal. Developing these for an improved energy grid should eventually result in improved economic production along the TKC.

At this point the overall physical infrastructure of Namibia's corridors is well established. The main areas of concern, including adding lanes, shoulders, and improving road materials are already either underway or planned for the near future. The main infrastructure concerns that need to be addressed include finding alternative modes of rapid transport. The railway in particular could alleviate wear on the road from heavy-load vehicles. First, the railway needs to be upgraded to transport goods faster, carry heavier loads, and extended to transport goods further. In addition, the development of new airports as in Okahandja could make shipment by air more affordable.

4.3 Identification of Problems Perceived by Stakeholders

During our extensive interviews we determined the major challenges that, in the stakeholder's view, are inhibiting the development of the Trans-Kalahari Corridor. Each stakeholder identified significant problems that need to be overcome before the TKC can become an economic development corridor. These perceptions include social barriers, infrastructure obstacles, and financial challenges. We analyzed each stakeholder concern to determine the issues that most inhibit the economic development of the TKC.

4.3.1 Social Barriers

The following issues are the social barriers that the stakeholders believe hinder economic development including the lack of regional integration, education level of SMEs, and unsafe driving practices of truck drivers. Here we outline these factors in greater depth.

Regional Integration:

The NIC believes that there is a current lack of regional integration along the TKC. Different sections of the corridor are creating similar projects, but have no knowledge of these parallel developments. If information about project developments was shared freely, town councils could work together to create more sustainable and mutually beneficial projects. Towns could work together to come up with solutions to implementation problems instead of struggling separately.

Additionally, the NIC would like to promote regional integration among the countries of the SADC Region. There is a large coal mine along the Botswana section of the TKC near the border of Botswana and South Africa. The Port of Walvis Bay is the ideal port for exporting the

coal shipments, requiring that the coal be shipped along the TKC. Regional integration between Botswana and Namibia would improve both countries' trade potentials.

Several government agencies including the NIC offer incentives for private sector investors to establish projects along the TKC. These benefits include tax breaks and exclusive processing zones (EPZs). However, many investors do not know these types of programs exist. The NIC believes that better advertisement of these programs would encourage more investors to develop along the TKC.

From our findings, we realized that there is currently a serious lack of communication, both between the different regions of the TKC as well as between the different stakeholders. Not only are different towns developing similar projects, but different government agencies unknowingly offer similar incentives. Being able to communicate effectively is important to creating the most effective economic development along the Trans-Kalahari Corridor possible. Therefore, the lack of regional integration is an issue that we will have to address in our economic development strategy.

Education Level in the SME Community:

The NGCL expressed serious concerns as to the low level of business education in the SME community, noting that the only way for Namibia to strengthen its economy from within is to train its citizens on how to effectively operate a business. Currently, most of the population cannot establish and operate their own businesses since they do not possess the necessary skills or education. The NGCL offers programs and workshops to train SME owners in business strategies to ensure their business will succeed. Despite the NGCL's best efforts to provide an education to SME owners, their services are not being fully utilized because of a lack of advertisement and interest. According to the NGCL this lack of interest is due to SME owners not realizing the value of educating themselves and their employees. They do not realize the need to pay the tuition costs to enroll in one of the NGCL's workshops.

Similarly, the Namibia Investment Centre works with SME owners to expose them to international standards in order to accustom them to what is expected of their businesses. The NIC also provides support in writing business proposals. While these services do help SME owners start their business, they do not provide the necessary business education to ensure the owners can keep their businesses running.

We determined that the education level of the SME community is a major concern to this project. Encouraging SMEs to set up businesses along the TKC will not help the corridor's economic development if the businesses close prematurely. However, educational programs already exist from the NGCL and the NIC. The current problem lies in the fact that these workshops are not well advertised and SME owners are not informed of the benefits of these programs. Educational programs must be better advertised before economic development of the TKC can occur.

Health and Safety Concerns Related to Increased Traffic:

As shipping through the Port of Walvis Bay increases, there is a related increase in the cargo being shipped along the TKC. The MME is concerned about the social ramifications that will occur as a result of this increased traffic flow. Therefore, they believe that these current social problems should be solved before throughput volumes increase further.

Trucks do not typically have areas for their drivers to sleep. According to NamPort, the lack of lodging facilities along the TKC can be a cause of high HIV rates among truck drivers. The perception of many town councils is that these truck drivers are spreading HIV throughout their town. As one CEO claimed, "the only thing the trucks bring in is HIV and AIDS". Town councils are concerned that an increase in traffic flow through their town will lead to an increase in HIV infections in their town.

Additionally, NamPort believes that truck drivers are exceeding the driving time limit. Drivers must stop at least 30 minutes every five hours to rest. However, since truck drivers usually carry enough fuel to reach their destination they prefer not to stop if they cannot find a secure location to do so. There is a lack of truck stops and lodging facilities along the TKC, meaning that many drivers are exceeding this five hour time limit. Namport believes that overtired drivers will lead to an increase in traffic accidents along the TKC.

We concluded that the lack of adequate accommodations will not only cause truck drivers health problems, but will also inhibit the development of the TKC. In order for businesses to use the TKC for importing and exporting cargo, the corridor must be considered safe and reliable. Overtired truck drivers will decrease the safety of the corridor, causing a decrease in corridor throughput volumes as businesses find more reliable trade routes to ship through.

We also determined that there is a poor public perception of truck drivers among the communities we visited along the TKC. If this perception continues it will greatly reduce the

community’s ability to fully harness the economic potential that travels along the corridor. As the economy along the TKC develops, the number of trucks on the road will increase. Therefore, this poor public perception must be minimized.

4.3.2 Infrastructure Obstacles

There are certain obstacles in infrastructure that stakeholders worry might hamper the economic development of the TKC. These include the need for expansion of the port and road damage caused by heavy transport. Here we evaluate some of the highlights from our findings.

Expansion of the Port of Walvis Bay:

A challenge that NamPort has been facing recently is the lack of land on which to expand the port. About fifty percent of the port land is currently allocated to bulk and break bulk, while the containers are becoming the dominant shipping medium. There is no more room for development along the coast; the city of Walvis Bay constrains the port to the east and the ocean is located immediately to the west. Currently, the port channel is being dredged to 14.4 meters [48 feet]. The dredged land is being amassed to create an artificial extension of the port to be used for the storage of shipping containers. Figure 17 below illustrates a dredging crane resting from dredging the port.



Figure 17: Dredging Crane at Walvis Bay Port

It is the MME’s perspective that the Port of Walvis Bay has yet to unlock its full potential.

We have concluded that the need for port expansion in Walvis Bay is a problem that has already been addressed. Therefore, there is no further need to focus on this concern.

Road Damage from Heavy Transport

A major concern that was expressed by every town council along the TKC was the damage to their roads caused by trucks. Unlike the main stretches of the TKC, the small roads of the towns were not designed for the large turning radius required or heavy cargo carried by trucks. The TKCS believes that the heavy loads traveling along the TKC will only continue to damage the roads as the tonnage and volume throughput of the TKC increases. There are currently insufficient funds for repairing these routes. According to the TKCS, the Namibian government is currently borrowing money from other countries in order to finance infrastructure development. Another solution must be found soon since the government does not have a plan in place to repay this debt much less finance more needed improvements. The TKCS have suggested tonnage levies, user levies, and taxpayers investing money as possible solutions.

The road damage caused by heavy trucks traveling through small towns is an issue that must be addressed in our strategy. Although levies and taxes may help the towns pay to fix their deteriorated roads, they will not prevent the roads from being damaged. A preemptive solution would be better for the long term development of the corridor.

4.3.3 Financial Challenges

TKC stakeholders expressed concern about financial issues that can occur during economic development, including SME funding and a lack of economic diversification. Again, we present the highlights from our meeting below.

Financing for SMEs:

According to the NIC, the SMEs will always face challenges acquiring financing for their



Figure 18: SME Park in the town of Usakos

small business. For this reason the MTI is in the process of setting up a SME bank that will be better attuned to the needs and workings of a SME. The NIC also helps SMEs write proposals in order to gain funding for their endeavors. Figure 18 above is of a SME park in Usakos along the TKC, which is a type of area that would benefit from the NIC services.

The MTI offers incentives to encourage development of the small and medium enterprises. Different industries have various regulations for their incentives and also several types of incentives, as some pertain to one industry but not another. In particular, incentives of tax holidays – a brief time when a newly-established business is not required to pay taxes – and tax breaks are offered to the manufacturing industry in order to encourage development. For a business to obtain a tax holiday or tax break, the business needs approval from both MTI and the Ministry of Finance.

We have realized that there is a lot of financial support from government agencies for SMEs. However, these services need to be better advertised. The challenge for financing SMEs is in informing SME owners where they can acquire help financing their business.

Economic Diversification:

For an economy to prosper, it is essential for it to diversify, not relying on just one industry. Currently, Namibia relies heavily on the export of mining products to sustain the

economy. If this resource were to be depleted, the loss in revenue would dramatically affect the lives of its citizens.

The NIC is concerned with the lack of economic diversification in Namibia's exports. If, for example, the Port of Lüderitz were to lose its Skorpion Zinc export there would be very little left to ship through the port, effectively nullifying it. Similarly, Namibia needs to diversify its economy creating new exports in many industries including agriculture, manufacturing and mining. The ability to diversify its economy will ensure its global market stance. We have determined that economic diversification will come from establishing new projects. Since Namibia is already expanding into new industries, however, we will not focus on economic diversification in our economic development strategy.

4.4 Identification and Analysis of Improvement Proposals from Stakeholders

The government officials, private sector officials, and town councils have brainstormed solutions to some of their previously listed concerns. The stakeholders proposed solutions to aid development around anchor projects, increase the efficiency of the road transport route, and promote the rail and air transportation systems, as described in the following sections.

4.4.1 Development of Cluster Projects

Anchor projects are created with the intention that smaller projects and businesses, called cluster projects, will build from them. For example, in the case of the mines throughout Namibia, the NIC wants to see construction of SME "mining villages." These villages could offer take away food, sit down restaurants, lodging, showering facilities, toilets, and so forth. Having this type of development throughout Namibia will help to relieve unemployment of the local communities. The anchor projects provide the opportunity for businessmen to develop SMEs where there was previously not enough traffic to sustain business. The SME parks, in turn, support the large projects by providing needed products and services.

We concur with the NIC that the development of cluster projects would be beneficial to corridor development. Cluster projects allow anchor projects to maximize the impact of the investments they receive. The cluster project concept is an essential part of the SDI methodology that is used for economic development.

4.4.2 Creation of a Dry Port System

Dry ports, facilities used to store goods while in transit or while awaiting departure can be a solution to decreasing transportation time. These facilities can offer various benefits to the system of importing and exporting, as one can be strategically located in a border area so that it is accessible by both countries without having to undergo border processing.

The town councils that we interviewed expressed great interest in establishing dry ports in their towns. The towns each stated how they would benefit from having their own facility: it would provide more business and employment opportunities to the local community. Gobabis, Okahandja, and Usakos especially expressed an interest in having these establishments in or near their towns. Gobabis stated that their town is a strategic location for a dry port due to its location in Namibia. It is in close proximity to the border with Botswana and it easily links with the TCC and the TCuC. Okahandja states that they are the ideal position for a dry port since they are in the center of the country, a crossroads for all the corridors. Usakos reasons that their town is best due to its proximity to the port. Since the port area is a caustic environment from acid rain and other detrimental weather patterns, it would be beneficial to store the goods outside of the area of Walvis Bay.

However, we have determined that creating a dry port system for the TKC would not be feasible. While in certain cases the efficiency of a transport route can be increased with the addition of a strategically located dry port, Johny Smith of the WBCG cautioned that dry ports can also decrease efficiency. The benefits would not outweigh the increase in transportation time and cost caused by the loading and unloading process that occurs at dry ports.

4.4.3 Promotion of Alternative Transportation Methods

While Namibia has recently developed a mature road infrastructure, many stakeholders feel that there are still improvements to be made. The MME is of the opinion that the road infrastructure of both the main and feeder roads (those leading to the mines themselves), need to be improved to handle heavy loads and equipment. There needs to be a way to travel even when the roads are damaged or flooded since the mines' deadlines still need to be met. They are under the impression that solving this problem will fix much of the mining sectors import and export issues.

The NIC believes that Namibia must keep its infrastructure up to date with the added traffic created by the increased throughput of cargo in Walvis Bay. The country needs its routes

to be efficient and effective in order to ensure the corridors reach their full potential. Current Namibian roads were not made to handle the heavy loads that currently tax them, including fuel, cement, and oil products. These products should be transported via train or airplane. This would relieve the road system, requiring fewer road upgrades so that it would be less expensive to maintain the roads.

