



**The Government of the Republic of Namibia (GRN)
National Planning Commission (NPC)**

**MASTER PLAN FOR DEVELOPMENT OF
AN INTERNATIONAL LOGISTICS HUB
FOR SADC COUNTRIES
IN THE REPUBLIC OF NAMIBIA**

Final Report

Summary

March 2015

Japan International Cooperation Agency (JICA)

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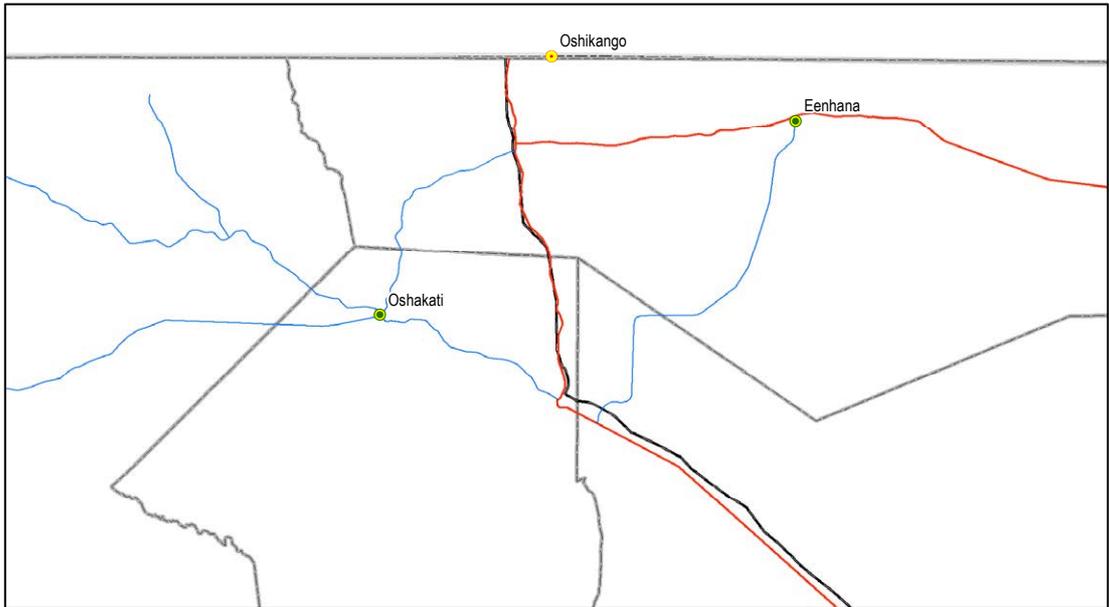
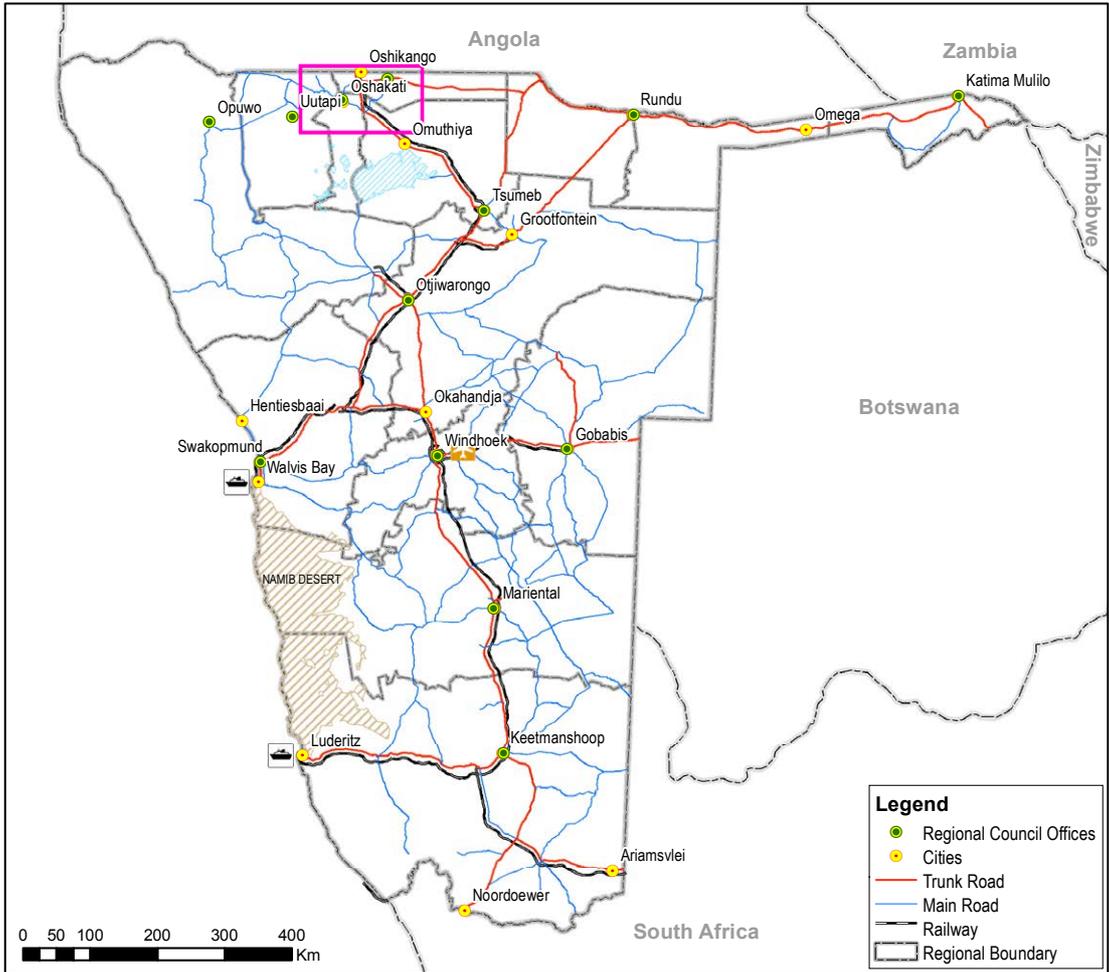
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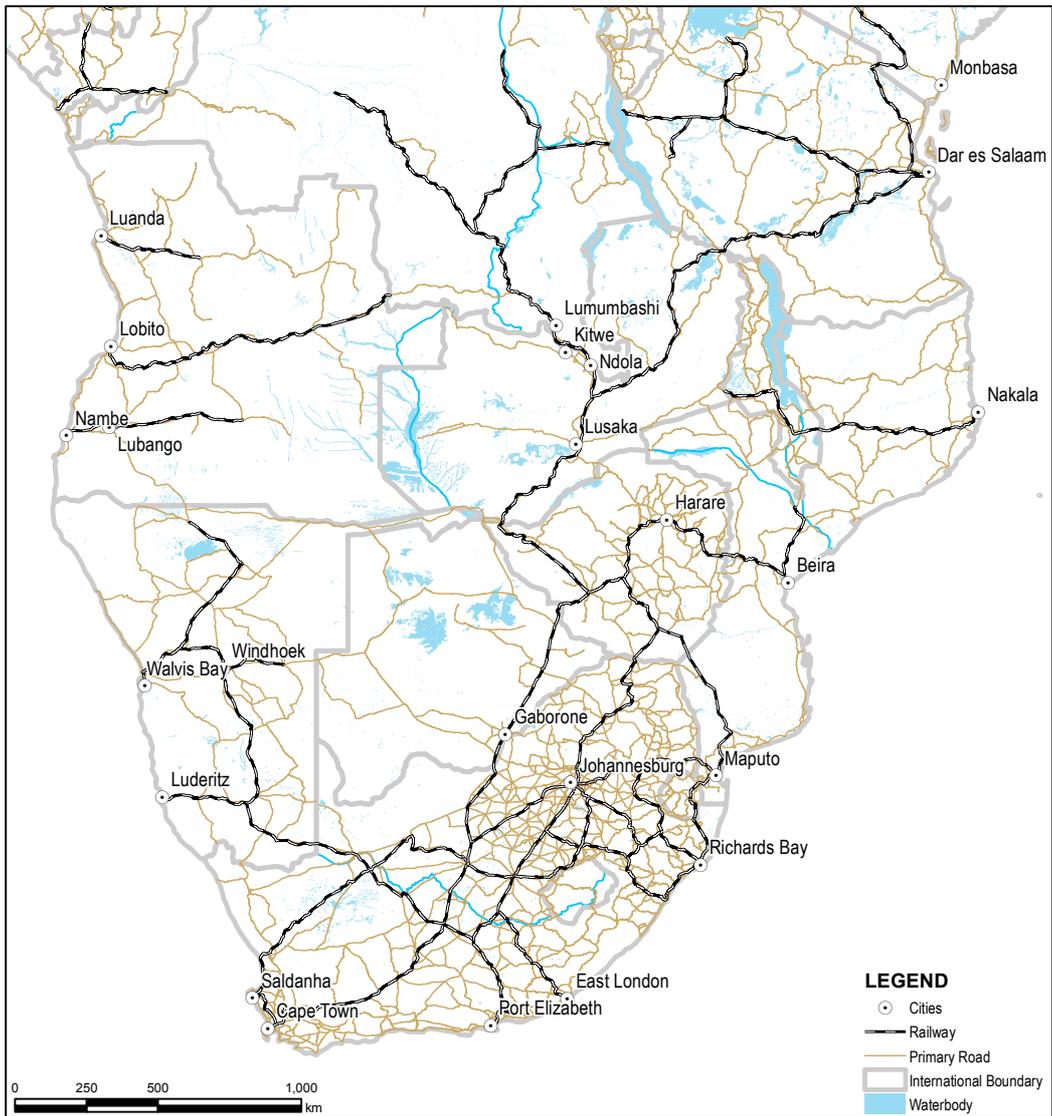
1 US Dollar = 107.37 Yen

1 US Dollar = 10.93 Namibian Dollar

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Namibia



Cities and transport infrastructures in the southern Africa

**Master Plan for Development of an International Logistics Hub for
SADC Countries in the Republic of Namibia**

**Final Report
Summary
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Abbreviations

ADB	African Development Bank
CBM	Coordinated Border Management
DRC	Democratic Republic of Congo
EIA	Environmental Impact Assessment
ES	Engineering Service
F/S, FS	Feasibility Study
GDP	Gross Domestic Products
GIPF	Government Institutions Pension Fund
GOJ	Government of Japan
GRN	Government of the Republic of Namibia
HIV	Human Immunodeficiency Virus
HKIA	Hosea Kutako International Airport
IBI	Integrated Border Infrastructure
ICT	Information and Communication Technology
LHC	Logistics Hub Centre
MET	Ministry of Environment and Tourism
MHAI	Ministry of Home Affairs and Immigration
MOF	Ministry of Finance
MRLGHRD	Ministry of Regional and Local Government, Housing and Rural Development
MTI	Ministry of Trade and Industry
MWT	Ministry of Works and Transport
NAC	Namibia Airports Company
Namport	Namibian Port Authority
NACOMA	Namibian Coast Conservation and Management
NDC	Namibia Development Corporation
NDP4	Fourth National Development Plan
NGCL	Namibian–German Centre for Logistics
NGO	Non-governmental Organisation
NPC	National Planning Commission
NTA	Namibia Training Authority
NTB	Non-Tariff Barrier
OSBP	One Stop Border Post
PPP	Public Private Partnership
RA	Road Authority
RFA	Road Fund Administration
RSA	The Republic of South Africa
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
SOEs	State Owned Enterprises
STDs	Sexually Transmitted Diseases
TEU	Twenty-feet equivalent unit
TKR	Trans–Kalahari Railway
WBCG	Walvis Bay Corridor Group
WLNDC	Walvis Bay–Ndola–Lubumbashi Development Corridor

1. Introduction

1.1 Background to the study

1.1.1 Background

Namibia shares borders with Angola, Botswana, South Africa, and Zambia having good ports and trunk roads to link them with the rest of the world. This gives her a huge potential to be an international logistics hub for the inland areas of Southern African Development Community (SADC).

One of the desired outcomes stipulated in the Fourth National Development Plan (NDP4), which is a roadmap of Namibia up to 2016/17, is to enable Namibia to become a regional leader in logistics and distribution. In order to realize this, NDP4 included the preparation of a “National Logistics Master Plan” that provides a detailed future image of Namibia as an international logistics and distribution centre and identifies key policy measures and actions to be taken to promote logistics industries already established in Namibia as well as invite further logistics industries to Namibia.

The Government of the Republic of Namibia (hereinafter referred to as “GRN”), embarking upon this new challenge of development, requested the Government of Japan (hereinafter referred to as “GOJ”) to provide technical cooperation for development planning on “The Project on Master Plan for Development of an International Logistics Hub for SADC Countries in the Republic of Namibia”.

1.1.2 Goals for industrial development and expected role of the development plan for an International Logistics Hub in Namibia

1.1.1.2 Growth and disparity adjustment by overcoming limitations of the small domestic economy and escaping from the existing mining monoculture

Goals for industrial development in Namibia are summarized into the following two points.

- To go beyond the limits of the small domestic economy – economic development by utilizing economic growth in the whole southern African region.
- To exit from the dual structure economy overly dependent on a very narrow scope of mining industry, which causes disparity and unemployment – diversification of economic activities.

1.1.2.2 Direction of the new industrial development – International Logistics Hub Master Plan as a national development strategy

Given these goals, the new industry should have the following three characteristics.

- The new industry should be the one that directly taps on economic growth in neighbouring countries and brings its multiplier effects to Namibia – need to utilize links among the economies of the southern African region.
- The new industry should be the one to enhance the competitiveness of Namibia over a relatively short period of time even in spite of the fact that the population density is low and labour cost is rather high – better focus on geographical advantages of Namibia where the efficient Walvis Bay Port and the southern African inland region are directly connected by the good paved roads and Katima Mulilo Bridge.
- The new industry should offer an employment opportunity to the low-income group – the need to have some elements of labour intensive activities within the local economy.

International logistics is now being watched with keen interest internationally as a new industry that has the potential to comply with all these requirements. Namibia has a high potential because there are speedy and safe logistics routes that connect the world with the southern African region, especially landlocked countries. In particular, there have been some recent events to further enhance the potential of Namibia, including the following:

- Walvis Bay Port is being expanded (from 350,000 TEUs to 750,000 TEUs per year) and expectations about this are quite high among major shipping lines. Once this has been done, Walvis Bay can become the foremost port of call for large container ships on the west coast of Africa, which makes it possible for Namibia to be one of the major international logistics hubs in the region.
- Namibia shares borders with Angola, Zambia, Botswana and South Africa, has Walvis Bay Port as a front door to the southern African region, and international transport corridors (roads in good condition) that lead to neighbouring countries.
- In 2004, the bridge was constructed over the Zambezi River that forms the border between Namibia and Zambia, and accessibility has been improved dramatically. On the other hand, there is no bridge over the Zambezi River along the North-South route that goes through South

Africa, Botswana and Zambia, and the small transportation capacity leads to congestion because cargo trucks have to wait for the ferry at *Kazungula* crossing point. (It should be noted, however, there is a plan to build a bridge there by 2018 and it's financing through a joint loan by ADB and JICA has already been agreed.)

- Namibia has the highest standard of public safety among African countries that assures safety of the corridors to the inland countries.
- Due to a favourable business environment, the time required for customs clearance is shorter and the risk of fraud is lower in Namibia than many other African countries. Namibia also has a modern financial sector, which is essential for international logistics (as good as the financial sector in South Africa).

Table 1.1: Business environment indicators in African countries

Countries	Days to clear customs		Corruption (%)		Losses due to theft and vandalism	Transport Infrastructure	Electricity	Water
	Export	Import	Firms expected to give gifts to get an import license	Firms expected to give gifts to public officials "to get things done"	Percentage of annual sales	Percentage of firms identifying transportation as a major constraint	Number of electrical outages in a typical month	Number of water shortages in a typical month
Namibia	1.4	2.2	0.0	11.4	1.3	7.9	0.4	0.1
South Africa	4.5	5.3	2.7	15.1	1.0	3.9	0.9	0.1
Mozambique	10.1	10.4	10.6	14.8	1.8	23.0	1.6	0.4
Angola	6.7	11.4	55.6	48.9	1.5	25.3	4.7	2.5
Kenya	5.6	11.8	18.6	79.2	3.9	30.6	5.8	3.1
Tanzania	5.7	14.3	6.6	49.5	1.2	14.1	9.1	6.0
Sub-Sahara Africa	7.9	13.8	16.1	34.9	1.7	26.9	8.9	2.4
World	7.2	11.5	14.1	25.3	1.0	21.8	7.0	1.4

Source: World Bank "Enterprise Survey", 2006, respective edition for each country

Namibia should make the most of its geographical advantages and streamline the whole logistics system by shortening the lead-time for cargo transit and reducing the handling cost in freight transport. It is possible for Namibia to have an international competitive edge in the logistics sector. Utilizing this potential is quite important for Namibia, as it cannot attract a labour-intensive manufacturing industry at the moment.

On the one hand, this potential to become a gateway for these landlocked countries is not fully utilized at present. While the transshipment volume at Walvis Bay Port is growing, the volume of cargo unloaded at Walvis Bay and transported to the southern African landlocked countries is limited. At present, the function of transportation to the landlocked countries is concentrated at Durban Port in South Africa. In order to increase the distribution volume for landlocked countries through Walvis Bay Port, it is necessary to improve the international competitiveness and reputation of the port and corridors. To achieve this, there are some critical issues to be addressed.

In this regard, a vision to transform Namibia into a regional leader in logistics and distribution was

identified in NDP4 as one of the top priorities. NDP4 requires that a Master Plan for Development of an International Logistics Hub be established in order to make this vision a reality. On the one hand, it is expected that the implementation of the National Logistics Master Plan contributes to the improvement of living conditions and economic growth of the whole southern African region through the promotion of export of resources from landlocked countries and import of commodities into them. On the other hand, it brings the growth of a new logistics industry such as a processing industry for distribution which should result in job creation in Namibia. Therefore, it is expected that the logistics industry will be one of the major engines of the economy to lift Namibia out of the dual structure and narrow based economy, which causes disparity and unemployment.

1.2 Outline of the Study

1.2.1 Goals which will be attained after project completion

1.2.1.1 Goal of the proposed plan (objective of the Project)

The Government of Namibia uses the International Logistics Hub Master Plan as a part of the “Logistics Nation” Strategy.

1.2.2.1 Goals which will be attained by utilizing the proposed plan (overall goal)

- Accelerated economic growth by development of Namibia as “A Logistics Nation”, which will contribute to making SADC as a region more competitive in the global market
- Accelerated growth of other sectors in the Namibian economy spearheaded by the logistics industry,
- Increased employment and improved income equality in Namibia

1.2.2 Expected outputs

The expected output of the study is the preparation of the **International Logistics Hub Master Plan**, which includes the following items.

- Development strategies and implementation plans which aim to make Namibia “A Logistics Nation” with a target year of 2025
- A comprehensive list of strategic projects and profiles for the selected priority projects
- A set of action plans including allocation of resources and capacity building
- Involvement of local stakeholders in the process of developing an International Logistics Hub Master Plan Study to make it a common framework of “All Namibia” to realize the concept of

“A Logistics Nation”

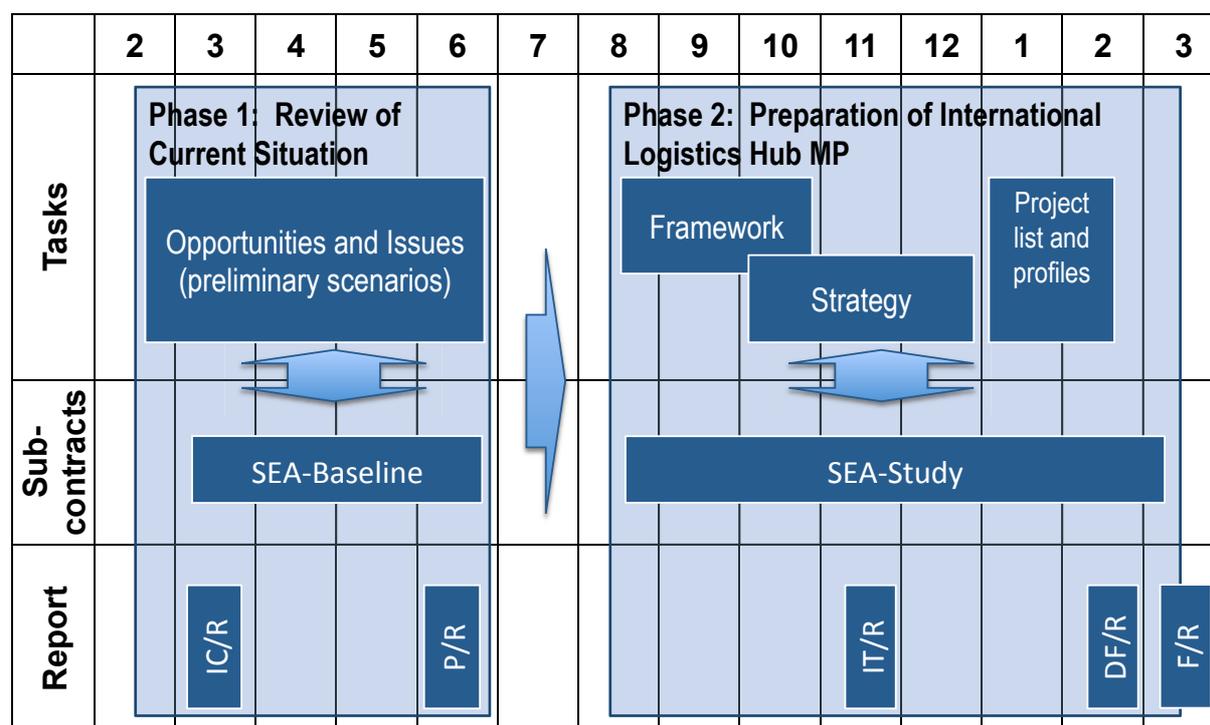
- Dissemination of the International Logistics Hub Master Plan as a common framework to promote this “Logistics Nation” to the international donors and investors

1.2.3 Project site(s)

The Project covers the whole area of the country. It also targets the southern African region and surrounding countries in order to analyse the present situation regarding cargo volumes and forecast the freight flows.

1.2.4 Project schedule

The Project started in February 2014, and will be completed in March 2015. It comprises two phases as indicated in Figure 1.1. Phase 1 from February to June 2014 is for review of current situation and identifying opportunities and issues of logistics sector in Namibia. Phase 2 from August 2014 to March 2015 is for preparation of the International Logistics Hub Master Plan. Strategic Environmental Assessment (SEA) was conducted in parallel with the master plan study, and feedbacks from the SEA are utilized for the formulation of the master plan.



