



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

Main Text

March 2015

Japan International Cooperation Agency (JICA)







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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

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Abbreviations

AADT	Annual Average Daily Traffic
ADB	African Development Bank
AEO	Authorized Economic Operator
AIDS	Acquired Immune Deficiency Syndrome
Asycuda	Automated SYstem for CUstoms DAta
BCC	Behaviour change communication
CBD	Central Business District
CBM	Coordinated Border Management
CCGT	Combined Cycle Gas Turbine
CCTV	Closed-circuit Television
CEO	Chief Executive Officer
CER	Circulating Eluidicad Bad
CFB	Custom Immigration and Quaranting
CSIR	Council for Scientific and Industrial Research
	Container Yard
DBSA	Development Bank of Southern Africa
DFIS	Development Financial Institutions
DO	Desired Outcome
DRC	Democratic Republic of Congo
ECB	Electricity Control Board
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPZ	Export Processing Zone
EQOs	Environmental Quantity Objectives
ES	Engineering Study
EU	European Union
FDI	Foreign Direct Investment
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
HSE	Health, safety and environment
IBI	Integrated Border Infrastructure
ICT	Information and Communication Technology
IMF	International Monetary Fund
IPAs	Interested and affected parties
IPP	Independent Power Producer
IUSDF	Integrated Urban Spatial Development Framework
JAFZ	Jebel Ali Free Zone
JICA	Japan International Cooperation Agency
KAZA	Kavango-Zambezi Transfrontier Conservation Area
KfW	Kreditanstalt für Wiederaufbau: Reconstruction Credit Institute
LCC	Low Cost Carrier
I HC	Logistics Hub Centre
MAWE	Ministry of Agriculture Water and Forestry
MET	Ministry of Environment and Tourism
MHAI	Ministry of Home Affairs and Immigration
MLTRMP	Medium and Long Term Road Master Plan
MOF	Ministry of Finance

MOHSS	Ministry of Health and Social Services
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
NamWater	Namibia Water Corporation
NDC	Namibia Development Corporation
NDP4	Fourth National Development Plan
NGCL	Namibian–German Centre for Logistics
NGO	Non-governmental Organisation
NPC	National Planning Commission
NSA	Namibia Statistics Agency
NTA	Namibia Training Authority
NTB	Non-Tariff Barrier
OD	Origin and destination
ODC	Offshore Development Corporation
0.IT	On the Joh Training
OSBP	One Stop Border Post
PCB	Police Custom and Border Guard
PCF7C	Ports Customs and Free Zone Corporation
PDCA	Plan-Do-Check-Act
PPP	Public Private Partnershin
RA	Road Authority
RFA	Road Fund Administration
RAS	Rheinland Air Services
RMS	Risk Management System
RMS	The Penublic of South Africa
	Read User Charge
SACU	Southorn African Customs Union
SACO	Southern African Development Community
SADO	Southern African Development Community
SAIEA	South African National Boods Agapav Limited
	Stratogia Environmental Accessment
SEA	Strategic Environmental Assessment
SEMP	Strategic Environmental Management Plan
SEZ	Special Economic Zone
SMES	Small and Medium Enterprises
SUES	
SIDS	
SIS	
SWOT	Strengths, Weaknesses, Threats and Opportunities
TEU	I wenty-feet equivalent unit
IKR	I rans–Kalahari Railway
UN	United Nations
USAID	United States Agency for International Development
VAT	Value Added Tax
WBCG	Walvis Bay Corridor Group
WBEPZMC	Walvis Bay Export Processing Zone Management Company
WLNDC	Walvis Bay-Ndola-Lubumbashi Development Corridor
ZACCI	Zambia Chamber of Commerce and Industry
ZAM	Zambian Association of Manufacturers

Executive Summary

1 Vision

The Development Vision of the present "Master Plan for Development of an International Logistics Hub for SADC Countries in the Republic of Namibia" (referred to as "Logistics Master Plan") is defined by the following statement with reference to NDP4 and Vision 2030.

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

2 Definition of an "International Logistics Hub"

An international logistics hub is a place where <u>a complete package</u> of international logistics services is readily available in order to serve <u>market demand</u> for international logistics. Integrated services consist of major functions required for international trade, including the following <u>5 elements</u>; efficient (1) port, (2) storage (operation base for logistics industry), (3) transport network, (4) collection and distribution of goods (international logistics companies), and (5) 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 <u>IS</u> a "Logistics Nation".

These 5 elements of functions alone do not guarantee the success of an international logistics hub. It is obvious that the presence of a substantial volume of market demand is a necessary condition for any hub to succeed. In this regard, development of a "hub" must include <u>effective market development</u> as well.

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 ES - 1.

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



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

Figure ES - 1: A conceptual framework of "Namibia as an International Logistics Hub"

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 the cost of utilizing land strategically low for the logistics industry.
- **Strategy 3:** The "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 the Logistics Hub Centre.
- **Strategy 4: Remove critical bottlenecks in 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 financial sources and skills.
- **Strategy 6: Re-introduce "beneficiaries pay" principles** 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 legislation and regulations under a "Basic Law on Promotion of International Logistics" as umbrella legislation and portal of cross-reference.

5 Development the scenario to become "An International Logistics Hub"

An overall development scenario is assumed with different phases as shown in Figure ES - 2.



Figure ES - 2: Expected changes in economic structure by a "Logistics First Strategy" and a flow of development scenario towards "An International Logistics Hub"

In the first phase, namely the "Short-term: Transport Corridor" phase, the focus is on removing bottlenecks and preparing to attract 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 a larger flow of goods.

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 supply and distribution depot for the region.

6 Targets

The Master Plan sets the targets of 2025 with given projected potential demand and supply capacity as summarized in the following table.

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	-
	Transit cargo	Transit cargo volume using Walvis Bay (million tons/year)	0.8	1.3	3.6	13.2%
Targets		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 by logistics (000 persons)	25.7	-	57.6	8.4%
		% Contribution to employment	3.7%	-	5.7%	-

 Table ES - 1 1: Master plan targets

Source: JICA Study Team

7 Critical programmes and projects for immediate implementation

Sixty-nine actions are identified and given respective implementation timeframes of "Short-term (by 2020)", "Medium-term (by 2025)", or "Long-term". Key organizations for implementation of those actions are identified as well. Among these actions, most "Critical Programmes/ Projects" are identified as summarized in Table ES - 2. Criteria to identify critical actions are the following 3 points. These criteria do not represent "importance" of actions but rather "sequence" of actions

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

K	ey 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 (Towns)	Bypass Road and Truck Stop Development Programme (16) Land use-planning program (17) Preparation of bypass road development projects (18) Preparation of truck stop development projects	NPC/MWT/RA/7 towns (Usakos, Karibib, Omaruru, Otjiwarongo, Ondangwa, Grootfontein, Rundu)	2015-2020	2,237.90	8
(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

 Table ES - 2: Summary of Critical Programmes and Projects by 2020

Source: JICA Study Team.



Figure ES - 3: Schedule of Critical Programme/Project

8 Urgent needs for establishing an entity for the overall coordination of implementation of the Logistics Master Plan

The identified issues and actions involve many kinds of stakeholders with different interests and priorities, which makes it challenging to reach much-needed consensus on how to implement programmes and projects. Outcomes of actions are mutually supplemental and interactive in their nature. Therefore, it is quite likely that piecemeal implementation of individual actions result in inefficient and unsatisfactory results in the end. These actions must be implemented with close coordination among a wide range of stakeholders in an integrated manner in order to maintain/ensure consistency among actions to be taken and to realize synergy as intended in the Master Plan.

To do so, it is necessary to have a new single Coordinating Body at national level that can propose clear policy directions supported by strong technical expertise to manage such a comprehensive and strategic development plan to the highest level policy decision. The Coordinating Body should cooperate with the implementing task forces such as "Working Groups" that will consist of members from implementing organizations in charge of respective actions (programmes/projects). "WBCG is in an excellent position to be transformed to the Coordinating Body".

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

1.1.2.1 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).

	Days to clear customs		Corruption (%)		Losses due to theft and vandalism	Transport Infrastructure	Electricity	Water
Countries	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

Table 1.1: Business environment indicators in African countries

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 transhipment 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.

1.2.1.2 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, the study team had given presentations at many meetings with stakeholders in major cities/towns in Namibia and Livingstone in Zambia 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.

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, D&M Rail, NGCL, WBCG		
Stakeholder meeting	g/information sessi	ion (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 H	Project to Japanese	e companies (arranged by JICA South Africa Office)		
22 May 2014	Johannesburg	Japanese companies in Johannesburg and Pretoria		
Namibia Logistics H	ub Symposium (ar	ranged by NPC)		
19–20 September	Swakopmund	NPC, MW1, M11, MOF, MHAI, Namport, Roads Authority, TransNamib, NAC, Air Namibia,		
2014		WBCG, Municipality of waivis Bay, Municipality of Swakopmund, Erongo Region, waivis Bay		
New lists Lewistics II		Port Users Association, Container Liner Operators Forum, logistics companies		
Namibia Logistics H	UD Master Plan WC	DrKsnop (arranged by NPC)		
20-21 February	Swakopmund, Walvia Bay	NPC, MWT, MTT, MOF, MHAI, MRLGHRD, Namport, Roads Authonity, Transnamid, NAC, Alf		
2015	waivis bay	Namibia, WBCG, Local Authonites, Walvis Bay Port Users Association, Container Liner		
Uperators Forum, logistics companies				
Consultation worksnop for SEA				
09 October 2014	Windhoek	Natiiwater, Mitt		
14 October 2014	waivis bay	Conservation and Management Project		
16 Octobor 2014	Lüdoritz	Ministry of Eisbories and Marine Deseurces, Namport, Lüderitz Town, NCO		
28 October 2014				
20 Octobor 2014	Votimo Mulilo	NPC Katima Mulila Town Namibia Chamber of Commerce and Inductry private companies		
26 January 2015		NPC, Natima initiation rown, Natimal Chamber of Commence and industry, private companies		
20 January 2013	Walvis Bay	Municipality of Walvis Ray, WRCC, NACOMA, private		

Table 1.2: Meetings with stakeholders

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 studies in "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 Main Text of the Final Report. The Main Text volume consists of 11 Chapters, and a supplemental attachment (Programmes/projects profile). Each part has the following elements.

1.3.1 Frameworks of the master plan (Chapter 2 to 3)

In Chapter 2, overall vision and strategies of the International Logistics Hub Master Plan is explained. Firstly, vision of International Logistics Hub Master Plan is set in accordance with the context of NDP4 and "Vision 2030".

Secondly, a conceptual framework of "Namibia as an International Logistics Hub" is presented to set a common ground of understanding what kind of elements are required to make Namibia an "International Logistics Hub".

And thirdly, seven strategies are proposed to install those required elements to transform Namibia. These strategies provide a set of fundamental standpoints to address issues & potentials, to identify development directions, and to propose actions in Chapter 4 to 10 for respective elements or aspects to make Namibia an "International Logistics Hub".

The Chapter 3 sets quantitative development targets and framework of the Master Plan, and describe development scenario such as expansion of market demand in the landlocked areas of SADC, cargo transport volume, economic impacts, and effects of modal shift.

1.3.2 Analyses of issues & potentials, identification of development strategies and proposal of projects & programs by element of International Logistics Hub (Chapter 4 to 7)

In chapters 4 to 7, issues & potentials are analysed and development strategies are identified for each element of International Logistics Hub, which consists of "market (Chapter 4)", "Logistics Hub Centre (Chapter 5)", "transport network (Chapter 6)" and "integrated border management (Chapter 7)".

Chapter 4 deals with market promotion to attract demand base. Logistics Hub Centre, which is the centrepiece to attract global players in logistics business as "anchor tenants" and to connect Walvis Bay Port with landlocked areas of SADC is featured in Chapter 5. Justification and concept, organization and necessary institutional setup, location and necessary facility of Logistics Hub Centre are explained in this chapter.

Four modes of transport, road, railway, aviation and maritime, and town development along WLNDC and Trans–Cunene Corridor are discussed in Chapter 6. Chapter 7 mentions integrated border

management that includes border management system and border town development.

1.3.3 Development of Lüderitz Port (Chapter 8)

Discussions from Chapter 4 to Chapter 7 are for development corridors that start from Walvis Bay Port. The other idea is needed for development of Lüderitz Port. JICA Study Team recognizes that basic development direction for southern part of Namibia including Lüderitz Port is to strengthen connection with the Northern Cape Province of South Africa in terms of economic activity. Based on this idea, future development direction of Lüderitz Port is proposed in this chapter.

1.3.4 Cross-cutting issues and Strategic Environmental Assessment (Chapter 9 to 10)

Issues that make cross-cutting impacts on different aspects of development of International Logistics Hub and Lüderitz Port are discussed in Chapter 9. Those are finance mechanism, power supply & water supply and human resource development.

Natural and social environmental consideration is another cross-cutting issue. Result of Strategic Environmental Assessment (SEA) which is conducted in parallel with the master plan study is explained in Chapter 10.

1.3.5 11. Conclusions and implementation of the Master Plan (Chapter 11)

Chapter 11 summarizes discussions from Chapter 2 to Chapter 10 and proposes a set of "Critical Programmes and Projects" to carry out the Logistics Hub Master Plan. This chapter also proposes establishment of a National Coordinating Body that is an entity to consolidate stakeholders' actions in order to create integrated driving force of implementation of the Master Plan.

2. Vision and Strategy

2.1 Development vision of the Logistics Master Plan

2.1.1 Vision: Namibia as a "Logistics Nation" by 2025

The Development Vision of the present International Logistics Hub Master Plan (referred to as "Logistics Master Plan") is set as the following statement.

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

This vision is set within the context of "Namibia's Fourth National Development Plan (2012/13–2016/17; NDP4)" which is one of Namibia's consecutive 5-year national plans to guide the country to reach the long-term goals of "Vision 2030¹" set in 2000. Likewise, the development "Target" and "Scenario" of the Logistics Master Plan discussed in Chapter 3 below are also based on the overall development targets and timeframes of "NDP4".

2.1.2 Logistics as a priority area in National Development Plan 4 (NDP4)

GRN has formulated 5-year plans called National Development Plans (NDP) to achieve the long-term vision. The present 5 year plan is "Namibia's Fourth National Development Plan (2012/13–2016/17; NDP4)," which was published in July 2012. Logistics was chosen to be one of the priority areas of NDP4.

NDP4 assesses achievements of the previous development plans and concludes that achievements of the previous development plans have not lived up to expectations largely because priorities, responsibilities, and the implementation process had not been clear.

Based on this assessment, priority areas were narrowed down to five "Basic Enablers" and four "Economic priorities", and clear targets (desired outcomes) prepared for each one of them. NDP4 also indicates strategic actions to achieve the targets with due dates for implementation. Figure 2.1 shows

¹ GRN formulated a long-term national development plan called "Vision 2030" in 2000, in order to guide long-term development. Vision 2030 has a vision statement, "A prosperous and industrialised Namibia, developed by her human resources, enjoying peace, harmony and political stability." In this vision wording like, "industrialised Namibia" has a message that Namibia's per capita income will grow equivalent to upper income countries.

the structure of NDP4, consisting of overall goals, basic enablers and economic priorities. It is significant that logistics was chosen to be one of the economic priorities of NDP4.



Figure 2.1: Structure of NDP4

Source: Namibia's Fourth National Development Plan: NDP4, NPC, 2012

2.1.3 Logistics Master Plan as a "high-level strategy" of NDP4

The Logistics Mater Plan is clearly stipulated as an integral part of Namibia's national development strategies. In NDP4, the desired outcome for logistics (DO6) is set as "<u>Port of Walvis Bay has</u> become the preferred African West coast port and logistics corridor for southern and central African logistics operations." One of the high-level strategies to achieve DO6 is "<u>development of a logistics</u> <u>master plan</u>" as described in Table 2.1.

In order to achieve DO6, 8 high-level strategies (including the Logistics Mater Plan) have been identified. Many ministries are going to work as major role players/agents to carry out the high-level strategies in their respective fields. Those are MWT, Ministry of Regional and Local Government, Housing and Rural Development (MRLGHRD), MOF and NPC. It means that the cooperation of these players is very important to promote logistics development. MWT is designated as the "champion" and is the responsible entity to achieve the desired outcome regarding logistics.

Actually however, implementation of the high level strategies in Table 2.1 has been delayed. Development of the Logistics Master Plan was to be completed in 2013 in NDP4, and the institutional

setting for public-private partnership and international and bi-lateral agreements to ease the cross border flow of goods has not commenced yet².

Desired Outcome 6/ Champion	High-level strategy (Due date)	Main role player/agent responsible
By 2017, the volume in cargo handling and rail-transported	Maintain and expand critical infrastructure (see also all D05s; 2017)	Ministry of Works and Transport
cargo is double that of 2012, and the Port of Walvis Bay has become the preferred African	Make land available in Walvis Bay and in other municipalities along Corridor routes to support logistics activities (2017)	Ministry of Regional and Local Government, Housing and Rural Development
West coast port and logistics corridor for southern and central	Put in place a public-private partnership funding framework to create synergies and funding for the logistics hub (2012)	Ministry of Finance
African logistics operations. Ministry of Works and Transport	Transform the Walvis Bay Corridor Group, moving away from its focus on transport to a focus on logistics and distribution (2012)	Ministry of Works and Transport
	Pursue international and bilateral agreements to ease the cross- border flow of goods (On-going)	Ministry of Trade and Industry
	Identify and develop the skills necessary to make the logistics hub a reality, i.e. focus on long-term development as well as short-term measures, including attraction of expatriates (2012)	National Planning Commission
	Develop a <u>National Logistics Master Plan</u> , detailing Namibia as an international logistics hub, including images of networks, population distribution, and the spatial distribution of economic growth and job creation (2013). (Delayed. Final of The Master Plan is scheduled to be completed by Mar 2015.)	National Planning Commission
	Develop a Master Plan on Regional Urban Centres, with a focus on the greater coastal area, an inland hub, the northern core Regions, and various border towns (2014). (Delayed and expected to be included as part of implementation of the Logistics Master Plan 2015-2020)	Ministry of Regional and Local Government, Housing and Rural Development

Table 2.1: Desired outcome 6 (DO6) and high-level strategy for logistics

Source: Namibia's Fourth National Development Plan: NDP4, NPC, 2012. Additional information by the Study Team is written in italic.

2.1.4 "Basic Enablers" that support development of logistics

NDP 4 lists 5 basic enablers: institutional environment, education and skills, health, extreme poverty and public infrastructure. Among these 5 enablers, "institutional environment" and "public infrastructure" involve some immediate implications to logistics development as reviewed in the following sub-sections. Given those implications, the Master Plan addresses issues and proposes actions related to "institutional environment" and "public infrastructure" in the context of development of international logistics.

2.1.4.1 Institutional environment

"Institutional environment" means a supportive institutional environment to enable sustainable economic development including logistics. It includes factors such as environmental management,

² For example, One Stop Border Post at Mamuno Border Point has not been started due to delay in preparation of legislation.

macroeconomic stability and good business environment.

Table 2.2 indicates the desired outcome, high-level strategies and major role player/agent responsible for creating an institutional environment. The desired outcome of NDP4 stipulates that Namibia is to become "the most competitive economy in the SADC region by 2017". As of 2013/14 Namibia is in the third position among SADC member states. According to the Global Competitiveness Report 2013–14, Namibia was identified to have weaknesses in indicators related to quality and size of human resources such as "health and primary education," "higher-education and training," "market size," and "innovation."

Twelve high-level strategies are prepared to improve the factors and sub-factors mentioned above, and many Ministries and Agencies are responsible for implementing the strategies. MTI will coordinate the overall high-level strategies as a champion. Improvement of the institutional environment significantly impacts on logistics development. Especially, those institutional environments related to "land availability", "importation of foreign skills", "incentive regimes for potential industries," and "public-private dialogue" have immediate relevance to what the Logistics Master Plan proposes.

Desired outcome/champion	High-level strategy (due date)	Main role player/agent responsible
By the year 2017, Namibia is the most competitive economy in the SADC region, according to the standards set by the World Economic Forum.	Rebuild policy buffers to maintain macroeconomic stability through continued prudent fiscal policy and promotion of monetary and price stability (On-going)	Ministry of Finance – fiscal policy Bank of Namibia – monetary and price stability
Ministry of Trade and Industry	Reform the business environment by making it easier for existing and new business to register (2013)	Ministry of Trade and Industry
	Address the financial constraints of start-ups and micro and small-scale enterprises, and promote risk capital for rapid economic development, i.e. implementation of the Namibia Financial Sector Strategy) (2012–17)	Bank of Namibia
	Ensure availability of sufficient serviced land in towns and municipalities (2017)	Ministry of Lands & Resettlement
	Streamline the importation of foreign skills as a short-term measure to enable industries to operate optimally (2013)	Ministry of Home Affairs and Immigration
	Elevate the importance of research and development as well as innovation to a national level to sustain long-term competitiveness (2017)	Ministry of Education
	Introduce more labour flexibility without infringing on the rights of workers (2013)	Ministry of Labour and Social Welfare
	Regularly assess the productivity of Namibian labour and promote a productive work force in order to be globally competitive (On-going)	Ministry of Labour and Social Welfare
	Improve public service delivery to improve quality of life, and reform State-owned enterprises to be globally competitive (2017)	Office of the Prime Minister – public service delivery Ministry of Finance – State-owned enterprises

 Table 2.2: Desired outcome and high-level strategy for institutional environment

Desired outcome/champion	High-level strategy (due date)	Main role player/agent responsible
	Reform the Tender Board to ensure timely execution of Government programmes (2012)	Ministry of Finance
	Streamline the incentive regime to make it more transparent and link it to industries with growth potential (2012)	Ministry of Finance
	Strengthen and institutionalise public- private sector dialogue, and strengthen (2012)	Ministry of Trade and Industry

Source: Namibia's Fourth National Development Plan: NDP4, NPC, 2012

2.1.4.2 Public Infrastructure

Improvement of public infrastructure, in particular transport infrastructure, is also closely related to logistics development. As indicated in Table 2.3, five different desired outcomes are set for transport, energy, water, housing and ICT sectors. The desired outcome for transport is "development of well-functioning and high quality infrastructure from Walvis Bay to domestic and SADC markets and improvement of the railway network."