The NIC would like to see the construction of the Trans-Kalahari Railway (TKR) reach the coal mine in Botswana in order to expedite transport of the coal to the Port of Walvis Bay and beyond. However, the inefficiency of the TKR was a common complaint among the town councils of the TKC. The town of Okahandja was especially concerned about the delays caused by the current rail transport system. Trains take two days to transport cargo from Okahandja to Swakopmund; a distance that normally takes three hours by truck. This inefficiency means that Okahandja cannot export time sensitive goods, such as meat products, through Walvis Bay by train. This fact is seriously inhibiting the economic development of Okahandja.

Currently the TKR consists of only one rail track. A single track means that two-way traffic between towns is impossible. This inefficiency is the cause of most rail transportation delays. For this reason, NamPort has determined that there is a need to improve the infrastructure system of the TKR. The NIC is also looking into creating a passenger rail project where they would develop the rail routes along the TKC and make them suitable for passengers, increasing the efficiency and reliability of the line.

Transport by air is also severely under-utilized. Namibia is currently undergoing renovations of three of its main transport airports including the Walvis Bay airport. This allows the airport to accommodate larger and more planes than before. Air transport is underutilized due to its expense; however, as air transportation increases, its cost decreases

We have realized that there is a definite need for Namibia to develop alternative and complementary transportation methods. The proposal for increased rail and airport infrastructure is relevant, as there is much need for improvement in these transportation areas throughout the country. Each method has its issues: the rail is slow and air is expensive. In order to make these methods feasible for use by common shipping companies these problems must be resolved. This will increase the effectiveness of Namibia's trade network by making it quicker and more reliable.

4.4.4 Town Capacity Building

Developing communities in Namibia have been searching for ways to reach out for help in town planning. Several of the town councils proposed that setting up twin city relationships with communities in the United States of America could be a solution. They believe that this would allow the communities to take advantage of planning models, resources, and information that could assist them in their development. We determined that this was a good suggestion from the town councils. Forming a twin city with an already developed city would be mutually beneficial. We believe that twin cities could be set up with other developed cities around the world.

4.5 Summary

In sum, our findings reflect the complex nature of economic development strategies. We learned that the process must take into consideration the social dimension, infrastructure obstacles, and financial planning. The existing industries all play a vital, interrelated role in developing Namibia's economy. The mere perceptions communities have can affect the reality of Namibia's future. Speed of transport can also shape the functions of all other industries. Regardless of how logical a solution may be to accomplish a task or ease its function, there are many other factors involved that can often render a proposed solution impractical.

Chapter 5. Recommendations and Conclusions

The Trans-Kalahari Corridor is currently undergoing a transformation from a transport corridor to a dynamic economic development corridor. This transformation provides opportunities for the cities and towns along the corridor to improve their economic status and to envision the future of their community. For this study we focused on six major industries: manufacturing, tourism, agriculture, mining, energy, and infrastructure.

5.1 Recommendations

We identified eight primary themes as universal concerns that will provide the largest benefit if they are addressed. These concerns include the lack of regional integration, educational level in the SME community, unsafe driving practices, the public perception of truck drivers, the feasibility of bypass creation, SME development around the anchor projects, the expansion of railway lines, and town capacity building. The following details are how we suggest the concerns could be addressed.

5.1.1 Regional Integration by Improved Communication

The lack of regional integration along the TCK is a serious issue that will hinder the development of this corridor. One way to alleviate this lack of communication is to have one organization that is in charge of spearheading and organizing the economic development of the corridor. This organization would oversee the creation of the master transportation plan for the entire corridor and determine the role each town will play. For each town, this organization will determine the economic opportunities that the town has to offer. This way, each town complements each other's efforts to create the most effective corridor possible. There should no disputes over the services each town would offer; all of the information would be collected and organized by one source and would be available to all towns and organizations.

This organization would need to have connections to the public and private sector in order to coordinate between government agencies and private investors. They would need to be a pre-established and renowned organization so that they can begin to design an economic development plan immediately. Finally, this organization would need to have an intimate knowledge of the Walvis Bay Corridors, especially the Trans-Kalahari Corridor.

We believe that the Walvis Bay Corridor Group would be the ideal organization to lead this effort. The WBCG is a public-private-partnership that has been working for the economic

development of the Walvis Bay Corridors since 2000. The WBCG is a highly respected organization with the knowledge and experience to accomplish this task. It is our recommendation that the Walvis Bay Corridor Group organize the creation and implementation of the economic development plan for the TKC.

5.1.2 Education Level in the SME Community

The inconsistent business education level of the SME community is a serious hindrance to the economic development of the TKC. However, there are already programs in place to aid SME owners in higher business education to ensure that they have all the proper skills to operate a business. These programs simply need to be better advertised. In addition, SME owners should be encouraged to attend these workshops and seminars. They should be informed of the benefits that gaining higher business skills will bring them. The WBCG, as the corridor development organizer, could take steps to promote educational programs for SMEs.

5.1.3 Unsafe Driving Practices

The lack of accommodations for truck drivers along the TKC is decreasing the safety of the corridor. This fact must be mitigated before the economic development of the TKC can occur. Therefore, more lodging facilities should be constructed along the corridor. These facilities should allow the drivers to relax, containing services such as movie theatres, televisions, and arcades. Truck stops should also have clean laundry and shower facilities. It is our recommendation that the WBCG facilitate the creation of additional truck stops along the TKC. Furthermore, better monitoring of speeding and traffic regulations should be enforced.

5.1.4 Public Perception of Truck Drivers

The negative connotations associated with truck drivers must be changed before economic development along the TKC can occur. The town councils currently feel that truck drivers only bring HIV to their towns. However, they should be informed of the benefits that truck drivers bring. Every time a truck driver stops at a local grocery store is an economic opportunity that town would not have had. The WBCG could hold discussions with town councils to explain this and other opportunities that truck drivers provide. Additionally, if a town built a truck stop, they would secure a permanent economic opportunity while preventing the spread of HIV by ensuring truck drivers have adequate accommodations. The WBCG could propose this solution at their informational discussions with town councils.

5.1.5 Road Damage from Heavy Transport

The road damage caused by trucks must be mitigated before economic development increases the number of trucks on the road. Although levies and taxes will help towns pay to fix their roads in the short term, a more long-term solution would be ideal. One possible long-term solution to this issue is a bypass. A bypass is a fundamentally good idea, but because Namibia has a low population density it may not be ideal to apply to small towns along the TKC.

Bypasses provide many benefits to towns. First, they provide a means for trucks to travel around a town, rather than through it. Heavy trucks that would normally damage the narrow roads of a small town can now travel around it, on the highway grade bypass built specifically to handle heavy trucks. Therefore, bypasses can lower the road maintenance costs experienced by towns along the TKC. Additionally, since bypasses divert a majority of traffic around a town, it will experience fewer traffic problems and accidents, resulting in a safer town.

However, bypasses can have a crippling effect on the economy of a small town. Towns along the TKC, for example, depend on the business that truckers and other corridor travelers bring. The town benefits even if a truck driver stops for five minutes to buy a soda from the local grocery store. If a bypass is installed, a large portion of the business that town would otherwise receive will be diverted around the town. Additionally, just constructing a bypass does not ensure that it will be used. A bypass around Okahandja already exists, but trucks fail to make use of it. Heavy trucks still travel through Okahandja, damaging the town's roads.

One compromise is to build a truck stop along the bypass. Trucks would then be encouraged to make use of the bypass instead of going through the town, since they could receive all of the amenities required from the truck stop. Town citizens could establish SMEs as part of the truck stop with each business providing an important service for the corridor travelers. For example, one SME could be a laundry facility while another could be a grocery store. Now, drivers can buy their soda from the truck stop along the bypass without having to come into the town. With this bypass system in place, traffic problems and road damage can be reduced while the town still receives economic benefits from the travelers of the TKC.

As each town along the TKC has a unique economy, it is important for each town to conduct their own feasibility studies before implementing the bypass system. A bypass system for one town may not be feasible for another. For this reason, we recommend that the WBCG

work with each town to plan their bypass thoroughly to minimize any negative impacts that it might bring.

5.1.6 SME Development Around Anchor Projects

As suggested by the NIC, an important way to stimulate economic growth is through the development of cluster projects. Each main anchor project along the TKC can support smaller spinoff cluster projects. The WBCG, as the corridor development organizer, should work to promote the establishment of cluster projects around pre-existing anchor projects. One way of doing this is by creating SME parks. These parks are a collection of SMEs that will supply a variety of services to the anchor project resulting in a mutually beneficial relationship between the anchor project and the SME Park.

5.1.7 Promotion of Alternative Transportation Methods

The road system is being taxed by heavy trucks. In order to relieve the stress from the growing industries transporting heavy cargo other transportation methods must be employed. At present, the Trans-Kalahari Railway (TKR), owned by TransNamib, travels from the Port of Walvis Bay to Gobabis. Plans are already underway to extend this railway to Botswana, allowing the TKR to expand its cargo volumes. However, the towns that are currently along the TKR do not take full advantage of it due to its lack of speed. Okahandja cannot export their meat products on the rail since it would take two days to reach Walvis Bay. Solving the efficiency issues of the TKR would increase its throughput volumes more so than simply extending the railway. Increasing the efficiency of the railway would also increase the number of products transported to and from the towns along the TKC.

Using trains instead of trucks will boost the efficiency of cargo transportation. Although trucks can travel the TKC at 120 km per hour [75 mph], trains along the TKR travel an average of 100 km per hour [62 mph] without stopping. Like trucks, trains only require one operator, but carry multiple trucks worth of cargo. By moving cargo transportation to trains rather than trucks, the TKC will experience less road surface wear.

Currently the TKR consists of one track running from the Port of Walvis Bay to Gobabis, with freight yards at each town. Trains have to wait for each other to pass before traveling between towns, leading to highly delayed transportation times. Ideally, with a second track parallel to the current track, two-way traffic along the TKR will be possible. A second track

would significantly decrease the turn-around time for transporting goods. This substantial increase in efficiency would allow time sensitive deliveries to be transported by rail.

Therefore, our recommendation for improving the railway is not only to extend the TKR to Botswana, but also to add a second track. Although this will be an expensive investment, it will pay off in the long run by increasing rail throughput volumes. Increased volumes will mean an increased net profit for TransNamib, allowing them to recover this investment. There should be a more in-depth feasibility study conducted to determine the estimated cost to add a second rail as well as the potential decrease in transportation times. Finally, it is important to consider the capacity of the railway to ensure that it can handle increased volumes. Freight yards at each town must be large enough to store and rearrange the increased number of train cars. When constructing the second track, TransNamib should also update these freight yards.

The key to creating an effective and efficient trade route is to link the TKC and the TKR into one working unit. The trains will act as large cargo vessels, transporting large heavy loads to a dry port. The trucks then distribute individual loads from the dry port to their final destinations. With rail and road working together, the corridor will achieve maximum efficiency while transportation costs remain minimal.

In addition to the railways, air transport will be an important transportation method. Currently, air transportation is expensive to operate since few companies make use of it. Air is the quickest method for shipping within country and throughout the SADC Region. The current airport infrastructure is in need of modernizing as well. There are many airstrips in Namibia, but the two major airports are Hosea Kutako just outside of Windhoek and the Walvis Bay Airport. There are also plans for a regional airport near Okahandja. These airports should work as a support network for each other, shipping goods and people to their destinations as efficiently as possible. A push for air travel for both passenger and freight will drive the costs down.

5.1.8 Town Capacity Building

By establishing a twin city relationship with a town in the Americas or Europe, these communities could benefit from the mentoring of the experienced town. Mentoring communities may have seen similar issues that the Namibian towns are dealing with now and could advise them on possible solutions. They could also offer services or used equipment such as fire trucks to the towns in need at discounted prices. Establishing a twin city will be mutually beneficial for the towns involved. In return for providing resources to the recipient town, the mentoring

community can also enjoy the benefits of this cross-cultural relationship. The relationship between the two cities will allow for the citizens of each town to become more culturally aware.

Another option for capacity building so that the community members are engaged with their town planning is to have a “grassroots” design. This comes by involving the citizens in creating the master plan for the town and region. The most effective way can be through a community forum, where each citizen can voice his or her opinion.

The capacity building of the town cannot only be done through “big business.” There also needs to be a movement to build the economy from the SME level. Larger manufacturers and mines will provide many jobs to the town, but there will be a need for a support network for the businesses and workers. This would include creating small business that could offer take-away food, cleaning services, repair services and lodging.

5.1.9 Summary

In sum, we would like to stress that the recommendations include both infrastructure and social dimensions. We believe that the economic development of the corridor needs to have a micro and macro element. Below is a condensed list of our recommendations to the Walvis Bay Corridor Group.