Source: JICA Study Team

Figure 1.1: Project schedule

In the process of formulating the master plan, many meetings with stakeholders in major cities/towns in Namibia and Livingstone in Zambia are organised as indicated in Table 1.2. Most meetings were

arranged by NPC, WBCG, and feedbacks from the stakeholders were also incorporated in the master plan.

Table 1.2: Meetings with stakeholders

Date	Location	Major participants
Steering Committee		
10 March 2014	Windhoek	NPC, MWT, MOF, MTI, WBCG
18 March 2014	Windhoek	NPC, MWT, MOF, MTI, Namport, RA, TransNamib, Air Namibia, NAC, WBCG
24 June 2014	Windhoek	NPC, MWT, MOF, MTI, TransNamib, NAC, WBCG
20 November 2014	Windhoek	NPC, MWT, RA, Air Namibia, GIPF, D&M Rail, NGCL, WBCG
29 January 2015	Windhoek	NPC, MWT, MOF, MTI, MHAI, MRLGHRD, MET, Roads Authority, TransNamib, Air Namibia, NAC, WACG, D&M Rail, NGCL, WBCG
Stakeholder meeting/information session (Arranged by NPC and Walvis Bay Corridor Group)		
14 March 2014	Walvis Bay	NPC, MWT, Namport, Roads Authority, TransNamib, NAC, Erongo Regional Electricity Distribution Company, WBCG, Municipality of Walvis Bay, Municipality of Swakopmund, Walvis Bay Port Users Association, Container Liner Operators Forum, private companies
16 April 2014	Windhoek	NPC, MWT, MTI, Namport, Roads Authority, TransNamib, WBCG, Municipality of Windhoek, Namibia Logistics Association, Namibia Chamber of Commerce and Industry, private companies
22 April 2014	Lüderitz	NPC, MWT, Namport, WBCG, Lüderitz Town, NAC, NamPower, private companies
24 April 2014	Keetmanshoop	NPC, MWT, Namport, WBCG, Karas Region, Keetmanshoop Town, NAC, private companies
15 May 2014	Tsumeb	NPC, MWT, Namport, TransNamib, WBCG, Tsumeb Town, Grootfontein Town, Otijwarongo Town, private companies
27 August 2014	Oshakati	NPC, MTI, MOF, TransNamib, WBCG, Helao Nafidi Town, Ongwediva Town, Oshakati Town, private companies
08 September 2014	Livingstone	MWT, WBCG, MOF (Zambia), Zambia Chamber of Commerce and Industry, private companies, journalists
10 September 2014	Katima Mulilo	NPC, MWT, MOF, Roads Authority, WBCG, Zambezi Region, Katima Mulilo Town, private companies, NGO
Introduction of the Project to Japanese companies (arranged by JICA South Africa Office)		
22 May 2014	Johannesburg	Japanese companies in Johannesburg and Pretoria
Namibia Logistics Hub Symposium (arranged by NPC)		
19–20 September 2014	Swakopmund	NPC, MWT, MTI, MOF, MHAI, Namport, Roads Authority, TransNamib, NAC, Air Namibia, WBCG, Municipality of Walvis Bay, Municipality of Swakopmund, Erongo Region, Walvis Bay Port Users Association, Container Liner Operators Forum, logistics companies
Namibia Logistics Hub Master Plan Workshop (arranged by NPC)		
20–21 February 2015	Swakopmund, Walvis Bay	NPC, MWT, MTI, MOF, MHAI, MRLGHRD, Namport, Roads Authority, TransNamib, NAC, Air Namibia, WBCG, Local Authorities, Walvis Bay Port Users Association, Container Liner Operators Forum, logistics companies
Consultation workshop for SEA		
09 October 2014	Windhoek	Namwater, MTI
14 October 2014	Walvis Bay	Municipality of Walvis Bay, MTI, Namibia Chamber of Commerce and Industry, Namibian Coast Conservation and Management Project
16 October 2014	Lüderitz	Ministry of Fisheries and Marine Resources, Namport, Lüderitz Town, NGO
28 October 2014	Oshikango	NPC
30 October 2014	Katima Mulilo	NPC, Katima Mulilo Town, Namibia Chamber of Commerce and Industry, private companies
26 January 2015	Windhoek	NPC, MRLGHRD, WBCG, NGCL, NGO, private
27 January 2015	Walvis Bay	Municipality of Walvis Bay, WBCG, NACOMA, private

Source: JICA Study Team

1.3 Structure of the report

This Final Report is a compilation of the master plan, project and programme profiles and proposed implementation structure of the master plan which are the outcomes of “The Project on Master Plan For Development of An International Logistics Hub for SADC Countries in The Republic of Namibia”. The Final Report consists of “Summary”, “Main Text” and “Appendix”. This volume is the Summary of the Final Report.

2. Framework of the Master Plan

2.1 Vision

The Development Vision of the present International Logistics Hub Master Plan (referred to as “Logistics Master Plan”) is set as the following statement with reference to NDP4 and Vision 2030.

<p>Vision: To transform Namibia as a whole nation into an international logistics hub for SADC region by 2025.</p>

2.2 Definition of an “International Logistics Hub”

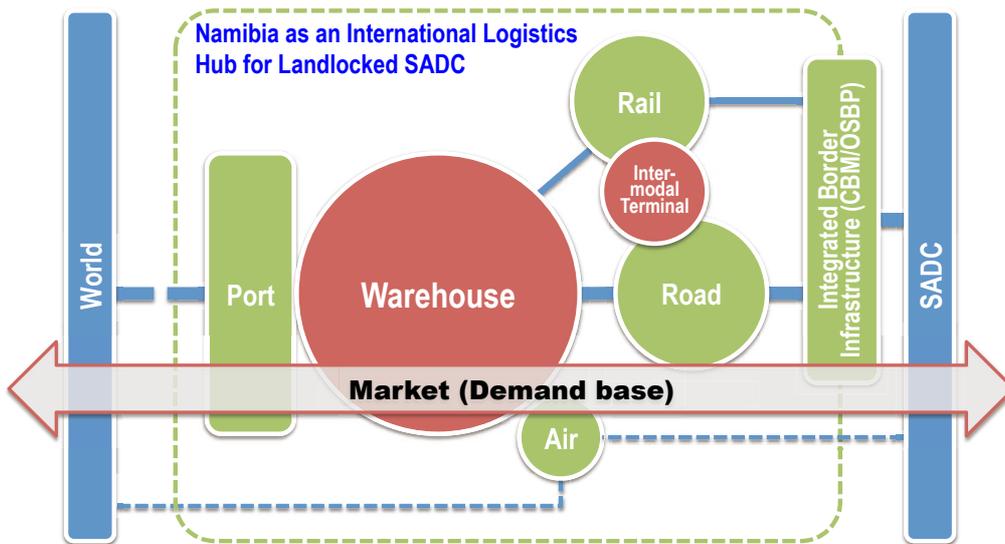
An international logistics hub is a place where **a complete package** of international logistics services is readily available in order to serve **market demand** for international logistics.

Integrated services consist of major functions required for international trade, including the following **5 elements**.

- Efficient port,
- Storage (operation base for logistics industry),
- Efficient transport network,
- Collection and distribution of goods (international logistics companies), and
- Cross-border arrangements.

A nation as a whole can be referred to as an international logistics hub, and thus in such a case a respective nation **IS** a “Logistics Nation”. If a package is **NOT** complete, this is **NOT** a logistics hub. An “International Logistics Hub” with a complete package with 5 essential components is shown as Figure 2.1.

These 5 elements of functions alone do not guarantee success of an international logistics hub. It is obvious that presence of substantial volume of market demand is a necessary condition for any hub to succeed. “No demand, no hub”. In this regard, development of a “hub” must include effective market development as well.

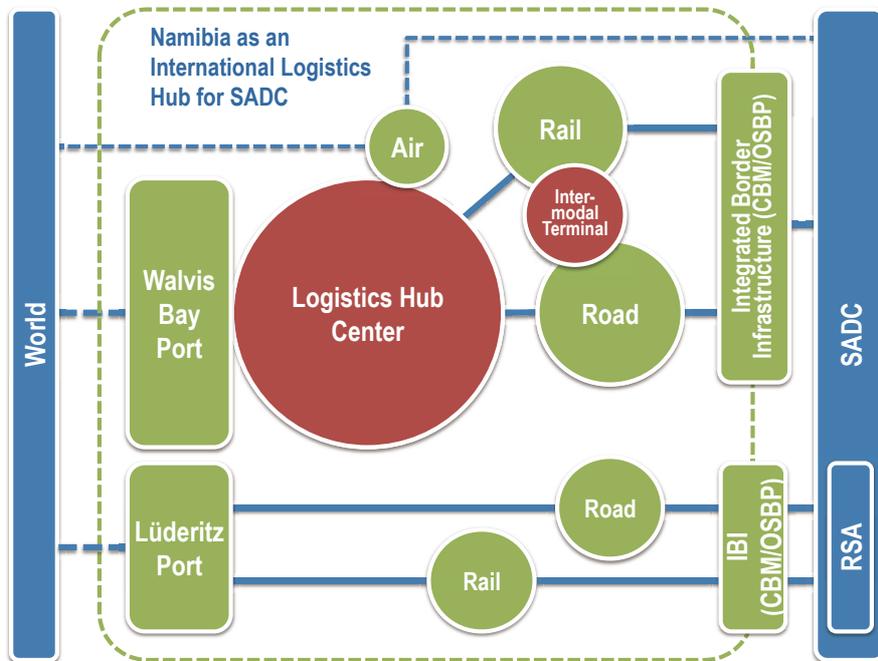


Source: Conceptual drawing used as working hypothesis by the Study Team

Figure 2.1: Market plus Five essential components of an “International Logistics Hub”

2.3 Conceptual Framework of “Namibia as an International Logistics Hub”

Given the above definitions along with the analysis of the Study, a conceptual framework of “Namibia as an International Logistics Hub” can be illustrated as in Figure 2.2.



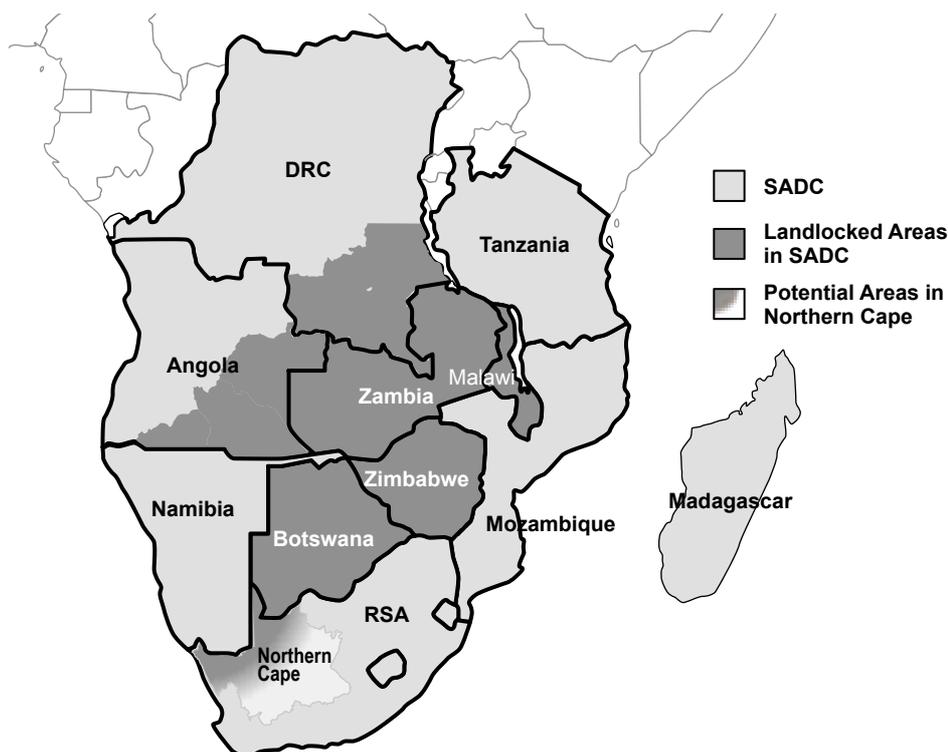
Source: Conceptual diagram used as working hypothesis by the Study Team

Figure 2.2: A conceptual framework of “Namibia as an International Logistics Hub”

As can be seen clearly from the figure, a “Logistics Hub Centre (logistics park)” alone cannot work as a “Hub”. It is indispensable to have all the other vital elements including all modes of transport, cross-border facilities and procedures to work in a closely integrated manner as one complete package of a “Logistics Hub”. If one element fails, a “Hub” system as a whole will suffer from substantial loss of efficiency.

There are two presumed target markets for international logistics. One is “Landlocked Areas in SADC” where Walvis Bay Port and the Walvis Bay–Ndola–Lubumbashi Development Corridor (WNLDC) will be the primary route. Here, “Landlocked Areas in SADC” refers to the areas of all landlocked countries in SADC and some inland regions of Angola and DRC as shown in Figure 2.3.

The other target is “Northern Cape, Republic of South Africa” where Lüderitz Port and the Trans Orange Corridor will be the primary route.



Source: Definition by JICA Study Team

Figure 2.3: Landlocked Areas in SADC

In this Master Plan Study, this conceptual framework is used as a platform to facilitate a common understanding of future images to pursue among stakeholders.

2.4 Strategies: How to transform Namibia into an “International Logistics Hub”

The Master Plan is developed based upon the following seven over-all strategies in order to transform Namibia into an “International Logistics Hub”.

- Strategy 1:** **Namibia as a newcomer should be “impressive at a glance”;** must present very strong and clearly visible selling points that everyone can understand at a glance in comparison with the other well established gateways.
- Strategy 2:** **Namibia as a country with a limited demand base in its own hinterland must install “pull-factors” strategically and decisively.** A typical way to do so is to set cost of utilizing land strategically low for the logistics industry.
- Strategy 3:** **“Anchor tenants approach” is the best and fastest way to get the volume,** which is to attract global players in the international logistics business to establish their large-scale operational bases in Namibia to use its ports as gateways. A strategic centrepiece to attract “anchor tenants” must be Logistics Hub Centre.
- Strategy 4:** **Remove critical bottlenecks on the key corridors** by expanding throughput capacity to enhance “speed and reliability.”
- Strategy 5:** **Get up to international standard as quickly as possible - “Launch window is limited.”** Namibia should not hesitate to utilize foreign skills and financial sources.
- Strategy 6:** **Re-introduce beneficiaries pay principles** - to stop cross-subsidisation in investment and operation of logistics related infrastructure in order to secure long-term sustainability.
- Strategy 7:** **Install a legal framework to give foundations for key stakeholders to implement the Master Plan.** A single legal instrument cannot establish the entire framework. Rather, a legal framework for implementation of the Master Plan should be as a cluster of relevant laws and regulations under a “Basic Law on Promotion of International Logistics” as an umbrella law and portal of cross-reference.

2.5 Development Scenario to Become “An International Logistics Hub”

An overall development scenario is assumed with different phases as shown in Figure 2.4.

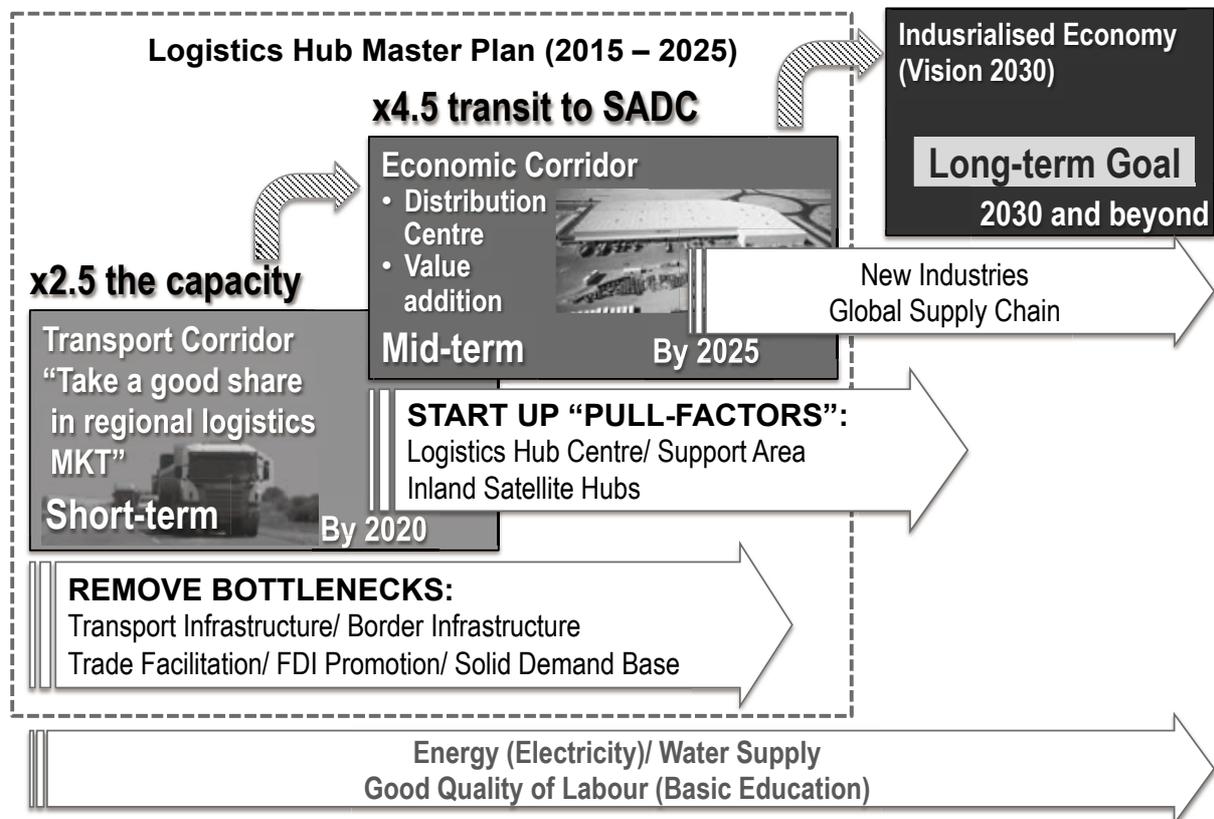


Figure 2.4: Expected Changes in Economic Structure by a “Logistics First Strategy” and a Flow of Development Scenario of “An International Logistics Hub”

In the first phase, namely the “Short-term: Transport Corridor” phase, the focus is on removing bottlenecks and preparing for attracting a sizable share in the regional portion of the international transportation market, as well as the expansion and upgrading of infrastructure that is needed to accommodate larger quantity of flow of goods. The capacity shall be expanded to 2.5 times as large by 2020. Given that this results in a large volume of goods going through Namibia, the country will be ready to go on to the next stage.

In the second phase, namely the “Medium-term: Economic Corridor” phase, the focus will be on evolving Namibia as one of the regional distribution centres from being a “Transport Corridor” by developing the functions of becoming a supply and distribution depot for the region. Making Namibia a nation of “International Logistics and Distribution Centre” is one prospective path to lead the country to achieve the long-term target of Vision 2030, becoming an industrialized country by 2030. After Chapter 3, the contents of the Master Plan are summarized including priority actions to achieve these two phases.

2.6 Targets

The Master Plan sets the targets in 2025 with given projected potential demand and supply capacity as summarized in Table 2.1. Table 2.2 and Figure 2.5 indicates future cargo volume by kind of transport groups.

Table 2.1: Master plan targets

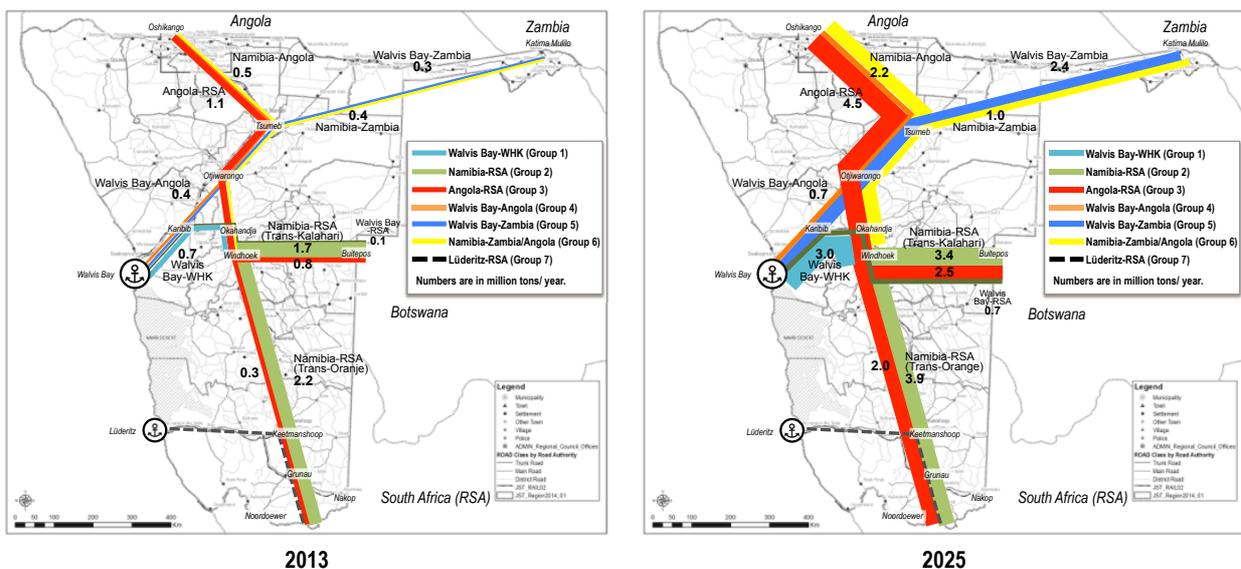
Target items		2013	2020	Target 2025	Growth rate 2013-25				
Pre-conditions	Potential demand	Total transit cargo volume to landlocked SADC via major Gateway Ports (million tons/year)				6.8	11.4	18.0	8.5%
	Supply capacity	Port Capacity in TEU (million TEUs/year)				0.35	0.75	0.85	-
Targets	Transit cargo	Transit cargo volume using Walvis Bay (million tons/year)				0.8	1.3	3.6	13.2%
		Share of transit cargo via Namibia in total transit cargo volume to landlocked SADC.				12%	11%	20%	-
		Transit cargo volume using Walvis Bay in TEU (million TEUs/year)				0.07	0.11	0.30	11.5%
		Transit cargo volume using Walvis Bay as % of Port Capacity				23%	15%	35%	-
Impacts	Economic contribution of logistics.	GDP of logistics (NAD billion at 2013 price)				3.1	-	10.0	12.3%
		%Contribution to GDP				2.5%	-	4.6%	-
		Employment of logistics (000 persons)				25.7	-	57.6	8.4%
		% Contribution to employment				3.7%	-	5.7%	-

Source: JICA Study Team

Table 2.2: Future cargo volume by kind of transport groups

Transport groups	2013	2025	Growth rate 2013-25
Group 1: Walvis Bay - Windhoek	0.7	3.0	12.8%
Group 2: Namibia - RSA	3.9	7.3	5.4%
Group 3: RSA - Angola	1.1	4.4	12.1%
Group 4: Walvis Bay - Angola	0.4	0.7	6.4%
Group 5: Walvis Bay - Zambia	0.3	2.4	18.1%
Group 6: Windhoek - Zambia/Angola	0.9	3.2	11.1%
Others (Walvis Bay - RSA)	0.1	0.5	10.6%
Total	7.4	21.5	9.3%

Source: JICA Study Team



Source: JICA Study Team

Figure 2.5: Cargo flow in 2013 and 2025

Modal shares between the railway and the road in 2025 are assumed to be more railway-oriented than in 2013 as shown in Table 2.3. Future rail cargo demand in this railway-oriented case for 2025 is assumed to be 6.0 million tons based on average growth rate in 2018 – 2020 projected by TransNamib. In this case, the rail cargo transport share will increase from 12% in 2013 to 15% in 2025. By this shift of cargo volume to rail, traffic condition on the roads will improve, especially on those sections between Swakopmund and Okahandja.