Desired outcome	High-level strategy (due date)	Main role player/agent responsible
	Develop a skills audit and skills development programme for public infrastructure (2012)	National Planning Commission
	Develop a funding mechanism to ensure adequate funding for infrastructure development (2012)	Ministry of Finance
By 2017, Namibia shall have a well-functioning, high quality transport infrastructure connected	Ensure the timely expansion of the Port of Walvis Bay (2015)	Ministry of Works and Transport
to major local and regional markets as well as linked to the Port of Walvis Bay: 70 per cent of	Renovate and maintain critical sections of the core rail network (2012)	Ministry of Works and Transport
railway network to comply with SADC axle load recommendation of 18.5 tonnes.	Renovate and maintain critical sections of the road network (2015)	Ministry of Works and Transport
Ministry of Works and Transport	Strike a balance between maintaining and expanding the road network (2012)	Ministry of Works and Transport
	Ensure aviation security, development and maintenance as well as the availability of an integrated Transport Master Plan for 2030 (2012)	Ministry of Works and Transport
	Upgrade the Hosea Kutako International Airport (2017)	Ministry of Works and Transport
By 2017, Namibia will have in place adequate base load energy to support industry development through construction of energy infrastructure and the production capacity would have expanded from 400 to more than 750 megawatts to meet demand.	Ensure the base load level of energy for Namibia (2017)	Ministry of Mines and Energy
Ministry of Mines and Energy		
By 2017, increased access to water for human consumption from 85.5% to 100% of the population as well as sufficient water reserves for industrialisation.	Ensure water security for human consumption and industry development (2017)	Ministry of Agriculture, Water and Forestry

Table 2.3: Desired outcome and high-level strategy of public infrastructure

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Desired outcome	High-level strategy (due date)	Main role player/agent responsible
Ministry of Agriculture, Water and Forestry		
By 2017, Namibia will have a robust and effective housing delivery programme where affordability is the key feature of the programme; and that 60 per cent of households will be living in modern houses from 41 per cent in 2009/2010.	Provide low-cost housing and review National Housing Policy (2015)	Ministry of Regional and Local Government, Housing and Rural Development
Ministry of Regional and Local Government,		
Housing and Rural Development		
By 2017, adequate ICT infrastructure will be in place to facilitate economic development and competitiveness through innovation, research and development: Availability of latest technologies score improves to 6.0 from 5.5, according to the World Economic Forum.	Ensure modern and reliable ICT infrastructure (2015)	Ministry of Information, Communication and Technology
Ministry of Information, Communication and Technology		

Source: Namibia's Fourth National Development Plan: NDP4, NPC, 2012

In the transport sector, 6 high-level strategies were prepared. All of them have direct relevance to the Logistics Master Plan. Completion of those on-going transport infrastructure projects (as of October 2014) are taken as preconditions of the Logistics Master Plan. In particular, expansion of Walvis Bay Port is an important precondition for what the Master Plan proposes. MWT acts as the main role player in all the strategies.

The ICT sector is also important for logistics especially for integration of data systems among the ports, trade permits, customs, immigration, quarantine, trace & tracking, and corridor information sharing at large.

2.2 What is an "International Logistics Hub" that Namibia wants to be?

The "DESIRED OUTCOME 6 (DO6)" of NDP4, reads "...the desired outcome of becoming a regional logistics hub...". This line represents a clear development policy direction to make Namibia "the preferred African West coast port and logistics corridor for southern and central African logistics operations." It is, however, not always clear among many of the stakeholders what an "International Logistics Hub" actually is.

In the Master Plan, definitions and a conceptual framework for an "International Logistics Hub" and a "Logistics Hub Centre" are introduced as described in the following sub-sections in order to facilitate better understanding of where we are heading. These are produced as provisional working hypotheses based on internationally recognized definitions in general terms and customized to better fit the present context of situations in Namibia.
2.2.1 Definition of an "International Logistics Hub"

2.2.1.1 Broader definition of an "International Logistics Hub" as a "Logistics Nation"

An international logistics hub is a place where <u>a complete package</u> of international logistics services is readily available. Integrated services consist of major functions required for international trade, including the following <u>5 components</u>.

- Transhipment,
- Storage,
- Efficient transport network,
- Collection and distribution of goods, 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 \underline{IS} a "Logistics Nation". If a package is <u>NOT</u> complete, this is <u>NOT</u> a logistics hub. An "International Logistics Hub" with a complete package with 5 essential components is shown as Figure 2.2.



Figure 2.2: Five essential components of an "International Logistics Hub"

2.2.1.2 Narrower definition of a "Hub Centre", a type of Special Economic Zone

In short, the term "Warehouse" that is found in the above figure becomes a "Hub Centre" once it is equipped with supply depot functions for value-addition and appropriate institutional settings. A "hub centre" can be described as follows. (In Chapter 5, a "Hub Centre" is described in more detail)

A Logistics Hub Centre is a specific area designated to deal with activities related to transportation, organization, separation, coordination and distribution of goods for national and international transit, on a commercial basis by various operators.

The operators may own, lease or rent the buildings and/or the facilities of Logistics Hub Centre. These include warehouses, storage areas, distribution centres, offices, and trucking and shipping services.

The hub centre must be equipped with infrastructure and facilities necessary to carry out the above functions. More detailed features of the Centre are described in Chapter 5.

It is best if a single, neutral legal body manages the Logistics Hub Centre. Such legal body could either be a public sector organization or a partnership between government and the private sector. In theory, "PPP" is preferable in order to ensure synergy and commercial consistency. In reality on the other hand, public sector involvement is needed in such a case where it is strategically important to keep the price of land low and contain risks for land speculation. These type of issues related to the logistics hub centre are also discussed in Chapter 5.

2.2.2 Conceptual Framework of "Namibia as an International Logistics Hub"

Given the above definitions along with the analysis in Phase 1 of the Study, a conceptual framework of "Namibia as an International Logistics Hub" can be illustrated as in Figure 2.3.



Figure 2.3: A conceptual framework of "Namibia as an International Logistics Hub"

As can be seen clearly from the figure, a "Logistics Hub Centre" 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 2.4.

The other target is "Northern Cape, Republic of South Africa" where Lüderitz Port and the Trans– Orange Corridor will be the primary route. Master Plan for Development of an International Logistics Hub for SADC Countries in the Republic of Namibia Final Report Main Text



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. This framework, however, is still at the draft stage for a working hypothesis. Thus, it could be revised in accordance with results of further analysis as well as inputs gained from extensive discussions with the stakeholders as the study process progresses.

2.3 How to Transform Namibia into an "International Logistics Hub"

2.3.1 A newcomer should be "impressive at a glance."

There is an important and very basic thing for all stakeholders to take cognisance of regarding the Logistics Master Plan. It is the fact that Namibia is <u>a newcomer</u> to international transit cargo business serving landlocked areas in SADC. Unlike Durban port (RSA) and Dar es Salaam port (Tanzania) with their long history of acting as major gateways, Walvis Bay port (Namibia) has not been fully used and is yet to be regarded as a substantial gateway to the landlocked areas in SADC within the international logistics industry. These existing major gateways already have well established international logistics business communities that have close relationships with major clients doing business in the landlocked areas in SADC and long records of operational experiences to provide logistics services for them.

The second thing to note is the fact that Namibia itself <u>does not have an immediate hinterland</u> with large domestic markets to generate cargo volume. In the case of South Africa, things are completely different. Given the size of its economy, there is a very large cargo demand originating in South Africa which nearly saturates existing major ports and railway lines (especially for bulk mining products). Their logistics business models are organized around this given context of "huge hinterland demand" that is completely different in the case of Namibia. Namibia alone <u>does not have such "natural demand pull factors"</u> to attract international logistics business operations.

In short, Namibia is in the position of "a newcomer without a large domestic cargo demand base", and dare to challenge the existing logistics business market in SADC. Although it is true that the logistics business operators are not all satisfied with the existing gateways (such as serious congestion, security risks, and quality of service), those are, at least still within their expectations to do their logistics business. Rather, they regard the use of a brand new route, such as through Namibia, as an operation with unknown risks for them.

In order to change the existing equilibrium, Namibia should be "impressive at a glance", and <u>must</u> present very strong and clear selling points that everyone can understand at a glance in comparison with the other well established gateways.

2.3.2 Install pull-factors strategically: Land Price is a Key.

In order to make Namibia (a newcomer) "impressive at a glance", it is indispensable to install "pull-factors" strategically and decisively. In the Logistics Master Plan, some key development programs/ projects are proposed including "Logistics Hub Centre in Walvis Bay", "integrated truck stops along the corridors", and "integrated border town development." All of them are expected to attract private investment. Needless to say, good locations and well-serviced infrastructure are the minimum requirements. On top of these, it is vital to install strong "pull-factors". A typical way to do so is to set land prices strategically low for the logistics industry.

It is known that the Logistics industry is weakened by high land prices. Never put prices as high as Durban or Cape areas (selling at N1,500 to $1,600/m^2$ or leasing at N10 to $13/m^2/m$ onth) if Namibia aims to be impressive to logistics companies. Land prices in Namibia should be at the highest 1/3 of the prices in Durban or the Cape. If it is set higher than this level, it is quite unlikely to see global logistics companies shifting their operation bases from Durban or Johannesburg to Walvis Bay or somewhere in Namibia.

Land prices for business investments are often set very low as part of their national strategy in

well-known international gateways, especially in cases where the ports do not have an immediate hinterland with large domestic markets to generate cargo volume. For example, in case of the Free Trade Zone right next to the port in Dubai, the leasing price of well-prepared commercial land is N\$ $2.5/m^2/m$ onth that is equivalent to a selling price of N\$300/ m². In the Port of Busan, South Korea, leasing prices of land for warehouses right behind the container terminals (meaning "within the port") are N\$ $3.5/m^2/m$ onth that is equivalent to a selling price of N\$420/ m²³. These are good examples of how they get their position as international logistics hubs even without an immediate hinterland that can generate cargo demand.

Table 2.4: Comparison	of costs of	land for	logistics
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	•		Unit: N\$/m ²
Location	Sale	Lease/ month	Source
Walvis Bay	1600	13.5	NDC (provisional)
Durban/ Cape Town	1500	10.0	Grindrod, 2013(*1)
Durban/ Dube	960	8.0	Dube Tradeport Data
Dubai	300	2.5	NIRA Report No.337, 2006
Busan	420	3.5	Daily Cargo, 2013

Note: (*1) http://www.grindrod.co.za/Uploads/Documents/5/Making%20Waves%20Feb08%20-%20Tribute.pdf Those figures in an italic format are estimates of sale or lease prices that are calculated either from actual lease or sale prices respectively using direct capitalization method.

Strategically low land prices is not the only thing to make Namibia "Impressive at a Glance". There are many other essential "pull-factors" to install, including good infrastructure, highly integrated trade support systems, tax incentives, work permits, etc. that are discussed in the other chapters and sections in this report. It should be noted, however, that land speculation and thus high land prices alone could instantly make Namibia "not impressive" and easily ruin effectiveness of all the other "pull-factors" proposed in this report. Dubai and Busan offer very low land prices (on top of offering all the other good pull-factors) and successfully make themselves simply impressive at a glance.

2.3.3 Volume first: Anchor tenant approach for "Logistic Hub Centre".

In the Master Plan, it is assumed to apply the "<u>anchor tenant approach</u>" to "Logistics Hub Centre" development in order to achieve the desired cargo volume in the shortest possible time. The Logistics Hub Centre must be a strategic centrepiece to prepare a super business friendly environment to attract the private sector of either Namibia or foreign companies to become "anchor tenants".

³ The Port of Busan is effectively competing against Port of Kobe (Japan) that was once in a position of an international hub port in Far East Asian region prior to The Great Hanshin earthquake, occurred on Tuesday, January 17, 1995. At present, Port of Shanghai (China) that has been emerging as another contender with even larger domestic cargo demand cannot take over Busan's position.

Without the volume, it is rather unlikely that the present balance of the situation will change regarding other established gateway ports and corridors. The best and fastest way to attract the volume 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. It is particularly necessary to attract those well-known international forwarders that have large clients and deal with their logistics needs to and from landlocked SADC. They are DHL, DB Schenker, Kuehne+Nagel, Uti, Savino Del Bene etc. to name a few.⁴ Once some of them decide to do large-scale transit business using Namibia as a gateway, they will become "anchor tenants⁵" of international logistics business in Namibia. Without these anchor tenants, it is quite unlikely to increase the volume of international transit cargo for landlocked areas of SADC as quickly as it is expected to be in NDP4.

"Anchor tenants" are by no means threats to the other smaller tenants. Rather, they are literally anchors for new market development for all. For example, the "anchor tenant approach" is often applied to a newly developed large shopping centre in order for it to attract a large customer base fast. The large customer base, that usually implies a large trading area behind, cannot be reached by small to medium-scale shops alone. These newly attracted customers from a larger trading area by those anchor tenants often generate dramatically larger and stable volume of market to "the mall as a whole" and bring more business opportunities for small to medium-scale tenants in the same mall. This is exactly what is expected to happen in the case of international logistics business in Namibia.

2.3.4 Remove critical bottlenecks on the key corridors: "speed and reliability"

The most important thing in logistics is "speed and reliability." It is necessary to concentrate efforts on removing critical bottlenecks that hamper "speed and reliability". There are many kinds of bottlenecks. These include capacity gaps in physical infrastructure, trade and investment facilitation, institutional arrangements, financial sources, skilled labour force, business cases etc.

A fundamental and common reason why all these gaps exist is that, in Namibia, things have been designed to meet domestic needs of its relatively small population of 2.1 million. Likewise, the majority of the present volume of cargo is for meeting domestic demand. This makes the corridors

⁴ Most of them already have their branches in Namibia. They, however, mostly focus on business either Namibia-South Africa or Angola-South Africa (via Namibia). When it comes to transit business to serve their large clients in the landlocked areas in SADC, major part of their operation bases are still in South Africa and they use its ports.

 $^{^{5}}$ Usually the first, and the leading, tenant in a shopping centre whose prestige and name recognition attracts other tenants and, it is hoped, shoppers. Anchor tenant generally pays rent rate lower than that paid by ancillary tenants. While this term typically relates to retail properties, it can also apply to the major tenants of a multi-tenant building or complex. In the context of a shopping centre, the anchor tenant(s) make the centre economically viable for the owner and the other tenants by being (one of) the primary draw(s) of customers.

connecting Namibia and South Africa the busiest. On the other hand, the cargo volume going through Walvis Bay port and corridors to other neighbouring countries is still very small. In fact, this "small volume" is one factor that makes it possible to transport cargo to Lusaka faster through Namibia than through South Africa at present.

However, once the international cargo volume increases to the level that is large enough to say Namibia is an international hub for the landlocked areas in SADC, things will be completely different. It will be a "new game" for Namibia who has never expected to accommodate such volume of cargo to land at the ports, be consolidated in warehouses, go through roads, stop at towns, and cross the borders. Throughput capacity, "speed and reliability of cargo flows", should be dramatically expanded.

In doing this capacity expansion, the Logistics Master Plan proposes programs/projects to fill the capacity gaps and to remove the critical bottlenecks. As mentioned earlier, there are both physical (transport network and integrated border infrastructure) and non-physical bottlenecks (logistics related laws/regulations, human resources and ICT). In terms of location, physical bottlenecks are mostly along Walvis Bay-Ndola-Lubumbashi Development Corridor (WNLDC) and Trans–Cunene Corridor.

In case of Lüderitz Port and the Trans-Orange Corridor, there is a different set of opportunities to make it function as a gateway for the Northern Cape (RSA), which is explained in Chapter 8.

In any case, there must be collective and integrated planning that directly involves all stakeholders for each bottleneck. All relevant stakeholders should form one working group for each bottleneck, and make plans with looking at the same planning map in front of them. "Silo plans" fragmented in each separate organization never work properly. It is important for Namibia to remember and learn from what happened in Oshikango, a border town with Angola. Oshikango is a good example of problems created by a booming increase in cross border trade messing up a town because an integrated plan to accommodate such activities were not prepared in advance.

2.3.5 Rise to international standard as quickly as possible - "Launch window is limited."

The Logistics Master Plan aims to make Namibia ready for 100% exposure to international competition in the logistics business as quickly as possible.

In order to attract international transit cargo to go through corridors in Namibia, <u>everything related to</u> <u>transport and logistics</u>, should be aimed to be up to "international standard." This means Namibia should go beyond "African standard". There is no room for an excuse in international competition. Just one excuse could be the reason for international clients not to use Namibia as a gateway and remain happy to keep using their existing channels they have been familiar with for a long time. It is also essential to reach international standard as quickly as possible. Namibia should go ahead of

the other gateways that have better endowment of immediate hinterlands. The launch window is limited. Along with this context, <u>Namibia should not hesitate to utilize foreign skills and financial resources</u>. By using those foreign resources efficiently and proactively, Namibia can buy time to solve long-term issues such as human resources development.

2.3.6 Re-introduce beneficiaries pay principles – "Stop cross-subsidisation."

As a key strategic element, the Logistics Master Plan proposes to stop cross-subsidisation⁶ in investment and operation of logistics related infrastructure in order to secure long-term sustainability. Investment in transport and logistics projects are categorised into two different kinds in terms of whether it is financed by "user charge/ private investment" or "tax money". It is very important to draw a clear and sharp distinction between these two in order to make Namibia competitive in the international logistics business, especially in pricing for the use of transport infrastructure or services. Once this distinction becomes ambiguous, the pool of "user charge" is diverted to finance "economically not viable" projects (cross-subsidise), which will cause a shortage of funds and often end up with raising "user charge" instead of raising taxes. The context behind this argument is as explained below.



Figure 2.5: Types of Infrastructure in terms of sources of funding

A project or an operation financed by user charges or private investment must be economically viable.

⁶ "Cross-subsidisation": a situation in which profits from one activity are used to pay for another activity that is losing money.

A typical example is a toll road or trunk road with a large traffic volume with revenue from user charge large enough to finance the investment and maintenance. The beneficiaries pay principle can be effectively applied and there is no need for tax money. The greater the volume of traffic, the more user charge will be generated to finance the maintenance. In the case of international transit cargo traffic, all of them use this category of roads. The level of user charge must be high enough to finance the costs of roads and, at the same time, low enough to be competitive.

There is some infrastructure to be financed partly by both tax money and user charges such as railways that cannot be economically viable in the short to medium-term. This mix of financing should also be applied to those of strategic importance to attract foreign direct investments such as the "Logistics Hub Centre" proposed in the Logistics Master Plan.

The second category covers those projects not economically viable but decided to be socially essential and thus must be financed by general tax revenue (implying a nation agreed to do so). A typical example is a rural road with a low traffic volume where potential revenue generated by beneficiaries is too small to finance either the investment or maintenance.

As far as such distinction between "economically viable" and "socially needed" is clear in planning and budgeting, financial benchmarks of "how much to spend" on "what" and "how to pay" are also clear. A real danger is to mix up those two concepts, which usually means to divert a pool of "user charge" to finance projects not economically viable.

Once this distinction becomes ambiguous, "user charge" is often diverted to other purposes as "easy money", which causes serious long-term problems including the following:

- A financial mechanism of "user charge" stops functioning as it was intended to be in the first place. This will cause serious shortage of money to develop or maintain "economically viable" infrastructure that eventually deteriorates far enough and "economically not functional" in the end. For example, the Road Fund should be allocated to different sections of roads in accordance with the volume of traffic as it is designed to finance "economically viable roads."
- Such shortage of funds often ends up with moves for raising "user charge" (especially those on foreign entities) instead of raising taxes. This will make international transportation costs higher in Namibia and less competitive against the corridors through other countries.
- In the case of a state owned enterprise, "economically viable" businesses are often mixed up with "social operations (not making money)" and it often ends up with overall deficits. This results in an SOE being less competitive in pricing.
- At the same time, such confusion of "business" and "social" operations (= cross-subsidy) lay down a thick smokescreen that makes it impossible to evaluate an SOE's business operations whether these are really efficient and profitable or not. When an SOE is asked to perform

better, those "social operations" must be clearly separated from their business account. They should be free from those burdens and be prepared for international competition. There will be no room for excuses either.

2.3.7 Legal Framework for Implementation

A legal framework is required to be installed to give foundations for key stakeholders to implement the Logistics Master Plan. What the Logistics Master Plan proposes involves new approaches that may require amendment or revision of existing laws and regulations in order to authorise stakeholders to take on new roles or functions in implementation. For example, the Logistics Master Plan proposes a conceptual structure of an operations company of a Logistics Hub Centre in Walvis Bay that is assumed to be in the form of a joint venture between Walvis Bay Municipality, Namport, and private investors. In order to make such an institutional arrangement a reality, it is required to have a legal foundation to authorise it to do so. Most of these matters resort under the issues related to the legal framework for "Public Private Partnership" (PPP). A legal framework for PPP should address the issues as summarised below.

Table 2.5: Key issues for a PPP legal framework

- PPP projects typically involve significant investment by the private sector over a long period of time. Investors said that "insufficient legal protection of investors" was their primary concern (in a 2003 World Bank survey).
- Can the government entity enter into a PPP arrangement? Which ministry or local government entity is involved which body will be empowered to enter into and implement the project?
- · Are there legal limitations on delegation to a private operator?
- Monitoring and regulating the project.
- Procurement processes.
- Dispute resolution.
- Protecting the project revenues.
- · Lender issues.
- Foreign investment issues.
- Land issues.
- Taxation.
- Labour law.

Source: "Legal Issues in Structuring & Tendering PPPs", the IFC and the Royal Government of Bhutan Workshop on Leveraging Public-Private Partnerships for Development, 6 December 2010; World Bank

Given the fact that issue is very complex, a single law cannot establish the entire framework of PPP. Rather, a framework will consist of a cluster of laws and regulations in practice. This applies to a legal framework for implementation of the Logistic Master Plan as well.