- The WBCG should lead and organize the development of the TKC
- Educational workshops should be promoted for SME owners.
- Educational workshops should be promoted for SME owners.
- The WBCG should work to change the negative perception of truck drivers.
- Bypass system feasibility should be considered for each town along the TKC.
- SME parks should be developed around cluster projects.
- Road, rail, and air should be linked to achieve maximum transport efficiency.
- Twin cities should be established to aid in town planning.

5.2 Conclusion

This report was designed to establish a strategy for the economic development of the Trans-Kalahari Corridor. This corridor extends from Walvis Bay to the border of Botswana through the towns of Swakopmund, Usakos, Karibib, Okahandja, Windhoek, and Gobabis. The diverse environments that the TKC traverses contain many different economic opportunities. The Walvis Bay Corridor Group is creating an economic development plan with the goal of

transforming the TKC from a transport route into an economic development corridor by taking advantage of these opportunities. Our report was intended to aid the WBCG in creating this plan.

Through site evaluations of the corridor and interviews with the stakeholders including government officials, private sector representatives, and town councils we gained an understanding of the current projects, the projects under development, and those that need to be developed. This data was compiled into a comprehensive list of current economic developments along the TKC. Additionally, we determined the socio-economic problems that each stakeholder believed were inhibiting the economic development of the TKC. Finally, we amassed a list of recommendations for the WBCG to consider in solving these problems.

It is our hope that this strategy will help the WBCG to attract investors to establish economic projects along the TKC. It is these projects that will transform the Trans-Kalahari Corridor from a transportation route to an economic development corridor. Once the transformation of this corridor is complete, the TKC will contribute to local and regional economic growth, increasing employment opportunities, reducing poverty, and decreasing the inequalities in income distribution as envisaged in Namibia's Vision 2030.

Having gained independence only 21 years ago, Namibia is still a developing country. It is crucial that the country is able to create a sustainable economy to take Namibia from a low-income developing country to a high-income developed country; a trajectory that is currently in progress. The corridor initiatives discussed in this report are the foundation for this growth, as they will begin to contribute to the national economy over the next few years. The economic development plan established by the WBCG will create a long-term impact on the development of the corridor and the country. Although this impact may not be seen in the next few years, it will result in an entire national transformation to a developed country by the year 2030. It is our hope that the strategy we have created in this project will provide the basis for this national development.

References

- (2002). *The Road Traffic and Transport Regulations*. Windhoek, Namibia: Republic of Namibia.
- Accolade Properties Namibia. (N.D.). *Sungate*. Retrieved from <http://www.sungate.ws/home.asp>
- Achievements of the Walvis Bay Corridor Group*. (N.D.). Retrieved February 5, 2011, from Walvis Bay Corridor Group: <http://www.wbcg.com.na/about-us/history-achievements.html>
- Adams, T., Srivastava, P., Wang, B., & Ogard, L. (2009). *Low Cost Strategies to Increase Truck Stop Parking in Wisconsin*. Madison: National Center for Freight & Infrastructure Research & Education.
- Adams, W., & Moila, B. (N.D.). *Executive Summary of Nelspruit (Mbombela) case study*.
- Adzibgey, Y., Kunaka, C., & Mitiku, T. N. (2007). *Institutional Arrangements for Transport Corridor Management in Sub-Saharan Africa*.
- Arroukatchee*. (N.D.). Retrieved March 21, 2011, from Namibia: People and Cities: <http://www.southern-africa.arroukatchee.fr/namibia/people-namibia.htm>
- Bruyn, C. d. (2010, October 12). *Walvis Bay Port gets R2,7bn Upgrade, Corridor Seen As An Alternate Trade Route for SA*. Retrieved from Engineering News: <http://www.engineeringnews.co.za/article/walvis-bay-port-gets-r27bn-upgrade-corridor-seen-as-alternative-trade-route-for-sa-2010-10-12>
- Carboni, M., Beretta, S., & Finzi, A. (2003). Defects and in-service fatigue life of truck wheels. *Engineering Failure Analysis*, 45-57.
- de Beer, G. (2001). Regional Development Corridors and Spatial Development Initiatives - Some Current Perspectives on Potentials and Progress. *Meeting the Transport Challenges in Southern Africa* (pp. 1-26). Document Transformation Technologies.
- Dredging Today*. (2010, June 2). Retrieved from Namibia: \$264 Million for Walvis Bay Port Expansion: <http://www.dredgingtoday.com/2010/06/02/namibia-264-million-for-walvis-bay-port-expansion/>
- Driver, A., & de Barros, J. G. (2000). *The impact of the Maputo Development Corridor on freight flows: An Initial investigation*. Centre for Strategic and International Studies in Maputo.

- Driver Services*. (2011). Retrieved February 7, 2011, from Petro Stopping Centers:
http://www.petrotruckstops.com/driver_services.sstg
- Econogistics (Pty) Ltd. (2011). *An Economic Benefit Study of the Walvis Bay Trans-Caprivi and Trans-Cunene Corridors*. Johannesburg.
- Harmon, L. M. (2011). *Economic Benefits of Port and Corridor Development*. Windhoek.
- Harmon, L. M., Simataa, B., & van der Merwe, A. (2009). Implementing Facilitation on Trade and Transport Corridors. *Southern African Transport Conference*, (pp. 612-619).
- Heita, D. (2010, October 26). *All Africa*. Retrieved from Namibia: Sungate Ready for Take Off:
<http://allafrica.com/stories/201010260294.html>
- History of Namibia*. (2011). Retrieved February 8, 2010, from namib.info:
http://www.namib.info/namibia/uk/history/first_settlements/index.php
- Kolkman, J. (N.D.). *Synergy between Schiphol and the Port of Rotterdam*. Den Haag: Netherlands Institute for Transport Policy Analysis.
- Marrian, B., Freeman, P., & Ziv, J. (2001). Towards a General Theory of Corridor Development in South Africa. *Meeting the Transport Challenges in Southern Africa* (pp. 45-58). Document Transformation Technologies.
- Menges, W. (2010, December 21). *Heavy new traffic fines now in force*. Retrieved from Heavy new traffic fines now in force: <http://www.namibian.com.na/news/full-story/archive/2010/december/article/heavy-new-traffic-fines-now-in-force/>
- MME. (2006). Retrieved March 23, 2011, from Ministry of Mines and Energy:
<http://www.mme.gov.na/default.htm>
- MTI. (2000). *Ministry of Trade and Industry*. Retrieved March 18, 2011, from
http://www.op.gov.na/Decade_peace/mti.htm
- Namibian Port Authority. (2009). Retrieved January 28, 2011, from Namport:
<http://www.namport.com.na/content/show.php?m=4>
- NCCI. (2011). *Namibia Chamber of Commerce and Industry*. Retrieved March 18, 2011, from
<http://www.ncci-namibia.org/>
- Njeru, P. (2011). *History of Walvis Bay*. Retrieved February 9, 2011, from The African Executive:
<http://www.africanexecutive.com/modules/magazine/articles.php?article=2317>

- Njini, F. (2008, March 28). *Engineering News*. Retrieved from Namibia Plans R1,2bn Walvis Bay Port Expansion: <http://www.engineeringnews.co.za/article/namibia-plans-r12bn-walvis-bay-port-expansion-2008-03-28>
- Ray, C. (2007, July 31). *Associated Content*. Retrieved February 6, 2011, from Truck Stop Food-When Options for Truck Drivers are Few: http://www.associatedcontent.com/article/328809/truck_stop_food_when_options_for_truck.html?cat=51
- Reporter, C. M. (2010, November 15). *CIC Energy submits EoI for Trans-Kalahari rail project*. Retrieved March 18, 2011, from <http://www.engineeringnews.co.za/article/cic-energy-submits-eoi-for-trans-kalahari-rail-project-2010-11-15>
- Sabbagh-Ehrlich, S., Friedman, L., & Richter, E. (2005). Working Condition and Fatigue in Professional Truck Drivers at Israeli Ports. *Injury Prevention*, 110-114.
- Teca, P. (N.D.). *Namibian German Centre for Logistics (NGCL) launched at Polytechnic*. Winkhoek: Polytechnic of Namibia.
- The Road Traffic and Transport Regulations*. (2001). Retrieved July 31, 2004, from The Road Traffic and Transport Regulations: http://www.mwtc.gov.na/admin/policies/Summary_Roads.pdf
- United States Agency of International Development. (2008). *Maputo Corridor Summary Report: A Transport Logistics Diagnostic Tool Study*. The Nathan Associates, Inc.
- Uranium in Namibia*. (2011, March). Retrieved March 18, 2011, from <http://www.world-nuclear.org/info/inf111.html>
- Walvis Bay Corridor Group. (N.D.). *Walvis Bay Corridor Group*. Retrieved 01 26, 2011, from WBCG: <http://www.wbcg.com.na/home-page.html>
- Walvis Bay Corridor Group exhibits at Global Expo*. (2010, November 25). Retrieved March 31, 2011, from The Botswana Gazette: http://www.gazettebw.com/index.php?option=com_content&view=article&id=8129:walvis-bay-corridor-group-exhibits-at-global-expo&catid=13:business&Itemid=2
- Water Profile of Namibia*. (2008, September 22). Retrieved March 23, 2011, from The Encyclopedia of Earth: http://www.eoearth.org/article/Water_profile_of_Namibia
- Weidlich, B. (2010, August 24). *The Namibian*. Retrieved from Insufficient Water For Uranium Mines in Erongo: <http://allafrica.com/stories/201008250642.html>

Whitfield Jacobson, P., Prawitz, A., & Lukaszuk, J. (2007). Long Haul Truck Drivers Want Healthful Meal Options at Truck Stop Restaurants. *Journal of the American Diebetic Association*, 2125-2129.

Appendix A: Interview Questions

Note: These questions are not in any particular order.

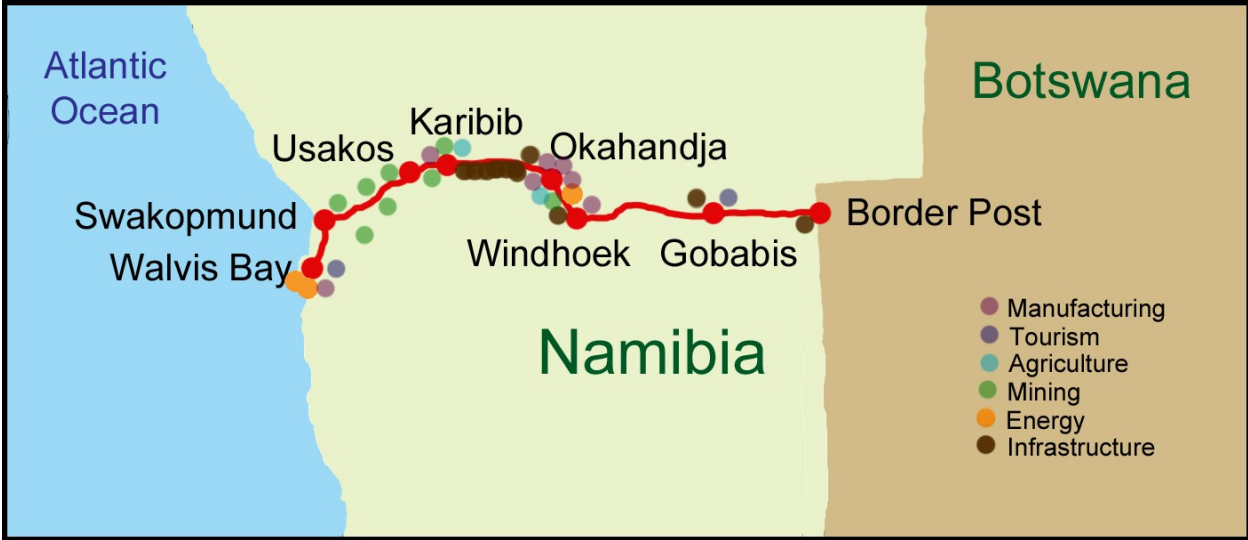
1. Could you explain the programs for incorporating SME owners into the mainstream economy?
2. What products do you oversee being exported and imported or in transit?
3. What programs do you offer for small businesses?
4. Where are you focusing your resources?
5. What, if any, projects are you working on?
6. How do you see the economic development along the TKC?
7. What constraints are holding back the economic development along the TKC?
8. What are your views on infrastructure being a catalyst / stimulant for economic development?
9. How do you think Namibia stands to gain from economic development along the TKC?
10. What progress has been made towards economic diversification and local beneficiation?
11. Are there any new project opportunities in terms of mining, agriculture, tourism, energy and manufacturing that are earmarked along the corridors and what are they?

Appendix B: Compiled List of Projects

Estimated cost and location were not available for all projects.