Table 2.3: Future total cargo volume by mode (Rail oriented case)

Unit: million ton per year

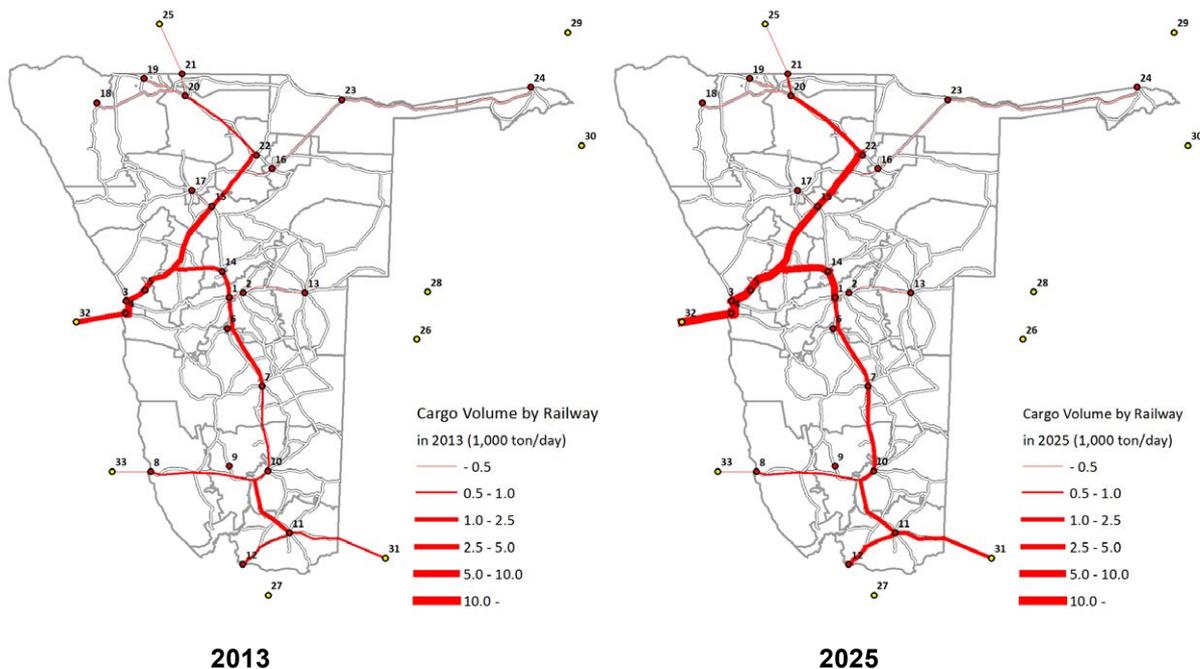
Transport modes	2013		Target in 2025		Growth rate 2013-25
Railway	2.7	(12%)	6.0	(15%)	4.9%
Road	19.6	(88%)	34.5	(85%)	6.9%
Total	22.2	(100%)	40.5	(100%)	5.1%

Source: JICA Study Team

Table 2.4: Shares in cargo volume by rail in major sections

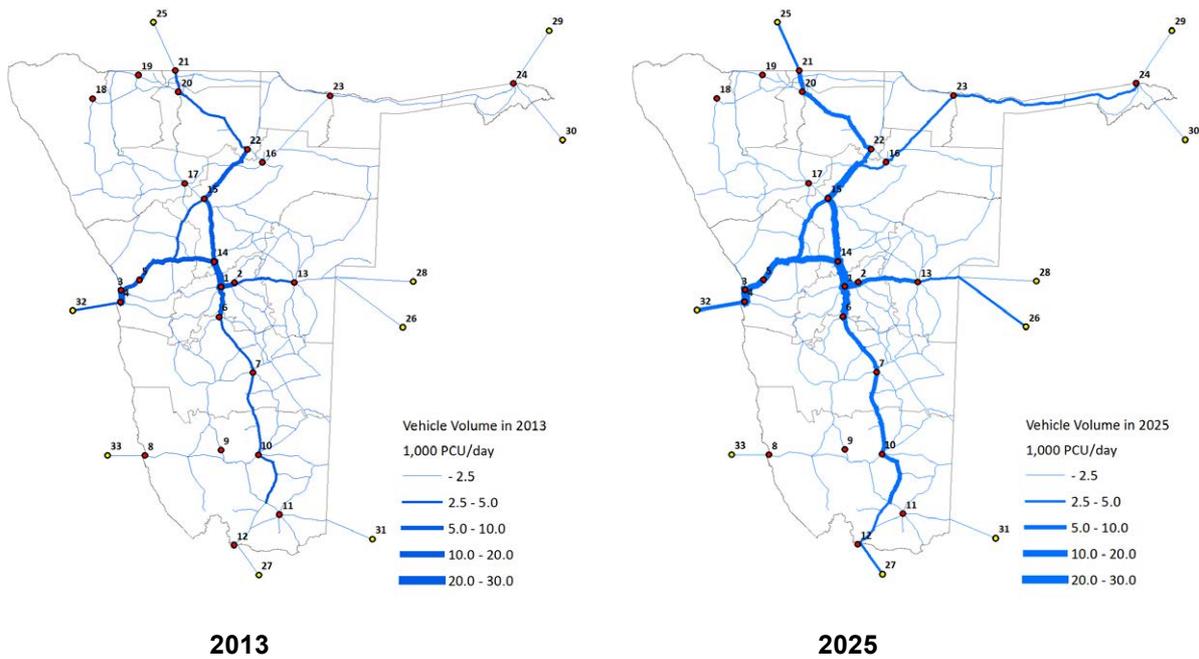
Major sections		2013	Target in 2025
Swakopmund	Walvis Bay	18%	23%
Kranzberg	Swakopmund	18%	23%
Okahandja	Kranzberg	17%	20%
Kranzberg	Otavi	20%	28%

Source: JICA Study Team



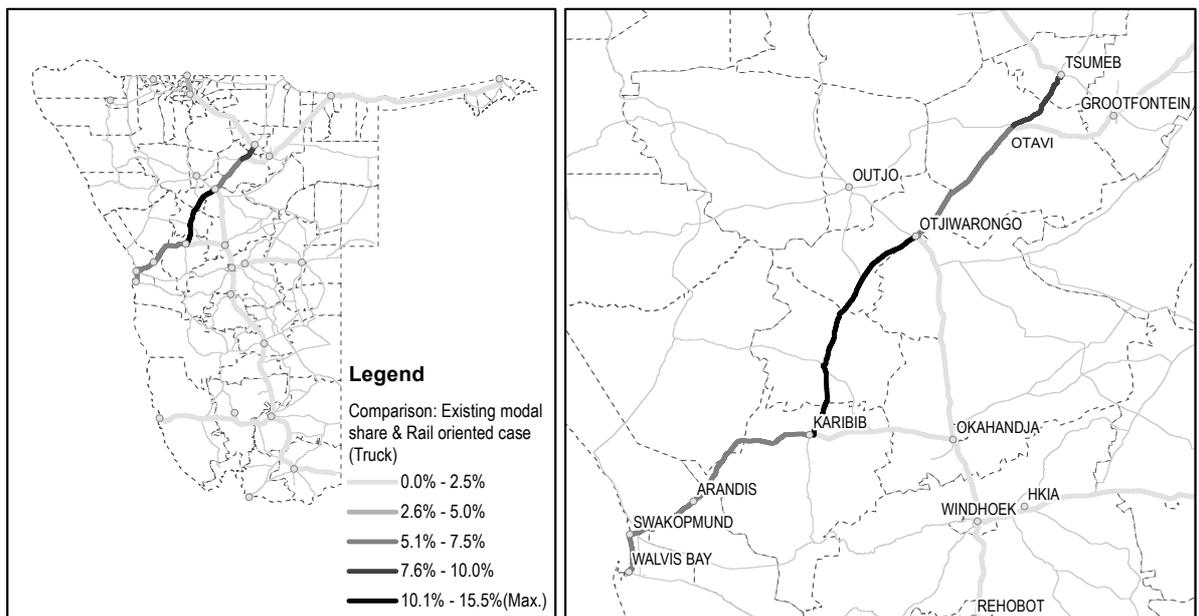
Note: The figures include road transport to access railway station.
Source: JICA Study Team

Figure 2.6: Rail cargo transport (Rail oriented case)



Source: JICA Study Team

Figure 2.7: Road traffic volume (Rail oriented case)



Note: Trucks includes 2 axle truck, 3 axle truck and multi axle truck in this analysis.

Source: JICA Study Team

Figure 2.8: Decrease ratio of truck traffic from existing modal share case to rail oriented case in 2025

3. Diagnosis and Strategies

3.1 Key elements, diagnosis, strategies and actions

The overall structure of the Master Plan is as summarized in Table 3.1.

Table 3.1: Overall structure of the master plan

Key Elements	Diagnoses	Strategies	Actions
<ul style="list-style-type: none"> (1) Market (demand base) (2) Strong and attractive operation base for international logistics. (3) Efficient Transport Network (including town infrastructure). (4) Integrated Border Infrastructure. (5) Cross-cutting elements (Finance, Human Resources, Power Supply, Water Supply, ICT). (6) Environmental and Social Considerations. 	<ul style="list-style-type: none"> (1) Volume is too small. (2) Cost (price) is higher than the other gateways. (3) Transport network fails to reach international standard. Volume matters. (4) Towns are not ready to accommodate increased volume. (5) Shortage in throughput capacity of border posts and need for Integrated Border Infrastructure. (6) Lack of integrated ICT System to support logistics services. (7) Immediate shortage of human resources. (8) Financial mechanisms for developing/ maintaining transport infrastructure are not sustainable. (9) Stable electric power supply. (10) Negative impacts of logistics development on environment and society are found to be manageable. Pay attention to mitigate negative impacts, and promote synergy effects with other sectors. 	<ul style="list-style-type: none"> (1) Namibia as a newcomer should be “impressive at a glance” (2) Namibia must install “pull-factors” strategically and decisively. (3) “Anchor tenants approach” is the best and fastest way to get the volume. Logistics Hub Centre must be a strategic centrepiece. (4) Remove critical bottlenecks on the key corridors by expanding throughput capacity to enhance “speed and reliability.” (5) Get up to international standard as quickly as possible. (6) Re-introduce beneficiaries pay principles - to stop cross-subsidisation in investment and operation of logistics related infrastructure in order to secure long-term sustainability. (7) Install a legal framework to give foundations for key stakeholders to implement the Master Plan. 	<ul style="list-style-type: none"> Develop all key elements. See table below for detail.

Source: JICA Study Team

The “Key Elements” shown on the first column in Table 3.1 are the elements required for Namibia to develop for the purpose of transforming the nation as a whole to an “International Logistics Hub” as presented in Chapter 2. The items in the second column are the “Diagnoses” of gaps between the present conditions and required states as an “International Logistics Hub”. The third column summarizes proposed “Strategies” (overall level) to fill these gaps (see Chapter 2 for detail

descriptions).

There are specific “Symptoms” behind overall diagnoses as summarized in Table 3.2. Given those symptoms, respective “Development requirements” are identified and “Actions” to fulfil these requirements are proposed as summarized in Table 3.2. The on-going projects already in progress are not included in the list (such as “New Container Terminal Development in Walvis Bay”).

Table 3.2: Summary of diagnoses, development requirements, and respective proposed actions

Key elements of an International Logistics Hub	Diagnoses	(Symptoms)	Development requirements	Actions
Market (demand base)	Volume is too small.	<ul style="list-style-type: none"> Lack of business cases to sell. 	<ul style="list-style-type: none"> Market promotion for transit cargo. Market promotion for transshipment cargo. 	<ul style="list-style-type: none"> Market research and promotion activities. Regular benchmarking of state of Logistics in Namibia. Proactive and strategic business plan to involve global players (shipping companies) in port operation.
Strong and Attractive Operation Base for International Logistics	Cost (price) is higher in Namibia than the other gateways.	<ul style="list-style-type: none"> Limited number of logistics companies for transit cargo market. Lack of logistics facility for serving Landlocked SADC. Non-tariff barriers (NTB) to foreign companies (e.g. VISA). Risks of soaring land prices due to land speculation. 	<ul style="list-style-type: none"> Attract Namibian and foreign companies to enter transit cargo market. Human resource development on logistics businesses. Elimination of NTB. Stop land speculation. 	<ul style="list-style-type: none"> Development of business plan and incentive mechanisms for Logistics Hub Centre Reforms of laws and regulations for development of Logistics Hub Centre. Preparations of Logistics Hub Centre development project (including road, drainage, water supply, sewerage, electricity). Marketing LHC. Preparation and development of inland satellite hubs.
Efficient Transport Network	Transport network fails to reach international standard.	Road: <ul style="list-style-type: none"> Low design standard in some trunk roads (narrow road width and low axle load). Unsustainable distribution of user charge funds. 	<ul style="list-style-type: none"> Upgrading key sections of trunk roads. Rationalise fund allocation. 	<ul style="list-style-type: none"> Upgrading trunk road section of Swakopmund–Karibib. Upgrading trunk road section of Karibib–Otjiwarongo. Re-introduce beneficiaries pay principle. Maintenance of trunk roads along the corridors.

Key elements of an International Logistics Hub	Diagnoses	(Symptoms)	Development requirements	Actions
Efficient Transport Network (continued)	Transport network fails to reach international standard.	<p>Railway:</p> <ul style="list-style-type: none"> ▪ Unreliable operation. ▪ Aging of locomotives and lack of loading machines and facilities ▪ Low reliability in some sections of tracks between Walvis Bay–Kranzberg and Kranzberg –Windhoek. ▪ Incapable of meeting increasing potential demand on bulk cargo in Namibia 	<ul style="list-style-type: none"> ▪ Implementation of 5 year strategy plan ▪ Comprehensive rehabilitation/ upgrade of 3 major lines to improve reliability and speed. ▪ Development of new cargo trains to meet increase in bulk/ container cargo demand. ▪ Investment in locomotives and loading facilities (umbrella agreement, outsourcing,) 	<ul style="list-style-type: none"> ▪ Upgrading for the section of Walvis Bay–Kranzberg. ▪ Upgrading for the section of Kranzberg–Windhoek. ▪ Purchase, repair and maintenance of rolling stock and facility. ▪ Operation of block cargo trains. ▪ Comply with SADC standard. ▪ Preparation and development of “Grootfontein–Katima Mulilo” rail link. <hr/> <p><i>Depends on coalmines in Botswana.</i></p> <ul style="list-style-type: none"> ▪ <i>Preparation and development of “Trans-Kalahari Railway (TKR)”.</i>
		<p>Maritime:</p> <ul style="list-style-type: none"> ▪ High dependency on volatile demand for transshipment. ▪ Need more routes and frequency. ▪ Good in terms of “African Standard”. ▪ Port capacity will not be enough around 2020. 	<ul style="list-style-type: none"> ▪ Secure transshipment demand-base ▪ Market promotion for transshipment cargo ▪ Improvement of handling capacity and throughput efficiency to go beyond African standard. 	<ul style="list-style-type: none"> ▪ Examine 5 different alternatives in expanding container handling capacity of the port. ▪ Re-arrangement of port facility and operation hours to stretch port capacity to max. ▪ Human resources development. ▪ Integrated operation with border management. ▪ Integrated operation with “Hub Centre” and truck stops. ▪ North Port Phase 2 (Multi purpose bulk terminal) <hr/> <p><i>Depends on TKR.</i></p> <ul style="list-style-type: none"> ▪ <i>North Port Phase 3 (Botswana coal terminal)</i>

Key elements of an International Logistics Hub	Diagnoses	(Symptoms)	Development requirements	Actions
Efficient Transport Network (continued)		Aviation: <ul style="list-style-type: none"> ▪ Momentum of an Intra-Africa Open Sky Policy. ▪ Overall service level is not sufficient. ▪ Burdens of unprofitable operations. 	<ul style="list-style-type: none"> ▪ Realization of Intra-Africa Open Sky with neighbouring countries. ▪ Improvement of service level. ▪ Separation between profitable operations and non-profitable operations. ▪ Explore new air cargo market opportunities. 	<ul style="list-style-type: none"> ▪ Promotion of negotiations on open sky with neighbouring countries. ▪ Market research on air cargo demand at HKIAK Airport. ▪ Market research on air cargo demand at Walvis Bay Airport. ▪ Closer coordination between NAC and airlines. ▪ Human resources development and better customer service information system.
	Towns are not ready to accommodate increased traffic volume.	Town planning: <ul style="list-style-type: none"> ▪ Congestions of trucks at town areas along the corridors. ▪ Risks of soaring land price due to land speculation. 	<ul style="list-style-type: none"> ▪ Construction of bypass roads at towns ▪ Development of truck stops. ▪ Stop land speculation. 	<ul style="list-style-type: none"> ▪ Land use planning program. ▪ Development of bypasses and truck stops.
Integrated Border Infrastructure	Shortage of throughput capacity of the border posts and need of border infrastructure.	<ul style="list-style-type: none"> ▪ Congestion at border facilities and the surrounding areas. ▪ Time consuming to obtain the necessary permits for cargo transport from multiple government agencies. ▪ Lack of “last one mile” of ICT network. 	<ul style="list-style-type: none"> ▪ Preparation of land use plans and regulation. ▪ Relocation and expansion of border facilities. ▪ Bypass road. ▪ Facilitation of ICT (linking Asycuda with Navis, introduction of Risk Management System). ▪ Integration of different systems for cross-border procedures (Single Window). 	<ul style="list-style-type: none"> ▪ Preparation and development of border town development packages (land use plan, bypass, truck stop, and Integrated Border Infrastructure project). ▪ Integration of ICT system for border management (linking Asycuda with Navis, introduction of Risk Management System, and “Single Window”). ▪ Install “Corridor Net” to provide information services to transporters. ▪ Preparation and Implementation of OSBP.

Key elements of an International Logistics Hub	Diagnoses	(Symptoms)	Development requirements	Actions
Development of Lüderitz	Under utilized port capacity.	<ul style="list-style-type: none"> Isolated from economic activities in Namibia. Limited public funds for investment. 	<ul style="list-style-type: none"> Explore closer economic linkage with Northern Cape (RSA). 	<p><i>Depends on assessment of demand for manganese export.</i></p> <ul style="list-style-type: none"> <i>Development of Lüderitz Port with PPP scheme for exporting manganese and fruits.</i> <i>Improvement of rail link from Aus to Ariamsvlei.</i>
Cross-cutting issues	Financial mechanisms to develop/maintain transport infrastructures are not sustainable.	<ul style="list-style-type: none"> Mismatch between demand for infrastructure and provision of funds for investment and maintenance. Relatively small public debts in proportion to GDP. 	<ul style="list-style-type: none"> Re-introduction of Economic criteria of investment (beneficiary pay principle) Development of new financial schemes (e.g. use of GIPF) Explore more use of private investments for public infrastructure. Explore potentials for getting additional soft loans. 	<ul style="list-style-type: none"> Rationalize investment (Refocus on economically viable projects). Rationalize user charge in accordance with "mileage". Fund allocation in accordance with traffic volumes. Use of soft loans for immediate needs of large investments. Promotion of Public Private Partnership (Success case approach)
	Shortage of human resources.	<ul style="list-style-type: none"> Immediate shortage of skilled labour. Long-term shortage to supply broad-based work force to the logistics sector. 	<ul style="list-style-type: none"> Do not hesitate to use foreign skilled labour, especially to fill immediate gaps. Need to build up long-term supply base of human resource to the logistics sector. 	<ul style="list-style-type: none"> More flexible work permits/ visas for strategically important areas. Expand college level training capacity in Namibia. Conditional scholarships to send college level students in foreign universities. Vocational training programmes.
	Shortage of power generation capacity within Namibia.	<ul style="list-style-type: none"> Increasing import of electricity. 	<ul style="list-style-type: none"> Secure energy sources to meet increasing demand. 	<ul style="list-style-type: none"> Explore new energy sources.
	Stable water supply	<ul style="list-style-type: none"> Enough supply at present. Risks of shortage in urban centres in the coastal areas in the future. 	<ul style="list-style-type: none"> Secure water sources to meet increasing demand. 	<ul style="list-style-type: none"> Explore new water sources.