In order to establish a legal framework for implementation of the Logistic Master Plan as a cluster of relevant laws and regulations, it is recommended to first draw up a basic law (such as "Basic Law on Promotion of International Logistics") to stipulate concept and directions of promotion of international logistics, that is a "legal version" of what DO6 of NDP4 describes. Once this basic law as an "umbrella" is in place, other laws and regulations can be cross-referred as relevant laws including existing laws and new laws such as a PPP framework currently under preparation, and a "Logistics Hub Centre Act" to give a legal foundation to the Centre. When it is needed, those relevant laws could be amended or revised with reference to the directions written in the basic law.

3. Target and Framework

3.1 Forecast of cargo transport volume by corridors

Given the "Strategies" for transforming Namibia into an International Logistics Hub presented in Chapter 2, this chapter proposes quantitative targets as outcomes of implementation of the strategies in terms of magnitude of impacts on increase in cargo volume along the corridors.

Future cargo volume by corridors (Walvis Bay–Ndola–Lubumbashi Development Corridor (WLNDC), Trans–Kalahari Corridor, Trans–Orange Corridor and Trans–Cunene Corridor) is forecast based on the flow diagram in Figure 3.1.



Source: JICA Study Team

Figure 3.1: Flow diagram to forecast future cargo volume by corridors.

Cargos that will be transported along the corridors are divided into "regional trade" (Namibia's trade with trade partners) and "transit trade" with the landlocked areas of SADC¹. With regard to forecasting future cargo volume of transit trade, different methods are employed between WNLDC and the other corridors. The future transit volumes of Trans–Kalahari Corridor, Trans–Orange Corridor and Trans–Cunene Corridor are set from future trade volumes between origins and destinations and current share of Namibia's transit trade. On the other hand, future transit volume of WNLDC is set from the following comparative analysis. At first, two alternatives of future cargo

¹ Transit trade is further divided into two categories hereinafter in this chapter: transit trade between coastal countries of SADC and outside of SADC (e.g. Namibia–EU and Tanzania–China), and that between inland countries of SADC and outside SADC (e.g. Zambia–China and Zimbabwe–UK).

volume are set by use of the current share of Namibia's transit trade (base case) and 100% share of that (maximum case) between inland countries of SADC and Europe and America. Meanwhile, targets of Namibia's share of transit cargo are set from the trade volumes between major ports in SADC and inland countries and future container handling capacity at Walvis Bay Port. A detailed analysis of the future cargo volume forecast is described in Chapter 10 of Appendix.

3.1.1 Cargo transport demand in SADC and Namibia's trade in the future

The future international cargo flow of SADC region is estimated from the following 4 steps.

- Step 1: Forecasting of future total export/import volumes based on future GDP forecast and its elasticity of export/import volume in SADC member states.
- Step 2: Future export and import volumes by type of commodity and by partner are estimated by regression (with use of the UN ComTrade data).
- Step 3: Future cargo flow in SADC region is calculated by multiplying the proportion of type of commodity by trade partner and total export/import volume.
- Step 4: Based on future cargo flow in SADC region, cargo flow relevant to Namibia is extracted and assigned on proper origin-destination (OD) pair.

Unit: million tons								
Country	Export				Imp	oort		
Country	2013	2015 f	2025 f	2045 f	2013	2015 f	2025 f	2045 f
Angola	96.7	104.1	163.9	367.6	11.0	11.9	19.3	45.3
Botswana	1.3	1.4	2.1	4.6	5.0	5.9	13.1	71.3
DRC	5.1	6.4	19.0	73.3	3.5	4.3	11.6	40.0
Lesotho	0.2	0.2	0.3	0.5	0.7	0.8	1.2	2.4
Malawi	1.2	1.4	3.1	11.6	2.2	2.5	5.1	17.5
Mozambique	3.7	4.2	8.1	31.6	10.0	12.7	42.8	102.6
Namibia	3.3	3.7	6.6	21.3	5.5	6.3	13.1	56.3
South Africa	176.0	188.0	263.4	500.0	57.9	61.2	81.5	140.5
Swaziland	4.2	4.3	4.7	5.6	2.8	2.8	2.9	3.2
Tanzania	2.7	3.5	11.5	33.9	10.8	13.5	40.6	119.9
Zambia	3.3	4.0	9.9	38.3	5.5	6.6	14.8	50.5
Zimbabwe	1.7	1.9	3.7	13.7	5.6	5.8	7.6	12.6

Table 3.1: Future trade volume of SADC countries

Note: Export and import volumes in 2013 are estimates; f means forecast volume. Source: JICA Study Team

Table 3.1 indicates future trade volume of SADC countries in 2025 and 2045 which is forecast from
step 1, and Table 3.2 indicates Namibia's future trade volume by trade partners, which is calculated
from step 4, respectively.

Unit: 000 tons						
Trade partners	Export				Import	
(countries and regions)	2015 f	2025 f	2045 f	2015 f	2025 f	2045 f
Countries						
Angola	329	567	1,680	2	7	32
Botswana	81	198	1,059	61	180	787
DRC	244	704	2,417	5	17	71
Lesotho	0	0	1	0	0	1
Malawi	0	3	10	1	3	12
Mozambique	38	86	212	48	140	618
Swaziland	86	90	97	10	25	103
Tanzania	3	9	32	50	151	671
Zambia	150	372	1,217	134	379	1,646
Zimbabwe	25	54	173	6	5	28
Regions						
America	159	308	996	127	264	1,164
Asia	309	616	1,991	665	1,588	6,958
Central Africa	405	639	2,058	0	0	2
East Africa	7	16	54	4	12	58
Europe	568	765	2,463	1,016	2,409	10,570
North Africa	1	5	15	13	41	172
South Africa	1,244	2,107	6,728	4,180	7,802	33,113
West Africa	9	21	66	8	15	62
Unknown	2	4	10	19	52	228
Total	3,661	6,562	21,278	6,348	13,090	56,295

Table 3.2: Namibia's future trade volume by trade partners

Source: JICA Study Team

3.1.2 Transit cargo demand of landlocked areas in SADC

Trade volume of SADC countries is divided into the following 3 categories.

- International trade among SADC countries such as Namibia-RSA and RSA-Zambia,
- International trade of SADC coastal countries with other regions, such as Namibia–EU and Tanzania–China, and
- International trade of SADC inland countries with other regions such as Zambia–China and Zimbabwe–UK.

According to Table 3.3, total trade volume of inland countries (Zambia, DRC, Zimbabwe, Malawi) amount to 34.4 million tons in 2013. The volume includes both the international trade among SADC countries and the international trade with other regions. This Study estimated that the current transit trade volume between major ports in SADC (Walvis Bay, Durban, Maputo, Beira and Dar es Salaam) and landlocked areas in SADC (Angola, Zambia, DRC, Zimbabwe, Malawi) without pipeline transport amounted to 6.8 million tons².

The percentage of the transit volume to the trade volume of inland countries accounts for 19.8%. The portion is important from the point of Walvis Bay's target setting of transit cargo transport because Walvis Bay aims to increase its future share from the transit cargo into inland countries. If

² Refer to Chapter 4 of Appendix.

the proportion is constant, the transit cargo demand of the inland areas in SADC will increase to 11.4 million tons in 2020, 17.8 million tons in 2025 and 65.9 million in 2045.

Cargo volumes	2013	2020	2025	2045	Remarks	
Total SADC	419.9	557.4	749.9	1,764.1	Total of trade volume in Table 3.1	
Inland countries	34.4	57.6	90.0	333.4	Trade volumes of DRC, Malawi, Zambia, Zimbabwe*	
Transit cargo between major ports of SADC and inland areas of SADC w/o pipeline transport	6.8 (19.8%)	-	-	-	Major port of SADC: Walvis Bay, Durban, Maputo, Beira and Dar es Salaam Inland areas of SADC: Angola, Zambia, DRC, Zimbabwe, Malawi	
Future transit cargo in inland areas of SADC	-	11.4	17.8	65.9	Keeping 19.8% of share	

Table 3.3: Future transit cargo demand of inland countries

I Init, million tong

Note: * Angola is not included in inland countries.

Source: JICA Study Team

3.1.3 Base and maximum cases for transit cargo (a potential range of target)

Trade flows relevant to Namibia including international trade outside SADC, regional trade and transit trade are extracted from forecast future trade in SADC region. Considering existing customs data and cross-border cargo data through Walvis Bay Port, OD pairs are extracted and assigned on proper external zone. Impacts of proposed activities are assumed to be reflected on the volume of transit cargo through WLNDC where the following two extreme 2 cases are assumed to identify the width of the possible target range.

- Base case: Existing ratios of transit volume through Namibia to potential demand are applied.
- Maximum case: 100% of potential demand such as international trade between Zambia and Europe/America through Namibia via Walvis Bay Port.

Results of the base case and maximum case are indicated in Table 3.4 and Table 3.5. In 2025, transit cargo volume will increase to 2.3 million tons in the base case and 6.6 million tons in the maximum case, respectively. The volume will also increase to 9.8 million tons in the base case and to 21.7 million tons in the maximum case in 2045. The Trans-Kalahari Railway Project that is expected to transport 65 million tons of coal from Botswana to Walvis Bay Port is not included in this analysis.

			Unit: million tons
Corridors (kind of trade with route)	2013	2025	2045
Walvis Bay–Ndola–Lubumbashi Development Corridor (WNLDC)	0.8	2.2	13.3
Transit traffic between Zambia and Walvis Bay Port	0.3	1.2	5.3
Regional trade (Namibia - Zambia/DRC/Zimbabwe)	0.4	1.0	8.0
Trans-Kalahari	3.3	9.1	44.4
Transit traffic between Buitepos and Angola	0.8	2.5	8.0
Transit between Buitepos and Walvis Bay Port	0.1	0.4	1.4
Regional trade (Namibia - Botswana/South Africa)	1.7	3.4	27.1
Domestic demand (Walvis Bay - Namibia)	0.7	3.0	7.9
Trans-Orange	2.6	5.9	19.7
Transit traffic between Noordoewer/Ariamsvlei and Walvis Bay Port	0.0	0.0	0.2

Table 3.4: Future cargo transport volume (base case)

	Corridors (lied of trade with route)	2012	2025	20.45
Corridors (kind of trade with route)		2013	2025	2045
	Transit traffic between Noordoewer/Ariamsvlei and Angola	0.3	2.0	3.2
	Regional trade (Namibia - South Africa)	2.2	3.9	16.3
Trans-Cu	nene	2.0	7.4	17.7
	Transit traffic between Walvis Bay and Angola	0.4	0.7	2.9
	Regional trade (Namibia - Angola)	0.5	2.2	3.6
	Transit traffic between South Africa and Angola	1.1	4.4	11.2
Total of tr	ransit traffic using Walvis Bay	0.8	2.3	9.8
Total of Regional Trade		4.8	10.5	55.0
Total of C	Corridors	7.4	20.2	83.9

Note: Cargo transport between RSA and Angola is listed twice at Trans-Kalahari & Trans-Orange and Trans-Kunene. Trans-Kalahari Railway Project is not included in this table.

Source: JICA Study Team

		U	nit: million tons
Corridors (kind of trade with route)	2013	2025	2045
Walvis Bay–Ndola–Lubumbashi Development Corridor (WNLDC)	0.8	6.4	25.0
Transit traffic between Zambia and Walvis Bay Port	0.3	5.4	17.0
Regional trade (Namibia - Zambia/DRC/Zimbabwe)	0.4	1.0	8.0
Trans-Kalahari	3.3	9.2	44.7
Transit traffic between Buitepos and Angola	0.8	2.5	8.0
Transit between Buitepos and Walvis Bay Port	0.1	0.4	1.7
Regional trade (Namibia - Botswana/South Africa)	1.7	3.4	27.1
Domestic demand (Walvis Bay - Namibia)	0.7	3.0	7.9
Trans-Orange	2.6	5.9	19.7
Transit traffic between Noordoewer/Ariamsvlei and Walvis Bay Port	0.0	0.0	0.2
Transit traffic between Noordoewer/Ariamsvlei and Angola	0.3	2.0	3.2
Regional trade (Namibia - South Africa)	2.2	3.9	16.3
Trans-Cunene	2.0	7.4	17.7
Transit traffic between Walvis Bay and Angola	0.4	0.7	2.9
Regional trade (Namibia - Angola)	0.5	2.2	3.6
Transit traffic between South Africa and Angola	1.1	4.4	11.2
Total of transit traffic using Walvis Bay	0.8	6.6	21.7
Total of Regional Trade	4.8	10.5	55.0
Total of Corridors	7.4	24.5	95.8

Table 3.5: Future cargo volume (maximum case)

Note: Cargo transport between RSA and Angola is listed twice at Trans-Kalahari & Trans-Orange and Trans-Kunene. Trans-Kalahari Railway Project is not included in this table.

Source: JICA Study Team

3.1.4 Target setting for transit cargo

Given the potential target range identified in the previous section, targets in 2025 and 2045 for the Master Plan are set as follows.

In 2013, the transit cargo volume starting from Walvis Bay Port (total of WNLDC, Trans–Kalahari, Trans–Kunene) amounted to 0.8 million tons, and it occupied 12% of the transit trade volume between major ports in SADC and landlocked areas in SADC (6.8 million tons). This Study set a target that Namibia will increase its share in the total potential transit cargo volume to the landlocked areas of SADC from 12% in 2013 to 20% in 2025. If the target is achieved, the transit cargo volume will increase from 0.8 million tons in 2013 to 3.6 million tons in 2025.

When it comes to set the target share of the transit cargo volume in 2045, another factor that is future

port capacity has to be considered. Container handling volumes at Walvis bay Port are set at 750,000 TEUs in 2025 and 2 million TEUs in 2045 according to the existing plans of Namport³. Considering the realistic balance of volumes between different port usage for domestic demand, transit and transhipment, it is appropriate to allocate 1.2 million TEUs to transit cargo, and total transit volume will amount to 14.5 million tons⁴ in 2045. As a result, Namibia's share **in total potential demand for transit cargo in landlocked areas in SADC will increase to 22% in 2045**. It is also recognised that steady growth of transhipment is also important to maintain Walvis Bay Port's advantage on direct connection with the Far East market. Considering the point, transhipment also increases from 210,000 TEUs in 2013 to 300,000 TEUs in 2025 and 400,000 TEUs in 2045. As a result, container handling volume at Walvis Bay Port exceeds Namport's plan in 2025 and 2045 as indicated in Table 3.6. The necessity for rapid preparation of the additional container terminal plan after 2018 is also mentioned in section 6.3.2.

						Unit: Teus
Kind of container	Container handling volume (TEUs)				Share (%)	
handling	2013 e	2025 f	2045 f	2013 e	2025 f	2045 f
Transit	70,000	300,000	1,200,000	20	35	53
Domestic	70,000	250,000	660,000	20	30	29
Transhipment	210,000	300,000	400,000	60	35	18
Total*	350,000	850,000	2,260,000	100	100	100
		-				

 Table 3.6: Container handling volume at Walvis Bay Port

Note: "e" means estimation and "f" means forecast. * Proposed by JICA Study Team from demand of transit and domestic cargo and necessary growth of transhipment cargo

Source: JICA Study Team

C C		,		,	Unit:	million tons
Corridors (kind of trade with route)	2013	2020	2025	2045	Growth rate 2013-25	Growth rate 2025-45
Walvis Bay-Ndola-Lubumbashi Development Corridor (WNLDC)	0.8	1.2	3.4	18.0	13.2%	8.7%
Transit traffic between Zambia and Walvis Bay Port	0.3	0.6	2.4	10.0	18.1%	7.4%
Regional trade (Namibia - Zambia/DRC/Zimbabwe)	0.4	0.6	1.0	8.0	7.2%	10.9%
Tra <u>n</u> s-Kalahari	3.3	6.2	9.2	44.4	8.9%	8.2%
Transit traffic between Buitepos and Angola	0.8	1.8	2.5	8.0	9.8%	6.1%
Transit between Buitepos and Walvis Bay Port	0.1	0.2	0.4	1.4	11.1%	6.2%
Regional trade (Namibia - Botswana/South Africa)	1.7	2.4	3.4	27.1	6.0%	11.0%
Domestic demand (Walvis Bay - Namibia)	0.7	1.8	3.0	7.9	12.8%	5.0%
Trans-Orange	2.6	4.2	5.9	19.7	7.3%	6.2%
Transit traffic between Noordoewer/Ariamsvlei and Walvis Bay Port	0.0	0.0	0.0	0.2	7.5%	7.4%
Transit traffic between Noordoewer/Ariamsvlei and Angola	0.3	1.0	2.0	3.2	16.1%	2.4%
Regional trade (Namibia - South Africa)	2.2	3.2	3.9	16.3	4.9%	7.4%

Table 3.7: Future	e cargo volume	by corridor	(Target)
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³ According to "Port of Walvis Bay Infrastructure Development Master Plan [Draft] (October 2014)," container cargo handling demand in 2023 amounts to 750,000 TEUs, and it is the maximum handling capacity at the new container terminal. The container handling capacity in 2045 is estimated from the sum of the existing container terminal (350,000 TEUs), new container terminal (750,000 TEUs) and Phase 1 of SADC Gateway Port (974,000 TEU in 2050) which is described in "THE WALVIS BAY SADC GATEWAY PORT DEVELOPMENT CONSOLIDATED REPORT ON PRE-FEASIBILITY STUDIES, May 2013".

⁴ A twenty feet container is converted to 12 tons in this analysis.

						Growth	Growth
	Corridors (kind of trade with route)	2013	2020	2025	2045	rate	rate
						2013-25	2025-45
Tra	ins-Cunene	2.0	4.7	7.4	17.7	11.7%	4.5%
	Transit traffic between Walvis Bay and Angola	0.4	0.5	0.7	2.9	6.4%	7.1%
	Regional trade (Namibia - Angola)	0.5	1.2	2.2	3.6	13.7%	2.4%
	Transit traffic between South Africa and Angola	1.1	3.1	4.4	11.2	12.1%	4.7%
To	tal of transit traffic using Walvis Bay	0.8	1.3	3.6	14.5	13.2%	7.2%
Total of transit traffic using Walvis Bay (000 TEU)		68.0	107.2	300.2	1,205.8	-	-
Total of Regional Trade		4.8	7.4	10.5	55.0	6.8%	8.6%
To	tal of Corridors	7.4	13.3	21.5	88.6	9.3%	7.3%

Note: Cargo transport between RSA and Angola is listed twice at Trans-Kalahari & Trans-Orange and Trans-Kunene. Trans-Kalahari Railway Project is not included in this table.

Source: JICA Study Team

Table 3.7 indicates the target for future cargo volume by corridors. The transit cargo volume which was 0.8 million tons in 2013 will increase to 1.3 million tons in 2020, 3.6 million tons in 2025 and 14.5 million tons in 2045, respectively. Total corridor cargo volume recorded 7.4 million tons in 2013, and it will increase to 13.3 million tons in 2020, 21.5 million tons in 2025 and to 88.6 million tons in 2045, respectively.

3.1.5 Cargo transport volume by corridors

Table 3.8 indicates future cargo volume by kind of transport groups⁵, which is calculated from the target case shown in Table 3.7. Figure 3.2 to Figure 3.4 show cargo flow in 2013, 2025 and 2045, respectively.

					l	Jnit: million tons
Transport groups	2012	2020	2025	2045	Growth rate	Growth rate
mansport groups	2013				2013-25	2025-45
Group 1: Walvis Bay - Windhoek	0.7	1.8	3.0	7.9	12.8%	5.0%
Group 2: Namibia - RSA	3.9	5.6	7.3	43.4	5.4%	9.3%
Group 3: RSA - Angola	1.1	2.8	4.4	11.2	12.1%	4.7%
Group 4: Walvis Bay - Angola	0.4	0.5	0.7	2.9	6.4%	7.1%
Group 5: Walvis Bay - Zambia	0.3	0.6	2.4	10.0	18.1%	7.4%
Group 6: Windhoek - Zambia/Angola	0.9	1.8	3.2	11.6	11.1%	6.6%
Others (Walvis Bay - RSA)	0.1	0.2	0.5	1.6	10.6%	6.3%
Total	7.4	13.3	21.5	88.6	9.3%	7.3%

Table 3.8: Future cargo volume by kind of transport groups

Source: JICA Study Team

 $^{^{5}}$ The six transport groups are defined and analyses in section 4.3.2 of Appendix.

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Source: JICA Study Team

Figure 3.2: Cargo flow in 2013



Source: JICA Study Team

Figure 3.3: Cargo flow in 2025



Source: JICA Study Team

Figure 3.4: Cargo flow in 2045

3.2 Contribution of logistics sector to the national economy

3.2.1 GDP growth

The contribution of the logistics sector to the national economy is estimated from the relationship between cargo transport volume (ton-kilometres) along corridors and "transport and storage" of GDP in 2013. Table 3.9 indicates distance of each corridor and cargo transport volumes of corridors in 2013 and 2025, which is set in Table 3.7. The total of cargo transport volume will be 5.6 billion ton-km in 2013 and 18.0 billion ton-km in 2025.

Corridors	Kind of trade with route	Distance	Cargo transport volume (million ton-km)		
		(KIII)	2013	2025	
WINDC	Transit cargo between Zambia and Walvis Bay Port	1,389	454	3,334	
WLINDC	Regional trade (Namibia – Zambia/DRC/Zimbabwe)	1,230	541	1,243	
	Transit cargo between Buitepos and Angola	1,057	843	2,590	
Trans-Kalahari	Transit cargo between Buitepos and Walvis Bay Port	709	84	295	
Corridor	Regional trade (Namibia – Botswana/South Africa)	314	528	1,058	
	Domestic demand (Walvis Bay – Windhoek)	308	216	915	
Trans Orango	Transit cargo between Noordoewer/Ariamsvlei and Walvis Bay Port	966	20	47	
Corridor	Transit cargo between Noordoewer/Ariamsvlei and Angola	1,542	505	3,046	
Corridoi	Regional trade (Namibia – South Africa)	800	1,762	3,140	
Trans-Cunene	Ins-Cunene Transit cargo between Walvis Bay and Angola		316	665	
Corridor	Regional trade (Namibia – Angola)	743	354	1,662	
Total cargo transpo	ort volume (million ton-km)	-	5,622	17,995	
Trans-Cunene Corridor Total cargo transpo	Regional trade (Namibia – South Africa) Transit cargo between Walvis Bay and Angola Regional trade (Namibia – Angola) ort volume (million ton-km)	800 902 743 –	1,762 316 354 5,622	3,14 66 1,66 17,99	

Table 3.9:	Cargo	trans	ort	volume	(ton-km)) along	Corridors

Source: JICA Study Team

"Transport and storage" recorded N\$3.1billion, and accounted for 2.5% of GDP in 2013. The transport and storage will increase to 10.0 billion N\$ in 2025 from the relationship of transport and storage and the cargo transport volume in 2013. The proportion of the transport and storage to GDP will increase from 2.5% in 2013 to 4.6%, and the logistics sector will be one of major industries in Namibia in 2025 as indicated in Table 3.10. The proportion is almost at the same level as food processing (total of meat processing, fish processing and other food processing and beverage; 4.7%) and mining and quarrying except diamond mining (4.5%) in 2013.