Name of Investor:	Project:	Estimated Cost:	Location:	Industry:
Gundle	Plastics Manufacturing Plant			manufacturing
SABMiller	Brewery	N\$350 million	Okahandja	manufacturing
	Glass Manufacturing Plant	N\$410 million	Okahandja	manufacturing
	Corrugated Steel Plant		Okahandja	manufacturing
	Dune 7 Industrial Park		Walvis Bay	manufacturing
	Mining Equipment Manufacturing Plant		Karibib	manufacturing
Ohorongo Cement	Cement Mine and Manufacturing	N\$2.44 billion	Okahandja	manufacturing
	Game Park		Gobabis	tourism
	Apartheid Museum	N\$80 million	Walvis Bay	tourism
	Okahandja Farming Communities		Okahandja	agriculture
MAWF	Strategic Food Reserve Facilities		Namibia	agriculture
Royal Chicken Trading CC	Karibib Agricultural Farm		Karibib	agriculture
Rio Tinto	Rossing Uranium Mine Expansion	N\$496 million	Usakos	mining
	Trekkopje Uranium Mine	N\$7 billion	Usakos	mining
Swakop Uranium Company	Husab Uranium Mine	N\$12 billion	Usakos	mining
Forsysmetals/Westport Resources	Valencia Uranium Mine		Usakos	mining
	Calcium Carbide Mine		Karibib	mining
	Copper Mine		Okahandja	mining
MME	Granite Recycling Facility		Karibib	mining
Gecko Group of Companies	Mining Industrial Park		Swakopmund	mining
MME	400 MW Diesel Plant		Walvis Bay	energy
MME	24 MW Coal Plant		Walvis Bay	energy
NamPower	Coal Plant		Swakopmund	energy
	Okahandja Solar Power		Okahandja	energy
NGCL/NamPort/MF	Trade Information System		Namibia	infrastructure
	Border Post Renovations		Border post	infrastructure
	Military Academy	N\$200 million	Okahandja	infrastructure
	Okahandja Airport		Okahandja	infrastructure
	Gobabis Truck Stop		Gobabis	infrastructure
	Karibib-Okahandja Road Expansion		Karibib	infrastructure

Appendix C: Map of All Pending Projects



The above map shows the types and locations of pending projects along the Trans-Kalahari Corridor. As the map shows, there are a wide variety of projects currently under development along the TKC. Appendices D – I show the breakdown of projects into the different industries of manufacturing, tourism, agriculture, mining, energy, and infrastructure.

Appendix D: Map of Pending Manufacturing Projects



List of Pending Manufacturing Projects:

Mining Equipment Manufacturing Plant (Karibib)

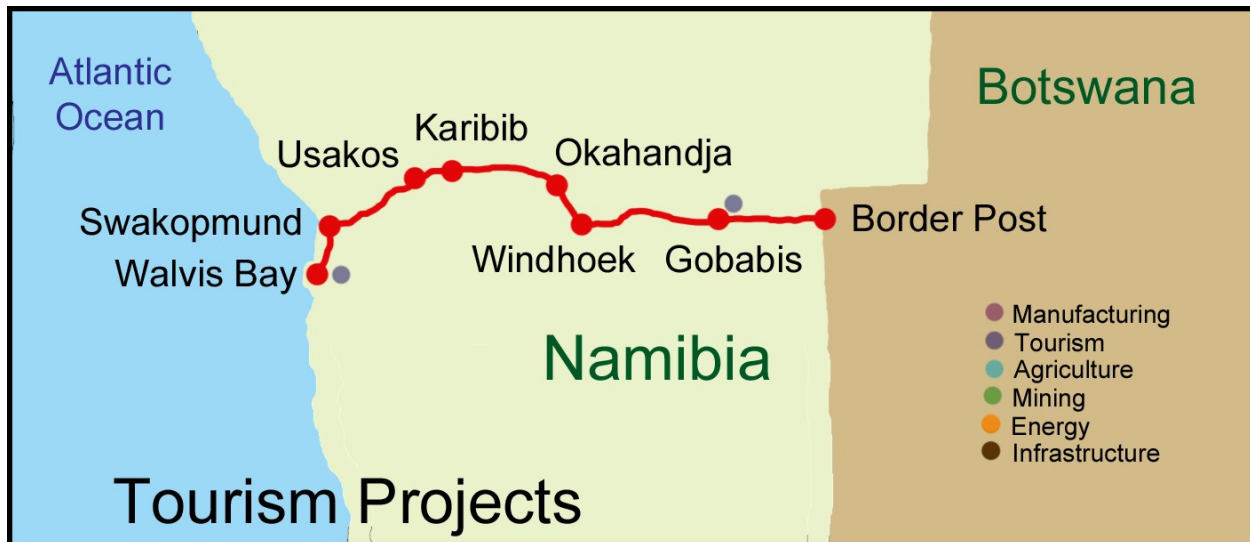
SABMiller Brewery (Okahandja)

Glass Manufacturing Plant (Okahandja)

Corrugated Steel Plant (Okahandja)

Ohorongo Cement (Okahandja)

Appendix E: Map of Pending Tourism Projects



List of Pending Tourism Projects:

Game Park (Gobabis)

Apartheid Museum (Walvis Bay)

Appendix F: Map of Pending Agriculture Projects



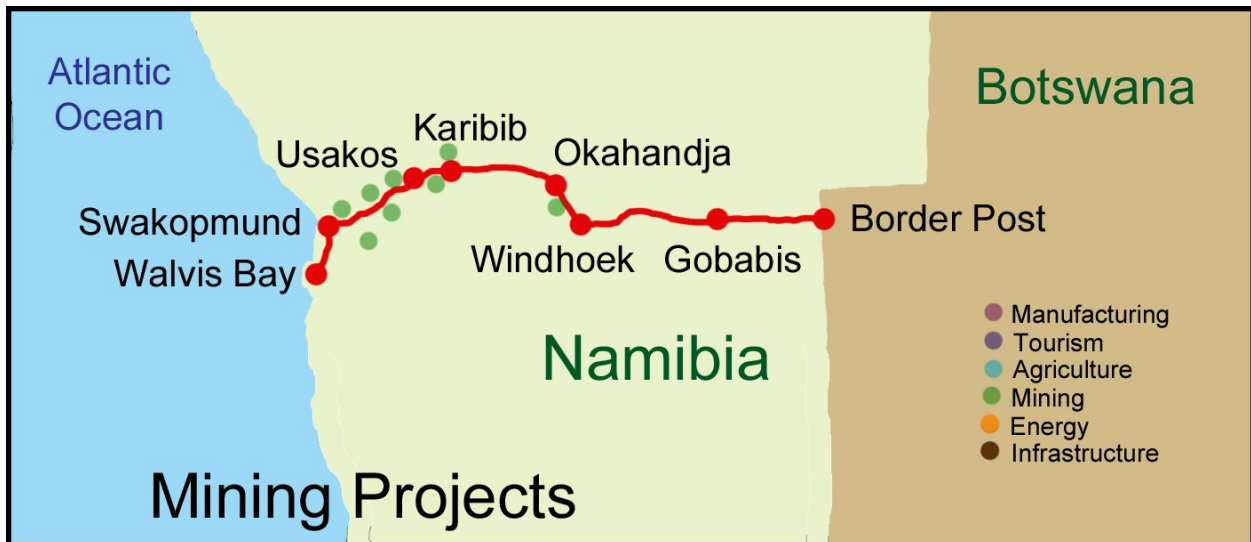
List of Pending Agriculture Projects:

Royal Chicken Trading CC Agricultural Farm (Karibib)

Strategic Food Reserve Facilities (Namibia)

Okahandja Farming Communities (Okahandja)

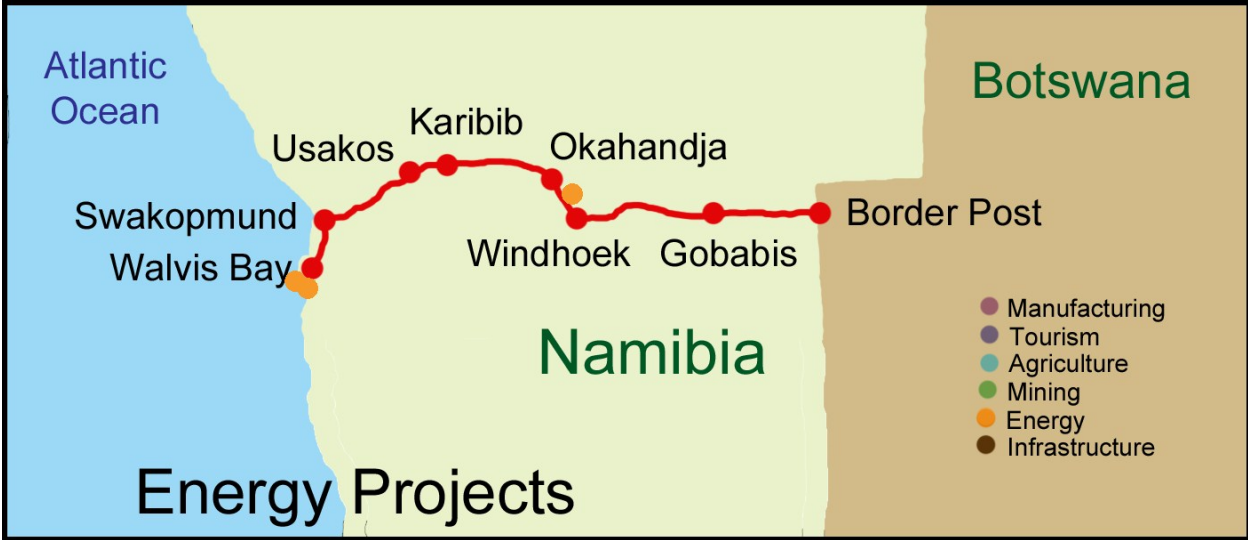
Appendix G: Map of Pending Mining Projects



List of Pending Mining Projects:

- Calcium Carbide Mine (Karibib)
- Granite Recycling Facility (Karibib)
- Copper Mine (Okahandja)
- Gecko Mining Industrial Park (Swakopmund)
- Rössing Uranium Mine Expansion (Usakos)
- Trekopje Uranium Mine (Usakos)
- Husab Uranium Mine (Usakos)
- Valencia Uranium Mine (Usakos)

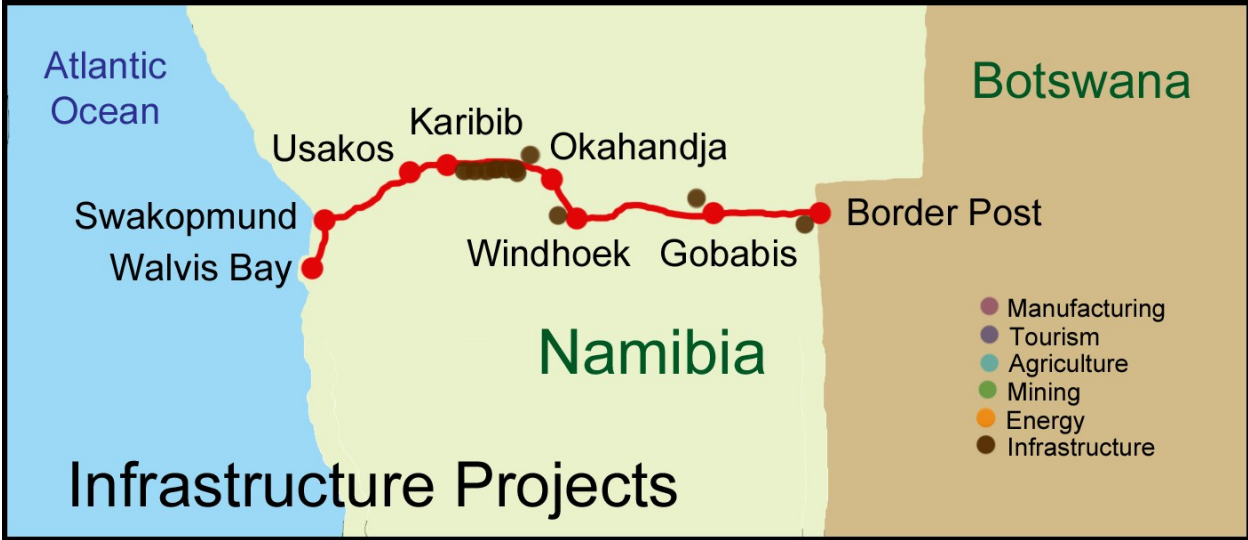
Appendix H: Map of Pending Energy Projects



List of Pending Energy Projects:

- Solar Power Plant (Okahandja)
- Coal Plant (Swakopmund)
- 400MW Diesel Plant (Walvis Bay)
- 24MW Coal Plant (Walvis Bay)

Appendix I: Map of Pending Infrastructure Projects



List of Pending Infrastructure Projects:

Border Post Renovations (Border Post)

Truck Stop (Gobabis)

Karibib-Okahandja Road Expansion (Karibib)

Trade Information System (Namibia)

Military Academy (Okahandja)

Regional Airport (Okahandja)

Appendix J: Meeting Minutes for Namibian-German Centre for Logistics

We met with representatives from the Namibian German Centre for Logistics (NGCL) on April 5, 2011. The NGCL is established as a logistics centre of excellence for research, education and practice, promoting a vital, efficient, reliable and sustainable transport logistics system as envisaged in the Namibian Vision 2030 (Teca, N.D.). During this meeting we discussed the NGCL's ultimate goal of a system for logistics as well as the development of small and medium enterprises (SMEs).