Key elements of an International Logistics Hub	Diagnoses	(Symptoms)	Development requirements	Actions
Environmental and Social Considerations.	Negative impacts of logistics development on environment and society are found to be manageable. Pay attention to mitigate negative impacts, and promote synergy effects with other sectors.	<ul style="list-style-type: none"> ▪ Higher risks of traffic accidents, noise, and other negative impacts. ▪ Potential risks to impede movements of wild animals. ▪ Higher risks of spreading communicable diseases. ▪ Potential benefits to encourage tourism. 	<ul style="list-style-type: none"> ▪ Reduce traffic accidents. ▪ Reduce noise and pollutions. ▪ Conserve wild animals ▪ Prevent the spread of diseases (HIV, Ebola, etc.) ▪ Promote synergy effect with tourism. 	<ul style="list-style-type: none"> ▪ Upgrade roads for more safety. ▪ Design transport infrastructure to minimize negative effects. ▪ Better and effective border control with integrated border infrastructure to prevent the spread of diseases. ▪ Better roads promote tourism. ▪ Utilise truck stops for tourism services as well. ▪ Conduct EIA for all required development projects ▪ Monitor implementation of the master plan (Strategic Environmental Management)

Source: JICA Study Team

4. Actions

4.1 “Roadmap”: Comprehensive timeframe of proposed actions 2015-2025

All actions listed in Table 3.2 are given respective implementation timeframes of “Short-term (by 2020)”, “Medium-term (by 2025)”, or “Long-term” as summarized in Table 4.1. Key organizations for implementation of those actions are also identified.

Table 4.1: “Roadmap”– Comprehensive timeframe of proposed actions 2015-2025

Timeframe Key elements	Short-term Actions (by 2020)	Medium-term Actions (by 2025)	Long-term Actions	Key Organizations
(1) Market (demand base)	Marketing promotion program <ul style="list-style-type: none"> Establishment of a National Coordinating Body 	<i>(The body is effectively functioning)</i>	<i>(The body is effectively functioning)</i>	NPC/MTI/ MOF/MWT/ WBCG/NGCL
	<ul style="list-style-type: none"> Market research and promotion activities Development of marketing promotion technique Regular benchmarking of state of Logistics in Namibia 	<i>(Continuation of the actions)</i>	<i>(Continuation of the actions)</i>	NPC/MTI/ MOF/MWT/ Namport/ WBCG
(2) Strong and Attractive Operation Base for International Logistics	Development of “Logistics Hub Centre” (LHC) in Walvis Bay. <ul style="list-style-type: none"> Development of a business plan and incentive mechanisms for LHC Reforms of laws and regulations for development of LHC Establishment of operation body for LHC Preparations of infrastructure development project for LHC (including road, drainage, water supply, sewerage, electricity) 	<ul style="list-style-type: none"> Marketing LHC to logistics companies (more than 80% of lots to be contracted by 2025) Preparation and commencement of development of satellite hubs in inland areas 	<ul style="list-style-type: none"> Completion of development of satellite hubs in inland areas in accordance with prospects of the demand 	NPC/MTI/MOF/ MWT/Namport/ WB Municipality/ WBCG
(3) Efficient Transport Network 1 (by Mode)	Road <ul style="list-style-type: none"> Commencement of upgrade of trunk road section of Swakopmund – Karibib. Commencement of upgrade of trunk road section of Karibib - Otjiwarongo. Re-introduce beneficiaries pay principle 	<ul style="list-style-type: none"> Completion of upgrade projects for trunk road sections Maintenance of trunk roads along the corridors. 	<ul style="list-style-type: none"> Maintenance of trunk roads along the corridors 	MWT/Roads Authority (RA)/ Road Fund Administration (RFA)

Timeframe Key elements	Short-term Actions (by 2020)	Medium-term Actions (by 2025)	Long-term Actions	Key Organizations
	Railway <ul style="list-style-type: none"> ▪ Upgrading for the section of Walvis Bay – Kranzberg ▪ Upgrading for the section of Kranzberg – Windhoek ▪ Purchase, repair and maintenance of rolling stock and facility 	<ul style="list-style-type: none"> ▪ Operation of block cargo trains by commodities ▪ Maintenance and upgrade of rail tracks along the corridors to comply with SADC axle load standard <hr style="border: 0.5px dashed black;"/> <p><i>(Depends on coalmines in Botswana)</i></p> <ul style="list-style-type: none"> ▪ Preparation and development of “Trans-Kalahari Railway (TKR)” 	<ul style="list-style-type: none"> ▪ Preparation and development of “Grootfontein – Katima Mulilo” rail link. 	MWT/ TransNamib
	Maritime <ul style="list-style-type: none"> ▪ Examine 5 different alternatives in expanding container handling capacity at Walvis Bay Port ▪ Re-arrangement of port facility and operation hours to stretch port capacity to max ▪ Human resources development in accordance with increase of cargo handling capacity 	<ul style="list-style-type: none"> ▪ Integrated operation with border management ▪ Integrated operation with the LCH and truck stops ▪ Preparation and development of North Port Phase 2 (Multi purpose bulk terminal) <hr style="border: 0.5px dashed black;"/> <p><i>(Depends on coalmines in Botswana and TKR)</i></p> <ul style="list-style-type: none"> ▪ Preparation and development of North Port Phase 3 (Botswana coalterminal). 	<p><i>(Preparation for further development in accordance with prospects of demand)</i></p>	MWT/Namport
	Aviation <ul style="list-style-type: none"> ▪ Promotion of negotiations on open sky with neighbouring countries ▪ Market research on air cargo demand at HKIA Airport ▪ Market research on air cargo demand at Walvis Bay Airport ▪ Human resources development and better customer service information system 	<ul style="list-style-type: none"> ▪ F/S and implementation of air cargo projects (in accordance with the results of market research) 	<p><i>(Preparation for further development in accordance with prospects of demand)</i></p>	MWT/NAC/Air Namibia

Timeframe Key elements	Short-term Actions (by 2020)	Medium-term Actions (by 2025)	Long-term Actions	Key Organizations
(4) Efficient Transport Network 2 (by Towns)	Towns along the Corridors <ul style="list-style-type: none"> Land use-planning program in 7 towns Commencement of development of bypasses and truck stops in 7 towns Commencement of development of truck stops in other towns where viable 	<ul style="list-style-type: none"> Completion of bypasses and truck stops in 7 towns Completion of truck stops at other towns where viable 	<i>(Preparation for further development in accordance with prospects of demand)</i>	NPC/MWT/RA/MRLGHRD/7 Towns (Usakos, Karibib, Omaruru, Otjiwarongo, Ondangwa, Grootfontein, Rundu)
(5) Integrated Border Infrastructure	Border Towns and Border Points <ul style="list-style-type: none"> Preparation and commencement of border town development packages (land use plan, bypass, truck stop, and integrated border infrastructure project) Integration of ICT system relating border management (linkage between Asycuda and Navis, Single Window and Risk management System) Install "Corridor Net" to provide information services to transporters. Implementation of OSBP at Mamuno border post Preparation of OSBP at Wenela border post 	<ul style="list-style-type: none"> Completion of construction of border town development package Preparation for development of satellite hubs in border towns Implementation of OSBP at Wenela border post 	<i>(Preparation for further development in accordance with demand)</i>	NPC/MOF/MTI MHAI/MOHSS/MAWF/MRLGHRD/WBCG/2 towns (Katima Mulilo, Helao Nafidi - Oshikango)
(6) Development of Lüderitz	<i>Depends on assessment of demand for manganese export.</i> <ul style="list-style-type: none"> Preparation of port development with PPP F/S and EIA on port development (alternatives) Preparation and improvement of rail link from Aus to Ariamsvlei 	<i>(Depends on outcomes of various assessments related to manganese export)</i>	<i>(Depends on outcomes of assessments)</i>	MWT/Namport
(7) Cross-cutting issues	Finance <ul style="list-style-type: none"> Rationalize investment (Refocus on economically viable projects) Rationalize user charge in accordance with "mileage" Fund allocation in accordance with traffic volumes Use of soft loans for immediate needs of large investments Promotion of Public Private Partnership (success case approach) 	<i>(Continuation of the actions)</i>	<i>(Continuation of the actions)</i>	NPC/MOF/MWT/RFA/GIPF

Timeframe Key elements	Short-term Actions (by 2020)	Medium-term Actions (by 2025)	Long-term Actions	Key Organizations
	Human Resources <ul style="list-style-type: none"> More flexible work permits/ visas for strategically important areas 	<i>(Flexible regulations are in place)</i>	<i>(Flexible regulations are in place)</i>	MHAI
	<ul style="list-style-type: none"> Expand college level training capacity in Namibia Conditional scholarships to send college level students in foreign universities (e.g. Stellenbosch Univ.) Needs survey for vocational training programmes 	<i>(Continuation of the actions)</i>	<i>(Continuation of the actions)</i>	SOEs/WBCG/ Polytechnic/ NTA
(8) Environmental and Social Considerations	<ul style="list-style-type: none"> Upgrade roads for more safety Design transport infrastructure to minimize negative effects Better and effective border control with integrated border infrastructure to prevent social disruption (e.g. STDs, drugs, trafficking, crime) Utilise better roads to promote tourism Utilise truck stops for tourism services as well Conduct EIA for all required development projects Monitor implementation of the master plan (Strategic Environmental Management) 	<i>(Continuation of the actions)</i>	<i>(Continuation of the actions)</i>	Respective organizations of implementation of projects

Source: JICA Study Team

4.2 Critical Programmes and Projects for immediate implementation

Among the actions listed above as a comprehensive list, most “Critical Programmes/ Projects” are identified as summarized in Table 4.2. Criteria to identify critical actions are the following 3 points. These criteria are not representing “importance” of actions but rather “sequence” of actions

- Timeframe criteria: Short-term actions to be completed by 2020.
- Upstream criteria: Actions to be done at the early stage in order to fulfil development requirements as necessary conditions of the other critical actions to follow.
- Collective actions criteria: Actions required to build-up clear policy directions and consensus for implementation.

Table 4.2: Summary of Critical Programmes and Projects by 2020

Key Elements	Programme/Project Title	Organisation	Schedule	N\$ million	#
(1) Strategic Marketing	Market Promotion Programme (1) Establishment of a National Coordinating Body. (2) Market research and promotion program (3) Development of marketing promotion technique (4) Regular benchmarking of “State of Logistics” in Namibia	NPC/MTI/MOF/MWT/Namport/WBCG/NGCL	2015-2020	42.60	1
(2) Strong and Attractive Operation Base for International Logistics	Logistics Hub Centre Development Programme 1 (soft component) (5) Establishment of an operation and management body (6) Development of a business plan and incentive mechanisms for LHC (7) Reforms of laws and regulations for development of LHC	NPC/MTI/MWT/Namport/WB Municipality/WBCG	2015-2020	32.70	2
	Logistics Hub Centre Development Programme 2 (hard component) (8) Preparation of infrastructure development	MWT/MTI (NDC)	2015-2016 (FS) 2017-18 (ES) 2019-20 (Const.)	644.40	3
(3) Efficient Transport Network (Modes)	Project on Upgrading Trunk Road between Swakopmund and Karibib (9) Swakopmund – Arandis (10) Arandis – Karibib	MWT/RA	2015 (FS) 2016-18 (ES) 2018-22 (Const.)	2,503 (min) – 6,888 (max)	4
	Project on Construction of Passing Lanes between Karibib and Otjiwarongo (11) Passing lanes in 40 locations	MWT/RA	2016 (FS) 2017-18 (ES) 2018-20 (Const.)	324.47	5
	Project on Upgrading Rail Lines (12) Walvis Bay – Kranzberg (13) Kranzberg – Windhoek	MWT/TransNamib	2015-16 (FS) 2017-18 (ES) 2019-21 (Const.)	1,968.62	6
	Market Research on Air Cargo Programme (14) Market research on air cargo demand at Walvis Bay Airport (15) Market research on air cargo demand at HKIA Airport	MWT/NAC	2015-2020	6.00	7
(4) Efficient Transport Network	Bypass Road and Truck Stop Development Programme (16) Land use-planning program	NPC/MWT/RA/7 towns (Usakos, Karibib, Omaruru,	2015-2020	2,237.90	8

Key Elements	Programme/Project Title	Organisation	Schedule	N\$ million	#
(Towns)	(17) Preparation of bypass road development projects (18) Preparation of truck stop development projects	Otjiwarongo, Ondangwa, Grootfontein, Rundu)			
(5) Integrated Border Management	Integrated Border Management Programme (19) Preparation and commencement of border town development packages (Land use plan, Bypass, Truck stop, and border infrastructure) (20) Integration of ICT system relating border management (linkage between Asycuda and Navis, Single Window and Risk Management System (21) Install "Corridor Net" to provide information services to transporters (22) Implementation of OSBP at Mamuno	NPC/MOF/MTI/MHAI/MOHSS/MAWF/WBCG 2 towns (Katima Mulilo, Helao Nafidi-Oshikango)	2015-2020	27.0 (excluding construction of border town development packages)	9

Source: JICA Study Team.

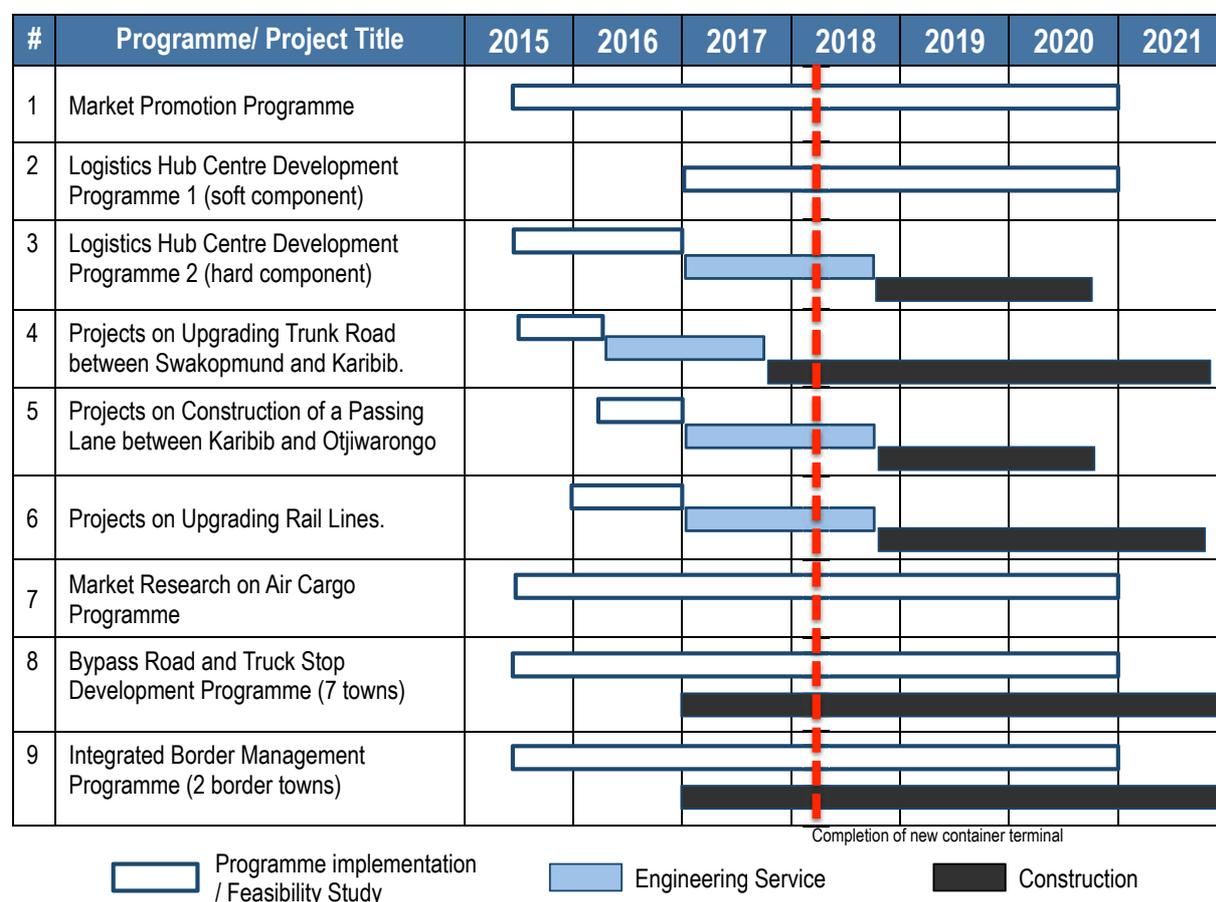


Figure 4.1: Schedule of Critical Programmes and Projects (provisional)

5. Implementation Structure

5.1 Identified urgent needs of establishing an entity for overall coordination of implementation of the Master Plan.

As clearly seen in the table above, challenges found and respective actions proposed are not just a group of simple matters of “construction” and “financing”. Each and every action involves many kinds of stakeholders with different interests and priorities, which makes it challenging to reach much needed consensus how to implement programmes and projects. Outcomes of actions are mutually supplemental and interactive in their nature.

For example, without an appropriate land use plan at a border town (a town council is in charge), it is impossible to decide location of border facilities (Customs & Excise Department is a leading organization) and a bypass road to connect them to a respective trunk road (Roads Authority is in charge). If a border town, a border post, roads do not have well coordinated development plan and cannot accommodate flows of trucks efficiently, this becomes a serious bottleneck to limit capacity of cargo flow as a whole. One failure could negate all the other good efforts.

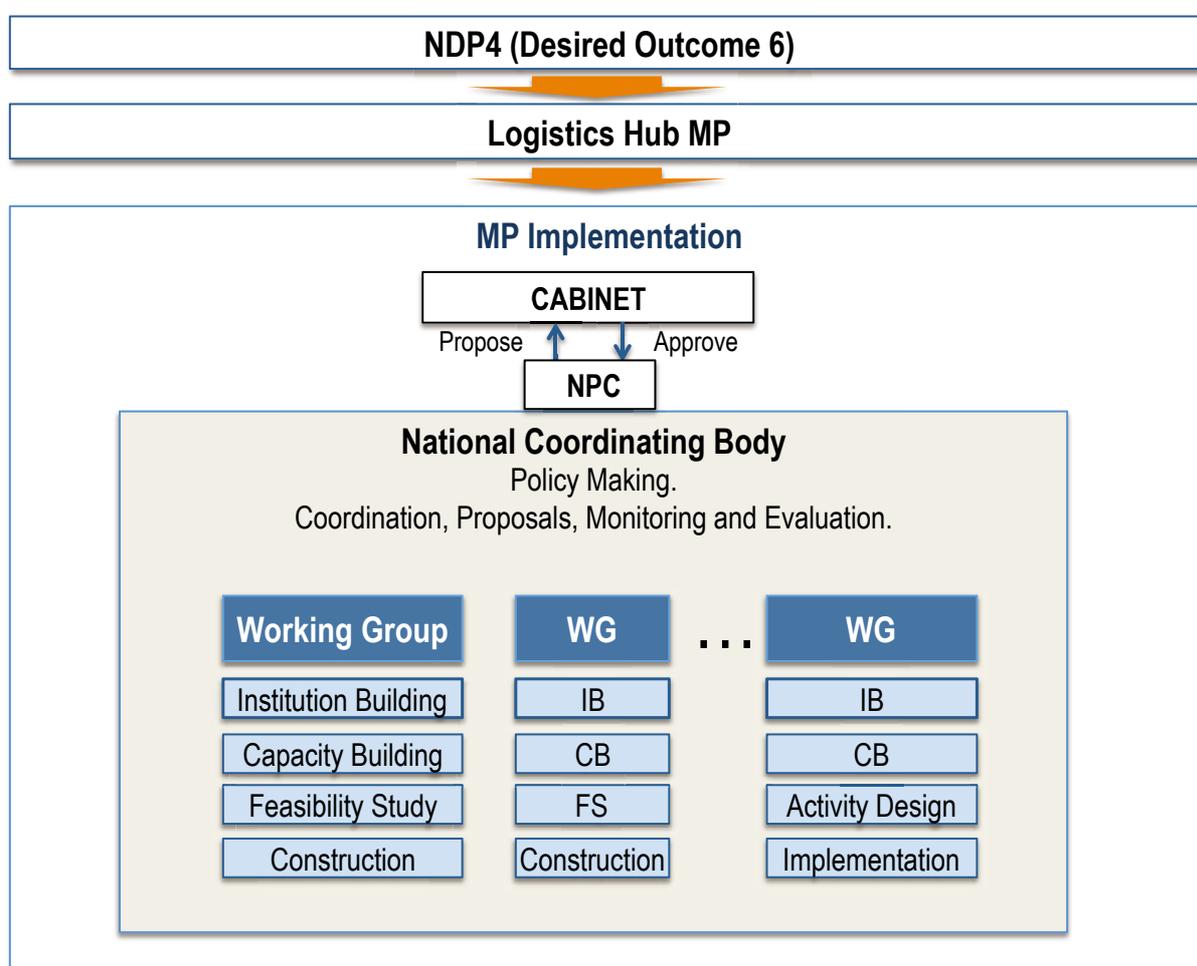
Therefore, it is quite likely that piecemeal implementation of individual actions result in inefficient and unsatisfactory results at the end. What the Master Plan Study revealed is the fact that these actions must be implemented with close coordination among wide range of stakeholders involved both from the public and private sectors in an integrated manner in order to keep consistency among actions to be taken and to realize synergy of them as intended in the Master Plan.

To do so, it is required to have a new single national level body for coordination that can propose clear policy directions supported with strong technical expertise for management of such a comprehensive and strategic development plan. The body should come along with the implementing task forces such as “Working Groups” that shall consist of members from implementing organizations in charge of respective actions (programmes and projects).

It is also considered that such a body shall best function when it is mandated to propose policy directions to the cabinet through NPC. The body should have an “Office” function that is capable of coordinating day-to-day operation with technical expertise and deliver policy decisions made by the cabinet to implementing organization. While such “Office” specifically focuses on implementation of Logistics Master Plan, it functions at the level similar to the one of National Planning Commission

(under the Office of The President and in charge of National Development Plan).

An organizational structure (provisional concept) for Master Plan implementation is as summarized in Figure 5.1.



Source: JICA Study Team

Figure 5.1: Schematic Organizational Structure of Master Plan Implementation (provisional concept with generic names)

Establishment of the coordinating body (the body and the Working Groups) and actual implementation shall follow the step-wise sequence as presented below.

Step 1: Establishment of the National Coordinating Body

The National Body is established for the following mandate and organizational arrangement (provisional concept and interim arrangement for inception, and a final structure will be determined as it progresses).

Table 5.1: Structure of the National Coordinating Body (provisional)

National Coordinating Body	
Mandate	<ul style="list-style-type: none"> To propose policy guidelines and development plan to the Cabinet. To appoint, coordinate, approve, monitor, and evaluate implementation of Master Plan by Working Groups. To manage and coordinate overall operation of implementation of Logistics Hub Master Plan by Working Groups with policy decisions and priorities approved by the Cabinet.