Unit: N\$ million (2013 price				
Items	2013	2025		
Transport and storage	3,135	10,033		
GDP	126,608	219,528		
Share of transport and storage to GDP	2.5%	4.6%		

Table 3.10: Contribution of transport and storage to GDP

 Note:
 GDP growth rates from 2013 to 2025 are derived from IMF projections in Article IV consultation report

 Source:
 National Accounts time series 1980-2013, NSA; JICA Study Team

3.2.2 Employment generation

According to the Namibia Labour Force Survey 2013, employment of "transport and storage" sector employed 25,659 persons, and it accounted for 3.7% of the total employment (685,651 persons) in 2013. Therefore, GDP of "transport and storage" per worker is N\$122,200 from GDP and number of labour force in transport and storage.

If the GDP of transport and storage per worker, labour productivity of transport and storage, improves at 3.0% per year, it will increase to N\$174,200 in 2025. The employment in transport and storage will be calculated at 57,600 persons from the relationship between the GDP of transport and storage and labour productivity of transport and storage. It accounts for 5.7% of the total employment. The annual increase in employment in the transport and storage sector will be 2,700 persons, and it will account for around 10% of the new employment in Namibia (27,000 persons) during 2013 and 2025.

Table 5.11. Employment in transport and storage						
Items	2013	2025	Increase from 2013 to 2025	Annual average increase between 2013 and 2025		
Transport and storage	25,659	57,597	31,938	2,661		
Total employment	685,651	1,011,335	325,684	27,140		
Share of transport and storage in the total employment	3.7%	5.7%	-	-		
Population	2,127,013	2,733,338	606,325	50,527		

Table 3.11: Er	nplovment	in transport	and storage
		m manopere	and otorage

Note: Total employment is calculated under an assumption that percentage of the total employment to population will increase from 32% in 2013 to 37% in 2025.

Source: Namibia Labour Force Survey 2013; JICA Study Team

3.3 Analysis of modal share between rail and road

3.3.1 Two modal share scenarios

Based on the future cargo flow volume by corridors (Table 3.7), a desirable transport mode in terms of national socio-economy is assessed in this section. Two different modal share cases are employed for comparative analysis of road transport and rail transport.

- Existing modal share case: The modal share between road and rail is calculated from the road interview survey carried out in the Transport Master Plan and transport results provided by TransNamib in 2011, and assuming proportionally the modal shares will remain the same until 2025.
- Rail orientation case: rail transport volume will increase from 2.7 million tons in 2013 to 6.0 million tons by 2025 based on average growth rate during 2018 and 2020 projected in the "180 day turnaround plan" by TransNamib. In this case, cargo transport share of railway increases from 12.1% to 14.7%.



Figure 3.5: Two modal share scenarios



3.3.2 Rail transport volume

Table 3.12 indicates forecast rail cargo volume at major sections. The future rail OD is prepared from forecast future cargo OD matrices and assumed modal share scenarios (existing modal share and

rail oriented). As shown in the table, increased cargo volume is distributed to OD pairs between (1) Walvis Bay – Kranzberg and Kranzberg – Oshikango, and (2) Walvis Bay – Kranzberg and (3) Kranzberg – Windhoek in accordance with TransNamib's business plan. Detailed calculations are included in Chapter 10 of Appendix. As a result of assignments on the railway network, section volume of cargo on Walvis Bay – Swakopmund increase from 10,220 tons per day in existing modal share case to 13,080 tons per day in rail oriented case.

					Unit: ton per day
Major	coctions	Longth (km)	2012	2025 f (Existing	2025 f (Rail
Major sections		Lengin (kin)	2013	modal share case)	oriented case)
Swakopmund	Walvis Bay	50.3	5,230	10,220	13,080
Kranzberg	Swakopmund	161.5	4,700	8,650	11,510
Okahandja	Kranzberg	139.9	2,170	4,960	5,280
Windhoek	Okahandja	72.7	2,190	4,980	5,300
Gobabis	Windhoek	226.1	50	90	90
Rehoboth	Windhoek	94.2	1,110	1,780	1,780
Mariental	Rehoboth	177.2	1,110	1,770	1,770
Keetmanshoop	Mariental	231.5	950	1,550	1,550
Keetmanshoop	Lüderitz	865.6	710	940	940
Karasburg	Keetmanshoop	227.3	1,120	1,370	1,370
Ariamsvlei	Karasburg	135.6	840	1,290	1,290
Kranzberg	Otavi	327.6	2,530	3,690	6,240
Otavi	Grootfontein	94.8	100	140	230
Otavi	Tsumeb	61.3	2,000	3,060	5,150
Tsumeb	Ondangwa	247.3	560	880	1,310
Ondangwa	Oshikango	56.7	340	570	920

 Table 3.12: Forecast cargo volume at major sections

Note: Cargo volume in 2013 is actual average daily transport in 2013 based on TransNamib data.

Source: JICĂ Study Tea; TransNamib

3.3.3 Road transport volume

Cargo OD for road transport is forecast after assignment of railway cargo OD. Figure 3.6 shows the results of future cargo demand assignment for road transport in 2013 and rail-oriented case in 2025.

Cargo volume transported by road should be converted to vehicular volume and the vehicular volume is added to passenger cars and buses that are forecast in the Integrated Transport Master Plan, in order to confirm a balance of traffic demand and road capacity in Chapter 6. The methodology and definitions to convert cargo OD of road transport to vehicular OD is presented in Chapter 10 of Appendix.



Source: JICA Study Team



Table 3.13 indicates daily trrafic of trucks (2 axle truck, 3 axle truck and and multi axle truck) in 2013, existing modal share case in 2025 and rail oriented case in 2025. Comparing the rail oriented case to the existing modal share case, daily truck traffic between Walvis Bay and Tsumeb will decrease by 130 to 180 trucks per day. Changes of truck traffic between Windhoek and Karibib and Tsumeb and Oshikango is 20 to 30 trucks per day. Figure 3.7 shows decrease ratio of truck traffic from existing modal share case to rail oriented case in 2025. Decrease ratio between Karibib and Otjiwarongo and Otavi and Tsumeb will account for more than 10%. These are effects of modal shift from truck transport to rail transport.

Sections		2013	Existing modal share in 2025	Rail oriented in 2025	Difference (1) - (2)
Swakopmund	Walvis Bay	1,550	2,930	2,770	160
Arandis	Swakopmund	1,460	2,660	2,480	180
Karibib	Arandis	1,480	2,660	2,490	170
Okahandja	Karibib	740	1,410	1,390	20
Windhoek	Okahandja	1,770	3,140	3,120	20
Karibib	Otjiwarongo	730	1,270	1,100	170
Otjiwarongo	Otavi	1,320	2,520	2,380	140
Otavi	Tsumeb	1,050	1,820	1,690	130
Tsumeb	Ondangwa	800	1,530	1,500	30
Ondangwa	Oshikango	540	1.220	1 190	30

Table 3.13: Daily traffic of trucks in existing modal share case and rail oriented case

Note: Trucks includes 2 axle track, 3 axle truck and multi axle truck in this analysis. Source: JICA Study Team



Note: Trucks includes 2 axle track, 3 axle truck and multi axle truck in this analysis. Source: JICA Study Team

Figure 3.7: Decrease ratio of truck traffic from existing modal share case to rail oriented case in 2025

3.3.4 Economic benefit of modal shift

The economic benefit from modal shift from road to rail is calculated from the following:

- Ton-kilometres of rail transport in 2013 and the two scenarios (existing modal share case and rail oriented case) in 2025 by using Table 3.12,
- Annual operation cost in 2013 and the two scenarios in 2025 with TransNamib's financial report and other investment plans,
- Difference of annual operation cost between the existing modal share case and the rail oriented case (incremental cost of rail transport),
- Additional number of trucks which are used in the existing modal share case and vehicle kilometres,
- Operation cost of trucks by use of unit Vehicle Operating Cost (incremental cost of truck transport),
- Comparison of incremental cost of railway transport with incremental cost of truck transport

Items	Unit	Amount	Remarks/source of data
Annual operation cost of railway in 2013	N\$ million/year	482.2	TransNamib's annual report; Depreciation/ amortization is excluded.
Investment in locomotives and coaches	N\$ million from 2015/16 to 2017/18	1,920	TransNamib's 180 day's turnaround plan; lifetime of locomotives and coached are assumed to be 20 years.
Investment in railway	N\$ million/year	2,500	Infrastructure Financing in Namibia; investment amount to railway infrastructure in 2015/16
Vehicle Operating Cost of heavy truck	N\$ per km per ton	1.036	Integrated Transport Master Plan (as of 2011); Adjusted by JICA Study Team
Average loading (multi)	tons	24.2	Integrated Transport Master Plan
Empty ratio of truck	per cent	80	Integrated Transport Master Plan

Table 3.14: Assumptions to calculate economic benefit of modal shift

Source: JICA Study Team

Table 3.14 indicates assumptions to calculate economic benefit of modal shift and Table 3.15 indicates the result of this calculation. The economic benefit of modal shift from road to rail amounts to around N\$1.5 million every day, and N\$534 million in 2025.

			Unit:	Namibian dollar
			2025	
Items	2013	Existing modal share	Rail oriented	Difference
Transport volume per day (ton-km)	4,119,129	6,787,111	8,559,104	1,771,993
Daily cost of railway transport (operational cost and investment)	8,433,438	9,289,128	10,120,465	-
Incremental cost of railway transport (Rail oriented minus existing modal share)	-	-	-	831,337
Daily cost of truck transport (incremental cost of truck transport)	-	-	-	2,295,036
Difference between incremental cost of railway transport and incremental cost of truck transport (Economic benefit) per day	-	-	-	1,463,699
Annual economic benefit	-	-	-	534,250,000

Table 3.15: Calculation of economic benefit

Source: JICA Study Team

Although the amount is very significant, some aspects of business operations are not fully reflected. For example, benefits of door-to-door transport of trucks are irreplaceable for some goods that may never be shifted to rail. Should rail transport fail to operate reliably, the users would not shift to rail, and the economic benefit would be "nominal by theory". It is necessary for TransNamib to carry out their 180-days turnaround plan and 5-year business development plan and achieve both target cargo volume and reliability, which is assumed in the rail oriented case.

4. Market Promotion

4.1 Outline of market promotion

Market promotion is, in a narrow sense, marketing of the Namibia route based on the marketing theory. However, in this Logistics Master Plan, market promotion is considered to be a comprehensive activity including port planning, city planning, infrastructure planning and identification of implementing organizations that consist of both the public sector and private sector.

The planning process for market promotion consists of 2 aspects. The first aspect is "What are sales points of Namibian logistics service?" in comparison with logistics service of rivals. The second one is "Who are customers for Namibian logistics sector?". Each aspect has the different marketing processes indicated in as shown in Figure 4.1.



Source: JICA Study Team

Figure 4.1: Flow diagram of market promotion

4.2 Identification of advantages and disadvantages of Namibian logistics service

4.2.1 Analysis of the logistics network in southern Africa

It is necessary to assess the situation of logistics infrastructures in southern African countries that are competitors of Namibia, in order to identify advantages and disadvantages of Namibian routes.

In southern Africa, Durban Port is the biggest gateway port. The other gateways are Dar es Salaam Port and Beira Port that are located on the east coast, while Walvis Bay Port is the only one located on the west coast. Regarding road networks, corridors starting from Durban, Dar es Salaam, and Beira ports have sections in poor conditions as shown in Figure 4.2. In contrast, Namibian routes such as WNLDC, Trans-Cunene, Trans-Orange and Trans-Kalahari that connect Walvis Bay Port to the Landlocked Areas in SADC are in good condition.



poor road condition

Source: Africa Road Corridors Handbook (2014) and port statistics

Figure 4.2: Current gateway ports and corridors

The capacity of Walvis Bay Port and the road network starting from Walvis Bay is sufficient to

accommodate the current cargo volume since the port and roads in Namibia are not congested. However, in order to handle more cargo in the future, Namibia needs to upgrade some parts of the transport infrastructure. Especially, improvement of Walvis Bay as an attractive logistics business base is essential for Namibia to become an international logistics player, and to catch up with Durban and Cape Town in South Africa. In this context, development of transport and logistics infrastructure such as a new container terminal (on-going), Logistics Hub Centre, truck stops and bypass roads, etc. are needed for Namibia to establish a strong position as a gateway on the west coast of southern Africa

4.2.2 Advantages and disadvantages of Namibian logistics routes

In order to assess the potential of Namibian routes, it is necessary to identify advantages and disadvantages of infrastructure and the logistics service. The current situation regarding transport infrastructure was investigated by transport mode in Chapter 6 of Appendix, and the condition of the port and roads are relatively good as summarised in section 4.2.1.

The condition of the infrastructure is not the only factor determining advantages or disadvantages of logistics routes. It is also important to analyse the available shipping service, transit time and cost by reviewing the existing reports and interviews with logistics companies. The shipping service and transit time are described in the following sections.

4.2.2.1 Shipping service

Walvis Bay Port has shipping lines as customers including two major shipping lines, CMA CGM and Maersk, and their affiliated companies. Their main business in Walvis Bay is transhipment from Asia to West Africa most notably to Angolan ports as shown in Figure 4.3. However, transhipment is not a stable business activity. Once good ports are developed in Angola, calls of ships to Walvis Bay Port for transhipment may decrease in the future. It is recommended that shipping services be diversified from a transhipment service to transit service to the Landlocked Areas of SADC. Shipping services to Europe and America where Walvis Bay Port has an advantage is a potential market to expand to these areas. At the moment, shipping services to Europe and America are available; however, the frequency is not so high. It is necessary to do more proactive marketing with the expected "target cargo" and to increase frequency of European and American routes.







4.2.2.2 Transit time

One of the potential transit cargo transport markets for Namibia is Zambia. Distance between Walvis Bay and major cities such as Lusaka and Kitwe is as same as for other ports such as Durban. When it comes to transit time, WNLDC route is the fastest because the roads are in good condition with no congestion. The other advantage of the WNLDC route is the fact that Namibia shares a border with Zambia (no need to go through the other countries).



Note: Number of days in underline means waiting time at port and borders. Source: Africa Road Corridors Handbook (3S Media, 2014)

Figure 4.4: Transit time from gateway ports to Lubumbashi

4.2.2.3 SWOT analysis and ideas on marketing promotion

Table 4.1 summarises advantages and disadvantages of Namibian routes and ideas on market promotion.

Walvis Bay has a frequent service between West Africa, Asia and Europe and the frequency of ship calls is almost daily for destinations in West Africa and Asia, however, frequency on the European/American route is not so high. It is necessary to increase the frequency on the

European/American route in the process of exploring potential cargo demand for the Landlocked Areas of SADC.

The most remarkable advantages of the Namibia routes are "speed" and "safety". WNLDC route is the fastest route to the Landlocked Areas of SADC because of the good condition of the road and no congestion. As a result, the transit time of the WNLDC route is faster than other routes such as North–South Corridor and Dar es Salaam Corridor. In addition to that, Namibian routes are known as the most secure ones among southern African corridors.

On the other hand, the weak points of Namibia route are that the number and capacity of logistics service providers working in the field of transit cargo at internationally competitive prices are limited. The rest of them focus on the small domestic market where they charge higher prices than international standard. Therefore, when a potential customer asks for a quotation to send transit cargo through Namibia, the price quotation from a logistics service provider is often higher than those from South Africa. A potential customer often gives up using the Namibian route and a reputation for "high transport cost of Namibian route" persists.

		External environment			
		Opportunity (advantage) - Economic growth in Landlocked Areas of SADC - Congestion and long transit time of other ports (Durban and Dar es Salaam, etc.)	 Threats (disadvantage) Existence of established route (Durban, Dar es Salaam) New competitors - big scale port and rail projects in rival countries. 		
	 Strong points (advantage) Quick, efficient, secure Good infrastructure Construction of new Container Terminal Short distance to Europe/America High frequency call of west Africa and Asia English speaking country 	 Ideas to capture opportunities by using strong points. To transport cargo between Europe/ America and landlocked countries/areas which are expected rapid economic growth To use high-level security and facilitate trade with Europe and America. 	 Ideas to avoid threats by using strong points. To establish trade route before the other gateways complete major development. To strengthen trade route of Atlantic ocean on which direction Namibia have comparative advantage. 		
condition	 Weak points (disadvantage) Limited number of international-level service providers for transit service Small domestic market High dependence on transhipment Limited direction of shipping service 	 Ideas to capture opportunities by mitigating weak points. To conduct promotion and marketing activity as Team Namibia. To attract and foster international logistics players to raise logistics capacity for transit trade. To develop Logistics Hub Centre and other key infrastructure. 	 Ideas to avoid threats by mitigating weak points. To increase trade with landlocked countries and establish well balanced trade system. To maintain and use Asian route service which is provided for transhipment. To construct new container terminal as scheduled to maintain big vessel calls for transhipment. 		

Table 4.1: SWOT	analysis of	Namibian	route and	ideas on	market	promotion
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Source: JICA Study Team

In practice, Namibia does have a few but very competitive service providers who can offer affordable prices and do transit business with companies in the Landlocked Areas of SADC. Namibia needs to

have more such competitive service providers. In the short-term, it is unlikely to see the number and capacity of such companies growing fast enough in the logistics industry within Namibia alone. Rather, it is more realistic for Namibia to attract international-level logistics companies to shift some of their transit operations to the Landlocked Areas of SADC to the Namibian routes. They will become "anchor tenants" to quickly increase the total cargo volume to the Landlocked Areas of SADC, which will increase the frequency of ship calls and lower inland transport cost.

4.3 Identification of target customers

4.3.1 Volume and flow of cargo

In order to understand Namibia's potential market size, it is necessary to confirm (1) total cargo flow of southern Africa, (2) transit cargo flow, and (3) hinterland of each gateway based on port statistics.

As shown in Figure 4.5, the total trade volume of SADC is about 420 million tons, of which about 30 million tons is intra-SADC trade in 2010. Trade with outside SADC is about 390 million tons. Among the trade volume, the transit cargo volume to the Landlocked Area of SADC (Zambia, Zimbabwe, Malawi, Botswana and parts of Angola and DRC) is estimated at 6.8 million tons. 2.2 million tons of transit cargo is transported through South Africa (32%) and the rest of 4.6 million tons transit cargo is transported through other countries such as Dar es Salaam, Beira and Walvis Bay (68%). Walvis Bay is handling 0.8 million tons of transit cargo to landlocked countries (12%).



Source: JICA Study Team

Figure 4.5: Current cargo flow in southern Africa in 2010

Given Namibia's small population, the potential market to increase cargo volume is to increase transit cargo to the Landlocked Areas of SADC or transhipment of cargo mostly to Angola. Currently Namibia depends heavily on transhipment cargo which is known to be very volatile. In order to lower the risk of this concentration on transhipment, Namibia should diversify the demand structure by increasing the volume of transit cargo to and from landlocked countries.

4.3.2 Analysis of target cargo: A case study of Zambia

It is inefficient to do marketing, such as visiting companies that may use Namibia routes, without a solid strategy and information on the market. It is necessary to identify the target cargo not only by word-of-mouth information but also by statistical data analysis. After analysis of data, it is possible to narrow down the potential target markets and cargo information. Given this data analysis, target companies can be identified and visited.

The Study Team analysed potential sources of cargo in Zambia based on UN ComTrade and Namibian customs data. Target cargo is assumed to be that traded between Zambia and Europe/America currently not going through Namibia. It is expected that Namibia should have a comparative advantage on that cargo because of shorter physical and time distance to Europe/America, and thus lower total transport costs.

The Study Team extracted export volume from Zambia to Europe and America by commodities (=A) at first. Next, the present transit volume from Zambia to Europe and America via Walvis Bay Port (=B) was extracted. It then calculated (A-B=C), assuming that the volume "C" is potential target volume for Walvis Bay Port.



Source: JICA Study Team



I Init tons

The result of the analysis on export cargo is shown in Figure 4.7 and Table 4.2. Identified export target cargo is Sugars & Sugar Confectionery, Metal and Metal Products, Garment, Textiles and fabric, Other Agricultural Products, and Household articles/ Pharmaceutical products.

The result of the analysis on import cargo is shown in Figure 4.8 and Table 4.3. Identified import target cargo is Other Ore, Slag, Stone and Sand, Machinery and Parts, Fertilizer, Chemicals and Industrial Material, Household articles, Pharmaceutical products, Metal and Metal Products and Paper/Printed Matter.