The NGCL is working to establish a trade information system for the Walvis Bay Corridors. This system will be an online database that combines real time cargo shipment data across Namibia. This system will allow for better marketing of the port because of a greater availability of real time trade information. The system will be a partnership between NamPort, the Ministry of Finance (MF), and other government & private agencies. The system will integrate all the information regarding the ports, transportation flow, and cargo tracking collected by these agencies and create a central hub for prospective investors, current operators and government agencies to view the data.

The NGCL also noted that the only way for Namibia to strengthen its economy from within is to train citizens on how to effectively operate a business. To this end, the NGCL has worked with the Polytechnic of Namibia to establish degrees in logistics and supply chain management. They have also established internships as one of their degree requirements to ensure that students gain real world experience on how businesses operate. This practical experience allows them to utilize the knowledge they have learned in the classroom and apply it to real life situations. For those that don't have the necessary background and qualifications to be admitted into the Polytechnic full time, the NGCL offers part time skills training programs. They also work alongside the Namibia Business Innovation Centre, which assists SMEs in writing business plans, feasibility studies, and loan proposals.

The NGCL also wish to mitigate several issues that are still restraining economic development within Namibia. They feel that there is too much dependence on road transportation and that there needs to be an expansion to rail and air transport. From their perspective, mining and other heavy industries rely too much on road transport that heavily taxes the infrastructure. If the rail system could be upgraded, it would relieve much of the strain caused by heavy goods and equipment. As it stands right now, air transport is also neglected. Because air is not fully utilized

for transporting goods within Namibia and the SADC Region, it can be very expensive to ship by air. This cost will be reduced as a result of increased shipping via air.

Appendix K: Meeting Minutes for Ministry of Mines and Energy

We met with Daniel Zaire from the Ministry of Mines and Energy on April 6, 2011. The MME is responsible for the oversight of the mining industry in the private sector. In our meeting we discussed important projects both upcoming and already underway. The primary mining industries throughout Namibia are uranium, gold, and precious stones, mostly in the Erongo region. Currently the MME is considering expanding current uranium mines such as Valencia, and Rössing while supporting the new projects Husab and Areva Trekkopje. The Rössing mine is currently undergoing an expansion. Both the Husab and Trekkopje projects have dedicated location where they will begin operation once they obtain mining licenses. The Husab Mine completed a feasibility study which determined that they will begin operation in 2014 assuming that their mining license is approved by the ministry. The Areva Trekkopje mining site is already under construction and is scheduled to begin operation by early 2013. Due to the increase in uranium mining in the region, the heads of the mining projects and the MME have determined the need for another desalination plant in order for the mines to get the required amount of water to operate.

The Ministry of Mines and Energy has had discussions with the heads of the mines and other relevant stakeholders which determined that Namibia will stick to exporting yellow cake uranium rather than attempting to establish facilities to further process and enrich the uranium. The process and facilities used to enrich the uranium to form useable materials for energy production are too expensive and high tech at the time to make it a worthwhile investment for Namibia.

We also discussed a few different types of mining and manufacturing areas. The first project mentioned, which is still in need of funding, is a calcium carbide mine to produce acetyl gas near Karibib. A prefeasibility study costing N\$95 million to conduct is still underway in order to determine the costs and logistics of establishing the mine. Another operation mentioned is a glass processing facility near Okahandja. The estimated cost, determined through feasibility studies, to establish this plant is upwards of N\$410 million.

The Ministry is also currently overseeing energy projects throughout the country. Off the coast of Namibia near the Port of Lüderitz is the Kudu Gas Plant. The Kudu Plant is 150 km [93 miles] off shore and produces 800 MW of electricity. The ministry also discussed their ties to the Baynes 600 MW hydro-power plant, a 400 MW diesel plant, and a 24 MW coal powered plant.

Both the diesel and coal plants are proposed to be constructed near Walvis Bay. The Baynes Dam is to be located on the Kunene River with a power capacity range between 360 MW and 600 MW.

The MME is of the opinion that the road infrastructure of both the main and the feeder roads (those leading to the mines themselves) need to be improved to handle heavy loads and equipment. They need to have a way for workers to travel even when the roads are damaged or flooded because the mining deadlines still need to be met. They are under the impression that solving this problem will fix much of the mining sectors import and export issues.

It is also the Ministry's perspective that the Port of Walvis Bay has yet to unlock its full potential. The port is currently under expansion dredging and using the dredged land to fill in other areas in order to create more land for the port to expand to. The port also contains dry docks for Zambia, Botswana, and Zimbabwe with the Democratic Republic of the Congo requesting space as well.

With this increased traffic flow to and from the mines and importing and exporting, the ministry is concerned with the social ramifications this will cause. An increase of people flowing through the towns, especially truckers, could have a negative impact as it is shown statistically that the drivers have a high HIV/AIDS rate. They fear that an increase of traffic could also bring in more immigrants from the surrounding countries and an increase in crime. The ministry is under the impression that schooling, electricity and telecommunications throughout the country are fairly reliable, but the water and energy industries are lacking. The MME did not provide any possible solutions to these issues though.

Appendix L: Meeting Minutes for Trans-Kalahari Corridor Secretariat

We met with a representative from the Trans-Kalahari Corridor Secretariat (TKCS) on April 7, 2011. The TKCS is the body in charge of the Trans-Kalahari Corridor and all the operations that happen along it. We started off our discussions with their thoughts on the current and future economic development along the TKC. The Secretariat stated that the corridor could be marketed for tourism. The Regional Tourism Association has conceptualized cultural tourism along the corridor as many of the Namibian tribes live in the vicinity of the Trans-Kalahari Corridor. The TKCS stated that tourism is a key area in the plan of transforming the TKC from a transport corridor into an economic development corridor. They discussed one of the benefits of the transport corridors is that they integrate the regions of Namibia as well as the SADC Region. This will allow the different ports throughout the region to be connected thus increasing the efficiency of the entire trade network. If this were to happen, it would unlock Namibia's potential for development.

The TKCS said that the corridors should have a set standard in their efficiency and should have standards in safety to ensure the security of the corridor and its travelers. There should be adequate parking and resting areas with clean facilities for showering and for toilets. These factors will contribute to the increased efficiency of the route. Having an organized structure for the TKC will entice private sectors to invest in the projects along the corridor. Currently, the Development Bank of South Africa is supporting certain projects along the TKC. They also mentioned that there needs to be a long term transportation plan for the corridors, which will add value.

The Secretariat expressed concerns for the TKC. The first being Namibia's lack of integrated planning along the TKC region. The different towns are developing similar projects at the same time that should be consolidated to increase the sustainability of these projects. Integrating each town's plans will allow for information sharing that benefits all involved. Also, motivating the private sector to invest in the projects along the corridor will benefit the TKC as an economic development corridor. Another integration issue is that the government initiatives out there to lend aid to developments are not linked to anything, nor are they consolidated to create a better support network. A way to facilitate this would be to have a discussion forum for the relevant stakeholders.

Another concern raised by the Secretariat is the increased traffic volume and tonnage of the loads traveling along the TKC will damage the roads. There are currently insufficient funds for repairing these routes. The TKCS brainstormed a few ways to increase funds for roads including having a tonnage levy, user levies, and taxpayers investing money. The Namibian government is currently borrowing money from other countries in order to finance infrastructure development throughout the country.

The Trans-Kalahari Corridor Secretariat asserted that Namibia has the potential to become a major player in the global market. Increasing the port throughput has immediate benefits as it will create jobs as well as increase the marketing potential of the country. The Port of Walvis Bay put Namibia on the global map helping to turn it into a trade and tourist hub and a reason foreign industry are willing and eager to expand to Namibia is that it has a positive investing climate; both the government and economy are stable.

Appendix M: Meeting Minutes for Ministry of Trade and Industry

We met with Gondi Diaz and Wilbard Nashandi from the Ministry of Trade and Industry (MTI) on April 8 2011. The MTI is responsible for overseeing Namibia's trade and industry interests. Therefore, there are many different sectors within the ministry with the sector pertaining to our study. The Namibia Investment Centre (NIC), for example, works with the pertinent stakeholders, coordinating between small and medium enterprises (SMEs) and the larger organizations including NamPower, MME, and so forth. The NIC explained that many of the facilities in industry cannot support the current and future developments. For example, there are not enough lodges for the increased number of tourists. In the energy industry there is a deficit of energy production as the demand is already greater than the supply and that gap is predicted to expand. The NIC desires high quality projects for the major industry areas with energy projects starting at N\$20 million and mining projects at least N\$100 million.

The Namibian Investment Centre aids small and medium enterprises in establishing and expanding. They work with the SMEs with industrial development and expose them to international standards in order to accustom them to what is expected of their businesses. The NIC also provides support in the form of supplying equipment, aide writing business proposals and attaining funding. The given example is The Equipment Aides Team, which provided supplies such as sewing machines for textile businesses. MTI determines the needs in the region, analyzes that information and takes action to help the SME in whatever way is needed.

According to the NIC the SMEs will always face certain challenges; one of these being trouble in acquiring financing for their small business. This is the reason that MTI is in the process of setting up a SME bank that will be better attuned to the needs and workings of an SME. NIC also helps SMEs write proposals in order to gain funding for their endeavors.

MTI offers incentives to encourage development of the small and medium enterprises. Different industries have different regulations for their incentives and also have different types of incentives as some pertain to one industry but not another. The manufacturing industry offers incentives of tax holidays and breaks in order to encourage development. In order for a business to obtain these, the business needs approval from both MTI and the Ministry of Finance. As with any program offering assistance, MTI has to be careful of companies attempting to take advantage of these incentive services. An example given by the NIC is that after a company's tax

holiday is over, the company will just close its doors. MTI has created schemes and contracts in order to deter exploiting the system of benefits that is needed to aid the SMEs.

The NIC wants to ensure that any type of investment or development along the TKC is promoted and reaches out to the community. They want to see regional integration; bringing the towns along the corridor together in terms of their plans for development both current and future as well as bringing the countries of the SADC Region together. In terms of the TKC both the Botswana and Namibia governments support the integration of the two to improve both countries trade potential. Botswana has a large coal mine that is alongside the TKC near the border of Botswana and South Africa. The Port of Walvis Bay is the ideal port for the coal to be shipped through which would mean the coal transport traverse the Trans-Kalahari Corridor. Botswana would benefit from shipping all their exports through Walvis Bay, as it will increase Botswana's international trade potential. The NIC also wants to see the construction of the Trans-Kalahari railway (TKR) through Botswana to the coal mine in order to expedite transport of the coal to the port.

The uranium industry in Namibia has boomed in the last years and is only looking to increase in the future. The NIC sees this as a great opportunity for SMEs to develop "mining villages" around the major mines. These villages could offer take away food, sit down restaurants, lodging, showering facilities, toilets and so forth.

According to the Namibia Investment Center, in order for Namibia to maintain and increase its international trade potential it must remain a peaceful country internally. The country is currently enjoying a time of political peace and stability. Namibia must also keep its infrastructure up to date with the added traffic created by the increased throughput of cargo in Walvis Bay. The country needs their routes to be efficient and effective in order to ensure the corridors make use of their full potential.

For Namibia's future, the NIC is concerned with the lack of economic diversification in the country's exports. If, for example, the Port of Lüderitz were to lose its zinc export there would be very little left to be shipped out of the port, effectively making the port null. Therefore, Namibia needs to diversify its economy creating exports in many industries including agriculture and manufacturing and mining. If Namibia is able to diversify its economy this will ensure its global market stance.

We discussed the impact that the economic development along the TKC will have on the people of the country. The NIC believes that increasing travel will mainly have positive effects. The local people have a lot to offer because they are “quite crafty,” according to Gondi Diaz of the NIC. If there are more travelers there is more demand for hand-made crafts, decreasing the poverty in poor areas of the country. The increased traffic flow will carry news and other important information to those along the corridor.

A concern raised by the NIC is that the majority of travel is done by motorized vehicle on the roads. The railways in Namibia are not used due to various issues, the main one being that the rail is outdated. The NIC is looking into creating a passenger rail project where they would develop the rail routes along the TKC and make them suitable for passengers, increasing the efficiency and reliability of the line.