Step 2: Formation of Working Groups (as part of the Body)

Seven Working Groups are to be established for the following mandates and core activities as identified by the Master Plan Study (provisional concept and interim arrangement for inception, a final structure will be determined as it progresses). In particular, Working Groups of (1) Strategic Marketing/Overall Arrangement and (2) Logistics Hub Centre Development are important to carry out the Logistics Hub Master Plan, and these Working Groups should be formulated soon after establishment of the National Coordination Body.

Table 5.2: Structure of Working Groups (provisional)

Working Groups	Ministries/ Organisations	Mandate	Programmes/Projects
(1) Strategic Marketing/ Overall Arrangement	NPC/MTI/ MWT/Namport/ WBCG/NGCL	<ul style="list-style-type: none"> Build common policy bases of marketing strategies. Overall management and institutional arrangement. 	<ul style="list-style-type: none"> Market promotion programme (Promotion strategy and overall management of the master plan)
(2) Logistics Hub Centre Development	NPC/MWT/ MTI/Namport/ Walvis Bay Municipality/ WBCG	<ul style="list-style-type: none"> Establish Business and Operation Policy, Institution building, and Infrastructure development for LHC. 	<ul style="list-style-type: none"> Logistics Hub Centre Development programme 1 (soft component) Logistics Hub Centre Development programme 2 (hard component)
(3) Transport Network 1 (Road and Railway)	MWT/RA/ TransNamib	<ul style="list-style-type: none"> Remove bottlenecks in all modes of transport network along the corridor. 	<ul style="list-style-type: none"> Project on upgrading trunk road between Swakopmund and Karibib. Project on construction of passing lanes between Karibib and Otjiwarongo. Project on upgrading rail lines (2 sections).
(4) Transport Network 2 (Bypass Roads and Truck Stops)	NPC/MWT/RA/M RLGHRD/7 Towns	<ul style="list-style-type: none"> Remove bottlenecks in towns along the corridor (including town plans, bypass road, and truck stop development). 	<ul style="list-style-type: none"> Bypass roads and truck stops development programme
(5) Integrated Border Management	NPC/MOF/MTI/ MHAI/MOHSS/ MAWF/ MRLGHRD/ WBCG/2 towns	<ul style="list-style-type: none"> Remove bottlenecks at the border points (including border infrastructure, town plans, bypass road, and truck stop development). 	<ul style="list-style-type: none"> Integrated Border Management Programme
(6) Cross-cutting elements	NPC/MOF/ MHAI/MTI/ MOE/NTA/ NGCL	<ul style="list-style-type: none"> Finance, ICT, and Human Resources. 	(To be identified as an element of relevant programmes and projects.)
(7) Environment	NPC/MWT/ MET	<ul style="list-style-type: none"> Mitigate negative environmental and social impacts of the MP. 	(To be identified as an element of relevant programmes and projects.)

Source: JICA Study Team

Step 3: Commencement of Programmes/ Projects

Actions (programmes and projects) proposed in the Logistics Master Plan start implementation in forms of active collaboration among relevant stakeholders both from the public and private sectors.

5.2 Transform the WBCG into the “National Coordinating Body”

Regarding establishment of a “national coordinating body”, it is highly recommended to transform and expand mandates of the Walvis Bay Corridor Group to take such role rather than to create a new organization. There are clear reasons for recommending transformation of the WBCG into the national coordinating body including the following points.

(1) Firstly, the Walvis Bay Corridor Group has already been identified within NDP4, with specific reference to the transformation of the WBCG as a high level strategy within the next 5 years. NDP4 reads “The Walvis Bay Corridor Group can be transformed from an entity that focuses on the various Walvis Bay Corridors to one that will consolidate the coordinated public and private sector efforts to make Namibia a regional logistics hub. This will require equipping the Walvis Bay Corridor Group with the necessary skills and financial resources.”

(2) Secondly, the WBCG is one of the few success stories of PPP entities that are functioning effectively in Namibia & SADC. The WBCG’s unique compilation of Private and Public stakeholders provides it with a distinct advantage which are successfully illustrated in various Corridor management programs and through its role as marketing and developing agency for Namibia’s Transport Sector. As the Logistics Hub is also based on similar principles of public-private sector cooperation, this proven institutional efficiency will be to the very benefit of the Logistics Hub development process.

(3) Thirdly, the WBCG is the organization that has the most relevant experiences to ensure the smooth transition from completion of the Logistics Master Plan into implementation stage. A Logistics Hub unit had been established at the WBCG offices in Windhoek.

A Logistics Hub unit of the WBCG has been working on formulation of the Logistics Master Plan throughout the whole process together with the Study Team, and thus fully understands the background analysis, development scenario, overall strategies, and proposed actions in the Logistics Master Plan.

5.3 Lack of technical expertise for establishment and management of “Coordinating Body” and “Working Groups” to implement the Master Plan

While the WBCG has good experiences and potentials to be transformed to “Coordinating Body”, in Namibia, there has been no such entity to make comprehensive coordination and collaborative work a reality yet. Thus, there is no experience and knowledge to establish this much needed “Coordinating Body” and “Working Groups” in appropriate institutional arrangement.

Secondly even if the Body is established, there is a lack of technical expertise to provide good analytical and reasoning basis for decision-making and to guide respective “Working Groups” for well-coordinated implementation of actions proposed by the Master Plan. There are many skill gaps to be filled by international experts and still much to learn from them in order to make it possible for the Namibian to manage comprehensive implementation in the medium to long-term perspectives.

According to the experiences of Logistics Master Plan Study Project up to now, it is found to be very effective to build such coordination and collaboration through establishment of working relationships and building up a common knowledge base and vision among different stakeholders with facilitation by the Study Team with relevant international experiences, knowledge, and insights to draw up roadmaps to make Namibia a “Logistics Nation”. It became quite visible that a new momentum of collective actions among the stakeholders is emerging through the process of Logistics Master Plan Study Project. This new trend generated by the Study Project should also be very effective and much needed to keep this momentum alive and carry on to establish “Coordinating Body” and “Working Groups” in the implementation stage.

5.4 A success case of national level planning and implementation of integrated development: A case of “Eastern Seaboard Development Committee” in Thailand

Regarding expertise needed for Namibia, the Master Plan Project proved that there are some success cases of such national level planning and implementation of integrated development. For example, the Study Team, as part of their skill transfer activities, introduced an experience where Japan had supported “Office of Eastern Seaboard Development Committee” within “National Economic Social Development Board” in Thailand to develop “Eastern Seaboard Region” as a new industrial base. Cooperation started from its Master Plan stage to its implementation, including two deep seaports, two industrial complexes, and associated infrastructures, during the period from the late 1970s to 1990s.

While, it is not possible to directly apply experiences and formation of Japan-Thailand cooperation in the past to logistics development in Namibia, Thai success case still gives quite insightful and practical references for Namibia in pursuing what the Logistics Master Plan proposed especially in terms of the role of planning agency, frameworks of decision making, and institutional arrangements for

implementation.

There are several success factors in case of Eastern Seaboard Development Programme.

(1) Master Plan first approach: One factor is that the whole programme had started with “Master Plan” providing a good common ground for a wide range of stakeholders to share the vision and whole image of development, which enabled them to discuss about issues on a same technical foundation. Technical Cooperation of Japan enabled formulation of the Master Plan, plans and feasibility studies for those projects proposed in the Master Plan¹.

(2) Given clear national level priority: Eastern Seaboard Development was regarded as a high priority in the 5th (1982-1986) and the 6th (1987-1991) National Economic and Social Development Plans. In case of Logistics Master Plan in Namibia, this has been already done through NDP4 stipulating it as a priority.

(3) National Coordinating Body: Thailand created special coordination and decision-making mechanisms exclusively for the plan. These were the following three level entities.

Table 5.3: Organisations for implementation of Eastern Seaboard Development

Level 1	Cabinet level national committee: Eastern Seaboard Development Committee (ESDC) chaired by Prime Minister (Prime Minister himself functioned as a “balancer”).
Level 2	Sub-committees by major programmes
Level 3	Secretariat: Office of the Eastern Seaboard Development Committee (OESD) within the National Economic and Social Development Board (NESDB, agency similar to NPC in Namibia). OESD was assigned as the Secretariat for a number of major national committees and acted as influential liaison to get the plans and policies into action. It should be noted that Prime Minister of Thailand placed confidence in technocrats (“Secretariat”) and delegated authority to them. He also placed great importance to pursue pragmatic economic outcomes by forcing back political pressures.

Source: Development Process and Aid: A Case Study in the Eastern Seaboard Development (Thailand), GRIPS Development Forum June 2006

The above structure itself was a reflection of Thai specific context and may not necessarily be applicable to Namibia. Important point is to learn from their coordinating functions and mandates to propose policy options directly to the level of Cabinet.

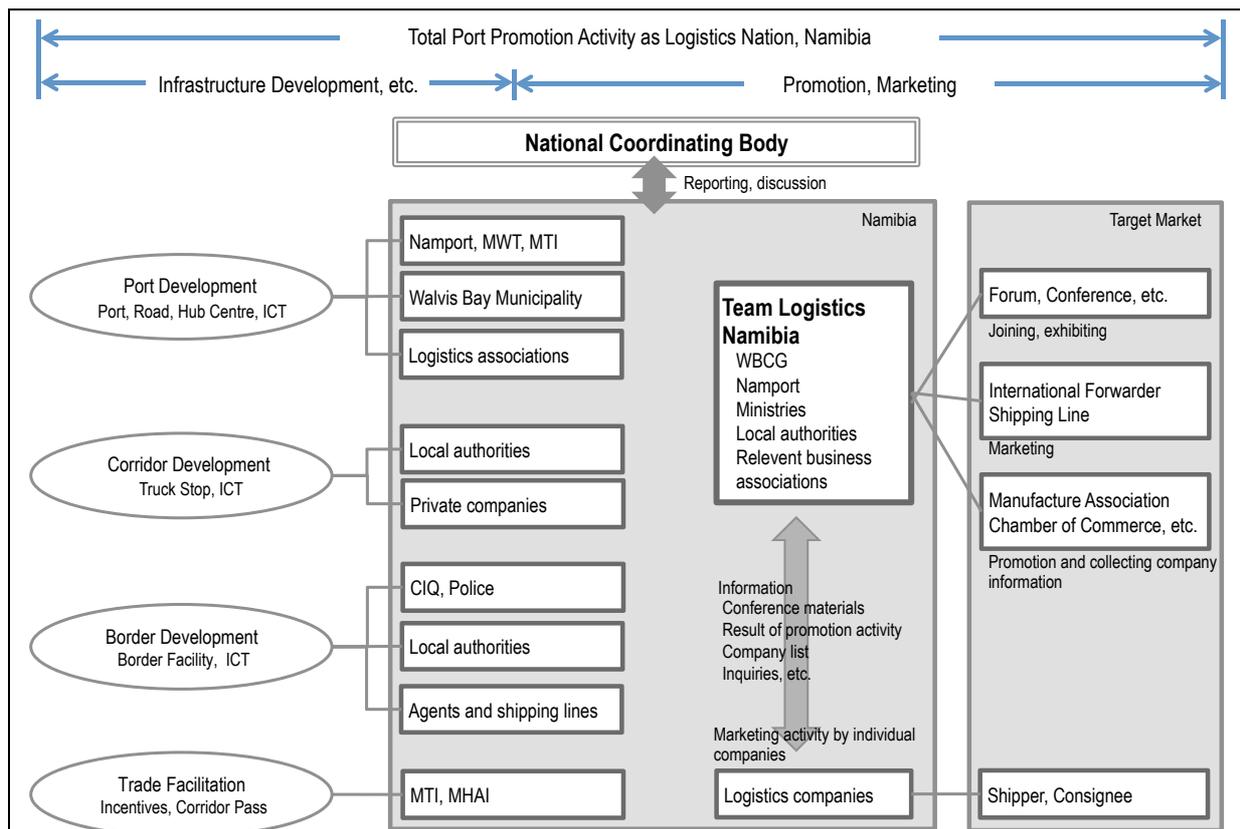
(4) Pragmatic revisions and adjustment of implementation process: Given a strong national coordinating structure, it was made possible that Master Plan and other sub-plans were revised in their implementation stage (their timing and scale of development) in order to adjust them to volatile economic conditions and availability of financial sources including their own government budget, Development Finance Institutions, and private sector investments.

¹ Japan also provided soft-loans for 16 projects (27 loans) during the period of 1985-2000. This financial cooperation was obviously one of the success factors. However, this may not applicable to such extensive provision of “yen loan” was made possible with given situation specific context that defined relationship between Japan and Thailand at the time: 2 countries are in “Asia” where “Japanese Yen” has been a key currency; Thailand had long been one of those primary destinations of FDIs from Japan during at the time; and the period of Eastern Seaboard Development Programme coincided with the period of rapid expansion of international cooperation budget of Japan in 1978-1997, which made it possible to provide large amount of loans.

PROGRAMME/PROJECT PROFILES

PROGRAMME/PROJECT PROFILE 1

#	Title
1	Market Promotion Programme
<p><u>Implementing Agency</u></p> <p>NPC, MTI, Namport and Walvis Bay Corridor Group will lead this market programme. Ministries, local authorities and business associations will be involved in this programme.</p>	
<p><u>Location</u></p> <p>Namibia and the neighbouring countries</p>	
<p><u>Description</u></p> <p>Marketing, securing a demand base, is a necessary condition for Namibia to become an international logistics hub, likewise giving real significance to improvement of the logistics facility (Logistics Hub Centre) and transport network. Market promotion activities consist of 2 different levels.</p> <p>The first level is to put a focus on the provider's side (Namibia itself) calling for "sales point of Namibia's logistics service", and promotion activities will be conducted after identification of advantages and disadvantages of the Namibian logistics sector. Current activities of Namport and WBCG to participate in expositions, international conferences and seminars are included in this category. Activities to remove identified bottlenecks and to overcome weak points are also included in this category. It is important to develop a mechanism that identifies bottlenecks and weak points and ways to remove and overcome them.</p> <p>The second level of promotion activity focusing on the customers' side asking, "who are customers for Namibia's logistics service". Activities will be conducted after identification of customers and their characteristics based upon market study by questionnaire and interview surveys. Individual companies with support of WBCG and business associations mostly conduct this category of marketing.</p> <p>It is recommended that firstly to establish a national level coordinating body to oversee the whole implementation of the Logistics Master Plan. Secondly, an organisation for marketing is formed namely "Team Logistics Namibia". It should consist of WBCG, Namport, ministries and parastatals, municipalities and towns and business associations. The "Team Logistics Namibia" should participate international forums and conferences. It should also collect information from business associations of target markets, and conduct market promotion to international forwarders and shipping lines of the target market.</p> <p>When the Namibian logistics sector promotes Namibian routes, it is essential to promote Namibia together with all relevant players including the fields of infrastructure, trade procedure, and actual transportation. For example, Dubai established a company titled "Ports Customs and Free Zone Corporation" (PCFZC) through consolidation of Dubai Customs, Dubai Ports Authority and Jebel Ali Free Zone Authority. They are promoting Dubai Port and free zone together as "one team" under "one brand" of PCFZC.</p> <p>A National Coordinating Body proposed as an entity for overall coordination of implementation of the Master Plan could coordinate promotion activities including infrastructure development and marketing activities both by the public and private sector in the coordination meeting. The figure below illustrates a conceptual idea of an implementation structure for the promoting activities in the future.</p>	



Source: JICA Study Team

Figure: Implementation structure for marketing

This programme intends to create the “Team Logistics Namibia”, and form relationships among the “Team Logistics Namibia” and ministries, local authorities, logistics companies and target markets through trial marketing activities.

Component

- (1) Establishment of a National Coordinating Body
- (2) Market research and promotion program
- (3) Development of marketing promotion technique
- (4) Regular benchmarking of “State of Logistics” in Namibia

Schedule

- (1) Establishment of the National Coordinating Body: 2015 to 2016
- (2) Market research and promotion program: 2016 to 2020
- (3) Development of marketing promotion technique: 2016 to 2018
- (4) Regular benchmarking of “State of Logistics” in Namibia: 2015 to 2020

Benefit

- Attract transit cargo of shippers/consignees in neighbouring SADC countries, in particular, Zambia, DRC, Botswana, South Africa Zimbabwe and Malawi.
- Invite international logistics companies, including world-class logistics companies to Walvis Bay, in particular, the Logistics Hub Centre.

- Create a process of improvement of logistics infrastructure and logistics service by collecting opinions of users (logistics companies and shippers/consignees).
- Understand the situation of the logistics sector in Namibia from results of research and development activities including the “State of Logistics Report”

Cost estimate

Total of Market Promotion Programme: N\$42.6 million

- (1) Establishment of the National Coordinating Body: N\$5.4 million
- (2) Organizing regular meetings with relevant government organizations: N\$24.0 million
- (3) Development of marketing promotion technique: N\$7.2 million
- (4) Regular benchmarking of “State of Logistics” in Namibia: 2015 to 2020: N\$6.0 million

PROGRAMME/PROJECT PROFILE 2

#	Title
2	Logistics Hub Centre Development Programme 1 (soft component)

Implementing Agency
 NPC, MWT, MTI, Namport, WB Municipality and WBCG

Location
 Logistics Hub Centre will be developed within Walvis Bay Municipal area (4.2km from Walvis bay Port). In the master plan study, the triangle area (No. 2 of the figure below) is proposed as a preferred location from the viewpoints of distance from Walvis Bay port, accessibility with transport infrastructure (trunk road and rail) and consistency with the land use plan of Walvis Bay Municipality.
 The location of the Logistics Hub Centre will be assessed and determined in this programme.

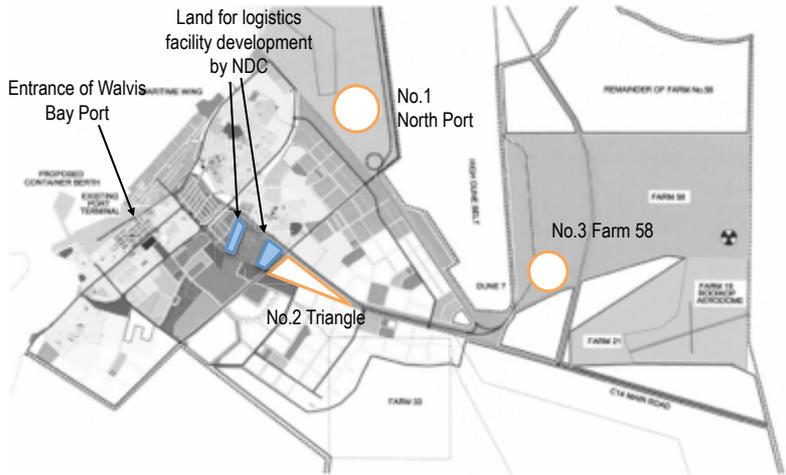


Figure: Location of Logistics Hub Centre

Description
 The Logistics Hub Centre which will be developed at Walvis Bay is a key logistics facility to promote Logistics Hub Development Master Plan. Currently, around 60% of cargo handled at Walvis Bay Port is for transshipment, and the percentages of domestic cargo and transit cargo are both 20%, respectively. The Logistics Hub Centre will be a “Pull Factor” to change the situation. Transit cargo volume is expected to increase from 0.8 million tons in 2013 to 3.6 million tons in 2025.
 In order to develop the Logistics Hub Centre, many preparatory arrangements are needed because many stakeholders will be involved in preparation and operation of the Logistics Hub Centre. It is also necessary to clarify the concept of the Logistics Hub Centre such as roles and function, facilities required and the layout of these, incentives, necessary law and regulation system, and organization for operation of the Logistics Hub Centre.
 The objective of the programme is to develop a business policy, operational structure, and institution building for the Logistics Hub Centre.

- Component**
- (5) Establishment of an operating body of the LHC
 - (6) Development of a business plan and incentive mechanisms for LHC
 - (7) Reforms of laws and regulations for development of LHC

Schedule

- (5) Establishment of operating body of the LHC: 2017 to 2018
- (6) Development of a business plan and incentive mechanisms for LHC: 2015 to 2020
- (7) Reforms of laws and regulations for development of LHC: 2015 to 2016

Benefit

- Logistics companies including global logistics players will invest in the Logistics Hub Centre, and the development of LHC will enhance intermodal function (from sea transport to land transport) of Walvis Bay Port.
- Promote transit cargo transport from/to the neighbouring SADC countries such as Zambia, DRC, Zimbabwe, Malawi, Botswana and South Africa.
- Storage, consolidation function of the Logistics Hub Centre will mitigate congestion at Walvis Bay Port.
- Logistics Hub Centre increase logistics demand that eventually induces demand for satellite hubs in inland areas.

Cost estimate

Total of Logistics Hub Centre Development Programme 1 (soft component): N\$32.7 million

- (5) Establishment of operating body of the LHC: N\$8.4 million
- (6) Development of a business plan and incentive mechanisms for LHC: 19.5 million
- (7) Reforms of laws and regulations for development of LHC: N\$4.8 million

PROGRAMME/PROJECT PROFILE 3

#	Title
3	Logistic Hub Centre Development Programme 2 (hard component)

Implementing Agency

Implementation body for designing and establishment of the LHC will be decided through the conclusions of the Logistic Hub Centre Development Programme 1 (soft component). At present MWT or MTI (NDC) are candidate implementation bodies. Operation of the Logistics Hub Centre will be conducted by an operating company, details of which are to be defined and established in the Logistic Hub Centre Development Programme 1 (soft component).

Location

Currently the project site is proposed at the location shown in the figure below. The site is a light industrial area, located 4.2km east from the existing port. The size of the available land is 89 ha.

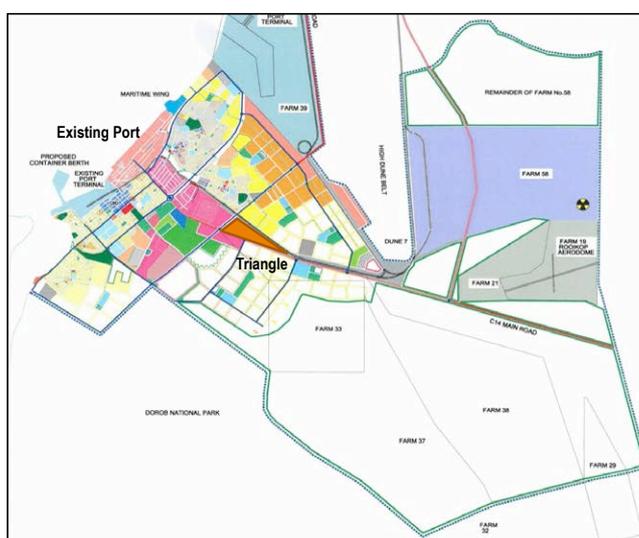


Figure: Location of Logistics Hub Centre

Description

The Logistics Hub Centre that will be developed at Walvis Bay is a key logistics facility to promote the Logistics Hub Development Master Plan. Currently, around 60% of cargo handled at Walvis Bay Port is for transshipment, and the percentages of domestic cargo and transit cargo are 20%, respectively. The Logistics Hub Centre will change the situation. Transit cargo volume is expected to increase from 0.8 million tons in 2013 to 3.6 million tons in 2025.