Source: UN ComTrade and Namibia custom data



Table 1 2. Potential	cargo volume an	d industry f	or Walvie B	av Port ((avnort)
i able 4.2. Polenila	i cargo volume an	u muusuy n		ay Full	export

Commodities	Export from Zambia to Europe and America in 2013	Transit from Zambia to Walvis Bay Port in 2013	Potential Transit Volume from Zambia	Walvis Bay's Share (%)	
	Α	В	C=A-B	D=B/A	
Sugars & Sugar Confectionery	117,769	0	117,769	0	
Metal and Metal Products	28,783	0	28,783	0	
Copper	27,507	37,328	-9,821	136	
Garment, Textiles and fabric	17,308	160	17,148	1	
Other Agricultural Products	12,521	0	12,521	0	
Household articles, Pharmaceutical products	12,067	760	11,307	6	
Other	14,437	5,989	8,448	41	
Total	230,392	44,237	186,155	19	

Source: UN ComTrade, Namibia custom data


Source: UN ComTrade, Namibia custom data

Figure 4.8: Potential cargo volume and industry for Walvis Bay Port (import)

_				Unit: tons
Commodities	Import from Europe and America in 2013	Transit Cargo from Walvis Bay to Zambia in 2013	Potential Transit Volume to Zambia	Walvis Bay's Share (%)
	С	D	A=C-D	B=D/C
Other Ore, Slag, Stone and Sand	110,481	0	110,481	0
Passenger Car, Truck, Motorcycle	86,652	65,388	21,264	75
Machinery and Parts	37,037	11,598	25,439	31
Fertilizer	34,072	0	34,072	0
Chemicals and Industrial Material	27,471	9,588	17,883	35
Household articles, Pharmaceutical products	27,381	2,344	25,037	9
Metal and Metal Products	17,840	570	17,270	3
Paper and Printed Matter	11,979	13,816	-1,837	115
Garment, Textiles and fabric	11,672	180	11,492	2
Other	34,250	31,242	3,008	91
Total	398,835	134,726	264,109	34

Table 4.3: Potential	cargo volume and	l industry for W	alvis Bav Port	(import)
				(

Source: UN ComTrade, Namibia custom data

4.3.3 Marketing activity: Questionnaire and interview survey

The Study Team carried out a questionnaire survey and an interview survey of private companies in Zambia as an example of marketing activities. The surveys took the following steps.

Firstly, the team visited Zambia Association of Manufacturers (hereinafter refereed as to "ZAM"), and received contact details of ZAM members. The study team conducted a questionnaire survey and an interview survey with the cooperation of ZAM and WBCG Zambia Office, in order to analyse companies that can possibly use the Namibia route.

In the questionnaire survey, the questionnaire was sent to 163 companies to collect information on (1) kind of goods handled, (2) logistics route and (3) possibility to use the Namibia route. Replies were received from 26 companies (16.0%). Effective responses were from 18 companies. Table 4.4 gives an overview of the questionnaire survey, and Table 4.5 indicates responses of the target companies, respectively.

Target, group, survey	method and date of survey	Remarks	
Target group	Manufacturers in Zambia	Joint Survey with ZAM (Zambia Association of Manufacturers)	
Survey method	Email	Cover letter, questionnaire (PDF and Microsoft Word format)	
Survey method	Follow-up call	All companies. Once or twice	
Date	18th – 26th of September	Follow-up call: 22 nd of September to 14 th of November 2014	
Course UCA Church To and			

	Table 4.4:	Overview	of q	uestionn	aire	survey
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Source: JICA Study Team

	Table 4.J.	conection of the questionnane
No of questionnaires to be delivered and collected		Remarks
Delivered to be sent	235	All ZAM member companies
Undelivered	72	Writing errors in email address and telephone number, etc.
Number of samples	163	
Respondents	26	
International market	19	Agro-processing, metal, leather & textile and pharmaceutical, etc.
Local market	7	
Response rate	16.0%	
Effective respondents	18	

Table 4.5: Collection of the questionnaire

Source: JICA Study Team

According to the replies, all companies are importers and 11 companies (61.1%) are exporters.

Most of the origins of imports are from Asia (in particular India) and Africa. The number of companies importing from Europe and America is relatively small. Many companies are using Dar es Salaam Port (8 companies) and Beira Port (7 companies), and some companies are using Walvis Bay Port (4 companies). Regarding inland transportation, half of the respondents are using container trailers, while the others are by flat bed truck. Only one company uses rail.

question	Import	Numbe of replies		Export	number of replies	
Situation of trade	Import Company		16	Export Company		10
	India		8	India		0
	Africa		8	Africa		10
Origin/destination	Asia		6	China		1
	Europe		3	Europe		1
	America		1	America		0
	Dar es Salaam		8	Dar es Salaam		2
Current using port	Beira		7	Beira		2
Current using port	Durban		5	Durban		1
	Walvis Bay		4	Walvis Bay		1
	Your company		5	Your company		3
Decision maker of company's route	Parent company		5	Parent company		2
	other		4	other		1
Style of cargo	Container		8	Container		4
Im: arriving at port	Other		6	Other		4
	Container		8	Container		4
Inland transport	Flat Bed		7	Flat Bed		5
	Rail		1	Rail		1

Table 4.6: Major characters of logistics in the questionnaire survey

Source: JICA Study Team

Almost all export destinations are to Africa, and only a few companies export to Asia and Europe. Since most cargo is exported to countries within Africa, only a few companies use ports such as Dar es Salaam Port (2 companies), Beira Port (2 companies), Durban Port (1 company) and Walvis Bay Port (1 company). Regarding inland transportation, half of the respondents are using container trailers while the other half are by flat bed truck. Only one company uses rail. Table 4.6 shows major characters of logistics.

The questionnaire had a question about reasons to select the current port. Many companies answered (1) <u>short transit time</u>, (2) <u>existence of reliable logistics company</u> and (3) <u>cheap transportation cost</u>. The study team recognizes that short transit time and cheap transportation cost are important factors for Zambian companies to select ports before conducting the survey. However, the existence of a reliable logistics company is a finding from the survey, and this fact is one of important points for considering Logistics Hub Centre in Chapter 5. Regarding the possibility of changing ports, 6 companies replied that they could change ports when conditions of the new port could fulfil their requirement. The study team found that many companies are interested in Walvis Bay Port and Beira Port as potential ports in the future. The study team enquired about the details of trade for companies

that replied they are interested in Walvis Bay. Most of the companies are trading with Europe and America, and one company has a factory in Livingstone (close to Namibia). It was confirmed that potential customers of Walvis Bay are companies trading with <u>Europe and America</u> and a company that have a business operation <u>near Namibia</u>. They can benefit financially by transporting cargo faster with lower total costs through Walvis Bay.

Table 4.8 indicates Criteria for choosing a port and candidate ports.

Questions	Import	Number of replies			
	Short transit time		8		
	Reliability of logistics company		6		
Main reason to select the current	Cheap transport cost		5		
port	Speed of custom clearance		3		
	Direction of parents company		3		
	Other		4		
Future possibility to change the	Continue to use the present port		6		
present port	Possibly change the port		6		
	Walivis Bay		4		
If you change the present port,	Beira		2		
which port are you interested in?	Durban		1		
	Dar es Salaam		1		
Issues about the present port	Durban: long transit time, Dar es Salaam: unreliable, poor service, congeston, long to discharge, long transit time				
Advantages and Disadvantages of Walvis Bay	Not transit through 3rd country, Quick Efficient, Cheap Expensive				

Table 4.7: Criteria of choosing a port and candidate ports

Source: JICA Study Team

The Study Team interviewed 6 companies in Lusaka that were introduced by ZAM, and companies replied with filled questionnaire forms. Table 4.8 gives an overview of the interview survey. The study team found that 5 companies were highly interested in Walvis Bay excluding one company who is trading with India/Japan and have its parent company in Dar es Salaam.

	Target companies	Interview method			
Company	6 companies in Lusaka	JICA Study Team members visited companies who were recommended by ZAM or replied with filled questionnaire.			
Date	29 th of September to 3 rd of October				
a					

Table 4.8: Overview of the interview survey

Source: JICA Study Team

One of the companies said that the company have used Walvis Bay a few years ago to import raw

material from Europe, and the company is very satisfied with the logistics service provided by Walvis Bay. On the contrary, 2 other companies said that they had used Walvis Bay Port before, but now they are not using the port because of its high costs.

Regarding the transportation cost of Walvis Bay, the study team members have received two conflicting comments saying that cost is "expensive" and cost is "cheap". It is understandable that if a company in Zambia uses a logistics company who has international logistics knowhow and network, the customer can receive an internationally competitive price. However, the number of such logistics companies is quite limited in Namibia. When a shipper/consignee gets a cost quotation from a logistics company that does not have international logistics knowhow and network, the customer is likely to receive an expensive quote. Therefore, it is important for Namibia either to attract internationally competitive logistics companies to do their business through Namibia or to have more domestic logistics companies to get up to international standard in the future.

There are 2 companies that want to use Walvis Bay and import their raw material if they can get other services in addition to transportation. In order to get their cargo, it is important for a logistics company to offer an attractive total solution including not only a competitive price but also useful market information for the customer. For example, a comment from company D suggests that the company would be more interested in Walvis Bay, if a logistics company can provide not only service for transit transportation but also total import service regarding palm oil. Table 4.8 indicates comments on WNLDC route from Zambian companies.

The Study Team also visited the Zambia Chamber of Commerce and Industry (hereinafter refereed as to "ZACCI") and received consent for co-operation on the questionnaire and interview survey in future. ZACCI members include major retailers such as SHOPRITE, Trading companies and logistics companies, and the same kind of questionnaire survey and interview survey should be conducted in the implementation process of the International Logistics Hub Master Plan.

Overview of interviewees	Comments on Walvis Bay Port	
Company A Lusaka Leather products Container India, China, Spain Durban, Beira	We used Walvis Bay in the past. Walvis Bay is Quick and Efficient. But <u>costs have increased</u> and now <u>too expensive</u> .	
Company B Lusaka Tractor, pump, etc. Container Italy, Brazil, China, India, Angola Beira, Durban	There are two problems with Walvis Bay and because of those issues we don't use it. First is <u>high price</u> . Second is the <u>way</u> <u>of inland transportation</u> . We want to transport container without unpacking at Walvis Bay, but they unpack and carry by flat bed track. If these things will be solved, it is possible to use Walvis Bay because import from Brazil is increasing.	

 Table 4.9: Comments on WNLDC route from Zambian companies

Overview of interviewees	Comments on Walvis Bay Port
Company C	We have used Walvis Bay since 2-3 years
Lusaka	ago. Walvis Bay is quick, secure and
Packaging material	the cost is cheap.
Container	
Europe, China	- Starting and a starting of the starting of t
Walvis Bay, Beira	
Company D	We are interested in Walvis Bay because we
Lusaka	are importing sugar from Brazil and if in the
Pharmaceutical, food	future we can use palm oil from west Africa, we
China, India, Brazil, Malaysia	will import it from there.
Beira, Dar es Salaam	
Company E	We have a distribution centre in Johannesburg. Then it is difficult
Lusaka	to use Walvis Bay now. But on the other hand, in order to lower
Construction machinery	logistics cost, we are trying to introduce direct shipping from factory
Container, Roll-on roll-off ship,	to destinations. Then we want to keep in touch and share
etc.	logistics information from now on.
Japan, etc.	
Durban	and the second sec

Source: JICA Study Team

4.4 **Promotion activities**

As shown in Figure 4.1, promotion activities also consist of 2 different levels. 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 bottlenecks and to overcome weak points are also included in this category and it is important to develop a mechanism that identifies bottlenecks and weak points and ways to remove and overcome them. An organizational structure to operate such a mechanism is proposed in section 4.5.1.

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. For example, WBCG can take the following steps, firstly to compile an address list of target companies, and secondly, to do preliminary surveys, and thirdly, to share the results with logistics companies in Namibia for individual marketing activities.

- WBCG and its branch offices collect lists of member companies from company associations such as manufacturers' association, chamber of commerce of the target countries and provide a database service to logistics companies in Namibia.
- WBCG and its branch offices conduct preliminary surveys such as questionnaire surveys and

interview surveys with the major companies of the target market, and share the survey results with "Team Logistics Namibia"¹ and logistics companies.

- Each logistics company carries out marketing activities using the company list and preliminary survey results of WBCG.
- Each company shares the experiences of their marketing activities with Team Logistics Namibia as far as possible, and members of Team Logistics Namibia utilize the information for their own activities.

As shown in Figure 4.1, a part of the results on identification of advantages and disadvantages of Namibian routes is transferred to business associations and individual companies, and used as promotion material to attract potential users. On the other hand, potential users' opinions collected from questionnaire and interview surveys are transferred/made available to Team Logistics Namibia, and used to initiate activities for overcoming weak points and making advantages more appealing.

4.5 Implementation structure for marketing

4.5.1 Team Logistics Namibia: Role of Public, Private Sectors and WBCG

It is recommended that an organisation is formed called "Team Logistics Namibia". It should consist of WBCG, Namport, relevant ministries and parastatals, relevant municipalities and towns and relevant business associations. The "Team Logistics Namibia" will participate international forums and conferences. It will also collect information from business associations of target markets, and conducting market promotion to international forwarders and shipping lines of the target market.

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, actual transportation. For example, Dubai had 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.

In the case of Namibia, there is a move to form such "collective actions". In September 2014, ministries, local authorities and parastatals participated in a 2-day workshop at Swakopmund to discuss each organization's role for international logistics hub development. Such workshop has a potential to facilitate collective actions on regular basis.

¹ "Team Logistics Namibia" is an organization to promote logistics industry of Namibia. Its members and relationship with other organizations are explained in Figure 4.9.

A National Coordinating Body which is proposed in Chapter 11 could coordinate promotion activities including infrastructure development and marketing activities both by the public and private sector in the coordination meeting. Figure 4.9 illustrates a conceptual idea of an implementation structure of the promoting activities in the future.



Source: JICA Study Team

Figure 4.9: Implementation structure for marketing

4.5.2 Continuous follow-up based on PDCA cycle

It is important that stakeholders in the logistics sector conduct marketing activities based on PDCA (Plan-Do-Check-Act) cycle. After formulation of the international logistics hub master plan (PLAN), the Namibian logistics sector starts to access the market countries/areas/companies and conduct marketing activities (DO). Based on information from the first access, it is necessary to analyse experiences, share them within the team and improve marketing approach and targeting (CHECK). After that, it is needed to visit potential customers again (ACT).



Source: JICA Study Team



4.6 Necessary actions for market promotion

Based on the discussions in this chapter, the following actions (programmes and projects) in Table 4.10 are needed for market promotion and generating demand base.

Key elemen Internati Logistics	its of an ional s Hub	Actions (programmes/projects)
(1) Market (demand base)	Marketing promotion program	
	 Establishment of a national coordinating body. 	
	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. 	

Table 4.10: Necessary actions for market promotion

Source: JICA Study Team

5. Logistics Hub Centre

5.1 Justification and concept

5.1.1 Why "Logistics Hub Centre"?

There are several different reasons why a Logistics Hub Centre is proposed in the Master Plan. These are as the followings.

- To provide a <u>world-class "storage" function</u>, one of five essential components, to make Namibia a provider of a complete package of international logistics services.
- To establish a "Logistics Hub Centre" in perfect and long-term integration with development plans of the port and municipality, instead of piecemeal and ad hoc adjustments.
- To install <u>impressive "pull-factors" and make them clearly visible at a glance</u> to attract FDIs of global players in the logistics business as "anchor tenants". They are expected to be "anchor tenants" not only of the "Logistics Hub Centre" but also of Namibia as a whole to become an "International Logistics Hub."
- To secure a specific location as a special zone where <u>innovative arrangements can be applied</u> <u>very quickly</u> such as strategically low land costs or very flexible work permits within a zone.
- To make <u>investments on infrastructure most efficient</u> by concentrating on a strategic location.
- Risks of <u>environmental impacts can be better controlled</u> as transport alignments are designed to avoid negative impacts on local communities and natural environment well in advance.

5.1.2 Install pull-factors strategically: Cost of land is a key.

Needless to say, good locations and well-serviced infrastructure are the minimum requirements for an attractive "Logistics Hub Centre". On top of that, it is vital to create an additional strong "pull-factor". A typical way to do so is to set the cost of acquiring land by purchase or rental strategically low for the logistics industry.

The study team conducted interviews with global logistics companies in Johannesburg and Durban in the process of the master plan study. These companies are in operation in southern African countries such as Botswana, Zambia DRC. They recognize advantages of Walvis Bay in doing such logistics business, and are interested in shifting their operation base to Walvis Bay. However, they are facing a bottleneck of land for warehouse.

The logistics industry is known to be weak when the cost of land is high. Never set prices as high as Durban or Cape areas (selling at N1,500 to $1,600/m^2$ or leasing at N10 to $13/m^2/m$ onth) if Namibia aims to be impressive to logistics companies. The cost of land in Namibia should be not more than 1/3 the prices in Durban or Cape. If it is set higher than this level, it is quite unlikely to see global logistics companies shifting their operation bases from Durban or Johannesburg to a Logistics Hub Centre in Walvis Bay.

The cost of land for business investments is often set to be very low as part of the national strategy in well known international gateways, especially in cases where the ports do not have an immediate hinterland with large domestic markets to generate cargo volume. For example, in the case of the Free Trade Zone right next to the port in Dubai, the leasing price of well-prepared commercial land is N2.5/m^2/month$ that is equivalent to a selling price of N\$300/m². In the Port of Busan, South Korea, leasing prices of land for warehouses right behind the container terminals (meaning "within the port") are N\$3.5/m²/month that is equivalent to a selling price of N\$420/m²¹. These are good examples of how they secure their position as international logistics hubs even without immediate hinterlands that can generate cargo demand.

It is essential to install conditions and regulations not to allow land speculators to use the hub centre for their short-term benefit. Leasing, not selling, to the private sector with conditionality (such as to take away a right of leasing from a party for not starting tangible operation within a certain period of time) is a good option. In addition, sub-lease of the land should also be prohibited in the lease contract².

	•		Unit: N\$/m ²
Location	Purchase price	Lease per month	Source
Walvis Bay	1,600	13.5	Namibia Development Corporation
Durban/ Cape Town	1,500	10.0	Grindrod, 2013*
Durban/ Dube	960	8.0	Dube Tradeport
Dubai	300	2.5	NIRA Report No.337, 2006
Busan	420	3.5	Daily Cargo, 2013

Table 5.1: Comparison of cost of land for logistics

Note: * http://www.grindrod.co.za/Uploads/Documents/5/Making%20Waves%20Feb08%20-%20Tribute.pdf Those figures in an *italic* format are estimates of sale or lease prices that are calculated either from actual lease or sale prices respectively using direct capitalization method.

A strategically low land price is not the only thing to make the Logistics Hub Centre "Impressive at a Glance". It should be noted, however, that land speculation and thus high land prices alone could instantly make the Logistics Hub Centre "not impressive" and easily ruin effectiveness of all the other

¹ The Port of Busan is effectively competing against Port of Kobe (Japan) that was once in a position of an international hub port in Far East Asian region prior to The Great Hanshin earthquake, occurred on Tuesday, January 17, 1995. At present, Port of Shanghai (China) that has been emerging as another contender with even larger domestic cargo demand cannot take over Busan's position.

² Land borrower can build warehouse and lend to the 3rd party even if this condition is included in the lease contract.

things proposed in this report. Dubai and Busan offer very low land prices (on top of offering all the other good pull-factors) and successfully make themselves simply impressive at a glance.

5.1.3 Focusing on transit cargo for Landlocked Areas in SADC

In order to attract good global players and let them shift operations from the other existing gateways, it is one of the essential requirements to give <u>an "offshore" status</u> to an area for a Logistics Hub Centre. This gives such a centre a clear and visible comparative advantage over existing supply depots in the other SADC countries.

For example, the largest supply depot for SADC is South Africa. It should be noted, however, that most of these warehouses functioning as supply depots are <u>NOT</u> bonded warehouses. This reflects the fact that their largest customers are often those within South Africa, and thus their operation style is basically domestic (South Africa) market oriented. International supply for Landlocked Areas in SADC is treated as a small spill-over of domestic supply.

5.1.4 Proactive investment for value-added logistics services

The development of a Logistics Hub Centre is not only important to induce logistics companies to come and invest but also important as a proactive investment for the next step to create an "Economic Corridor".

The function of a hub centre is to add value to the cargo going through the ports. It provides not only traditional activities such as storage, but also provides value-added logistics services such as the role of a supply depot for machinery and maintenance parts for the mining sector in the Copperbelt.

From now up to 2020, demand for consumer goods in Landlocked Areas in SADC that may generate more demand for value-added logistics services is not yet so great. However, it is quite likely that this area may reach a threshold per capita income level where the consumption level and structure quickly shifts to that of middle-income countries anytime by 2025. It is good to be well prepared by the time when it happens.

5.1.5 Necessity to prepare legislation on the Logistics Hub Centre

To establish a Logistics Hub Centre and truck stops, participation of various bodies (government, SOEs, local authorities and private sector), establishment of a new organization and injection of public funds are essential. To make this participation and resource allocation possible, a "Logistics Hub Centre ACT" should be enacted in order to give a legal foundation to the Logistics Hub Centre.

5.2 Functions and facilities

5.2.1 The key features of a Logistics Hub Centre

A successful logistics hub must have two main elements:

Territorial planning alongside infrastructure rationalization

This is necessary to fully utilize the area dedicated for the Logistics Hub Centre and to safeguard the environment by redirecting the traffic from residential areas to the Logistics Hub Centre, and to build infrastructure to meet the specific needs of the operations.

High quality transport

To remain competitive, high quality transport is an essential component of the centre. With globalization, other countries are also preparing logistic hubs. Growing industries constantly need the most efficient transport and logistics solutions.

- Firstly, the Logistics Hub Centre must also control any transport costs, industrial costs, personnel costs, increase transport operations, total turnover and maintain industrial productivity competitiveness.
- Secondly, the Logistics Hub Centre must seek to optimize the logistics chain, including optimal utilization of road, rail, sea, and air transportation and warehousing, as well as providing optimal manpower organization.

5.2.2 Functions and facilities of the Logistic Hub Centre

Based on the justification and concept of a Logistics Hub Centre described in section 5.1, it should have the following functions:

- Storage and consolidation,
- Distribution processing,
- Intermodal service,
- Storage, washing and repairing containers,
- Customs, Immigration and Quarantine (CIQ) service and trade control,
- Access control and security,
- Services for truck drivers,
- Other services, and
- Administration.

In order to perform the functions above, a complex of facilities consisting of a Logistics Park, Inland Container Depot and truck stop is needed. The relationship between functions and facilities are shown in the 1^{st} and 2^{nd} columns of Table 5.2.