Appendix N: Meeting Minutes for Chamber of Mines

We met with the general manager of the Chamber of Mines, Mr. Veston Malango, on April 8, 2011. The Chamber of Mines is responsible for overseeing the private sector of the mining industry. They see the Port of Walvis Bay as the ideal port for shipping their goods to other countries. Other ports such as Durban in South Africa are not as reliable because the cargo could be delayed in the port due to port congestion. There have also been issues along the corridor to Durban with trucks carrying cargo being hijacked. These are two reasons the Chamber prefers to use both the Port of Walvis Bay and the Trans-Kalahari Corridor, as they are much safer.

The Chamber is hosting a Mining Expo to bring together all the important stakeholders in the industry in order to network. This will allow for the sharing of information between parties to create a synergy between the mining companies. The public and private sectors of the mining industry will be able to share ideas and projects for mutual beneficiation.

In the mining industry uranium has “taken center stage” according to Malango the general manager of the Chamber of Mines. He also states that the future of the country is in mining and the industry will only prosper looking to the future. Rössing Uranium Mine is currently underway with a US\$73 million expansion project in order to expand production capacity of uranium. There are three other major uranium projects in various states of development: Husab which is currently awaiting the approval of its mining license, Trekkopje Mine which is now preparing for mining operations and Valencia.

The next big project discussed was Ohorongo Cement in the Erongo Region of Namibia. This is a N\$2.44 billion [US\$358 million] investment to create and produce cement for the SADC Region. The plant is expected to produce 700,000 tonnes [772,000 tons] per annum keeping 400,000 tonnes [441000 tons] local and exporting the remainder. Angola especially needs this resource to rebuild their infrastructure after years of war. Shipping the cement to Angola is also an issue; they will need to ship through Walvis Bay as the road structure through Angola is seriously lacking.

Other mining resources include base metals, semi-precious and precious stones. In the southern part of the country and off the coast there is diamond mining. Also in the south is Skorpion Zinc Mining that ships through the Port of Lüderitz. Along the TKC are various mining operations including minerals or semi-precious stones, copper, and of course uranium.

The Chamber of Mines is a private sector industry and thus is focused on how to make mining profitable while aiding the people of Namibia. Though their perspective of the mining industry is commercially driven, they are willing to aid in whatever way they can so long as it still turns a profit.

We also discussed the feasibility of creating the facilities needed to transform uranium oxide into the material required in nuclear power plants. The Chamber has looked into this briefly and determined that it is not reasonable to bring these facilities here. The process is very high-tech and expensive requiring a lot of energy that is already spread too thin. Namibia will not acquire this ability in the near future.

Appendix O: Meeting Minutes for Botswana Border Post

We met with three Namibian customs officials on April 12, 2011 in order to get their opinion the facilities and operations of the Namibian side of the border post. The border post facility is a little too small for efficient operations. The electricity and internet connections are fair, but during the rainy season they will lose power. The facility does have a generator, but the system shuts down during the time that it takes the generator to come on so the system must reboot. This process wastes valuable time of shippers and travelers crossing the border. Another complaint raised is that when the power does go out there is no electricity at the residential facilities for the officials. There are currently plans to undertake renovations of the current border facilities, enlarging and updating them starting in the year 2012.

The border processes about forty trucks through the border on an average day and there are more travelers in cars and buses. The border is currently open seventeen hours a day, from 7:00 until 00:00. There have been discussions to make this border open twenty-four hours a day, but due to inadequate staffing on both sides this is not yet a tangible goal.

Both the governments of Botswana and Namibia have agreed to pilot a One Stop Border Post System on the TKC. The plan is to incorporate the two countrys' border officials making Namibia in charge of customs and Botswana in charge of immigration. There are plans to make the border and area of 10 km [6.2 miles] on each side where the officials can be free to go about their work; unlike the current set up where officials of one country are not allowed in the facilities of the other country. By allowing the officials to interact freely it will allow for a better flow of information and a more efficient border stop.

The border is efficient most of the time with a turnaround shipping time of about half an hour. In order for the most efficient crossing possible the driver must arrive with all their paperwork in correct order so that the only remaining thing to be done is look through the documents and stamp approval. Often, companies will forward the shipping information to the border before the scheduled arrival of the truck so that upon arrival all the paperwork is already approved and the driver must simply show matching papers to those already received.

The ultimate goal of the border post is to have a type of "drive-up window" for the travelers. Everything would be electronic in this system and easily accessible to the customs/immigration officials. In order to achieve this objective, the computer systems and physical facilities will have to be updated. The legal framework around this procedure must also

be detailed so each party involved knows their duties. In sum, border posts are an integral part of the smooth functioning of the highway. Improvements to border stops mean more reliable connections with neighboring countries.

Appendix P: Meeting Minutes for Namibian Ports Authority

We met with Phillemon Mupupa the Key Accounts Executive of the port on April 14, 2011. The Namibian Ports Authority (NamPort) is responsible for overseeing the two ports of Namibia: the Port of Lüderitz and the Port of Walvis Bay. They are responsible for the port facilities, the cargo throughput, and providing efficient and effective trade. Therefore NamPort has a large stake in the development of the Trans-Kalahari Corridor.

NamPort is concerned that the truck drivers are exceeding the five-hour time limit because there are not many truck stops or facilities for drivers. Truck drivers usually carry enough fuel to get them to their destination so they prefer not to stop if there is no secure area for them to stop. Drivers will stop when they need, wherever that may be. The trucks do not typically have areas for the drivers to sleep either, which contributes to health problems. According to NamPort, HIV is prevalent among the drivers. NamPort believes that if there were accommodations with secure parking drivers would be able to leave their trucks in a safe area and would have a bed to sleep in.

A challenge that Namibia faces is the out of date rail system. The rails here are closer together than in other countries which means that the trains cannot travel as fast as they are mechanically capable of which results in rail transport being slower than road shipping. To resolve this issue they have determined that there is a need to improve the infrastructure system of the Trans-Kalahari Railway. The rail should carry the heavy loads including fuel, cement and oil products.

Another challenge that NamPort has been facing recently is having no land to expand in order to accommodate the growing demand on the port. About fifty percent of the port land is currently allocated to bulk and break bulk, while the containers are becoming the dominant shipping medium. There is no more room for development along the coast; the port cannot expand east since the city of Walvis Bay is located immediately inland and the ocean is located immediately to the west. Currently the port channel is being dredged to 14.4 meters [48 feet] and they are using that dredged land to create artificial land to expand the port onto.

NamPort is also encouraging the construction of a heavy industrial park just outside Walvis Bay near Dune 7. The location for this park was carefully chosen, as it will have the least negative effect on the environment. This area could also house more dry-port facilities for the port as well as dry-ports for other land-locked countries in the SADC Region.

The Walvis Bay Port is in competition with the neighboring South African and Angolan Ports. Walvis Bay's Port has an edge up, as the infrastructure through Namibia is better than the surrounding countries. The political environment is stable, which is a huge selling point as it means cargo will not be tied up in political unrest. Another selling point for trade through the Port of Walvis Bay is that it is predictable and reliable as well as having few incidents of theft in the Walvis Bay Port.

Appendix Q: Meeting Minutes for Namibia Chamber of Commerce and Industry

We met with Tarah Shaanika the CEO of the Namibia Chamber of Commerce and Industry (NCCI) on April 19, 2011. The NCCI is responsible for overseeing all of the business undertakings throughout the country. They are the private sector affiliate of the MTI, responsible for advocating business in Namibia. The NCCI reviews the business policies proposed by the government and other private sectors to ensure the fairness of the policies. They ensure that Namibia has an environment conducive for businesses to prosper. The Chamber also links Namibia to international business opportunities, hosting business delegates from the United States, Turkey and so forth.

Namibia is a small country with a small but stable port in Walvis Bay. The Walvis Bay Port, nevertheless, does not have issues of being congested as the two main South African ports of Cape Town and Durban have. The cargo turn around in Walvis Bay is efficient and reliable making “the Port of Walvis Bay the best in Africa for numerous years now” according to Shaanika. The ultimate goal of the port, however, is to become the best in the world. The majority of western countries prefer Walvis Bay to the other two ports because it is more efficient. The port is even utilized by Brazil to trade in the SADC Region.

From the port the Trans-Kalahari Corridor allows trade all the way to Botswana, South Africa, and Mozambique by way of the Maputo Corridor system. Botswana is expanding its import and export capacity using the TKC to transport their goods. Botswana itself will ensure that the TKC has plenty of traffic as they are, at an increasing rate, exporting coal and minerals and importing goods from the rest of the world.

The Namibian mining industry is ever increasing, especially in the Erongo Region, meaning more demand for equipment. The mines receive their equipment and the required chemicals from South Africa. This means the corridors between the two areas and the port will have a healthy flow of cargo. About 80% of the shipments from South Africa will come in through the Port of Walvis Bay, which means that the TKC will be used to transport the good to the mining areas.

The NCCI fully supports the development and construction of the heavy industrial area just outside the city of Walvis Bay near Dune 7. One investor is planning an inland container terminal in this area where goods coming from and going to the SADC Region could be stored

while awaiting transit. From this container terminal, most of the traffic will run along the TKC stimulating development along the corridor. There are also plans for a German steel plant to be developed in this area to ship to the SADC Region.

The Chamber is in line with the MAWF in that they are pushing for increased food production in Namibia. Currently the country imports 80% of their food products from South Africa making Namibia at a severe disadvantage if South Africa were to have agricultural issues. They have been increasing the animal capacity of farms resulting in an increase of meat production. There has also been a push to increase produce production. The NCCI wants Namibia to have food security and eventually be mostly self-sustainable agriculturally.

The NCCI is strongly concerned about the inadequate railway system, which is deterring investors and shippers from coming to do business in Namibia. The railway needs to be updated for carrying heavy loads at fast speeds. Products such as Ohorongo's cement would be transported more effectively along the rail than via roads. In addition, the construction of a fuel storage industry is underway which will require a railway system. Botswana has a stake in the railway, as it would provide the country with the most effective way of shipping its coal and minerals.

Another concern raised is the assumption that only Botswana and Namibia can make use of the TKC. The desired image is that South Africa would also utilize the corridor as well as surrounding countries using it indirectly. The stakeholders find it hard to see the benefits they would receive from the TKC running to South Africa, while in reality, when the WBCG opened a branch in Johannesburg it increased business along the corridors. There is a need to market the corridors more effectively in order to convey their full potential and stakeholders have to be convinced about this need.

A third concern is the small size of Walvis Bay, as it may cost more to ship through. The port cannot offer the same incentives as the larger southern African ports can because they lack the amount of business required. The Chamber sees the port expansion as the key factor in convincing importers and exporters that Walvis Bay has the capacity to handle the required amount of cargo being shipped. This will improve the port's world image.

The infrastructure of the Trans-Kalahari Corridor is very good throughout Namibia and even in Botswana and South Africa. Although there have been issues with the border crossings

with shippers being delayed for various reasons, the governments involved are currently devising a solution to border crossing to make them more efficient for travelers.

The NCCI supports the development of a logistics hub in Gobabis as it is strategically located near the Botswana border in Namibia. This hub would house goods from throughout the SADC Region. Products could be held here awaiting transit either into or out of the SADC Region, even reaching the DRC. Also in Gobabis is an increase in the amount of animal farming for meat, a significant portion of which is shipped out to Norway through the nearby airport. These operations make use of the TKC that runs through Gobabis both to the airport and the surrounding countries.

Appendix R: Meeting Minutes for Ministry of Agriculture, Water, and Forestry

The Ministry of Agriculture, Water & Forestry (MAWF) is in charge of overseeing the operations pertaining to the three sectors: agriculture, water and forestry. Although we were not able to find a time to meet in person with the Ministry of Agriculture, Water & Forestry we received information regarding the projects they are currently undertaking along with other relevant information. For this study we discussed mainly the agricultural portion of their responsibilities. Currently they are undertaking the Green Scheme Programme along the Trans-Cunene (TCuC) and Trans-Caprivi Corridors (TCC), which is an initiative with the intention of developing irrigation-based agriculture. The ultimate goal of this program is to increase the country's agricultural contribution to the gross domestic product.

The ministry is currently working to develop many individual projects such as the Etunda Irrigation project in the Omusati Region. This project is allotted 1200 HA [3000 acres] of land, of which half still needs to be developed, with a completion date of 2012. There are other Green Scheme projects in Ndonga, Linena, Musese, and many more towns along the TCuC and TCC. These initiatives are aimed at both increasing agriculture in Namibia and improving the lives of locals by reducing poverty.