Table: Functions and facilities in Logistics Hub Centre

Functions	Facilities	Buildings/ equipment
Storage/consolidation	Logistics Park	Warehouse; rental warehouse; refrigerated storage
Distribution processing		Workshop
Intermodal service		Siding, truck terminal
CIQ service/ trade control		Offices for customs, Immigration, quarantine and trade control (MTI); Forwarders' office
Storage, washing and repairing container	Inland Container Depot	-
Services for truck drivers	Truck stop	Truck parking with power supply facility for reefer container; maintenance garage; information provision board
Access control/security	Common facility	Gate; fence, Police station; CCTV
Other services		Offices of logistics companies; banking services; shops, restaurants; accommodation; petrol station; public toilet; wellness centre; ICT infrastructure
Administration		Administration office

The functions of the Logistics Hub Centre are described in the 1st column of the table. Facilities that

are indicated in the 2nd column are needed to fulfil the function, and the facilities have the buildings and equipment tabulated in the 3rd column.

The figure below shows a proposed layout plan of Logistics Hub Centre. The Centre has a triangular shape and has good access to the railway and trunk road.

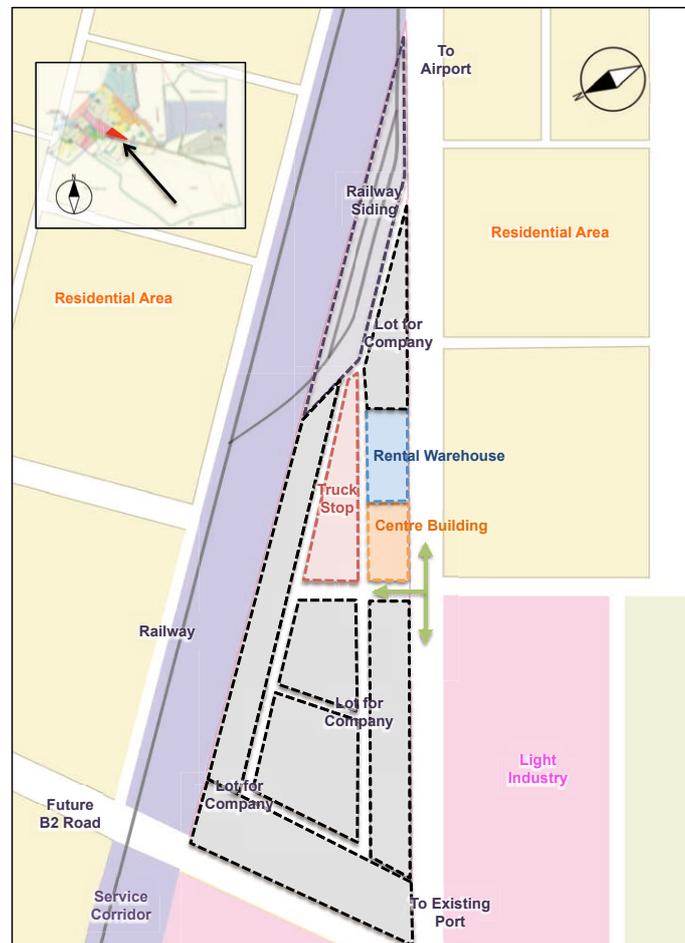


Figure: Layout of logistic Hub Centre

The objective of the programme is to develop land, install infrastructure (road, drainage, water supply, power distribution line) and construct buildings at Logistics Hub Centre.

Component

(8) Preparation of infrastructure development

Schedule

- Final selection of the LHC site and necessary coordination: 2015
- Feasibility study based on the business plan prepared by Logistic Hub Centre Development Programme 1(soft component): 2016 to 2017
- Environmental Impact assessment: 2016 to 2017
- Natural condition surveys and detailed design: 2018
- Tender and construction: 2018 to 2020

Benefit

- Logistics companies including global logistics players will invest in the Logistics Hub Centre, and the

changeover from transshipment from sea transport to land transport will be enhanced.

- Promote transit cargo transport from/to the neighbouring SADC countries such as Zambia, DRC, Zimbabwe, Malawi, Botswana and South Africa.
- The storage, consolidation function of the Logistics Hub Centre will mitigate congestion at Walvis Bay Port.

Cost estimate

Logistic Hub Centre Development Programme 2 (hard component): N\$644.4 million

Total cost of Logistic Hub Centre (Land acquisition cost is not included)		N\$644.4 million
Land development with infrastructure (roads, drainage, water supply, power distribution, etc.)		N\$311.5 million
Unit cost*: N\$350 per m ²	89ha	
Buildings		N\$204.0 million
Centre building (common facility, 2ha)		102.0 million
Unit cost**: N\$8,500 per m ² ; building area is 60% of land	2ha	
Rental warehouse (4ha)		102.0 million
Unit cost**: N\$425 per m ² ; building area is 60% of land	4ha	
Engineering services (study and design: 10% of construction works)		N\$51.6 million
Contingency & tax (15% of upgrading and engineering services)		N\$77.3 million

Note: * Detailed design of NARA Namib logistics facility (34ha); **NARA Namib Free Economic Zone (400ha)

PROGRAMME/PROJECT PROFILE 4

#	Title
4	Project on Upgrading the Trunk Road between Swakopmund and Karibib

Implementing Agency

Roads Authority

Location

B2 Road between Swakopmund and Karibib. It is divided into 3 sections: Swakopmund – Arandis, Arandis – the intersection with D1918 from Hentiesbaai, and the intersection with D1918 – Karibib as shown the figure below.

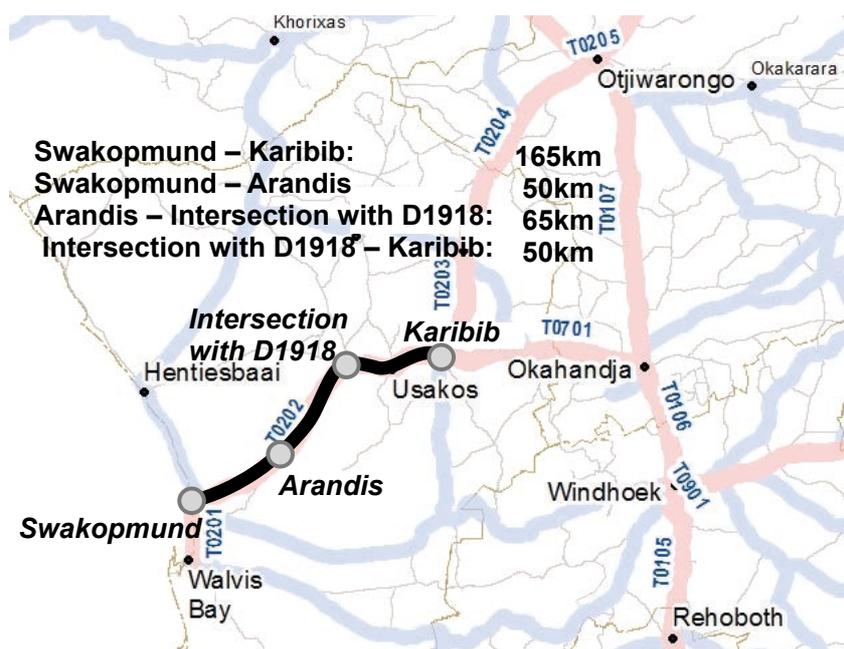


Figure: Location of the project

Description

GRN as a country aims to be the logistics hub of the SADC region, and the logistics industry was designated as one of priority areas for economic development in NDP4. NamPort is now constructing a new container terminal with a throughput capacity of 750,000 TEUs per year at the existing Walvis Bay Port, and operation of the new container terminal is expected to be started in 2018. After completion of the terminal, a significant increase of cargo volume is expected.

The Logistics Hub Master Plan set a target that the cargo volume from Walvis Bay to Namibia and the neighbouring countries will increase from 1.5 million tons in 2013 to 3.1 million tons by 2020 and 6.6 million tons by 2025 (total of domestic demand of Namibia and transit cargo to the surrounding countries).

In accordance with the increase of cargo volume, the number of trucks is also expected to increase. Furthermore, other types of vehicles such as passenger cars and buses will also increase along with the increase in population and GDP.

In 2013, AADT of the section between Swakopmund and Arandis was 5,080 and that of the section between Arandis and Karibib were 5,410 respectively. The capacity of these two sections is sufficient compared to the traffic volume. However, according to forecasts by the Integrated Transport Master Plan, AADT of these sections will reach the limits of the capacity of the roads by 2025. The traffic volumes on these sections will increase, and AADT of the same sections is estimated to be 9,650 and

10,290 by 2025.

Table: Traffic volume in 2013 and 2025

Section	No of lanes	Annual Average Daily Traffic volume (Vehicle/day)							Total (vehicle/day)	No of large cargo trucks	% of Large cargo trucks
		Passenger cars	Medium bus	Large buses	Light trucks	2 axle trucks	3 axle trucks	Multi axles trucks			
2013											
Arandis - Swakopmund	2	3,010	210	80	320	450	280	730	5,080	1,460	29%
Karibib - Arandis	2	3,320	220	90	320	460	280	740	5,410	1,480	27%
2025											
Arandis - Swakopmund	2	6,020	410	160	580	780	440	1,260	9,650	2,480	26%
Karibib - Arandis	2	6,600	440	170	590	790	440	1,260	10,290	2,490	24%

Source: JICA Study Team (volumes of passenger car, all types of bus, light truck are extracted from Integrated Transport Master Plan).

Therefore, the section between Swakopmund and Arandis and the section between Arandis and Karibib should be upgraded from 2 lanes 2 directions to 4 lanes 2 directions in order to decrease traffic jams. The figure below shows the existing and future road sections.

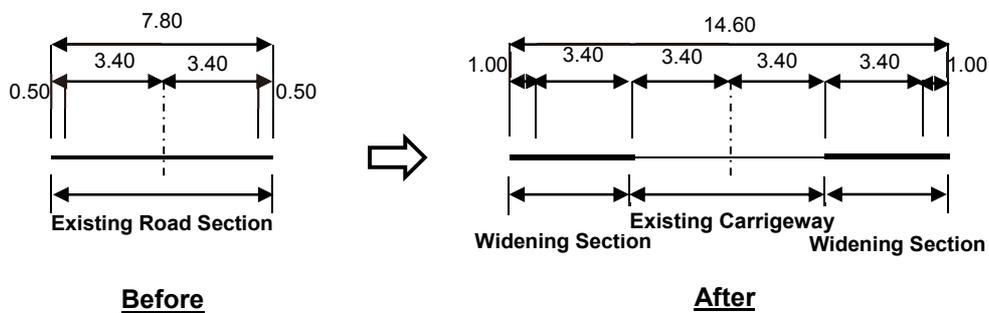


Figure: Existing and future road sections

The total length of the 2 sections is 165 km (Swakopmund – Arandis: 50km and Arandis – Karibib: 115km). Therefore, the section between Arandis and Karibib should be divided into 2 at intersection of D1918 (Arandis – D1918: 65km, and D1918 – Karibib: 50km) for phased development.

- Section 1: Swakopmund – Arandis (50km)
- Section 2: Arandis – D1918 (65km)
- Section 3: D1918 – Karibib (50km)

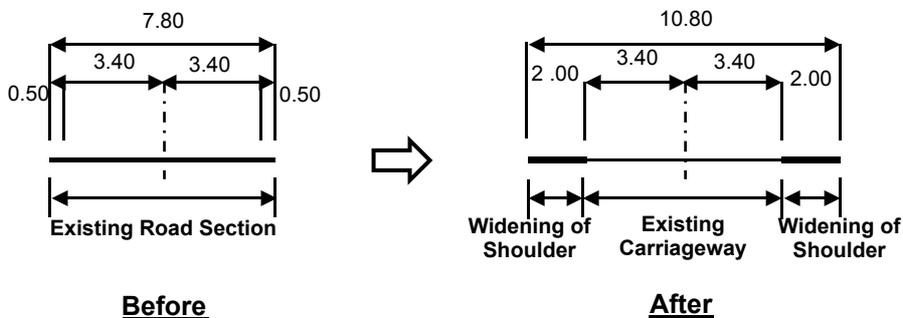


Figure: Widening of shoulder sections

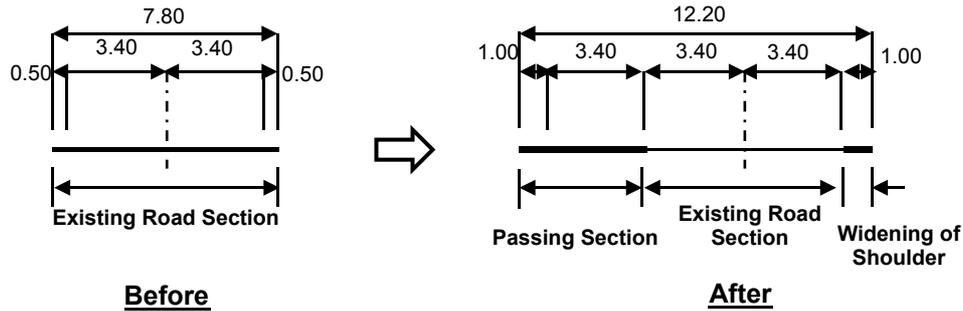


Figure: Passing lane section

However, as mentioned in 6.1.1.2 of Chapter 6, it is necessary to re-examine the traffic demand forecast prepared by the Integrated Transport Master Plan, and to forecast traffic volume again with a new set of traffic data by 3 sections before designing and constructing the road. Should the estimated future traffic volume will be less than 10,000, construction of a passing lane at upgrade sections and widening of shoulders should be sufficient and should be implemented to smooth the flow and improve the safety of traffic. The figures show road sections for the case of minimum upgrading of the road.

Component

- (9) Swakopmund – Arandis
- (10) Arandis – Karibib

Schedule

- Study, survey and detail design, EIA, tender preparation, bidding: 2015 to 2017 (2.5 years)
- Upgrading of the road: 2018 to 2022 (4 years)

Benefit

- Mitigate future traffic congestion
- Decrease traffic accidents and improve traffic safety
- Decrease travel time
- Improve environmental conditions

Cost estimate

Maximum Case: Cost of Upgrading (from 2 to 4 lanes): N\$ 6,888 million

Section	Swakopmund – Arandis	Arandis – D1918	D1918 – Karibib	Total
Length (km)	50	65	50	
Widening (N\$ million) (1) + (2) + (3)	1,898	2,713	2,277	6,888
Unit Cost (N\$ million/km)	30	33	36	
Construction (N\$ million) (1)	1,500	2,145	1,800	
Eng. Service (10% of (1)) (2)	150	215	180	
Contingency & Tax (15 % of (1) + (2)) (3)	248	354	297	

Note: * Refer to construction cost of "Swakopmund – Walvis Bay road rehabilitation" in Roads Authority: Five-Year Budget for the period 2014/15 to 2018/19

Minimum Case: Cost of Upgrading (Widening of shoulders and passing lane): N\$ 2,503 million

Section	Swakopmund - Arandis	Arandis - D1918	D1918 - Karibib	Total
Upgrading (I+II)	688.88	988.27	826.65	2,503.79
Widening of Shoulders (I, (1) + (2) + (3))	594.00	842.16	712.80	2,148.96
Length (km)	45	58	45	
Unit Cost (N\$ million/km)	6.0	6.6	7.2	
Construction (N\$ million) (1)	270.00	382.80	324.00	
Eng. Service (10% of (1)) (2)	27.00	38.28	32.40	
Contingency & Tax (15 % of (1) + (2)) (3)	297.00	421.08	356.40	
Passing Lane Construction (II, (4) + (5) + (6))	94.88	146.11	113.85	354.83
Length (km)	5	7	5	
Unit Cost (N\$ million/km)	15.00	16.50	18.00	
Construction (N\$ million) (4)	75.00	115.50	90.00	
Eng. Service (10% of (4)) (5)	7.50	11.55	9.00	
Contingency & Tax (15 % of (4) + (5)) (6)	12.38	19.06	14.85	

Note: * Refer to construction cost of "Swakopmund – Walvis Bay road rehabilitation" in Roads Authority: Five-Year Budget for the period 2014/15 to 2018/19

Preliminary scoping for EIA

Category	Environmental Item		Rating		Details
			Construction	Operation	
Pollution Control	1	Air Quality	B-	B+	<u>Construction phase</u> <ul style="list-style-type: none"> Exhaust gas from construction equipment and vehicles, and the dust caused by construction works will increase. <u>Operation phase</u> <ul style="list-style-type: none"> Reduction of traffic congestion due to road improvement will contribute to mitigate exhaust gas.
	2	Water Quality	C	D	<u>Construction phase</u> <ul style="list-style-type: none"> Mud, oil and turbid water from the construction site and domestic wastewater from workers' camp will be discharged. They would cause water pollution but it depends on the situation of surface water and groundwater aquifer around the target road. <u>Operation phase</u> <ul style="list-style-type: none"> No impact is predicted.
	3	Wastes	B-	D	<u>Construction phase</u> <ul style="list-style-type: none"> Solid waste, construction waste soil from the construction site and domestic waste from worker's camp will be generated. <u>Operation phase</u> <ul style="list-style-type: none"> No impact is predicted.
	4	Soil Contamination	B-	D	<u>Construction phase</u> <ul style="list-style-type: none"> Asphalt emulsion for paving work, oils and fuels will leak from the construction site and possibly contaminate soil. <u>Operation phase</u> <ul style="list-style-type: none"> No impact is predicted.
	5	Noise and Vibration	B-	B-	<u>Construction phase</u> <ul style="list-style-type: none"> Noise and vibration from construction equipment and vehicles will occur. <u>Operation phase</u> <ul style="list-style-type: none"> Growth in traffic volume might generate more noise and vibration
	6	Subsidence	D	D	No impact is predicted.

	7	Odour	B-	D	<p><u>Operation phase</u></p> <ul style="list-style-type: none"> Offensive odour due to asphalt emulsion for paving work and to exhaust gas of construction vehicles and machine will be produced. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> No impact is predicted.
	8	Sediment	D	D	No impact is predicted.
Natural Environment	9	Protected Areas	C	C	A part of the target road traverses the area of Dorob-National Park. It is about 40km long from Swakopmund. Although upgrade of existing road might not have a significant impact on the area, it is unknown.
	10	Ecosystem	B-	B-	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Exhaust gas and noise from construction equipment and vehicles will disturb wildlife. Movement of construction equipment and vehicles will disturb wildlife. Construction team will commit illegal wood cutting and wildlife poaching. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> The road widened by the project will have more barrier effect against wildlife movement. Growth in traffic volume will increase collision with wildlife and result to road kills. Incident of illegal wood cutting and wildlife poaching might increase.
	11	Hydrology	D	D	No impact is predicted.
	12	Topography and Geology	C	D	No impact is predicted.
	13	Resettlement	D	D	No resettlement will be involved.
Social Environment	14	The poor	C	C	Unknown
	15	Ethnic Minorities, Indigenous People	D	D	There are no ethnic minorities or indigenous people living around the target road.
	16	Local economy, employment	B+	B+	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Job opportunities, demand for goods and services related to construction work will be generated. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> Improved road transport will stimulate local economic activities such as agriculture and tourism business.
	17	Land use, utilization of local resources	B-	D	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Temporary facilities, such as borrow pit and quarry would be located for construction work. Construction work will be done within ROW so existing land use will not be altered. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> No impact is predicted.
	18	Water resources, water use	C	D	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Unknown. Water use for construction use and workers' camp might affect the existing water supply system. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> No impact is predicted.
	19	Public infrastructure, social services	D	D	No impact is predicted.
	20	Social institutions, local decision making	D	D	No impact is predicted
	21	Misdistribution of benefit and damage	D	D	No impact is predicted.
	22	Local conflict of interests	D	D	No impact is predicted.
	23	Heritage	D	D	There is no cultural or natural heritage around the target road.
	24	Landscape	D	D	No impact is predicted.
	25	Gender equity	C	C	Unknown
	26	Children's right	C	C	Unknown

	27	Infectious diseases such as HIV/AIDS	B-	D	<u>Construction phase</u> <ul style="list-style-type: none"> Influx of construction workers might induce spread of infectious diseases. <u>Operation phase</u> <ul style="list-style-type: none"> No impact is predicted.
	28	Working conditions	B-	D	<u>Construction phase</u> <ul style="list-style-type: none"> Operation of construction machines and vehicles will have a risk of accident. Workers will damage their health if safety and hygiene is not maintained at construction site and workers' camp. <u>Operation phase</u> <ul style="list-style-type: none"> No impact is predicted.
Others	29	Traffic accidents	B-	A+	<u>Construction phase</u> <ul style="list-style-type: none"> A risk of traffic accident will be higher than usual. <u>Operation phase</u> <ul style="list-style-type: none"> Reduction of traffic congestion and dangerous overtaking due to road improvement will greatly contribute to decrease in traffic accident, especially fatal ones.

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of positive/negative impact is unknown. (A further examination is needed, and the impact could be clarified as the study progresses)

D: No impact is expected.

PROGRAMME/PROJECT PROFILE 5

#	Title
5	Project on Construction of Passing Lanes between Karibib and Otjiwarongo

Implementing Agency

Roads Authority

Location

C33 Road between Karibibi and Otjiwarongo. The figure below shows the location of the project.