Functions	Facilities	Buildings/ equipment
Storage/consolidation		Warehouse; rental warehouse; refrigerated storage
Distribution processing		Workshop
Intermodal service	Logistics Park	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		Gate; fence, Police station; CCTV
Other services	Common facility	Offices of logistics companies; banking services; shops, restaurants; accommodation; petrol station; public toilet; wellness centre; ICT infrastructure
Administration		Administration office

Table 5.2: Functions and facilities in Logistics Hub	Centre
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Source: JICA Study Team

A Logistics Park requires warehouses, refrigerated storages which are constructed by tenants who lease land from the operator of the Logistics Hub Centre. It also requires workshops for distribution processing such as packaging. The Logistics Park should have a siding and truck terminal for intermodal service between rail and trucks, and between trucks. Office buildings for customs, immigration, quarantine, trade control and forwarders are to be constructed by the operator inside the Logistics Park.

The Inland Container Depot is a facility for the storage of loaded and empty containers. It is also constructed by tenants, and should have facilities to wash and repair containers.

The truck stop is a facility to serve truck drivers. It requires parking space for trucks with power supply facilities for reefer containers, accommodation, maintenance garage and information provision board displaying time required for customs clearance, traffic accidents along corridors etc.

In order to serve these facilities, the following 3 groups of buildings & equipment are needed. The first group consists of gates, fences, police station and CCTV for access control and security. The second group consists of offices of logistics companies, banks, shops, restaurants, a fuel station, public toilets, a wellness centre and ICT infrastructure. The third group is an administration office for the Logistics Hub Centre. The 2^{nd} and 3^{rd} columns of Table 5.2 indicate the relationship between facilities and buildings & equipment.

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Source: JICA Study Team



Figure 5.1 shows major facilities of Logistics Hub Centre. Since it is expected that the Logistics Hub Centre is to have "offshore" status, a fence and gates are very important in terms of management of accessibility and security.

5.2.3 Cargo handled at the Logistics Hub Centre

5.2.3.1 Market segments

There are differences in requirements for logistics services among different market segments, such as in spatial ranges of services (local vs. intercontinental) and in the structural forms of services ("mono-business service" vs. "integrated service")³ as conceptually illustrated as a horizontal and vertical axis respectively in Figure 5.2.

³ Characteristics of these two models are summarized as follows.

Business Model 1: These are logistics service providers that focus on "stand alone optimization of different logistics activities", such as forwarding, warehousing, and transporting separately and independently. Even when one company covers different activities, it is "Model 1" if they have dedicated business units for each activity. This model best serves small to midsize customers, providing them with flexible, custom-made solutions for each activity. Synergies between businesses are not the customers' main commercial focus.

Business Model 2: These are logistics service providers that focus on "global and integrated services of different activities". Service providers are organized by country or region, grouping together different activities. This model is good to develop a global network strategy around targeted trade lanes and induces growth of that network by attracting a broad range of customers. It enables providers to win over customers in search of solutions that integrate different logistics activities. See "Inception Report, March 2014" for full details of analytical framework.



Source: Conceptual drawing to be used as working hypothesis by JICA Study Team

Figure 5.2: Market segments and areas of competitive advantage

The current and future target market segments for the Logistics Hub Centre have been examined and identified both in terms of those with a high potential with reference to the present competitive advantages of Namibia, and in terms of those which should be strategically invited and/or attracted. Results of the analysis are as illustrated in Figure 5.2.

Firstly, this study assumed that goods traded between the Landlocked Areas of SADC and Europe/America are those market segments where Namibia, facing the Atlantic Ocean, can have natural advantages in "Intercontinental (global)" flows. Secondly, "Local" and "Regional (SADC)" flows literally represent two different ranges of trade areas, and major goods for trade are selected and plotted respectively. Given these assumptions, blue bubbles represent market segments of outbound goods from SADC to Europe/America. Orange bubbles on the other hand, represent inbound goods from Europe/America to SADC or intra-regional goods traded within SADC. Those bubbles, either blue or orange, with green coloured italic letters are the goods originating from Namibia. Altogether, these blue and orange bubbles represent either current or potential market segments for logistics services in Namibia.

Those bubbles surrounded by blue dotted lines are the current market segments served by the logistics industry of Namibia. As can clearly be seen, the current target market segments for Namibia are

concentrated in the lower half of the market domain where a "stand alone mono business type of service" has its competitive advantage regardless of spatial extent of flows.

There are some enclaves of the current market segments in the domain of a highly integrated service, namely "Diamonds" and "Uranium" for outbound goods originating from Namibia, and "Project Cargo" for inbound goods that are often abnormal cargo such as very large machinery for the mining sector or even giant components for a power plant in South Africa. While these are very important segments, they do not really constitute a volume zone of demand for logistics services by their nature. It should be noted, however, that there is an opportunity for "Project Cargo" to be a spearhead to induce demand for "Parts Supply" later on, if a sizable flow volume can be supported through Namibia.

5.2.3.2 Potential market

An area surrounded by a red line represents potential targets to reach when Namibia becomes an "International Logistics Hub" and functions as a regional gateway and supply depot for Landlocked Areas in SADC.

These potential target market segments are all "Intercontinental (Global)" flows and in a domain where the "Global/ Integrated Business type of service" has its competitive advantage.

Among these potential market segments for outbound goods from Landlocked Areas in $SADC^4$ to Europe/America, "Copper" is the largest and probably most immediate target as shown in Table 5.3 and Figure 5.3.

Commodities	Transit from Zambia to Walvis Bay Port in 2013 (tons)	Export from Zambia to Europe and America in 2013 (tons)	Walvis Bay's share	Potential transit Volume from Zambia (tons)
Copper	37,328	280,000	13%	242,672
Garments, Textiles and fabric	160	17,308	1%	17,148
Other Agricultural Products	0	12,521	0%	12,521
Household articles, Pharmaceutical products	760	4,028	19%	3,268
Manganese ores and concentrates	0	3,994	0%	3,994
Chemicals and Industrial Materials	20	3,463	1%	3,443
Vegetables and Fruit	0	1,617	0%	1,617
Diamonds and other precious stones, ore	0	1,568	0%	1,568
Copper ore and concentrates	4,336	1,443	100%	0
Other	1,633	2,368	69%	735
Total	328,309	44,237	85%	286,965
Total excluding copper	48,309	6,909	86%	41,400

Table 5.3: Potential Transit Volume from Zambia to Europe/America through Walvis Bay

Source: NSA data, UN ComTrade data

⁴ Due to data limitations, trade between landlocked SADC states and Europe/America are represented by international trade data of Zambia.



Source: NSA data, UN ComTrade data

Figure 5.3: Potential transit volume from Zambia to Europe/America through Walvis Bay

Among inbound goods to Landlocked Areas in SADC, "Fertilizer", "Machinery and Parts", "Household articles", "Pharmaceutical products", "Chemicals and Industrial Material", and "Metal and Metal Products" are the immediate potential market segments as shown in Table 5.4 and Figure 5.4.

Commodities	Transit cargo from Walvis Bay to Zambia in 2013 (tons)	Import from Europe and America to Zambia (tons)	Walvis Bay's share	Potential transit volume to Zambia (tons)
Fertilizer	0	34,072	0%	34,072
Machinery and Parts	11,598	37,037	31%	25,439
Household articles, Pharmaceutical products	2,344	27,381	9%	25,037
Passenger Car, Truck, Motorcycle	65,388	86,652	75%	21,264
Chemicals and Industrial Material	9,588	27,471	35%	17,883
Metal and Metal Products	570	17,860	3%	17,290
Garments, Textiles and fabric	180	8,329	2%	8,149
Cereals & Milling Industry Products	0	7,726	0%	7,726
Prepared Foodstuffs	1,227	7,182	17%	5,955
Cement, Construction Material	1,340	6,380	21%	5,040
Sugar & Sugar Confectionery	0	2,256	0%	2,256
Paper and Printed Matter	11,979	11,979	100%	0
Live Animals, Meat & Edible Meat Offal	3,035	3,035	100%	0
Other	3,034	3,034	100%	0
Sub-total	110,283	280,393	61%	170,110
Sub-Total except for automobiles	44,895	193,741	77%	148,846

Table 5.4: Potential transit volume from Europe/America to Zambia through Walvis Bay

Source: NSA data, UN ComTrade data



Source: NSA data, UN ComTrade data



On the other hand, 75% of "Passenger Car, Truck, Motorcycle" that is very large in terms of volume is already going through WNLDC (majority are second hand cars transported on own wheels). Although this flow does not involve land transport service and is not substantial in terms of value addition by the logistics industry, an opportunity to link this flow of "cars" to supply of "parts" will be examined.

5.3 Institution and organization

5.3.1 Incentives for investment/investing companies

The Logistics Hub Centre should provide an attractive business environment to investment companies. The most preferable incentive is offshore status such as Jebel Ali Free Zone (JAFZ) in Dubai provided to the investment companies.

Incentives should be consistent with MTI's new industrial policy. However, new legal frameworks for investment replacing the existing Foreign Investment Act and Economic Processing Zone (EPZ) Act have not been announced yet. Therefore, incentives proposed in this section are prepared with reference to the incentives in the existing EPZ system and other incentives MTI prepare for manufacturing companies.

Table 5.5 indicates incentives of the existing EPZ system (2nd column), proposed incentives for the Logistics Hub Centre (3rd column) and expected incentives of Special Economic Zones in South Africa⁵. The following incentives are proposed for companies that invest in the Logistics Hub Centre and are engaged in logistics business mainly to outside of SACU markets.

- Exemption/ reduction of taxes: corporate tax, VAT and stamp & transport duty.
- Deregulation for hiring foreign workers (experts and skilled workers): the most favourable condition is that work visas and work permits should not be required. If such condition is difficult to realize, it is necessary to do deregulation such as simplifying the application process and extension of duration for working visas and working permits.
- No foreign currency control and grant right to hold foreign currency accounts in Namibian bank
- One-stop shop: simple and easy communication with the operator of the Logistics Hub Centre for starting up business, receiving benefits and procedures with the central government and the local authority

In addition to that, the following incentives are to be given to investment companies.

- Leasing at very attractive rates
- Invested superstructure can be used as collateral
- 100% foreign capital is allowed

Almost all incentives summarized in Table 5.5 are already available as the existing EPZ incentives. Proposed incentives of the Logistics Hub Centre give it "near offshore status," and are more favourable than the proposed incentives for Special Economic Zones in South Africa.

Items	Existing EPZ incentive system	Proposed incentives in Logistics Hub Centre	Expected incentives of Special Economic Zone in South Africa
Tax exemption/ reduction	 Exemption of corporate tax Exemption of VAT Exempt of stamp and transfer duty 	 Exemption of corporate tax* Exemption of VAT Exempt of stamp and transfer duty 	Reduction of corporate tax from 28% to 15%
Tax allowance	Not eligible	Not eligible	Available: depends on scale of investment and difference of greenfield investment and brown field investment
Accelerated deprecation	Not eligible	Not eligible	Building allowance is available
Building allowance	Not eligible	Not eligible	
Employment	Substantial, issued by government on implementation of approved training program	Deregulation for foreign workers such as visa and work permit	Employment incentive is available.
Foreign exchange	No foreign exchange control and	No foreign exchange control and	Information is not available.

Table 5.5: Proposed	l incentives in the	Logistics Hub Centre
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⁵ In South Africa, "Special Economic Zones Act" was assented by the President on 14th May 2014 (Act No. 16 of 2014). The Special Economic Zone is going to replace the Industrial Development Zone.

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Items	Existing EPZ incentive system	Proposed incentives in Logistics Hub Centre	Expected incentives of Special Economic Zone in South Africa
control	right to hold foreign currency accounts in local banks	right to hold foreign currency accounts in local banks	
Eligibility and registration	 Companies engaged in manufacturing, assembly, packaging or break-bulk and exporting mainly to outside of SACU markets. Application to the EPZ committee through ODC or WBEPZMC 	 Companies investing in Logistics Hub Centre. Companies engaged in logistics business mainly to outside of SACU markets. Operator of the Logistics Hub Centre will have a function of the one-stop shop with cooperation of the central government and local authority. 	 Companies invested in SEZ Process to receive incentives is not clear so far. One-stop shop will be established in each SEZ to deliver government services to operating companies.

 Note:
 According to MTI, SADC member companies discuss to set up 10% of minimum rate for corporate tax to prevent an excessive corporate tax reduction competition for inviting private businesses. In case corporate tax should be set 10%.

 Source:
 Special Incentives for Manufacturers and exporters, MTI; Department of Trade and Industry of RSA web site (http://www.dti.gov.za/financial_assistance/financial_incentive.jsp?id=59&subthemeid=25)

5.3.2 Organization of the Logistics Hub Centre

An operating company should be established to develop and operate the Logistics Hub Centre. A provisional structure of the company is proposed as follows.

The operation company will be a joint venture of the public sector such as Namport, Walvis Bay Municipality and private companies. Involvement of Namport and Walvis Bay Municipality is important for the smooth coordination of port management and town planning. Since the Logistics Hub Centre Development project is a public investment project, involvement from private companies should be less than 33% at least in the development phase of the project.

The Ministry of Works and Transport, Ministry of Trade and Industry or Walvis Bay Municipality is the landowner of the Logistics Hub Centre, and provides land to the operation company for free. The operating company leases the land to tenants in the Logistics Park and Inland Container Depot at a strategic rate/tariff. It also leases land at the common facility at a commercial tariff/rate to the tenants. The operating company should also operate and manage a truck stop. Relationships between the operating company, landowners, investors and tenants are shown in Figure 5.5.



Figure 5.5: Relations with operating company, tenants and investors

Planning and performance documents (business plans and annual reports) of the operating company are to be overseen by a new coordinating entity titled "National Coordinating Body⁶", and approved by the landowner (MWT, MTI or Walvis Bay Municipality). The National Coordinating Body will also evaluate the performance of companies operating Logistics Hub Centre based upon opinions of the tenants.



Figure 5.6: Concept of organizational structure

⁶ Refer to Chapter 11 about the National Coordinating Body

Figure 5.6 shows relationships among the National Coordinating Body, the landowner, and Logistics Hub Centre operating company. Table 5.6 indicates roles and members/investors of each organization.

Table 5.6: Roles and	members/investors o	f organizations for	Logistics Hub C	Centre

Name of organization	Roles	Members/investors
Logistics Hub Centre	Operation and maintenance of Logistics Hub Centre	Namport
Operating Company	 Zoning inside of Logistics Hub Centre 	Walvis Bay Municipality
	 Promotion and advertisement activities to invite private companies 	Private companies
	- Land lease to tenants	
	 One stop service for necessary procedures 	
	- Operation of truck stop	
	 ICT service such as free Wi-Fi, information service 	
Land owner	- Transfer land from municipality for Logistics Hub Centre including truck stop	MWT or MTI
	- Land preparation of Logistics Hub Centre site including truck stop, and installation	
	of utilities	
	- Provide land with free to operation companies of Logistics Hub Centre and truck	
	stop	
	Approval of business plans and annual reports	
National Coordinating	 Assessment of performance of LHC. 	Government, SOEs,
Body	 Prepare recommendations to operation companies 	Walvis Bay Corridor
	- Prepare recommendations to relevant ministries and parastatals to improve	Group,
	transport and logistics	Municipality
		Relevant Associations
Tenants	- Construction of buildings, warehouses and necessary facilities inside rental lot	Logistics companies
	- Operation of logistics activities	Other private
	 Logistics related business activities 	companies

Source: JICA Study Team

5.3.3 Procedures to develop the Logistics Hub Centre

The Logistics Hub Centre development project will have the following development phases.

- Planning phase: Further study on function, scale, location, and operating body; Land transfer to landowner
- Business planning phase: establishment of operating company; preparation of business plan
- Design and Construction phase: Design and development approval including EIA; preparation of land, major roads and utilities
- Operation phase: Lease to the operating company; promotion and advertisement to potential investors; selection of tenants and land lease.

Table 5.7 indicates detailed procedures to develop the Logistics Hub Centre.

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Phase	Procedures	Remarks
Planning	1. Further study on function, scale, location and operating body.	Land owner (MWT or MTI), technical committee
-	2. Land transfer to land owner (MWT or MTI),	and Walvis Bay Logistics Forum will work for the
		further study.
Business	3. Establishment of the operating company	The operating company is responsible to prepare
Planning	4. Preparation of business plan of the operation company	business plan with support of technical committee.
-	 Receiving advices from technical committee in preparing 	
	business plan	

 Table 5.7: Procedures to develop the Logistics Hub Centre

Phase	Procedures	Remarks
	 Assessment by Walvis Bay Logistics Forum 	
	 Revision of business plan based on comments and 	
	suggestions from Walvis Bay Logistics Forum	
	 Approval by land owner 	
Design and	5. Design and development approval including EIA	Construction will be conducted by land owner
Construction	6. Preparation of land, main road and utility	(MWT or MTI), as a public work
Operation	7. Land lease to operator: land owner and the operation company	Land lease price to tenants at Logistics Park and
-	will have negotiations and make a contract for land lease.	Inland Container Depot will be determined through
	8. Promotion and advertisement to potential investors	discussions at Walvis Bay Logistics Forum.
	9. Selection of tenants and land lease	
	 Submission of application form and all supporting documents 	
	from candidate tenants: project summary, certificate of	
	registration, etc.	
	 Screening documents and approval by the operation company 	Operating company will work as One-stop Shop to
	 Obtain necessary approvals from various bodies on behalf of 	obtain necessary approvals.
	applicant	
	 Registration as a tenant 	
	 Starting operation by tenants, and monthly payment of land 	
	lent	
Source: JICA St	udv Team	

5.4 Location and layout plan

5.4.1 Issues for implementation of IUSDF and industrial development in Walvis Bay

One of the most important factors in identification of a potential location of the Logistics Hub Centre is the land use plan of Walvis Bay Municipality. The town-planning scheme of Walvis Bay was formulated in 1997. After 14 years, work on a new plan commenced in 2011. Currently the plan is in the final draft stage as of June 2014. The name of the plan is "Integrated Urban Spatial Development Framework (IUSDF) for Walvis Bay".

Issues to be challenged for implementation of IUSDF and industrial development are summarized as follows,

<u>Industrial development and demand forecast</u>: There was no technical and economic study for demand forecast of the industrial development in terms of land distribution in the IUSDF as well as industrial development project.

<u>Inter-municipal coordination</u>: As adjacent coastal towns, Swakopmund and Walvis Bay have played different roles due to their own different characteristics and history. For example, there is greater potential for middle to high-income level workers to live in Swakopmund according to the living environment. Tourist attractions in Swakopmund are different from those in Walvis Bay. Currently, there is no coordination and role sharing with the Swakopmund municipality in the IUSDF. It is desirable for both towns to prepare a plan with coordination of their complementing roles.

Coordination of development plans and smooth implementation: Regarding Farm 58 development,

many stakeholders are worried about the preparation of the planning process. Although there is an opportunity for discussion, the coordination is not as smooth as it is expected to be.

<u>Prospects of industrial development and assessment of business plan:</u> Business plans of the companies interested in Farm 58 development are not clear. Some might be just interested in land speculation. By careful assessment of their business plans, Walvis Bay Municipality should avoid transfers of land to those who are likely to speculate in land.

<u>Operation of Heavy Industry Park:</u> In order to operate a Heavy Industry Park like Farm 58, they need to have expertise that has never existed in Namibia before. Heavy industry has highly technical requirements and is environmentally sensitive. Therefore, extensive institutional capacity development and human resource development is required to operate such a park. To concession out its operation to a private company with required expertise is an option.

5.4.2 Site selection criteria for the Logistics Hub Centre

In order to invite foreign logistic companies, cost and location must be very attractive in comparison with the competitors. The key criteria to select the site for a Logistic Hub Centre include (1) proximity to the port, (2) easy access to transport axis, (3) compliance with municipal land-use plan, and (4) land price. These four factors are discussed below.

5.4.2.1 Proximity to the port

The priority location of the Logistic Hub Centre is to make it as close as possible to the port. From such a location, logistic companies can have easy access to cargo, thus do not need to arrange any additional transport from the port. Furthermore, customs, quarantine and port attached facilities are available nearby. This is also an advantage for those companies to operate. Figure 5.7 is an example of the location of a logistic park <u>adjacent to the port</u> in Busan, South Korea where the port and logistics areas are perfectly integrated in one piece. This port is well known to be very successful to have replaced Kobe port in Japan as an international hub port in the Far East.



Source: Korean Free Economic Zone Web Page⁷ Figure 5.7: Example of location of Logistic Hub Centre (Development plan of Busan New Port Hinterland)

In the case of Walvis Bay on the other hand, it is not possible to find sites adjacent to the existing port and container terminal due to the fact that the port is already surrounded by the existing built-up area. The port development plan and land-use plan of Municipality should accommodate this given condition. So does the location for the Logistics Hub Centre, likewise it requires to find other provisional areas near the port. Although the Logistics Hub Centre and the port are physically in separate locations, the Centre must serve some of the functions that are provided only in the port area in order to maintain close integration between them. Otherwise, the Centre will not be attractive to investors.

5.4.2.2 Easy access to transport axis

The Logistic Hub Centre must be accessible to the logistic axis for convenience for transport operators. In the case of Walvis Bay, the National Road from Swakopmund to Walvis Bay together with the railway is the transport axis.

5.4.2.3 Compliance with municipal land-use plan

The Logistic Hub Centre needs to start operating as soon as possible after the new container terminal is put in operation. In order to make the preparation process effective, it is required to coordinate with the municipal land-use plan. The Logistics industry is categorized as light industry and thus should be located accordingly. There are some other possibilities to locate it within a heavy industrial area or "North Port (SADC Port)".

⁷ http://www.fez.go.kr/en/bjfez-projects-industries.jsp (retrieved in November 2014)

5.4.2.4 Price of land

Currently the price of land is relatively high in the market. The recent selling price of land in private transactions in Walvis Bay is shown in Table 5.8. Without buildings, the unit price is N\$1,000 to 1,500 per square metre. This price is higher than that of neighbouring countries with which Namibia has to compete.