The MAWF has plans to increase the local production of agricultural products. This will include the production, processing and marketing of local produce and other horticulture products. The ministry has created and implemented the National Horticulture Initiative in order to facilitate this goal. The MAWF has also undertaken the Strategic Food Reserve Facilities (Silo) project that has the goal of food security for Namibia. They are to create storage facilities in strategic locations that will contain supplies of food, which will allow local farmers to produce more products which can be stored for periods of time. This project has the potential to increase cash flow through the farming communities by creating an increase in the demand for the farmers' products.

Appendix S: Meeting Minutes for Gundle Plastics Company

Gundle Plastics Company is the largest plastics manufacturer in South Africa. They are currently in the process of determining a market for their product: plastic sheeting that can be used to package anything from agricultural products to mining products. This sheeting is used for wrapping palettes, packaging food products, protecting produce from insects, cement lining, milk carton lining, and so forth. As such, this product is used by nearly every industry in Namibia. Plastic sheeting is also cheaper than other materials and is more durable and recyclable.

The first stage of the Gundle Plastics Company's expansion was to determine the market for plastics in Namibia. As a result of this stage, Gundle determined that although Namibia is a low-populated country, it has high buying power and would have the necessary client base for a new plastics plant. Gundle then established an office in Windhoek in order to begin taking orders for their products in Namibia and the surrounding countries. Once they have a large volume of orders and clients, they will set up a plant in the vicinity of their largest clients. Having a plant in Namibia will reduce the cost per capita for their product to their local Namibian clients as they will not import plastic sheeting from a great distance. Additionally, if this plant were located along the Trans-Kalahari Corridor it would allow Gundle to export their product across the world by using the Port of Walvis Bay and the Walvis Bay Corridors.

Appendix T: Meeting Minutes for Municipality of Okahandja

We met with Ripanda Meroro, the CEO of Okahandja, on two occasions. Our first meeting took place at the WBCG office in Windhoek on March 29, 2011. From this first meeting we discovered that Okahandja aims to become an economic hub and serve as a gateway to all destinations in Namibia by road or rail. In order to achieve this, Okahandja is looking for more manufacturing companies to establish within city limits. Okahandja is an attractive destination to establish any industry due to its proximity to the current economic hub of Windhoek. Unlike Windhoek, Okahandja has an abundance of available land. Establishing an industry in Okahandja is also cheaper than in Windhoek due to the lower prices of land and utilities. In addition to its land, Okahandja also has large unskilled and semi-skilled labor forces available for use.

Our second meeting took place in the municipality of Okahandja on April 7, 2011. Again we met with the CEO of Okahandja as well as several other town officials including the heads of the departments of Local Economic Development (LED), Engineering Services, Human Resources, Business Development, and Civil Structures. This second meeting served to expand our knowledge on the current projects under development in Okahandja, as well as the projects that will soon be under development.

Currently, the main industry of Okahandja is meat processing and packaging. Okahandja is especially known for its biltong, which is a type of dried meat similar to American jerky. Okahandja's biltong is shipped to Johannesburg, South Africa and is even exported to Germany. Other industries that currently prosper in this town include diamond cutting and finishing as well as steel manufacturing. The woodcarvers' market serves as a tourist attraction that also supports the economy of Okahandja.

SABMiller, a South African brewing company, plans to expand to Okahandja. The brewery is in its final stages of development after a cost of N\$350 million. The location for this brewery was chosen as Okahandja due to its proximity to needed raw materials. This proximity means that raw materials would not have to be imported. The cost savings for manufacturing in Namibia rather than importing raw materials from Namibia would recover the cost of setting up the plant in one year. Also, Namibia was chosen over Angola due to Namibia's peaceful political climate. Okahandja has allotted SABMiller 350 hectares of land for initial construction, with more land available for expansion. This plant will also create many new jobs for Okahandja citizens, as SABMiller only plans to bring 20 people from South Africa; all other jobs will be

filled by local Namibians. SABMiller plans to ship their product to Zambia, South Africa, and Angola, as well as sell it locally in Namibia. The plant is scheduled to open in June 2011.

A regional airport has been approved for construction outside of the main town of Okahandja. This airport will be utilized for international aviation as well as cargo shipment; this usage of air transport will complement the current ground infrastructure of the Trans-Kalahari Corridor and Railway. Products from Okahandja could be shipped by air to Walvis Bay, speeding up transport across the entire SADC Region.

The Namibian government has decided to construct a military academy in Okahandja. This academy will cost N\$200 million and will be used to train officers. Interest from the Namibian military has been expressed to link the academy with the regional airport. An additional 5 km [3.1 mi] long runway will be constructed for the Namibian military, and in return the Namibian military will help fund the construction of the airport.

Thirty hectares of land have been approved to use for a solar power plant in Okahandja. Power harnessed through the plant will be sold to NamPower. The energy can be used to power the town of Okahandja both during the day and at night, with the excess being exported to the rest of Namibia. This land can also be used as farmland; the MAWF plans to establish farms underneath the panels.

Other projects currently under development include a glass manufacturing plant, a copper mine, and a steel manufacturing plant. Construction on the glass plant has been slow, but has now reached roof level. The plant still needs machinery to start production, however. The copper mine has been approved for an exclusive processing license (EPL), but has not started construction. The town council of Okahandja has recently approved land for the corrugated steel manufacturing plant. This corrugated steel would be used for roof sheets. Although investors have been found for this project, construction has not started.

The industries that Okahandja would most like to see expanded include tourism and retail. There are opportunities for tourist attractions in Okahandja due to its history of oppression. The town council would like to see museums built in Okahandja displaying this history. Also, tourists could come to visit the graves of battlegrounds near Okahandja. Many middle class Namibians are moving from Windhoek to Okahandja due to rising cost of land and housing in Windhoek. For this reason, there is need for more retail stores in Okahandja to supply food and clothing so that citizens would not have to travel to Windhoek to shop and eat. A Woolworths

retail store is already under construction and is expected to open on May 1, 2011. There are an adequate number of high class restaurants in Okahandja, but there is need for smaller, more inexpensive restaurants, coffee shops, and take-aways.

The town council of Okahandja also brought to our attention two main problems the TKC causes their town. The first is the damage that the heavy trucks cause to the roads of Okahandja. As trucks travel through Okahandja on their way to and from Walvis Bay, the weight of their cargo creates excess damage to the roads that the town has to pay for. Although a bypass around Okahandja already exists, trucks neglect to make use of it. Furthermore, when trucks do use the bypass, the town of Okahandja loses the business that they would bring to the town. Okahandja would like government assistance in maintaining their roads as the damage is caused by too much heavy traffic of noncitizens.

The second problem is the danger that trucks pose to the citizens of Okahandja. Heavy traffic travels at elevated speeds through the town, making pedestrian crossings difficult and dangerous. As many citizens of Okahandja walk to work and school this is an especially pertinent issue; multiple collisions involving pedestrians have already occurred. The town council has suggested pedestrian bridges as a way of alleviating this concern. In addition, these bridges would beautify the town and create picturesque locations for tourists. SMEs could also develop on each end of the bridge establishing a marketing tool to encourage pedestrians to visit businesses they would otherwise overlook. The town council of Okahandja would also like government assistance in establishing these pedestrian bridges.

During our meeting, the town council also discussed the fact that the current railway between Okahandja and the Port of Walvis Bay is underused as it takes two days to reach the port by rail, whereas by road it can be accomplished in three hours. This makes it impossible for Okahandja to export their fresh meat products via the railway. Although the mining industry in the Erongo region must use the railway because mining products are too heavy for the road, products that need to remain fresh, such as meat and agriculture can only be shipped via the road. Therefore, the town council of Okahandja would like to see the railway be improved to become more efficient.

Another reason that Okahandja cannot export their fresh meat products beyond Namibia is their lack of cold storage facilities. Currently, most of the meat that Namibia consumes comes from Cape Town, South Africa. If cold storage facilities were created in Okahandja and in

Walvis Bay for Okahandja's use, Okahandja could not only export meat products to all of Namibia, but also agricultural products. This is especially important as Namibia is trying to limit the amount of produce that they import from South Africa. Therefore, it will be important for cold storage facilities to be created in Okahandja.

Finally, the town council of Okahandja discussed how they are trying to attract new investors to establish projects in Okahandja. In order to market their abundance of available land, they have made this land conducive for investors' use. Okahandja also has an exclusive processing zone (EPZ). EPZ is a duty free zone that allows infant industries to grow. The Development Bank of Namibia offers tax breaks and other incentives for burgeoning industries. They provide business education for companies that have a business plan and a sustainable product or concept.

Appendix U: Meeting Minutes for Municipality of Gobabis

We met with Efraim Muneo Dawids, the CEO of Gobabis, as well as other members of the Gobabis town council including the LED officer, the councilperson of management, the manager of health, parks, and gardens, and the town treasurer. This meeting occurred at the Municipality of Gobabis on April 11, 2011. Gobabis was very interested in learning more about the TKC and in becoming a member of the WBCG. Since the Trans-Caprivi Corridor is expected to be extended to connect with the TKC in Gobabis, economic development in Gobabis will be especially important.

Gobabis has difficulty encouraging local economic development, as they do not have the natural resources of mines or the sea. Gobabis's mainstay is farming; the town is surrounded by farms. However, when the farmers become too old to work, or lose their jobs, they move into the town of Gobabis. For this reason, the unemployment rate of Gobabis is 75%. The municipality is required to give these people water, which they do not have the resources to do. The Gobabis town officials, therefore, were very interested in how the TKC could bring economic opportunities to Gobabis.

Gobabis is most looking to expand its tourism sector. Currently, tourists travel through Gobabis on their way to Windhoek or Botswana. Gobabis would like to create tourist attractions to encourage these tourists to stop and spend some time in Gobabis. There are nine different traditional ethnic groups found near Gobabis including the San, the Herero, and the Afrikaners. This diversity provides an excellent opportunity to promote cultural tourism in Gobabis. The town council would like to provide land for a cultural village or traditional house that would showcase these different cultures. Additionally, Gobabis is found in the Kalahari Desert and is surrounded by beautiful landscapes and thus would be an excellent location for a game park. However, when an entrepreneur requested land for a game park, he was rejected by the town. The CEO is still trying to convince the town to approve the request. If approved, this game park could serve to encourage more tourists to stay in Gobabis, rather than just passing through.

Gobabis has 2000 hectares of land available for economic development. They have set aside some land for a truck stop, for which they have already found private investors. The land has been approved, but construction has not started yet. Similarly, the Gobabis town council has approved and found a site for a weigh bridge for trucks, but construction has not yet begun. This project will be funded by the town municipality.

The town council of Gobabis especially expressed their interest in establishing a dry port in Gobabis. The idea of this dry port would be to create a warehouse to store cargo. Truckers coming from Botswana would cross the border and drop off their cargo at the warehouse in Gobabis. They would then pick up cargo destined for Botswana and re-cross the border into Botswana. This would eliminate the need for these truckers to travel all the way to Walvis Bay as well as the empty leg that the truckers would have on their way back to Botswana from Walvis Bay. Similarly, truckers from Walvis Bay would drop off their cargo at the warehouse and pick up the cargo that the Botswana truckers had dropped off. This would eliminate their need to ever cross the Botswana border, decreasing the amount of time spent undergoing border processing. The dry port would also create many jobs for Gobabis citizens as loaders and un-loaders.

The town council of Gobabis mentioned experiencing the same problems with the TKC that Okahandja discussed. The heavy traffic from the trucks is damaging the roads of Gobabis and road maintenance is not subsidized by the Namibian government.

Dissimilarly to Okahandja, a bypass has not yet been constructed around Gobabis, but is under discussion. A bypass would alleviate road damage, but would also direct drivers away from the town. Since Gobabis is interested in attracting tourists to stay in Gobabis, this would not be ideal. The town council would like to see the bypass be fully planned out, and effects wholly considered, before approving construction.

Appendix V: Meeting Minutes for Municipality of Karibib

We met with the acting CEO of Karibib at the Municipality of Karibib on April 13, 2011. Karibib is another especially important town along the TKC, as both the Trans-Cunene and the Trans-Caprivi Corridors branch off from the TKC at this point. Economic development in Karibib could have a great impact on the development of the whole TKC. However, Karibib currently lacks a LED officer, inhibiting the economic development of the town.

Current economic projects that exist in Karibib are mostly based in the mining sector and include a gold mine and marble and granite mines. The Navachab mine, which is owned by AngloGold Ashanti, is the only gold mine in operation in Namibia.

There is a stone carving industry in Karibib that utilizes the granite and marble that is mined nearby. Raw granite is also exported as far as Italy. The Ministry of Mines and Energy plans to start a project in Karibib to recycle granite. They will crush the granite and export it to Europe for use in toothpaste and tires. For this reason, the MME has requested a piece of land containing granite on the outskirts of town.