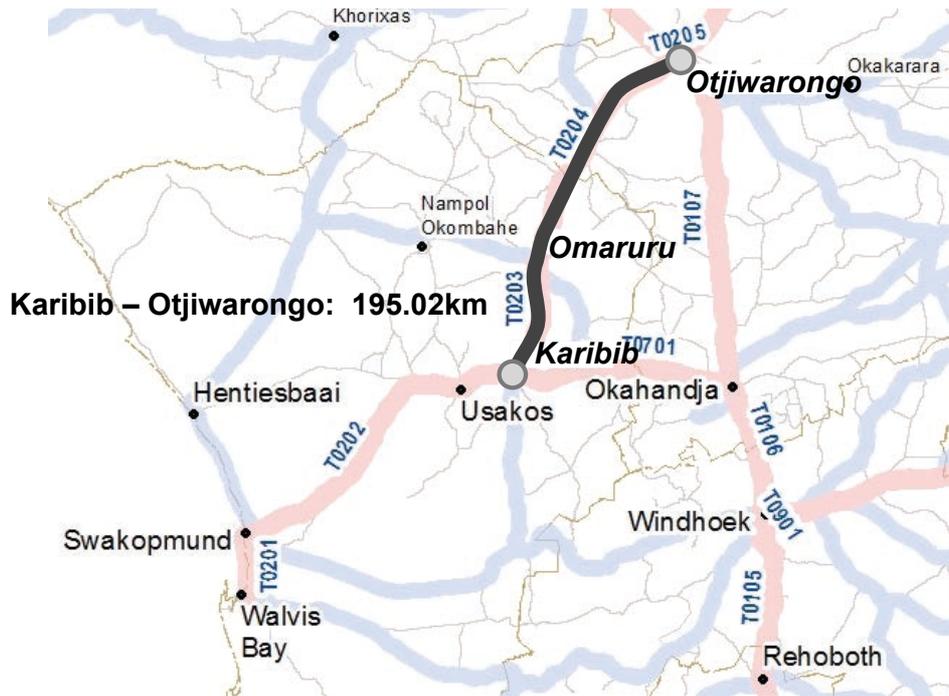


Figure location of the project

Description

GRN aimed to be the country logistics hub of SADC region, and logistics industry was designated as one of priority areas for economic development in NDP4. NamPort is now constructing a new container terminal with throughput capacity of 750,000 TEUs per year at the existing Walvis Bay Port. Construction is expected to be finished in 2018. After completion of the terminal, increase of cargo volume is expected.

The Logistics Hub Master Plan set a target that cargo volume from Walvis Bay to Namibia and the neighboring countries will increase from 1.5 million tons in 2013 to 3.1 million tons in 2020 and 6.6 million tons in 2025 (total of domestic demand of Namibia and transit cargo to the surrounding countries).

Along with the increase in cargo volume, the number of heavy vehicles transporting cargo will increase. Furthermore, other types of vehicle such as a passenger cars and buses will also increase along with increase in population and GDP.

In 2013, the AADT volume in the section between Karibib and Otjiwarongo was 1,790. The traffic volume in the same section will increase in 2025 with the increasing population, GDP and cargo volume. AADT volume in the section in 2025 is estimated to be 3,010. This section will still have sufficient capacity in 2025. However, this section is located in an area with hilly topography and the proportion of heavy vehicles will be high (37%) compared to other sections where the topography is

relatively flat. Securing road safety is a major issue in this section.

Table: Traffic volume in 2013 and 2025

Section	No of lanes	Annual Average Daily Traffic Volume (Vehicle/day)							Total (vehicle / day)	No of large cargo trucks	% of large cargo trucks	Geography
		Passenger car	Medium bus	Large bus	Light truck	2 axles truck	3 axles truck	Multi axles truck				
Karibib - Otjiwarongo	2	870	50	20	120	230	140	360	1,790	730	41%	Hill area
Otjiwarongo - Otavi	2	2,750	180	70	250	380	260	680	4,570	1,320	29%	Flat area
Otavi - Grootfontein	2	770	50	20	80	90	60	120	1,190	270	23%	Flat area
Karibib - Otjiwarongo	2	1,550	80	40	240	370	190	540	3,010	1,100	37%	Hill area
Otjiwarongo - Otavi	2	4,630	280	110	530	720	430	1230	7,930	2,380	30%	Flat area
Otavi - Grootfontein	2	1,280	70	30	250	250	130	320	2,330	700	30%	Flat area

Passing lanes should be constructed at the between Karibib and Otjiwarongo, in order to avoid traffic congestion and to decrease traffic accidents. The figure below shows the existing and future road section.

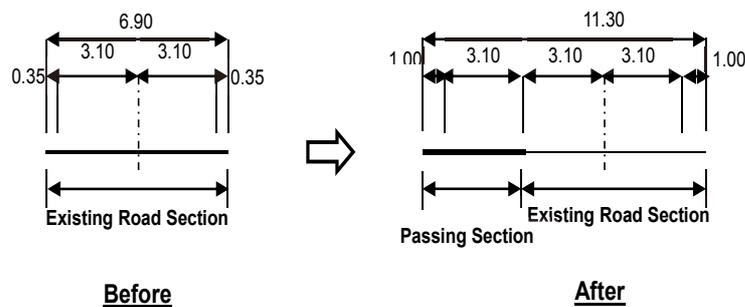


Figure: Existing and future road section

Component

(11) Passing lanes in 40 locations

Schedule

- Study, survey and detail design, EIA, tender preparation and bidding: 2016 to 2018 (2.5 years)
- Construction of passing lanes: 2018 to 2020 (2 years)

Benefit

- Decrease in traffic congestion
- Reduce traffic accidents and improve traffic safety
- Reduce travel time
- Improve environmental conditions

Cost estimate

Construction of passing lanes: N\$324.47 million

Construction of passing lanes		N\$324.47 million
Unit price*	N\$17.1 million/km No of construction sites of passing lanes: 40 (20 each direction) Average length of a passing lane: 0.5km	
Construction of 40 passing lanes		N\$256.50 million
Engineering services (study and design: 10% of widening works)		N\$25.65 million
Contingency & Tax (15% of upgrading and engineering services)		N\$42.32 million

Note: * Refer to construction cost of "TR1/5 Windhoek – Rehoboth" in Roads Authority: Five-Year Budget for the period 2014/15 to 2018/19

Preliminary scoping for EIA

Category	Environmental Item		Rating		Details
			Construction	Operation	
Pollution Control	1	Air Quality	B-	B+	<u>Construction phase</u> • Exhaust gas from construction equipment and vehicles, and the dust caused by construction works will increase. <u>Operation phase</u> • Reduction of traffic congestion due to road improvement will contribute to mitigate exhaust gas.
	2	Water Quality	C	D	<u>Construction phase</u> • Mud, oil and turbid water from the construction site and domestic wastewater from workers' camp will be discharged. • They would cause water pollution but it depends on the situation of surface water and groundwater aquifer around the target road. <u>Operation phase</u> • No impact is predicted.
	3	Wastes	B-	D	<u>Construction phase</u> • Solid waste, construction waste soil from the construction site and domestic waste from worker's camp will be generated. <u>Operation phase</u> • No impact is predicted.
	4	Soil Contamination	B-	D	<u>Construction phase</u> • Asphalt emulsion for paving work, oils and fuels will leak from the construction site and possibly contaminate soil. <u>Operation phase</u> • No impact is predicted.
	5	Noise and Vibration	B-	B-	<u>Construction phase</u> • Noise and vibration from construction equipment and vehicles will occur. <u>Operation phase</u> • Growth in traffic volume might generate more noise and vibration
	6	Subsidence	D	D	No impact is predicted.
	7	Odour	B-	D	<u>Operation phase</u> • Offensive odour due to asphalt emulsion for paving work and to exhaust gas of construction vehicles and machine will be produced. <u>Operation phase</u> • No impact is predicted.
	8	Sediment	D	D	No impact is predicted.
Natural Environment	9	Protected Areas	D	D	There is no protected area nearby the project site.

	10	Ecosystem	B-	B-	<u>Construction phase</u> <ul style="list-style-type: none"> Exhaust gas and noise from construction equipment and vehicles will disturb wildlife. Movement of construction equipment and vehicles will disturb wildlife. Construction team will commit illegal wood cutting and wildlife poaching. <u>Operation phase</u> <ul style="list-style-type: none"> The road widened by the project will have more barrier effect against wildlife movement. Growth in traffic volume will increase collision with wildlife and result to road kills. Incident of illegal wood cutting and wildlife poaching might increase.
	11	Hydrology	D	D	No impact is predicted.
	12	Topography and Geology	C	D	No impact is predicted.
Social Environment	13	Resettlement	D	D	No resettlement will be involved.
	14	The poor	C	C	Unknown
	15	Ethnic Minorities, Indigenous People	D	D	There are no ethnic minorities or indigenous people living around the target road.
	16	Local economy, employment	B+	B+	<u>Construction phase</u> <ul style="list-style-type: none"> Job opportunities, demand for goods and services related to construction work will be generated. <u>Operation phase</u> <ul style="list-style-type: none"> Improved road transport will stimulate local economic activities such as agriculture and tourism business.
	17	Land use, utilization of local resources	B-	D	<u>Construction phase</u> <ul style="list-style-type: none"> Temporary facilities, such as borrow pit and quarry would be located for construction work. Construction work will be done within ROW so existing land use will not be altered. <u>Operation phase</u> <ul style="list-style-type: none"> No impact is predicted.
	18	Water resources, water use	C	D	<u>Construction phase</u> <ul style="list-style-type: none"> Unknown. Water use for construction use and workers' camp might affect the existing water supply system. <u>Operation phase</u> <ul style="list-style-type: none"> No impact is predicted.
	19	Public infrastructure, social services	D	D	No impact is predicted.
	20	Social institutions, local decision making	D	D	No impact is predicted
	21	Misdistribution of benefit and damage	D	D	No impact is predicted.
	22	Local conflict of interests	D	D	No impact is predicted.
	23	Heritage	D	D	There is no cultural or natural heritage around the target road.
	24	Landscape	D	D	No impact is predicted.
	25	Gender equity	C	C	Unknown
	26	Children's right	C	C	Unknown
		27	Infectious diseases such as HIV/AIDS	B-	D

	28	Working conditions	B-	D	<u>Construction phase</u> <ul style="list-style-type: none"> • Operation of construction machines and vehicles will have a risk of accident. • Workers will damage their health if safety and hygiene is not maintained at construction site and workers' camp. <u>Operation phase</u> <ul style="list-style-type: none"> • No impact is predicted.
Others	29	Traffic accidents	B-	A+	<u>Construction phase</u> <ul style="list-style-type: none"> • A risk of traffic accident will be higher than usual. <u>Operation phase</u> <ul style="list-style-type: none"> • Reduction of traffic congestion and dangerous overtaking due to road improvement will greatly contribute to decrease in traffic accident, especially fatal ones.

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of positive/negative impact is unknown. (A further examination is needed, and the impact could be clarified as the study progresses)

D: No impact is expected.

PROGRAMME/PROJECT PROFILE 6

#	Title
6	Project on Upgrading Railway Lines

Implementing Agency
MWT (construction) and TransNamib (operation)

Location
Section between Walvis Bay and Kranzberg (211.8km) and Kranzberg and Windhoek (212.6km) of the existing Railway Network in Namibia. The figure below shows the location of the project.

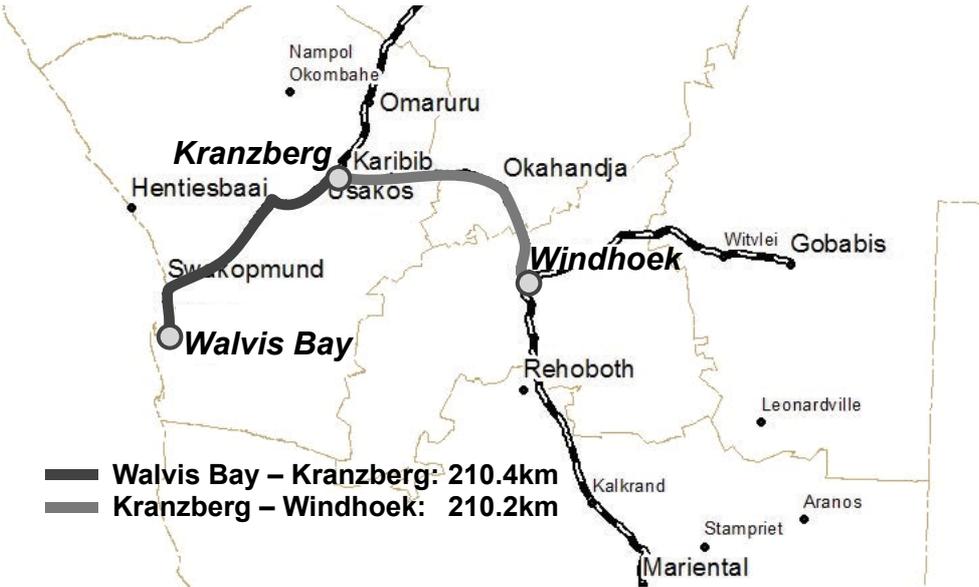


Figure: Location of the project

Description

GRN as a country aims to be the logistics hub of the SADC region, and the logistics industry was designated as one of priority areas for economic development in NDP4. Responding to NDP4, TransNamib set a goal to double the cargo volume transported by 2017 compared to the volume transported in 2011.

The new container terminal with handling capacity of 750,000 TEUs per year is now under construction at Walvis Bay Port to increase transit cargo to landlocked countries. In 2025, the cargo volume transported by rail at 3 lines (Walvis Bay – Kranzberg, Kranzberg – Tsumeb and Kranzberg – Windhoek) is estimated to increase 2.5 fold compared to the volume in 2013.

At present, MWT is rehabilitating the track between Kranzberg and Tsumeb with its length of 391.63km. It is expected to be completed by 2016. After the rehabilitation, trains will be able to run at about 40km/h on this section. The section between Tsumeb and Oshikango had been newly developed during 2004 to 2011 and trains are operated there at about 100km/h at present. Some bottlenecks still exist at sections between Walvis Bay and Windhoek (total 420km) because updating works have not been conducted since 1995. 30kg/m rail and 30 kg steel sleepers that do not meet SADC standards are still used on these the two lines.

According to TransNamib’s 180-days turn around plan, these two lines are positioned as its core lines, together with the Kranzberg – Tsumeb line. These three existing lines are vital in order to re-establish a rail network connecting the 3 most populated regions and to serve the immediate existing demand for bulk cargo transportation.

Therefore, these 2 lines should be upgraded as soon as possible after the rehabilitation of the track

between Kranzberg and Tsumeb.

Table: Present track condition

Section	Distance (km)	Year of re-laid or built	Rail (kg/m)	Sleeper	Ballast	Maximum speed of train
Walvis Bay – Windhoek: 420.557km						
Walvis Bay	199.080	1980 – 1993	48	STS & CS	Ballast	15km/h: 3km 40km/h: 35km 60km/h: 382km (Total 420.557km)
Usakos						
Albrechts	56.793	1958 – 1994	30 & 40	STS=30kg	Ballast	
Otjihajavera	134.339	1969 – 1995	48	STS=30kg	Ballast	
Windhoek	30.345	1966 – 1995	30 & 40	STS= 30 & 40kg	Ballast	
Kranzberg – Tsumeb: 391.627km (under rehabilitation; the section will be completed in 2015.)						
Kranzberg	391.627	1960 – 1986	30	STS=30kg	Ballast	15km/h: 31km 20km/h: 56km 40km/h: 304km
Tsumeb						
Tsumeb – Oshikango: 310.48km						
Tsumeb	252.500	2004 – 2006	48	CS	Ballast	100km/h (Total 310.48km)
King Nehale						
Oshikango	57.980	2011	48	CS	Ballast	

Note: STS means Steel tiled sleeper; CS means concrete sleeper

Source: TransNamib

Table: Present and future cargo volume of 3 lines

Section (Station)	Distance (km)	Cargo Volume (ton/day)		Increase (%)
		2013	2025	
Walvis Bay – Kranzberg	211.8			
Walvis Bay – Swakopmund	50.3	5,230	13,080	250%
Swakopmund – Kranzberg	161.5	4,700	11,510	245%
Kranzberg – Tsumeb	388.9			
Kranzberg – Otavi	327.6	2,530	6,240	247%
Otavi – Tsumeb	61.3	2,000	5,150	258%
Kranzberg – Windhoek	212.6			
Kranzberg – Okahandja	139.9	2,170	5,280	243%
Okahandja – Windhoek	72.7	2,190	5,300	242%

Source: TransNamib (2013); forecast by JICA Study Team (2025)

Component

(12) Walvis Bay – Kranzberg

(13) Kranzberg – Windhoek

Schedule

- Study, survey and detail design, EIA, tender preparation, bidding: 2016 to 2018 (3 years)
- Upgrading of the 2 lines: 2019 to 2021 (3 years)

Benefit

- Promote modal shift from truck transport to rail transport. The Logistics Hub Master Plan estimates the economic benefit of the modal shift amount to N\$534 million if TransNamib raise its modal share from current 12% to 15%
- Increase TransNamib's revenue and improve its business environment
- Reduce maintenance cost of roads
- Improve environmental conditions

Cost estimate

Total cost of upgrading for the sections between Walvis Bay –Kranzberg and Kranzberg – Windhoek: N\$1,968.62 million

Total cost		N\$1,968.62 million
Upgrading of track		
Unit cost*: N\$3.7million/km		
Section between Walvis Bay and Kranzberg (210.4km)		N\$984.78 million
Upgrading works	210.4km	N\$778.48 million
Engineering services (study and design: 10% of upgrading works)		N\$77.85 million
Contingency & Tax (15% of upgrading and engineering services)		N\$128.45 million
Section between Kranzberg and Windhoek (210.2km)		N\$983.84 million
Upgrading works	210.2km	N\$777.74 million
Engineering services (study and design: 10% of upgrading works)		N\$77.77 million
Contingency & Tax (15% of upgrading and engineering services)		N\$128.33 million

Note: * Estimated by the study team based on the data obtained from TransNamib (Rail – Sub Sector Bi-Annual Progress Report 2013/2014)

Preliminary scoping for EIA

Category	Environmental Item		Rating		Details
			Construction	Operation	
Pollution Control	1	Air Quality	B-	B-	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Exhaust gas from construction equipment and vehicles, and the dust caused by construction works will increase. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> Increase in the number of train operation will generate more exhaust gas.
	2	Water Quality	C	D	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Mud, oil and turbid water from the construction site and domestic wastewater from workers' camp will be discharged. They would cause water pollution but it depends on the situation of surface water and groundwater aquifer around the target line. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> No impact is predicted.
	3	Wastes	B-	D	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Solid waste, construction waste soil from the construction site and domestic waste from worker's camp will be generated. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> No impact is predicted.
	4	Soil Contamination	D	D	No impact is predicted.
	5	Noise and Vibration	B-	B-	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Noise and vibration from construction equipment and vehicles will occur. <p><u>Operation phase</u></p> <ul style="list-style-type: none"> Increase in the number of train operation will generate more noise and vibration.
	6	Subsidence	D	D	No impact is predicted.
	7	Odour	D	D	No impact is predicted
	8	Sediment	D	D	No impact is predicted.
Natural Environment	9	Protected Areas	C	C	The section from Walvis Bay to Rossing traverses the area of Dorob-National Park. Although upgrade of existing line might not have significant impact on the area, it is unknown.
	10	Ecosystem	B-	B-	<p><u>Construction phase</u></p> <ul style="list-style-type: none"> Exhaust gas and noise from construction equipment and vehicles will disturb wildlife. Movement of construction equipment and vehicles will disturb wildlife. Construction team will commit Illegal wood cutting and

					wildlife poaching. <u>Operation phase</u> • Increase in the number of train operation will have more barrier effect against wildlife movement, and increase collision with wildlife to death.	
	11	Hydrology	D	D	No impact is predicted.	
	12	Topography and Geology	D or C	D or C	No impact is predicted.	
Social Environment	13	Resettlement	D	D	No resettlement will be involved.	
	14	The poor	C	C	Unknown	
	15	Ethnic Minorities, Indigenous People	D	D	There are no ethnic minorities or indigenous people living around the target line.	
	16	Local economy, employment	B+	D	<u>Construction phase</u> • Job opportunities, demand for goods and services related to construction work will be generated. <u>Operation phase</u> • No impact is predicted.	
	17	Land use, utilization of local resources	B-	D	<u>Construction phase</u> • Temporary facilities, such as borrow pit and quarry would be located for construction work. • Construction work will be done on the existing line so land use will not be altered. <u>Operation phase</u> • No impact is predicted.	
	18	Water resources, water use	C	D	<u>Construction phase</u> • Unknown. Water use for construction use and workers' camp might affect the existing water supply system. <u>Operation phase</u> • No impact is predicted.	
	19	Public infrastructure, social services	D	D	No impact is predicted.	
	20	Social institutions, local decision making	D	D	No impact is predicted	
	21	Misdistribution of benefit and damage	D	D	No impact is predicted.	
	22	Local conflict of interests	D	D	No impact is predicted.	
	23	Heritage	D	D	There is no cultural or natural heritage around the target road.	
	24	Landscape	D	D	No impact is predicted.	
	25	Gender equity	C	C	Unknown	
	26	Children's right	C	C	Unknown	
		27	Infectious diseases such as HIV/AIDS	B-	D	<u>Construction phase</u> • Influx of construction workers might induce spread of infectious diseases. <u>Operation phase</u> • No impact is predicted.
		28	Working conditions	B-	D	<u>Construction phase</u> • Operation of construction machines and vehicles has a risk of accident. • Workers will damage their health if safety and hygiene is not maintained at construction site and workers' camp. <u>Operation phase</u> • No impact is predicted.
Others	29	Rail Accidents	D	A+	<u>Construction phase</u> • An accident will not happen. <u>Operation phase</u> • Rail improvement will greatly contribute to reduction of accidents such as derailment.	

A+/-: Significant positive/negative impact is expected.

B+/-: Positive/negative impact is expected to some extent.

C+/-: Extent of positive/negative impact is unknown. (A further examination is needed, and the impact could be clarified as the study progresses)

D: No impact is expected.

PROGRAMME/PROJECT PROFILE 7

#	Title
7	Market Research on Air Cargo Demand

Implementing Agency

MWT, NAC

Location

Hosea Kutako International Airport (HKIA)

Walvis Bay Airport

Description

Current cargo handling volume at airports in Namibia is limited. According to "World Airport Traffic Report 2009", 4 airports (HKIA, Eros, Walvis Bay and Lüderitz) handled air cargo in Namibia, and the cargo volume handled at the 4 airports was 8,611 tons in 2008 and 7,315 tons in 2009 respectively (Table 1). HKIA handled about 87% of the total cargo in 2009.

While Walvis Bay Port handled around 5 million tons in 2008 and 2009. Compared to the port handling volume, the cargo volume handled at the airports is very small.

Table 1: Cargo handling volume at airports in Namibia

Unit: tons

Airport	2008	2009
HKIA	7,464	6,362
Walvis Bay	110	14
Eros	1,028	934
Lüderitz	9	5
Total	8,611	7,315

Source: World Airport Traffic Report 2009

In SADC countries, the air cargo volume amounted to 481,000 tons in 2009. 55% of the cargo in SADC was handled in South Africa, and of which 94% (52% in SADC) was handled at OR Tambo Airport, Johannesburg. The percentage of HKIA in SADC was only 1.3%.