No	Price (N\$ million)	Area (m²)	Unit Price (N\$/m ²)	Land use	Location	Remarks
1	30	200,000	150	Industry	Industrial	With Building and Warehouse
2	29.58	11,900	2,486	Industry	Industrial	With Building and Warehouse
3	20.5	13,350	1,536	Light Industry	Central	Land only (Business also)
4	13.53	6,000	2,255	Industry	Industrial	With Building and Warehouse
5	8.58	1,000	8,580	Industry	CBD	Warehouse
6	8.3	3,441	2,412	Light Industry	Light Industry	With Building and Warehouse
7	8.2	1,653	4,961	Industry	Harbour	850 sq. m building
8	4.95	1,396	3,546	Light Industry	Light Industry	Warehouse
9	4.15	1,700	2,441	Light Industry	-	With Building and Warehouse
10	3.2	3,200	1,000	Industry	Industry	Land Only
11	1.76	260	6,769	Industry	Industry	New Warehouse
12	1.23	174	7,069	Industry	Industry	New Warehouse
13	38	32,370	1,174	Light Industry	Weighbridge	Land only

Table 5.8: Price of land in Walvis Bay

Source: http://www.anjoestates.com, http://www.jbestates.com.na/; Retrieved September 2014.

Given the system of land transaction, which has a unique historical background, is a complicated issue in Namibia, a fundamental change of the system is not possible to take place within the timeframe of the Master Plan. Therefore, land should be provided for the Logistics Hub Centre by public initiative to promote the logistics industry at the strategically lower level in forms of leasing out with conditionality rather than selling.

5.4.3 Proposed site for Logistic Hub Centre

After the assessment of the conditions mentioned in the previous section, three potential sites were selected. Locations and conditions are summarized in Table 5.9, Figure 5.8 and Figure 5.9.

No	Place	Area	Planned land use	Transport	Distance form the existing port	Remarks		
1	North Port	More than 100 ha	Port	Railway and National Road (Railway will be available after 2025	5.0km	The container port and related facilities will likely be constructed after 2025. Arrangement of the Port plan is required with Namport. The site will be ready after the development of B2 road.		
2	Triangle	About 90 ha	Light Industry	Both Railway and National Road	4.2km	-		
3	Farm 58	Up to 3,100ha	Heavy Industry	Railway and National Road.	11.0km	Many companies are interested. Planning is going on. More coordination is required. The site will be ready after the road development.		

Table 5.9: Comparison of potential sites

Source: JICA Study Team



North Port Source: JICA Study Team

Triangle

Farm 58

Figure 5.8: Current condition of potential sites



Source: Study team prepared based on IUSDF (Walvis Bay Municipality Figure 5.9: Potential sites for Logistic Hub Centre

Currently, all the potential sites are in the desert. After the preliminary examination of key factors, the "triangle" area was found to be most suitable for the Logistic Hub Centre. The distance to the existing port is shortest. This area has the advantage of the existing railway access and road access right from the beginning whereas the other areas need to wait for a longer period of time for both railway and roads to be developed.

NDC has 2 lots of land (17.5ha and 34ha) for developing logistics facility (refer to Figure 5.9). NDC has already started the 17.5 ha site as a logistics facility which accommodates small and medium scale local logistics companies in Namibia. Development of the 34ha which is located next to the Logistics Hub Centre has not started yet. It could be possible to coordinate with NDC for integrated development of the Logistics Hub Centre and the 34ha of land.

5.4.4 Preliminary layout plan

The functions and buildings for the Logistic Hub Centre are discussed in section 5.2.2. Table 5.10

summarizes issues that should be taken into account for preparing a layout plan.

Further analysis is required for introducing a weighbridge. There is a weighbridge at the west of the selected area. Once the trucks start to load cargo from the Logistics Hub Centre, it is better to relocate it to a better location to weigh loaded trucks efficiently. Its relocation might be taken into account in the future, so this function is not included in the plan at the moment.

Function/facility	Description
Lots for logistics companies	Size of lots may vary from 0.5ha to 10 ha. Layout will be flexible to the company's
	requirement. Inland container depot might occupy one lot.
Truck stop	Currently there is no truck stop in the Walvis Bay town. In order to secure a place
	for trucks to wait for the port gate to open, truck stop facilities are required inside
	the Logistics Hub Centre.
Siding	Siding will be used for loading and unloading containers onto container cargo
	train. The siding is planned to use existing railway, which runs on the north side
	of the site
Rental warehouse	There might be needs for the tenants in Logistics Hub Centre to accommodate
	goods to store in high season.
CIQ office, rental office, administration office etc.	These Buildings are merged and sited in the Centre "Building Zone"

Table 5.10: Analysis on function and facility for preparation of a layout plan

Source: Study Team

A preliminary layout plan is prepared based on following assumptions derived from geographic and transport conditions.

- Entrance is planned at only one place in the east, since a fly-over to pass the railway might be planned on the south road. This will contribute to enable easy access control.
- Environmental buffer (Green) in not included in the plan. The site is surrounded by a wide road and wide service corridor.

Table 5.11 summarises the area and function of each zone. The layout plan is shown on Figure 5.10.

Zones	Total area (ha)	Building/equipment	Remarks						
Centre building (common facility)	2.0	Gate, administration office, CIQ office, rental office (Office for forwarder), police station, bank braches, MTI office,							
Rental warehouse (Logistics Park)	4.0	Rental warehouse							
Lots for the companies (Logistic Park)	49.5	Inside of lots will be designed by each tenant	Lots are initially divided into 4.0 -14.0 ha. They can be divided into smaller size reflecting needs.						
Truck stop	6.0	Truck parking, Power supply for reefer container, Accommodation, Maintenance garage, Information provision board, Fuel station, Shops and restaurant, Toilet and Shower, Wellness Centre, Shops, Bank ATMs	This is the minimum size for truck stop development. If there is a need to have larger truck stop, plot can be switched to western area, which might have more than 10ha.						
Railway siding (Logistics Park)	8.5	Two lines for siding							
Roads and others	19.0	Road, fence, landscape							
Total	89.0								
Source: IICA Study Te	am								

Table 5 11: Zones and distribution

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Source: JICA Study Team



5.5 Long-term perspective: possibility of inland hubs

Once logistics sector achieved steady growth as forecasted in Chapter 3, capacity of the Logistics Hub Centre would be filled up to its limit in 2025. On top of this, if railway transportation is improved dramatically by the time, cost of linking the port and inland could be lower. In such case, development of large-scale inland hubs with intermodal terminal functions becomes viable. Cargos to inland countries such as Angola, Zambia, DRC would be transported from Walvis Bay to the inland hubs by railway without custom clearance, at the port and the cargos would be transhipped from railway to truck after custom clearance at the inland hubs. Such operation would save time and space at Walvis Bay.

There are 2 prospective sites for the inland hubs. The first site is at maize triangle area where towns of Otavi, Tsmeb and Grootfontein are located, and the second site is at Ohikango. These sites are intermodal points to Zambia and DRC (maize triangle area) and Angola (Oshikango) and best places for transhipments.

Studies to develop the inland hubs in these sites should be started when the following 2 prerequisites would be fulfilled.

- Cargo handling volume at Walvis Bay and Logistics Hub Centre would increase as forecasted in Chapter 3.
- TransNamib would improve truck condition, rolling stocks and facilities by investing those things.

Inland container depots in smaller scale (such as the one with 5ha or less), on the other hand, can be developed at the earlier stages to meet specific private business needs, such as to establish an inland "container returning point" for shipping companies.

5.6 Necessary actions for development of Logistics Hub Centre

Based on the discussions in this chapter, the following actions (programmes and projects) in Table 5.12 are needed for development of the Logistics Hub Centre.

K	ey elements of an International Logistics Hub	Actions (programmes/projects)
(2)	Strong and Attractive	Development of "Logistics Hub Centre" in Walvis Bay.Establishment of Operation and Management Body.
	Operation Base for International Logistics	 Development of a long-term business plan and incentive mechanisms for the "Logistics Hub Centre (LHC)" and truck stops along the corridors.
	-	 Reforms of laws and regulations for development of the LHC.

 Table 5.12: Necessary actions for development of Logistics Hub Centre

Key elements of an International Logistics Hub	Actions (programmes/projects)
	 Preparations of the LHC development project (including road, drainage, water supply, sewerage, electricity).
	 Marketing the 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.
	 Completion of development of satellite hubs in inland areas in accordance with prospects of the demand.

Source: JICA Study Team

6. Transport Network

Road, railway, maritime & port, and aviation (Air Namibia and Namibia Airports Company) are indispensable factors for logistics. This chapter describes analyses of the current situation, development directions and necessary actions for road, railway, maritime & port and aviation in the context of development of an International Logistics Hub.

6.1 Road

6.1.1 Analysis of trunk road traffic

The section 6.1 analyses trunk roads as industrial roads (corridors) stretching from Walvis Bay Port to major cities such as Windhoek in Namibia and neighbouring countries. According to the Geometric Design Guide of the South African National Roads Agency Limited (SANRAL), the target roads (trunk roads) are classified as Class II A. Table 6.1 shows the design standards of SANRAL. The necessary number of lanes is calculated from Annual Average Daily Traffic (AADT) and the design standards indicated in Table 6.1. Traffic volume of major road sections in 2025 (railway oriented case) in Chapter 10 of Appendix is used for analysis of traffic condition of the trunk roads. In the calculation of AADT, traffic volumes of passenger cars, medium buses, large bus and light truck are extracted from Namibia Integrated Transport Master Plan. Traffic volume of heavy trucks such as 2 axle truck, 3 axle truck and multi axle truck are forecast by JICA Study Team.

	Tuble 0.1. Desig				
Item		2 lane single carriageway	4 lane single carriageway	6 lane single carriageway	Passing lane
	Capacity (ADT: vehicle/day)	- 9,999	10,000 - 34,999	35,000 -	
	Lane width (m)		3.60		3.10 - 3.60
	Shoulder (m)		3.00		1.50
	Design speed (kms/hour)		100 - 120		

 Table 6.1: Design type classification for primary arterials Class II A

Source: SANRAL Geometric Design Guide

6.1.1.1 Heavy traffic between Swakopmund and Walvis Bay

The results of the future demand forecast shows that traffic volume of the section between Swakopmund and Walvis Bay that runs along the coastline (B2 Road), will increase to 18,570 vehicles/day in 2025 (refer to Chapter 10 of Appendix). Therefore, it is necessary for this road to be widened from the existing 2-lanes to 4-lanes for two-way traffic.

On the other hand, according to the 5 year Budget for the Period 2014/15 to 2018/19 of Roads Authority, the project for widening B2 Road, and the upgrading of the pavement construction for the road that runs behind Dune 7 (M44 Road), have been already listed, and the design phase of this project is going to start in the 2014/15 financial year. Therefore, traffic volume of B2 between Swakopmund and Walvis Bay will decrease in the near future.

According to the town planning of Walvis Bay Municipality, a large-scale industrial complex of about 2,800 ha behind Dune 7 has been planned. Meanwhile, it is proposed that a Logistics Hub Centre is established between Dune 7 and Walvis Bay Port, along the road to Walvis Bay Airport. Therefore, M44 Road becomes part of the industrial road from the Landlocked Areas of SADC to Walvis Bay Port, and heavy vehicles such as trucks with trailers will use this road. Therefore, it should be regulated that heavy trucks and trailers will not use B2 road in the future.

Table 6.2 estimates the future traffic volume of the section between Walvis Bay and Swakopmund in 2025. Two different cases are investigated as part of this project. In case 1, all vehicles (18,570) on the section are assigned to B2. In case 2, traffic of the section is distributed into B2 and M44 with a distribution ratio indicated in the 4th row. In that case, the number of vehicles on B2 is 14,565 and the number of vehicles on M44 is 4,005, respectively. Therefore, the project of widening B2 Road should be conducted even if both roads of B2 and M44 are to be utilized. Regarding M44, 2 lanes for two-way has sufficient capacity. However, considering future industrial development along the road development of 4 lanes for two-way should be considered.

		AADT in 2025 (vehicles/day)										
Cases		Passenger car	Medium bus	Large bus	Light truck	2 axle truck	3 axle truck	Multi axle truck	Total			
Case 1	All traffic is assigned to B2.	13,780	1,000	390	630	850	500	1,420	18,570			
	Distribution ratio (a):(b)	90:10	90:10	80:20	70:30	60:40	0:100	0:100	-			
Case 2	B2: along coastal (a)	12,402	900	312	441	510	0	0	14,565			
	M44: behind Dune7 (b)	1.378	100	78	189	340	500	1.420	4.005			

Table 6.2: Future traffic volume between Walvis Bay and Swakopmund in 2025

Source: Daily traffic volumes of passenger cars, medium buses, large bus and light truck are extracted from Namibia Integrated Transport Master Plan. Those of 2 axels truck, 3 axels truck and multi axels trucks are forecast by JICA Study Team

6.1.1.2 Insufficient number of carriageways of trunk roads

The predicted future traffic volume on the sections between Swakopmund and Arandis, Arandis and Karibib, Windhoek and Okahandja, and HKIA and Windhoek in 2025 is shown in Table 6.3.

At present these sections all have 2-lanes for two-way traffic. In the section between Windhoek and Okahandja, on the other hand, road construction including improvement of road alignment and widening to 4-lanes for two-way is being carried out. In addition, a road widening project to 4-lanes

for two-way for the sections between HKIA and Windhoek and between Rehoboth and Windhoek, also have been listed in the Five Year Budget of Roads Authority for the period of financial year 2014/15 to 2018/19.

However, with regard to the sections between Swakopmund and Arandis, and between Arandis and Karibib, the schedule for road widening is not included in the five-year budget plan. Therefore, in 2025, road capacity of both sections would not be enough, if these sections remain 2-lanes. It is, however, necessary to reassess scale of upgrade for these sections if 4 lanes for two-way is required for all sections or not.

	No.of	Daily traffic volume (vehicles/day)										
Section	lanes	Passenger car	Medium bus	Large bus	Light truck	2 axle truck	3 axle truck	Multi axle truck	(vehicles/ day)			
Arandis - Swakopmund	2	6,020	410	160	580	780	440	1,260	9,650			
Karibib - Arandis	2	6,600	440	170	590	790	440	1,260	10,290			
Windhoek - Okahandja	4	11,360	790	300	670	870	580	1,670	16,240			
HKIA - Windhoek	4	6,940	480	180	240	390	200	620	9,050			
Rehoboth - Windhoek	4	5,770	390	150	340	410	250	650	7,960			

Table 6.3: Heavy traffic volume on some sections in 2025

Source: Daily traffic volumes of passenger cars, medium buses, large bus and light truck are extracted from Namibia Integrated Transport Master Plan. Those of 2 axels truck, 3 axels truck and multi axels trucks are forecast by JICA Study Team

As indicated in Table 6.3, estimated daily traffic volume of Karibib – Arandis (10,290) is higher than that of between Arandis – Swakopmund (9,650). This does not match with common observation and intuitive impression of traffic volumes of respective sections. For example, it is more natural to expect the traffic volume of Arandis – Swakopmund is higher than the one in Karibib – Arandis because of mining activity which generates traffic between Arandis and Swakopmund. Roads Authority also pointed out that the figures estimated by the Integrated Transport Master Plan do not match with Roads Authority's data either.

It is necessary to re-examine traffic demand forecast prepared by Integrated Transport Master Plan carefully, and to forecast traffic volume again with a new set of traffic data when road development projects are proposed in the future.

6.1.1.3 Narrow carriageway and many large cargo trucks between Karibib and Otjiwarongo

A cross-section of the road between Usakos and Otjiwarongo is as shown in Table 6.4. The lane width of the trunk road is only about 3 metres wide, which is much narrower than the width

recommended by SANRAL (3.6 metres).

Table 6.5 indicates that the future traffic volume on the Karibib – Otjiwarongo section and Otjiwarongo –Otavi section with the ratio of large cargo trucks. The traffic volume of the section between Karibib and Otjiwarongo is not so high (AADT of 3,010), but large cargo trucks ratio accounts for 36.5% in hilly terrain. It implies that the slow speed of heavy vehicle due to hilly terrain will cause traffic congestion.

SANRAL Geometric Design Guide predicts that imperfect horizontal or vertical curvature and sharp curves of a road, and long and/or steep hills result in restricted sight distance. If heavy vehicles forcibly overtake on narrow roads under such poor forward visibility, accidents may increase. Photo 6.1 shows the narrow lane and shoulder of the trunk road in hilly terrain between Karibib and Otjiwarongo.

Table 6.4: Cross	s section of	road between	Usakos and	Otjiwarongo
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				Width (m) **		Number of	Accepted lane	
Sections			Total width (m)*	Lane	Shoulder	lanes	Width (m)	
T0203	Usakos	Omaruru	6.90	2.95	0.5	2	2.60	
T0204	Omaruru	Otjiwarongo	6.90	2.95	0.5	2	3.00	

Note: * Total width is taken as typical widths from the Pavement Management System. ** Width of lane and shoulder was estimated from pictures taken during site investigations

Source: Pavement Management System, Pavement Assessment (Phase 1), Roads Authority

Table 6.5: Traffic volume and large cargo trucks ratio between Karibib and Otjiwarongo in 2025

	No of lanes		Daily Traffic Volume (Vehicle/day)								% of	
Sections		Passenger Car	Medium Bus	Large Bus	Light Truck	2 axle truck	3 axle truck	Multi axle truck	(vehicle/ day)	large cargo trucks	large Cargo trucks	Topography
Karibib - Otjiwarongo	2	1,550	80	40	240	370	190	540	3,010	1,100	36.5	Hilly area
Otjiwarongo - Otavi	2	4630	300	110	530	720	430	1230	7,950	2,380	29.9	Flat area

Source: Extracted data from Chapter 3



Karibib – Otjiwarongo section

Photo 6.1: Narrow lane and shoulder of trunk road in hilly area
(Unit: km)

6.1.1.4 Shortage of human resources

According to Roads Authority's Medium and Long Term Road Master Plan (MLTRMP), the shortage of experienced technical staff (professional engineers/technicians) in particular, remains a major threat for the entire sub-sector. Roads Authority has not managed to successfully attract sufficient technical personnel with the required experience. Table 6.6 shows human resource capacity of Roads Authority. The vacancy rate of total staff is more than 30 % between 2007/08 and 2009/2010. In particular, engineering staff is insufficient, and the vacancy rate was more than 43% in 2009/10.

		2007/2000			2000/2000			2000/2010	
Kind of staffs		2007/2008		2008/2009			2009/2010		
KINU UI SIAIIS	Approved	Filled	Vacancies	Approved	Filled	Vacancies	Approved	Filled	Vacancies
Engineering staff	217	134	83 (38%)	295	156	139 (47%)	268	152	116 (43%)
Other general staff	241	183	58 (24%)	320	209	111 (35%)	361	241	120 (33%)
Total	458	317	141 (31%)	615	365	250 (41%)	629	393	236 (38%)

 Table 6.6: Human resources of Roads Authority

Source: Medium to Long Term Road Master Plan Revision, July 2012, Roads Authority

According to the 2012/13 Annual Report of Roads Authority, the actual number of employees was 418, while the number of employees which was budgeted in the budget plan, was 622. It means that the shortage of staff continues.

6.1.1.5 Growing maintenance cost, not increasing road user charge

The length of trunk roads increased by 208 km from 2009 to 2013 whereas the increase of the other roads was 1,740 km. It means that the length of the roads with low traffic volume has increased more significantly than that of trunk road with high traffic volume. Table 6.7 shows annual changes of road length.

Classification of roads	Surface conditions	2009	2011	2012	2013
	Paved	4,098.0	4,136.0	4,311.0	4,676.0
Trunk Road	Unpaved	474.0	436.0	282.0	104.0
	Total	4,572.0	4,572.0	4,593.0	4,780.0
	Paved	2,101.0	2,252.0	2,354.0	2,381.0
Other Road	Unpaved	37,755.0	38,563.0	38,699.0	39,215.0
	Total	39,856.0	40,815.0	41,053.0	41,596.0
Total		44,428.0	45,387.0	45,646.0	46,376.0

Table 6.7: Annual changes of road length

Source: Roads Authority

Table 6.8 shows the budget for maintenance of paved and unpaved roads. The budget allocation for unpaved roads is larger than paved roads, and the difference will increase from N\$154 million in 2014/15 to N\$721 million in 2018/19. Maintenance cost for paved road increases by 16% annually, while maintenance cost for unpaved road increases by 29% annually during 2014/15 and 20118/19.

						(Unit: N\$ 000)
	2014/15	2015/16	2016/17	2017/18	2018/19	2014/15-18/19
Maintenance cost for paved road	317,958	430,650	473,715	521,087	573,195	2,316,604
Maintenance cost for unpaved road	472,000	972,455	1,069,701	1,176,671	1,294,338	4,985,164

Table 6.8: Five Year Budget for the Period 2014/15-2018/19

Source: Five Year Budget for the Period 2014/15-2018/19, Roads Authority

6.1.2 Development requirements

6.1.2.1 Upgrading road section between Swakopmund and Karibib

In 2025, the traffic volume of the sections between Swakopmund and Arandis, and between Arandis and Karibib will amount to AADT of 9,650 and AADT of 10,290. The traffic volume of these sections will be almost equivalent to the maximum capacity of the current 2-lanes for two-way. Therefore, the section between Swakopmund and Arandis and between Arandis and Karibib should be upgraded from 2-lanes for two-way to 4-lanes for two-way to decrease traffic jams. Figure 6.1 shows proposed cross section for the roads.





Figure 6.1: Existing and future road section (4-lanes for two way)

Total length of the 2 sections is more than 160km (Swakopmund – Arandis about 50km and Arandis – Karibib about 115km). Therefore, the section between Arandis and Karibib should be divided into 2 at intersection of D1918 (Arandis – D1918 about 65km, AND D1918 – Karibib about 50km) for phased development.

- Phase 1: Swakopmund Arandis: about 50km
- Phase 2: Arandis D1918: about 65km
- Phase 3: D1918 Karibib: about 50km

However, as mentioned in 6.1.1.2, it is necessary to re-examine traffic demand forecast prepared by

Integrated Transport Master Plan, and to forecast traffic volume again with a new set of traffic data before designing and constructing the road. Even if future traffic volume estimated will be less than 10,000, construction of a passing lane at upgrade sections and widening of shoulders should be implemented because of smooth flow and safety of traffic. Figure 6.2 shows road sections for the case of minimum upgrading of the road.