Currently, all of the equipment used in the mines surrounding Karibib is imported. A Chinese company is looking to set up a manufacturing plant in Karibib, however. This plant would produce mining equipment for Namibian mines, cutting the costs of importation. The plant would also include maintenance and repair facilities to fix and service the mining equipment. This project is still in the preliminary stages; the investors have recently requested a plot of land which has not been approved yet.

Another economic project that is planned for the town of Karibib is a shopping complex with housing facilities. The 25,000 square meter development area will include a truck port, secure parking, and 400 houses. Additionally, the Royal Chicken Trading CC has begun the advanced stages of developing a new agricultural farm. This farm will include a 200-hectare chicken camp, a 20-hectare organic vegetable plantation, 30 hectares of oats, 30 hectares of barley, 30 hectares of maize, an olive grove with 3000 trees, and 10 hectares of citrus fruit trees. These agricultural produces will be sold in Karibib, as well as exported on the TKC across Namibia.

The town council of Karibib has created a town-planning scheme with the goal of creating more jobs. As part of this scheme, the road between Karibib and Okahandja will be

expanded. This will not only create jobs but will allow the road to be safer and easier to travel on, bringing in more travelers to Karibib.

The acting CEO of Karibib also discussed how the town would like to expand their tourism industry. Karibib has several historical sites and buildings, which are not currently protected. These locations could serve to attract tourists if they were properly established as historical sites. The local mines could also become tourist attractions if tours were offered. However, Karibib would need assistance from the Namibia Tourism Board (NTB) to train guides and establish tourist accommodations. Currently, the NTB has not been available to discuss this matter with the Karibib town council.

Appendix W: Meeting Minutes for Municipality of Usakos

We met with the CEO of Usakos, Mr. J. E. Jantze, at the Municipality of Usakos on April 13, 2011. Although he was optimistic about ways the TKC could provide economic opportunities to the town of Usakos, he explained that currently the only thing the town got from the truckers were HIV and AIDS. The truckers would pick these diseases up somewhere along their routes and would spread them to town citizens when they stopped in Usakos overnight. Additionally, although most truckers coming from Walvis Bay will spend the night in Usakos, they park their trucks on the sides of the road rather than paying for accommodations.

The CEO discussed his plans to build a truck stop in Usakos. This truck stop would provide for many of the truckers' needs and would provide facilities to allow the truckers to relax. There would be shower facilities, service stations, and take aways in the truck stop. Most importantly for Usakos, there would be secure parking available so that the truckers would no longer have to park along the side of the road. Additionally, the truck stop would have televisions, so that the truckers could sit and relax while they ate, waited for their food, or waited while their trucks were refueled. The truck stops could offer incentives such as a free meal with a gas fill up to encourage truckers to stay longer.

The mainstay of Usakos is mining. Many citizens of Usakos work in the nearby mines of Langer-Heinrich, Rössing Uranium, and Valencia. Langer-Heinrich is a uranium mine owned by Paladin Energy. It produces uranium oxide, "yellow cake", which it exports for use in energy production. Rössing Uranium is another uranium mine and is owned by Rio Tinto plc. Rössing is Namibia's biggest uranium mine and is one of the largest open pit uranium mines in the world. Like Langer-Heinrich, Rössing exports uranium oxide for power generation. Valencia, the nearest mine to Usakos, is yet another uranium mine. Valencia is co-owned by Forsysmetals and Westport Resources. The Valencia mine has also offered the unique opportunity to train 20 people from Usakos for one year in business education. They will give these people land to set up their own SMEs to support the mine and the mine workers.

The mines provide housing and transportation to their workers in Swakopmund and Aranis, even though the town of Usakos is closer to the mines. This means that between four and five o'clock, there is a lot of traffic congestion in Usakos as workers drive themselves to the mines. If the mines would provide transportation to the workers in Usakos like they do for those in Swakopmund and Aranis, it would alleviate these traffic problems. Also, the mines usually

ask for one town to sell them water. The town complies for the money, but then often struggles to meet their own water demand. If the towns of Aranis, Swakopmund, and Usakos worked together to supply the mines with water, they would all make money and they would all be able to keep enough water to supply their citizens with enough water.

Similar to Gobabis, the CEO of Usakos expressed his interest in setting up a dry port in Usakos. The idea would be to build a warehouse to store more high-risk items. The town councils of Gobabis and Usakos have already discussed this idea with each other. They would like to be able to each set up dry port facilities so that truckers would only need to travel between Usakos and Gobabis. The climate in Usakos is much sunnier than in Swakopmund or Walvis Bay, so the CEO of Usakos felt that Usakos would be an ideal location to store goods coming to and from Walvis Bay.

The industry that Usakos most needs to expand is their agricultural sector. The town currently has community farms, but none that produce excess food to sell. Most of these farms consist of sheep and goat subsistence farmers, who only produce enough food to survive. If these communal farms could be expanded to include more crops, farmers could grow enough excess food to sell in the markets in Usakos. The CEO of Usakos made sure to mention that he would like to see these farms remain environmentally sustainable.

The CEO of Usakos also had some recommendations for how to make trucking more people-friendly. If the trucks themselves had colorful advertisements or HIV/AIDS awareness campaigns, they would be more attractive to look at. Also, the CEO was interested in the feasibility of making the truck more environmentally friendly. Having more fuel-efficient trucks would not only help the environment, but would also save the truckers some money as well.

Appendix X: Meeting Minutes for Municipality of Walvis Bay

We met with the acting CEO of Walvis Bay as well as other members of the town council, including the LED officer, the Public Relations officer, and the heads of the tourism and infrastructure departments. The meeting took place at the Municipality of Walvis Bay on April 14, 2011. Walvis Bay has an estimated population of roughly 75,000-80,000 citizens and is home to the Port of Walvis Bay. The port serves Namibia as well as the DRC, Zimbabwe, Zambia, Botswana, Angola, and the Gauteng Province in South Africa. According to the public relations official of Walvis Bay, “To clear a container here takes less time than any other port in Southern Africa.” The port is linked to the whole of Namibia by road, rail, and air.

The main industries of Walvis Bay include fishing, engineering, cargo import and export, tourism, and SMEs. The area neighboring the port houses a large portion of the fishing industry. Fishing is the second largest export of Namibia after mining, and currently employs 13,000 people in the area. Hake, horse mackerel, monk, and pilchards are all found near the port. In order for the port to expand their land quay this entire industry would have to be relocated north. Considering fishing is a two billion dollar a year industry, moving the whole of the industry would not be reasonable; because of this fact, expanding to the sea is the better option for the time being.

Products exported from Walvis Bay are shipped to Spain, UK, Germany, United States of America, and Australia. About 85% of the products imported through Walvis Bay come from South Africa and include food, petroleum products, fuel, machinery, equipment, and chemicals. To facilitate this exchange of cargo, the municipality of Walvis Bay is upgrading the Walvis Bay Airport. The runway has already been updated and plans are underway to upgrade the airport building itself.

Walvis Bay also employs an EPZ to encourage the development of new industries and SMEs. The municipality offers tax-free incentives for manufacturers and exporters. These infant businesses do not have to pay corporate taxes, import duties, value added tax (VAT), stamp duties, or transfer duties. The EPZ does not only apply to Namibian companies, but also covers the companies in the rest of Africa, Asia, Europe, and North America.

The tourism industry is the fastest growing sector in Walvis Bay. There are many tourist attractions that already exist, including the Namib Desert and the Lagoon. The lagoon is an international Ramsar-listed sight and is home to over 200,000 birds of over 80 different species.

Ramsar-listed wetlands are protected under the 1971 Ramsar Convention which identified and conserved international wetland sites. The Namib Desert is the oldest desert in the world. Tourist attractions in the desert include sand boarding, quad biking, and horseback tours. Dune 7 is a popular destination in the Namib Desert. It is one of the tallest sand dunes along the coast at over 100 m high. The Namib Desert is home to several unique medicinal plants including hoodia, !nara, and welwitschia. Therefore, all of Walvis Bay's expansion and development plans are governed by environmental conservation and international preservation agreements. The bay itself is home to seals, dolphins, pelicans, and whales. Several tours are offered for tourist interested in admiring this aquatic wildlife. In addition to natural tourist attractions, Walvis Bay is planning the construction of a new Apartheid Museum. The estimated cost for the museum is N\$80 million. The municipality is still searching for investors, and as such, construction is still very far away.

Due to the constraints of the environmental conservation of the Lagoon and the Namib Desert, Walvis Bay is running out of space for residential and industrial development. Currently, the port has a three-kilometer long stretch of land quays, but cannot expand further without impeding the Lagoon. Instead, the port must expand out into the sea, building jetties and sea quays. In order for the municipality of Walvis Bay to expand further, they are planning the construction of an industrial park behind the dunes. There is already a road to Swakopmund traveling behind the dunes. This road would be upgraded from salt gravel to bitumen. Once the industrial sector of Walvis Bay has been relocated to this new location between the port of and the airport, there will be more space for new residential developments in Walvis Bay.

A new coal-fired power plant will be constructed in this new industrial sector. It will serve as a back up to the current pre-existing diesel plant. Together, the two plants will produce a total of 50MW of electricity for the city of Walvis Bay. The city of Walvis Bay would also like to develop their light industrial sector. Currently they have 77 light industrial plots located within city limits. One plot is used for an automotive plant that manufactures parts for BMW and Mercedes-Benz.

Walvis Bay lacks a desirable environment for land and sea development. The ground water beneath the city is brine, three times saltier than seawater. The excess salt in the water creates significantly more corrosive effects. In addition, the combination of brine with the gas that forms naturally in the soil forms a special type of sulfuric acid rain. For this reason,

construction materials in Walvis Bay are restricted to ones that can withstand this highly corrosive environment. Concrete is often not dense enough, and will crumble over time. Additionally, the construction of future railway expansion will prove to be a great challenge in that the bedrock is 35 meters below the surface.

Walvis Bay is one of the few towns that do not have traditional informal settlements. This is due to the fact that the municipality provides ensures public health standards are adhered to. This includes providing potable water as well as sewage and waste removal. People that cannot afford formal houses settle on lands that are fully equipped with water and sanitation in the informal settlement housing. The municipality also provides business registrations, road infrastructure maintenance, town planning and development, traffic and fire brigade services, tourism promotion, and economic development.

Appendix Y: Meeting Minutes for Municipality of Swakopmund

We met with the CEO of Swakopmund, Eckart Demasius, at the Municipality of Swakopmund on April 15, 2011. The main industry of Swakopmund is tourism. Swakopmund, like Walvis Bay, is located in the Namib Desert. Tourists come to Swakopmund to see the desert and partake in adventure sports such as sand boarding and quad biking.

Swakopmund is also located along the coast of Namibia; the Atlantic Ocean is a draw for many tourists. Some aspects of the tourist sector in Swakopmund stand to be improved however. The city plans to relocate the train station to entice tourists to travel to Swakopmund via rail. Currently the rail station is located in the industrial sector of Swakopmund, as it is primarily used to transport cargo for importation and exportation. The new rail station would be located on the outskirts of the city, giving it more space to expand in the future.

The CEO of Swakopmund would like to see the railway system itself expanded. The gauge used in Namibia is much smaller than what is used in the United States of America. A larger gauge, like that used in the US, allows heavier cargo to be moved faster. The current speed limit for the TKR is 100 kilometers per hour [62 mph], which is much slower than the road speed limit of 120 kilometers per hour [75 mph]. More cargo could then be shipped via the railway rather than the road. The town of Swakopmund would like to build a container harbor next to the railway to facilitate the transference of cargo from the road to the rail. The trucks could bring the cargo from Walvis Bay to Swakopmund, where it would be placed on trains and shipped further on the railway.

The CEO also discussed the problems that the trucks are bringing to the city of Swakopmund. Similarly to what we heard from other town councils, the trucks are damaging the roads of Swakopmund and creating noise pollution. Swakopmund would also like to see more trucks using the bypass between Walvis Bay and Swakopmund behind the dunes. To entice more truckers to take this route, they plan to construct a truck port along this bypass. Truckers would be able to get all of their essential necessities including accommodations, shower facilities, and take aways without having to come into the city of Swakopmund.

The Gecko Group of Companies is planning to create chemical factories to service the mines of the Erongo region. They wish to be incorporated into the city of Swakopmund. They have been allotted land 14 miles north of Swakopmund to build an industrial park that will house the chemical plants. The park will also have a power plant to generate its own electricity. In

addition, the Gecko Group will build a jetty into the Atlantic Ocean with a conveyor belt to facilitate the exportation of their products. North of Walvis Bay, the ocean is deeper, thus larger ships would be able to come and pick up these products from the jetty. The Gecko group will also be constructing desalination plants to provide water to the mines. The excess water could be sold to Swakopmund. NamPower plans to construct a coal power plant 6 miles north of Swakopmund, just north of the point that the bypass reconnects with the TKC. In order to provide water for this plant, NamPower will also construct a desalination plant.