Table 2: Air cargo volume in SADC countries in 2009

Unit: ton

Countries	Air cargo volume (A)	Share	Major airport	Air cargo volume (B)	Share (B/A)
Angola	53,339	11%	Luanda	53,339	100%
Botswana		0%			
Congo, Dem. Rep.	88,183	18%	Kinshasa	67,544	77%
Lesotho		0%			
Malawi	4,303	1%	Lilongwe	4,303	100%
Mozambique	10,462	2%	Maputo	7,373	70%
Namibia	7,315	2%	Hosea Kutako	6,362	87%
South Africa	266,989	55%	OR Tambo	252,063	94%
Swaziland		0%			
Tanzania	25,868	5%	Julius Nyerere	18,844	73%
Zambia	4,756	1%	Lusaka	4,756	100%
Zimbabwe	20,155	4%	Harare	20,155	100%
Total	481,370	100%	Total	434,739	90%

Source: World Airport Traffic Report, ACI, 2009

NAC recognises that HKIA and Walvis Bay Airport have a potential to handle more cargo. Regarding HKIA, the potential cargo is grapes to European countries and dates to Middle East countries which are produced in the southern part of Namibia. Currently, grapes are transported to Walvis Bay Port and exported by container vessel.

Potential cargo for Walvis Bay Airport is fresh fish to Europe and import of mining machines/equipment. Currently, fresh fish is transported to HKIA, and transported to Spain via OR Tambo Airport. NAC receives some requests from mining companies to transport mining equipment/machines but it cannot

transport them now. As a result the mining equipment/machines are transported by ship and land.

NAC intends to enhance cargo handling facilities at HKIA and Walvis Bay Airport, however, potential volumes of the cargo mentioned above is not yet clearly assessed. It is also necessary to investigate other potential cargo to invite cargo flights. Therefore, market research on air cargo demand is needed.

Component

(14) Market research on air cargo demand at Hosea Kutako International Airport

(15) Market research on air cargo demand at Walvis Bay Airport

Schedule

(14) Market research on air cargo demand at Hosea Kutako International Airport: 2015 to 2020

(15) Market research on air cargo demand at Walvis Bay Airport: 2015 to 2020

If a certain level of cargo demand is identified, a feasibility study and implementation on an air cargo project (development of cargo handling facility) will be conducted in the next stage

Benefit

- Namibia's function as an International Logistics Hub will be enhanced if aviation cargos are handled at HKIA and Walvis Bay Airport.
- Handling of air cargos is a new revenue source for NAC and airlines.
- Rapid transport of cargos (grapes, dates, fresh fish and mining equipment/machines) will support development of each industrial activity.

Cost estimate

Total of market research on air cargo demand: N\$6.0 million

(14) Market research on air cargo demand at Hosea Kutako International Airport: N\$3.0 million

(15) Market research on air cargo demand at Walvis Bay Airport: N\$3.0 million

PROGRAMME/PROJECT PROFILE 8

#	Title
8	Bypass Roads and Truck Stops Development Programme

Implementing Agency

Roads Authority, MRLGHRD, local authorities (Usakos, Karibib, Omaruru, Otjiwarongo, Ondangwa, Grootfontein, Rundu)

The National Coordinating Body of the Logistics Hub Master Plan will support town development planning, and coordinate between Roads Authority, MRLGHRD and local authorities.

Location

The combination of a bypass road & a truck stop is to be constructed at Usakos, Karibib, Omaruru, Otjiwarongo, Ondangwa, Grootfontein and Rundu. These towns are selected from the following criteria: (1) traffic volume, (2) traffic safety and (3) vehicle speed in towns from all towns along the corridors.

Construction of truck stops is proposed at Omuthiya, Mururani, Divundu and Kongola. These towns are selected due to the distance to the neighbouring towns. The figure below shows the location of the towns.

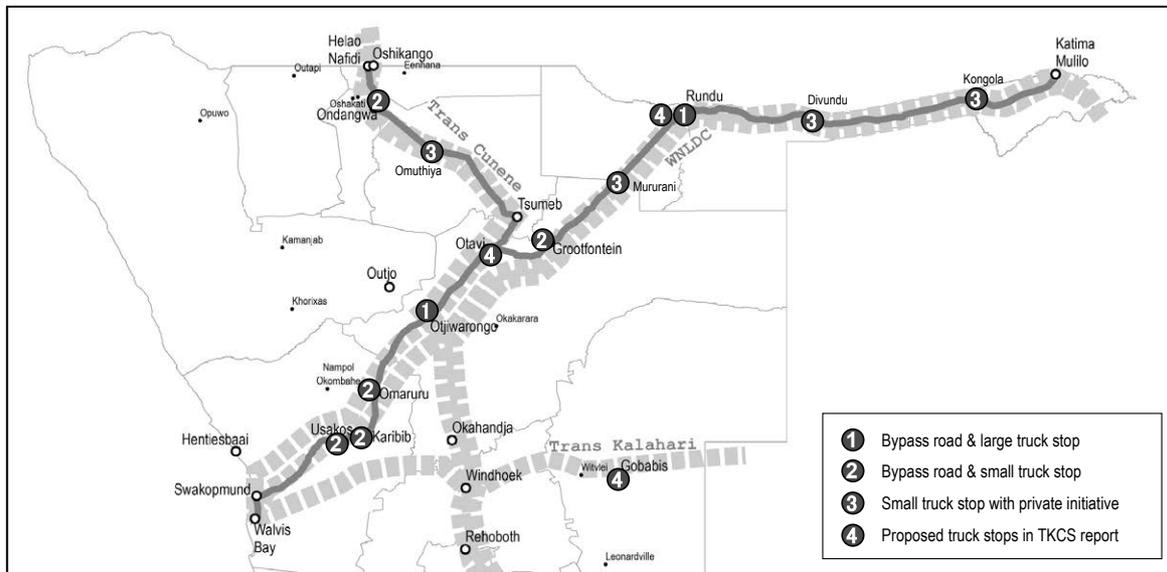


Figure: Location of bypass and truck stop projects

Description

The development of bypass roads is necessary for the following reasons: (1) Bypass restricted right of way for road in towns, (2) Reduction of travel time in corridors, and (3) Securing safety in towns. Some people may worry about the decrease of economic benefit to these towns if trucks would not pass built-up areas. In order to minimize economic loss, truck stops should be planned as well to promote economic activities of the residents of these towns.

A truck stop is a place where cargo trucks and passenger vehicles travelling along corridors can stop and the drivers and passengers take a rest. The drivers and passengers also buy goods and services. The truck stop will also have facilities such as a fuel station and a maintenance workshop, etc.

According to a study conducted by WBCG, if the distance between truck stops exceeds 75 to 80 miles (around 120km to 130km), the rate of traffic accidents increases. One of the important purposes to develop truck stops is to decrease traffic accidents.

In general, a truck stop has the following facilities as indicated in the table below. However, not all truck stops will be furnished with these functions. Large-scale truck stops (Otjiwarongo and Rundu), which would be far from other truck stops, should have all facilities. However, small-scale trucks stops (Usakos, Karibib, Omaruru, Ondangwa and Grootfontein), which would be near from other truck stops, should have minimum facilities such as parking lot, fuel station, toilets and showers and shops.

Table: Facilities of truck stops

No	Facilities	Description
1	Parking lot	Most basic function of the truck stop is to provide safe parking lot to users. The lot should be allocated separately for large vehicles and passenger cars.
2	Fuel station	A Fuel station is an important facility for truck stops.
3	Maintenance garage	In general, simple maintenance services such as replacement of tires, engine oil and transmission oil, bulbs and etc. should be available. If this facility is located inside the truck port, fewer trucks go inside the town to find a reliable garage. An example of such a facility is the Engen petrol station at Swakopmund.
4	Information services	An Information Board will provide drivers with traffic information and Customs and Immigration information related to congestion so that they can adjust their operation plan easily. Communication facilities are also important to be available: mobile phone service as well as fixed phone services to make international calls for foreign drivers, Internet Wi-Fi service to acquire information and communicate with truck companies. Mobile Phone coverage should be available for the truck stops.
5	Toilets and showers	Well-maintained tidy toilets should be provided to drivers. In some toilets, shower facilities are also to be supplied for drivers. Laundry facilities can be installed at the same place.
6	Accommodation	In most cases, drivers sleep in truck cabins, but there are certain needs for lodging facilities.
7	Restaurant	Food and drink supply is one of the most important needs for drivers. According to the study, drivers prefer take a ways, which can save time compared with hot meals. However some prefer to take a meal in restaurants. A variety/combination of take away shops and restaurants might be needed in truck stops.
8	Leisure facilities	Some drivers must stay overnight at the truck stop. Leisure facilities might include game centres where drivers can spend time to release stress. The facilities also may contribute to reduce HIV/AIDS infection.
9	Shops	Truck stop is the facility to support daily life of drivers. A convenience store can offer common goods necessary for drivers
10	Bank	Drivers need money to do anything, which cost even though inside the truck terminal. So ATMs are necessary.
11	Wellness Centre	According to the questionnaire survey conducted by the WBCG study, a wellness centre is one of the popular requests from drivers. This centre is basically required having two functions. The first one is health counselling and to provide medicine upon request of drivers. The second one is to promote preventative measures against HIV/AIDS.

Source: JICA Study Team

Public private partnership (PPP) could be introduced in construction and operation of the truck stops which are jointly developed with bypass roads. The operating company is a joint venture company consisting of local authorities and private companies or purely private company. Operating companies of petrol stations are one of the prospective investors. Involvement of the local authority is important from the point of smooth coordination for town planning, bypass road development and land preparation for truck stops.

The existing petrol stations could be upgraded to the truck stops at Omuthiya, Mururani, Divundu and Kongola. The local authorities may prepare land use plan for expansion of the existing facility, and support the upgrade if necessary.

The National Coordinating Body will prepare guidelines of bypass road development and truck stops development (A private company can develop and operate a truck stops but it is necessary to follow the guideline.), and monitor compliance of the truck stops in terms of customer satisfaction and safety guidelines.

Component

(16) Land use-planning program

(17) Preparation of bypass road development projects

(18) Preparation of truck stop development projects

Schedule

- Preparing a guideline for development of bypass roads and truck stops: 2015 to 2016
- Supporting the National Coordination Body to establish and update the policy on “Bypass Road and Truck Stop Development”: 2015 to 2020
- Supporting land use planning, and bypass road and truck stop development projects prepared by local authorities: 2016 to 2018
- Construction of bypass roads and truck stops: 2017 to 2020
- Supporting organizations of operation bodies operating truck stops: 2018 to 2020

Benefit

- Travel time for corridors is reduced (less traffic congestions in towns)
- Traffic safety is improved in towns
- Number of traffic accident caused by trucks may reduce
- Trucking companies can operate trucks stably under safer conditions
- Generation of employment at truck stops

Cost estimate

Total of Bypass Roads and Truck Stops Development Programme: 2,237.90 million

- Preparing a guideline for development of bypass roads and truck stops: N\$3.6 million
- Supporting the National Coordination Body to establish and update the policy on “Bypass Road and Truck Stop Development”: N\$3.6 million
- Supporting land use planning, and bypass road and truck stop development projects prepared by local authorities: N\$3.6 million
- Construction of bypass roads and truck stops: N\$2,223.50 million (refer to the table below)
- Supporting organizations of operation bodies operating truck stops: N\$3.6 million

Town	Bypass							Unit cost (N\$ mil/h a) ²	Truck Stop				Total
	Road			Bridge			Total		Large		Small		
	Length (km)	Unit (N\$ mil/ km) ¹	Cost (N\$ mil)	Length (m)	Unit (N\$ mil/ k) ¹	Cost (NS mil)			Area (ha) ³	Cost (NS mil)	Area (ha) ³	Cost (N\$ mil)	
Usakos	4.00	33.00	132.00	200.00	1.20	240.00	372.00			2.00	7.00	379.00	
Karibib	4.50	36.00	162.00	0.00			162.00			2.00	7.00	169.00	
Omaruru	5.00	36.00	180.00	200.00	1.20	240.00	420.00			2.00	7.00	427.00	
Otiwarongo	20.00	36.00	720.00	0.00			720.00		3.00	10.50		730.50	
Grootfontein	3.50	36.00	126.00	0.00			126.00		3.00	10.50		136.50	
Ondangwa	5.50	30.00	165.00	30.00	1.20	36.00	201.00	3.50		2.00	7.00	208.00	
Rundu	4.50	30.00	135.00	0.00			135.00		3.00	10.50		145.50	
Omuthiya										2.00	7.00	7.00	
Mururani										2.00	7.00	7.00	
Divundu										2.00	7.00	7.00	
Kongola										2.00	7.00	7.00	
Total							2,136.00			31.50	56.00	2,223.50	

Note: ¹ Refer to construction cost of “TR1/5 Windhoek – Rehoboth” in Roads Authority: Five-Year Budget for the period 2014/15 to 2018/19; ² unit cost of Nara Namib logistic facility (information from NDC); ³ Estimation by JICA study team

PROGRAMME/PROJECT PROFILE 9

#	Title
9	Integrated Border Management Programme

Implementing Agency

MOF (Customs & Excise Department), MHA (Immigration), MWT, RA, MAWF, MOH, MRLGRD, Local authorities (Katima Mulilo Town Council and Helao Nafidi Town Council)

Location

- Improvement of ICT systems and development of inter-organizational coordination: Windhoek, custom’s regional offices and major border points (HKIA, Walvis Bay, Oshikango, Oshakati, Wenela, Ngoma, Katima Mulilo, Mamuno, Trans–Karahari, Noordoewer, Ariamsvlei, etc.)
- OSBP Projects: Mamuno Border Office and Wenela Border Office
- Construction of border town development packages: Katima Mulilo and Oshikango (Helao Nafidi).

The figure below shows target towns, regional offices and border offices in the Integrated Border Management Programme.

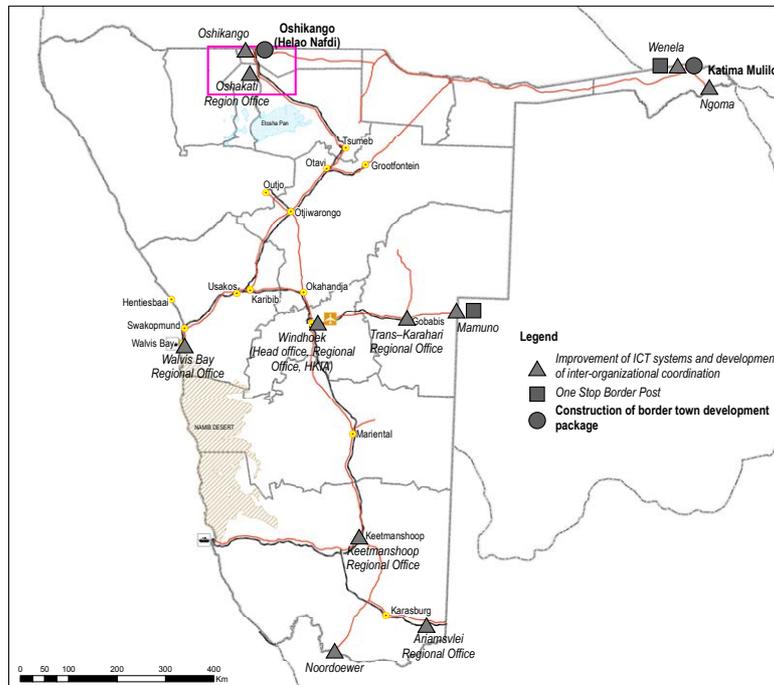


Figure: Location of Integrated Border Management Programme

Description

Currently, Namibian routes (port, road and border facilities) are not congested because of relatively good infrastructure and the small amount of cargo. However, the expected increase in the cargo volume would cause serious congestion at various places in the future unless throughput capacity is dramatically expanded. Even at present, it is pointed out that some border posts are already congested due to a shortage of staff.

In order to achieve efficient and secure border management, integration of ICT systems, efforts for development of a Risk Management System and development of a protocol for inter-organizational coordination, introduction of One Stop Border Posts are needed. The figure bellow shows a concept of “integration of systems”.

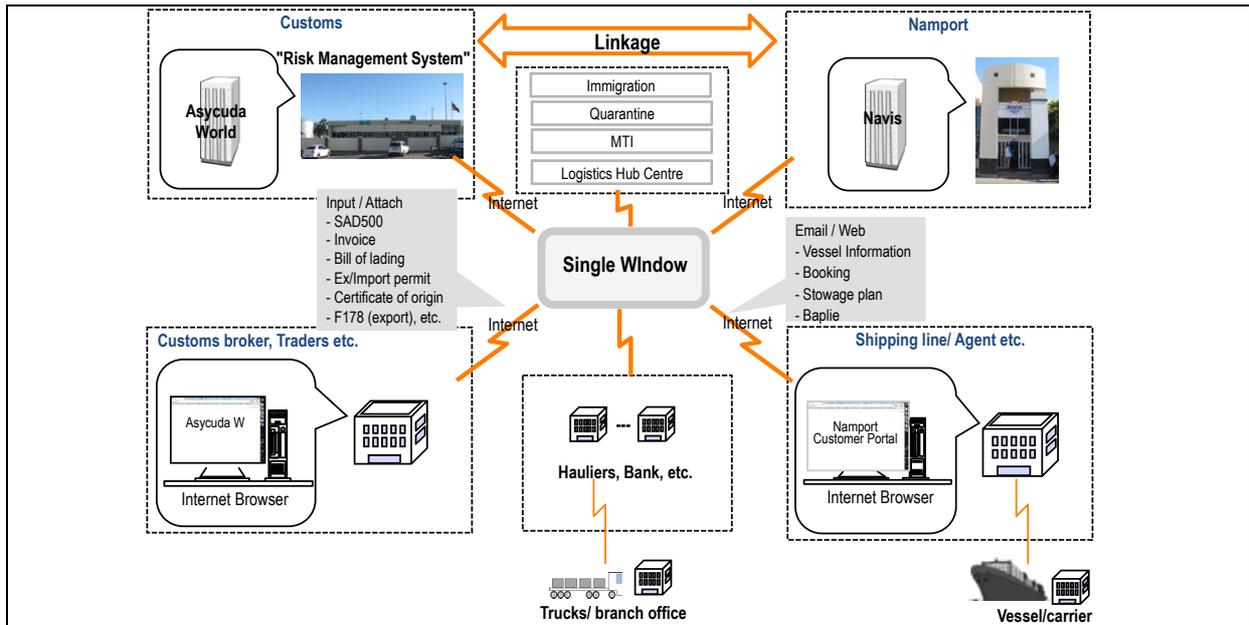


Figure: Concept of “Integration of systems”

Congestion at Oshikango is also a major issue regarding border management. Since the town has seen rapid development in a disorderly way, it is difficult to expand the border facility and infrastructure for transport and logistics now. Katima Mulilo, at which rapid growth of cargo transport is expected, is facing the same problem. Therefore, coordination between the Town Council and Customs is needed in preparing and implementing a town development plan. The figure below shows a conceptual plan for border infrastructure at Katima Mulilo Town.

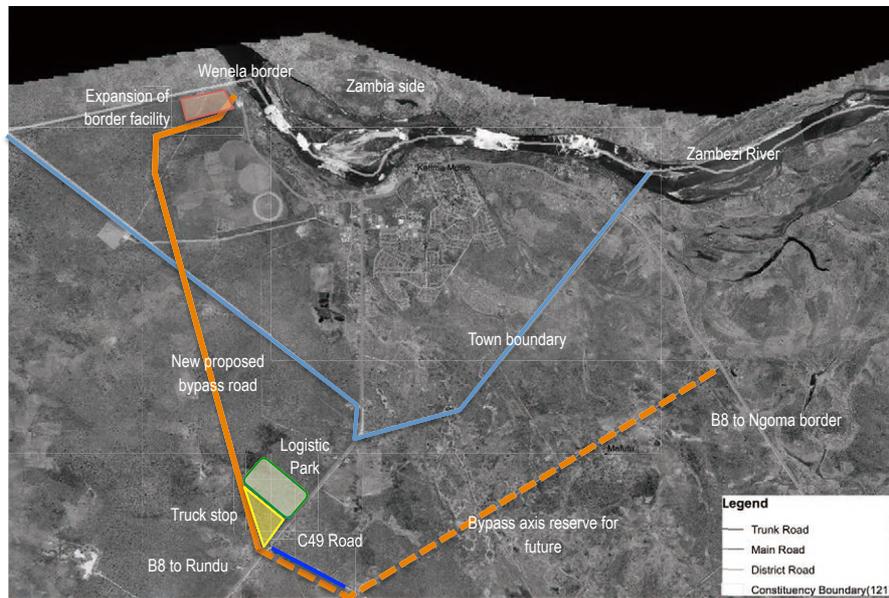


Figure: Conceptual plan for border infrastructure at Katima Mulilo Town

Component

- (19) Preparation and commencement of border town development packages (Land use plan, Bypass, Truck stop, and border infrastructure)
- (20) Integration of ICT system relating border management (linkage between Asycuda and Navis, Single Window and Risk Management System)

(21) Install "Corridor Net" to provide information services to transporters

(22) Implementation of OSBP at Mamuno

Schedule

(19) Preparation and commencement of border town development packages (Land use plan, Bypass, Truck stop, and border infrastructure): 2015 to 2020

(20) Integration of ICT system relating border management (linkage between Asycuda and Navis, Single Window and Risk Management System: 2015 to 2020

(21) Install "Corridor Net" to provide information services to transporters: 2018 to 2020

(22) Implementation of OSBP at Mamuno: 2015 to 2020

Benefit

- Waiting time at national border will not be increased from the present level.
- Securing safety and efficiency at national border offices by introducing a Risk Management System
- Procedures for transporting cargo are simplified by introducing a Single Window System
- Town development plans coordinated with border management infrastructure such as bypass roads truck stops will mitigate congestion at Oshikango and Katima Mulilo and improve town environment.

Cost estimate

Total of Integrated Border Management Programme: N\$27.0 million (excluding (19) border town development packages)

(20) Integration of ICT system relating border management (linkage between Asycuda and Navis, Single Window and Risk Management System: N\$13.0 million

(21) Install "Corridor Net" to provide information services to transporters: N\$5.0 million

(22) Implementation of OSBP at Mamuno: N\$9.0 million