Source: JICA Study Team

Figure 6.2: Widening of shoulders section (up) and passing lane section (down)

6.1.2.2 Additional passing lane between Karibib and Otjiwarongo

The future traffic volume in 2025 for the section between Karibib and Otjiwarongo will amount to an AADT of 3,010 vehicles/day. This section will have enough capacity. However, this section is located in hilly terrain and the large cargo trucks ratio is high (36.5%) compared to the other sections in flat terrain. Therefore, a passing lane on the section between Karibib and Otjiwarongo should be constructed to avoid traffic congestion and decrease traffic accidents. The following cross section is proposed for this road.



Source: JICA Study Team

Figure 6.3: Existing and future road section (additional passing lane)

A passing lane is not only necessary for heavy vehicles to move smoothly but also for passenger cars to avoid traffic congestion in hilly terrain.

6.1.2.3 Traffic control between Swakopmund and Walvis Bay

Traffic between Swakopmund and Walvis Bay will be one of the busiest (18,570 vehicle/day) sections in 2025, and the capacity of B2 Road will not be enough to accommodate the traffic. Roads Authority intends widen B2 Road, and upgrade M44 Road which runs behind Dune 7.

In addition to implementation of these projects, it is also important to utilize B2 Road and M44 Road efficiently. If a regulation that restricts heavy trucks and trailers not to use B2 Road is introduced, 1,920 heavy trucks and trailers will shift to M44 Road. Such traffic control will contribute to a reduction of traffic accidents on B2 Road that runs along the coast and is used by many passenger vehicles. This will mitigate negative impacts on the natural environment on the coast as well.

6.1.2.4 Human resource development

It is urgently required to secure human resources, particularly road engineers and technical staff. Development requirements for human resource development to improve current issues – shortage of staff and less skilled staff – are as follows.

<u>Increase in experienced engineers and technical staff</u>: Employment of university or technical school graduates should be encouraged, however, regular training of new graduates will be necessary due to their inexperience. Experienced and skilled staff should also be actively recruited.

Education and training of staff: on the job training (OJT) by foreign experts: The Roads Authority faces a challenge in training young or previously recruited staff because of the difficulty to find suitable instructors and the generation gap between current staff and new employees. In order to solve this problem, approximately 5 to 10 expert engineers could be invited from other countries and

employed on a temporary or short-term basis. The curriculum and contents of training should be established while target group of trainees should be identified.

<u>Employment of experts from foreign countries:</u> The employment of experts from other countries rather than in-house staff training should be considered as a way of bridging the generation gap within the Roads Authority. The experts could work alongside Namibian staff, in charge of project planning, project management and maintenance projects.

These measures should be carried out as soon as possible.

6.1.2.5 Revision of Roads Authority Act and road user charge

The Roads Authority plans, designs, constructs and maintains roads. As part of their work, they are also in charge of quality control of materials, supervision of work contracted out, the operation of road management systems, prevention of excessive damage to roads, and other functions. They are funded by RUC and other funds. The aforementioned is specified in the Roads Authority Act in the following parts:

- Objective of the Authority 3,
- Function of the Authority 15(1) a, and
- Management of road network -16(1) a.

Roads Authority has to maintain national roads using the Road Fund if those roads were constructed with government budget. The larger the road network becomes, the more funds are required for maintenance

Since establishment of the Road Fund Administration Act (Act 18, 1999), the tariff system has never been revised due to political judgment, and consequently, the revenue from the RUC is limited. The RUC tariff needs to be revised in order to make it fit to the current needs. The Roads Authority Act should be revised to distinguish between the roads of which the maintenance is funded by the RUC and those of which the maintenance is funded by the government budget.

6.2 Railway

6.2.1 Analysis of the current situation of the railway system

6.2.1.1 Very old railway infrastructure

The section between Tsumeb and Oshikango is a new railway line constructed from 2004 to 2011, and

trains are currently operated on this section at about 100 km/h. However, other lines had been constructed more than 20 years ago. Facility such as rail, sleeper and ballast of these lines are very old. Maximum speed of train such as 15 km/h and 40 km/h is set at several sections.

At present, MWT is rehabilitating the track between Kranzberg and Tsumeb which amounts to 391.6 km. The rehabilitation work is expected to be completed in 2016. After the rehabilitation, trains will be able to run at 40 km/h at this section. However, even after completion of the on-going rehabilitation work, the rail network will not be in a satisfactory condition to transport cargo smoothly and safely in future. 30kg/m rail and 30 kg steel sleepers that are not up to SADC standards are still used at some sections between Walvis Bay and Windhoek.

Section	Distance (km)	Re-laid or Built Year	Rail (kg/m)	Sleeper	Ballast	Maximum speed of train
Walvis Bay - Wir	ndhoek: 420.55	7km				
Walvis Bay	199.080	1980 to 1993	48	STS & CS	Ballast	
Usakos	56.793	1958 to 1994	30 & 40	STS=30kg	Ballast	15km/h: 3km 40km/h: 35km
Albrechts Otiihavera	134.339	1969 to 1995	48	STS=30kg	Ballast	60km/h: 382km
Windhoek	30.345	1966 to 1995	30 & 40	STS= 30 & 40kg	Ballast	
Kranzberg - Tsu	meb: 391.627k	m (under rehabilitati	on – will be c	ompleted in 2015)		
Kranzberg Tsumeb	391.627	1960 to 1986	30	STS=30kg	Ballast	15km/h: 31km 20km/h: 56km 40km/h: 304km
Tsumeb - Oshika	ango: 310.48kn	n				
Tsumeb	252.500	2004 to 2006	48	CS	Ballast	
King Nehale Oshikango	57.980	2011	48	CS	Ballast	100km/h

Table 6.9: Present condition of tracks of 3 lines

Note: STS means steel ties sleeper.

Source: Directorate of Railways of Ministry of Works and Transport

6.2.1.2 Lack of operational locomotives

Most of the rolling stock belonging to TransNamib are old and in poor condition. As a result, the operational trains can only provide a restricted service and this fact makes TransNamib's business situation worse. Many rail users are disappointed with the low reliability of rail transportation. The poor competitiveness has resulted in the increasing shift of heavy bulk and liquid bulk transport such as petroleum transport from rail to road trucks. TransNamib tries to change the situation in its business development plans.

In 2013/14, TransNamib prepared the Strategic Business Plan 2014/15 – 2018/19, a 5-year business development strategy. TransNamib revised it and announced as a new strategic business plan including the details of a short-term recovery program titled "180-days turnaround program" in

2014/15. According to the Strategic Business Plan, TransNamib owns 71 locomotives but the number of operative locomotives is only 37 units. TransNamib is planning to repair 25 of locomotives, and increase the number of operational locomotives to 62, which is the minimum requirement to implementing the Strategic Business Plan.

According to the 180-days turnaround programme, TransNamib is planning to rehabilitate 12 locomotives during the programme period.

6.2.1.3 Lack of expansion space for cargo handling at Windhoek Station

Windhoek Station, which is located in the centre of a built-up area, has no space for expansion, and would not be able to deal with increased cargo volumes in the future. In addition to that, if Windhoek Station were to be expanded, traffic congestion would worsen due to the increase in the number of heavy vehicles.

6.2.2 Development requirements

6.2.2.1 Upgrading of railway network

The "Public Infrastructure" is positioned as priority areas in NDP4, and "renovate and maintain critical sections of the core rail network" is a high-level strategy. Based on the strategy, TransNamib set a goal to double the volume of cargo transported between 3 sections of the railway network by 2017 compared to the volume in 2011. The 3 sections consist of the sections between Walvis Bay and Kranzberg, Kranzberg and Oshikango, and Kranzberg and Windhoek.

The new container terminal with handling capacity of 750,000 TEUs is now under construction at Walvis Bay Port to increase transit cargo to landlocked countries. The demand forecast in this study reveals that the cargo volume transported by rail in 2025 will increase two and half fold compared to the volume in 2013.

At present, MWT is rehabilitating the track between Kranzberg and Tsumeb (391.6 km). However, 30kg/m rail and 30kg steel sleepers are still used at some sections Walvis Bay – Kranzberg, and Kranzberg – Windhoek. These sections are not in satisfactory condition to transport cargo increased in the future smoothly and safely. Upgrading of these lines will attract customers to use railway as cargo transportation mode. Therefore, these lines should be upgraded in line with the port development.

The identified priority sections are as follows.

- Upgrading of the section of Walvis Bay Kranzberg
- Upgrading for the section of Kranzberg Windhoek

The rehabilitation and/or upgrading of other sections also should be preceded to accommodate potential cargo for trains in the future.

6.2.2.2 Purchase, repair and maintenance of rolling stock and facilities

In order to carry out the 180-days turnaround programme and Strategic Business Plan smoothly, the purchase of new locomotives and wagons, and repair and maintenance of existing rolling stock should be implemented:

- Repair aged rolling stock
- Purchase locomotives and wagons
- Improve employees' skills in the operation, maintenance and/or rehabilitation of rolling stock and railway infrastructure

The customers are waiting and expecting an improvement in TransNamib's services. Not to disappoint key customers, it is necessary to take action immediately. The assistance of MWT is indispensable in order to implement the above actions.

6.2.2.3 Development of new business (new block cargo train service)

In order to meet future container cargo transport demand to the northern part of Namibia and Angola, TransNamib should consider the operation of special container trains (block cargo trains) as a new business, as well as operation of bulk cargo trains.

6.2.2.4 Development of a new cargo handling facility near the existing container terminal in Windhoek

In order to meet the cargo handling demand in future, the cargo handling facility at Windhoek Station should be relocated to a site with good access to the main road. The site near the existing container terminal depot alongside a trunk road in the suburbs of Windhoek will be good for the candidate place of a new cargo handling facility.

6.3 Ports and maritime sector

The analysis of the present situation, issues and countermeasures regarding market promotion for ports such as port service, cost, travel time, and etc. are dealt with in Chapter 4. The relationship between

Walvis Bay Port and the logistics hub centre is also dealt with in Chapter 5. The necessity of an integrated cargo operation system is described in Chapter 7. This paragraph focuses on the facilities and human resource development of the port sector.

The new container terminal, which is now under construction, is expected to be fully operational by early 2018. The capacity of the new container terminal will be 750,000 TEUs per annum. Moreover, the bulk handling volume will increase because of the conversion of the existing berths (1 to 8) and relocation of the port facilities within the port.

Due to the increase of throughput capacity and cargo handling volume in future, other measures need to be implemented to streamline these functions.

6.3.1 Analysis of current situation of port sector

6.3.1.1 Future container handling volume

The present container handling volume in the existing container terminal (berth 1 to 3) is 334,410 TEUs (116,824 TEUs of transit and domestic and 217,586 TEUs of transhipment) in 2011/12, and 301,817 TEU (131,479 TEUs of transit and domestic and 170,338 TEUs of transhipment) in 2012/13. Those figures are close to the maximum of the container throughput capacity (about 350,000 TEUs). According to the report titled "Port of Walvis Bay Infrastructure Development Master Plan [Draft]" prepared by Namport, all container operations will be relocated from the present berth 1 to 3 to the new terminal when the new terminal is commissioned in 2018. These 3 berths with the back-up areas behind them will then be used for multipurpose cargo handling. Therefore, the total container throughput capacity in Walvis Bay port in the future (2018 and after) will be 750,000 TEUs per annum. However, the future handling volume estimated by Namport is projected to exceed the capacity at around 2023. Therefore, Namport proposes early action – study, design and construction to expand container throughput capacity.

This study also forecast the volume of container cargo handled and the number of containers in 2025, which is the target year of this study. The estimated cargo for transit and domestic cargo is 550,000 TEUs, and the estimated number of transhipment containers is 300,000 TEUs in 2025 as described in section 3.1.4. However, future transhipment volume is heavily affected by progress of port development in neighbouring countries such as Angola. If ports in neighbouring countries are not developed smoothly, transhipment volume in Walvis Bay Port will increase more than the estimated volume. Namport should closely pay attention to the trend of the handling volume and development

status of ports in neighbouring countries.

6.3.1.2 Re-layout of railway facility

At Walvis Bay Port, 6.1 million tons of cargo and 334,410 TEUs of containers were handled in 2012. The estimated total throughput cargo volume and number of container at the port in 2025 are 17.4 million tons and 850,000 TEUs respectively. The throughput cargo volume increases by 2.8 times, and the number of containers increases by around 220%, respectively, during the period.

In future, containers will be mainly handled at the railway sidings in the new container terminal currently under construction. Other cargo transported by the railway will be handled at the existing railway facility located inland part of the port or in the bulk handling facility to be constructed in phase 1 and 2 of the North Port development. The balance of handling volume between the new facility and the existing facility will be changed dramatically. Therefore, re-layout of the existing railway facility in the port will be needed in accordance with its function in the future.

6.3.1.3 Human resource requirement for increasing demand

The volume of Import and export cargo handled at the port is estimated to be more than double.

As of April 2014, Namport has a total of 853 employees. Of these, 268 work at the container terminal division, 127 at the bulk and break bulk division, 96 in the marine division and 103 in the technical division at the Walvis Bay port. They presently handle about 6 million tons of import, export and transhipment cargo.

In order to handle the increase in cargo safely, smoothly and efficiently in future, Namport has to secure the necessary number of skilled and trained staff.

6.3.1.4 Difference in working hours between Namport, TransNamib and others

As of 2014, ordinary working hours of Namport is as indicated in Table 6.10. The Marine service works from 06:00 to 22:00 on weekdays and 06:00 to 12:00 on Saturday. The cargo service working hours are from 07:00 to 17:00 only on weekdays. Cargo imported into the port after 17:00 on Friday is kept in the cargo yard at the port for more than 62 hours during the weekend. It is not beneficial for the port from the viewpoint of efficient use of the cargo yard.

TransNamib announced a "State of Recovery Program" in October 2014. In the program, it is stated that changes in working hours is necessary. At present, working time of TransNamib is daylight hours on weekdays. However, its customers want to receive their goods or a train 24 hours a day on 7 days per week. Therefore, TransNamib tries to change the operating philosophies to meet customers' needs and to maximize its potential capacity.

Services	Days	Working hours
Marine service	Monday to Friday (except public holiday)	06:00 to 22:00
	Saturday (except public holiday)	06:00 to 12:00
Corgo working	Manday to Friday (avaant public baliday)	07:00 to 12:00
Cargo working	Monday to Friday (except public holiday)	13:00 to 17:00

Table 6.10: Working hours of Namport by type of services

Source: Port & Syncrolift Tariffs, Namport, 2014The gate of the port is closed from 5:00 pm to 7:00 am of the next morning on weekday, and whole day on weekends and public holidays. If ships and vehicles want to come into the port for loading and/or unloading cargo after ordinary working hours, they have to pay additional money.

Trailer trucks arriving at Walvis Bay port to load or unload cargo after 17:00 or late on Friday or over the weekend have to wait until the next day or next Monday when the gate of the port is opened. Spending one night or more at the truck stop near the port means wasting time and profit for truck drivers and customers.

For efficient use of the cargo yard, and for the benefit of customers and transport companies, revision of working hours is needed.

6.3.2 Development requirements

6.3.2.1 Preparation of a container terminal plan after 2018

According to Namport, it will take around 3 years to construct the container terminal. As mentioned in Chapter 3, this study forecast that the cargo handling volume will exceed the new throughput capacity (750,000 TEUs) in 2025. Namport should start operation of a new container terminal plan in 2018, depending on the trend of container handling volume.

Namport is investigating the following options to increase the container throughput capacity.

- Expansion of the new container terminal (phase 2 of the new container terminal),
- Modification and utilization of the existing berths 1 to 3 for containers again,
- Modification and utilization of berths 4 to 8 for containers, and
- A new container terminal at the SADC Gateway Port.

In addition to that, it is necessary to consider the bulk cargo handling volume, except petroleum products¹ will increase by around 44%, namely from 1.6 million ton in 2013 to 2.6 million ton in 2025. It should be also considered how to handle increasing volume of bulk cargo in future.

¹ Petroleum products are going to be handled at the new tanker berths constructed at the SADC Gateway Port.



Source: Information from Namport and edited by JICA Study Team

Figure 6.4: The preferred option for creation of additional container throughput capacity

If Namport pursues the goal that more than 1 million TEUs of containers will be handled at Walvis Bay Port, and wants to make the port a hub port in SADC, the container terminal should be "impressive at a glance". To make the port "impressive at a glance" and handle more than 1 million TEUs containers at the port, it is proposed that the 5th option be implemented, i.e. that the additional container terminal should be constructed at berths 1 to 8 to make the existing port as a whole to be one large cluster of container terminals with the new container terminal now under construction (refer to Figure 6.4). To achieve this, modification and utilization of the existing berths 1 to 8 for containers and relocation of the present cargo handling function in the existing port to SADC Gateway Port is deemed to be one of the options to be considered.

When Namport prepares the container terminal plan after 2018, it has to consider container flow in the port and sharing equipment and human resources for container handling as well as construction cost.

6.3.2.2 Re-arrangement of railway terminal

The present railway terminal should be re-arranged based on cargo handling volume estimated in this

project or stated in the turnaround plan and/or the five-year plan of TransNamib. The size and shape of the terminal re-arrangement has a potential impact on the relocation of other port facilities. Therefore, discussions are needed between Namport and TransNamib on the re-arrangement plan of the railway terminal to assure the smooth relocation of port facilities.

6.3.2.3 Extension of working hours

If the present working hours of Namport is changed shifts accommodating a 24 hours service on 7 days per week without extra charge, it will be beneficial for customers, transport companies and drivers. At present, major ports are operated over 24 hours, and number of ports operated over 24 hours is increasing in the world. This change will be a very strong point to promote Walvis Bay port. Namport will also be able to increase turnover ratio of cargo in the port.

Therefore, Namport should start considering revision of the present working hours as soon as possible. Namport should discuss such changes with customers and the port users.

6.3.2.4 Human resource development in line with the new container terminal development

The new container terminal is expected to be fully commissioned by early 2018. To start operation of the new cargo terminal smoothly and to handle the increase in cargo smoothly, safely and effectively, sufficient new staff should be secured before the start of the new terminal operation or significant increase in cargo volume. New staff must have enough skills to operate the new terminal and cargo handling machines and/or equipment. Should the required number of new staff having enough skill not be available, Namport has to recruit non-skilled staff and train them.

Therefore, Namport should initiate a recruitment plan and/or a training plan for new staff as quickly as possible in order to secure the necessary number of new staff or to train them before starting operating the new terminal.

6.4 Aviation: Air Namibia

6.4.1 Liberalization of air services (Open Skies)

Liberalization of air services (Open Skies) is an international policy concept that calls for the liberalization of the rules and regulations of the international aviation industry, especially commercial aviation in order to create a free market environment for the airline industry. Its primary objective is

to liberalize the rules for international aviation markets and minimize government intervention applicable to scheduled and charter air transportation service for passengers and cargo. For open skies to become effective, a bilateral or multilateral Air Transport Agreement has to be concluded between two or more nations. Many clauses are generally included in such an agreement. Key clauses of the open sky are free market competition, determination of airfares by market forces, fair and equal opportunity for competition, and cooperative marketing arrangement (code-sharing or leasing arrangement with airlines of either country). Therefore, liberalization generally fosters greater competition among airlines, resulting in lower fares for travellers, greater numbers of people travelling, more choices of airlines and routes, and improvement of service levels. Liberalization of air services has the potential to make huge impacts on the aviation sector, tourism sector, trade, investment and productivity. Figure 6.5 shows impacts of liberalization on the wider economy.



Source: Transforming Inter-African Air Connectivity: The Economic Benefits of Implementing the Yamoussoukro Decision by InterVISTAS in July 2014

Figure 6.5: Impacts of liberalization on the wider economy

Liberalization of air services is expanding globally due to these advantages. Many air markets between African continent and countries outside Africa and some intra-African aviation markets such as South Africa, Kenya and Ethiopia have also been liberalized. The table below illustrates the example of liberalization in Africa.

Table 6.11: Examp	le of liberalization	in Africa
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Countries	Contents and Results of Liberalization
South Africa-Kenya	 Bilateral agreement on liberal air service in 2000
	- Allowing a number of airlines to operate between the countries and increasing the number of daily flights
	 Further liberalization, removing all restrictions on capacity in 2003
	 Passenger volumes on the main route increased by 69% after liberalization
South Africa – Zambia	 South African LCC starts operation between Johannesburg-Lusaka route in 2006
(Johannesburg – Lusaka Route)	 After the entry of LCC, traffic volumes increased 38%, fares declined 33% ~ 38%, on average.
Ethiopia	 Bilateral air service agreements with over 90 countries, some of which have been open skies
	agreements.
	- This has achieved status of Ethiopian Airlines as the largest carrier by revenue and profit in Africa in
	2013.

Source: Transforming Inter-African Air Connectivity: The Economic Benefits of Implementing the Yamoussoukro Decision by InterVISTAS in July 2014

However, most intra-African aviation markets remain largely closed. This has limited the potential of the aviation industry to contribute to economic growth and development of African countries.

To verify the impact on the economy in intra-Africa and Namibia, InterVISTAS conducted an analysis of the traffic and passenger impacts resulting from liberalisation of the air service based on bilateral agreements between 12 countries (Algeria, Egypt, Tunisia, Ethiopia, Kenya, Uganda, Angola, Namibia, South Africa, Ghana, Nigeria, and Senegal). It includes an impact analysis of liberalization between Namibia and South Africa. The result of the analysis was shown in the report of "The Economic Benefits of Implementing the Yamoussoukro Decision" implemented by InterVISTAS in July 2014.

According to the report, it is projected that bilateral liberalization between the 12 countries would increase traffic flows between these countries by 81%, from 6.1 million passenger movements currently (in 2013) to 11.0 million (an increase of 4.9 million passenger movements). Of this, it is estimated that Namibia will have an increase of 0.5 million passengers (92%). The passenger fares from 12 countries will reduce by 25 - 35%. The passenger fare from Namibia will reduce by 25%. Passenger traffic and reduction of fares are shown in Table 6.12.

In addition to the direct benefits to users, the increase of employment (direct and indirect) in the aviation sector and tourism sector, and increased trade, investment and productivity were pointed out. Economic growth (GDP) is also expected.

Table 6.12 shows the impacts of liberalization on the employment and GDP. Across the 12 countries, liberalization is projected to generate 155,100 jobs and add nearly US\$1.3 billion to GDP. In Namibia, generation of additional 10,600 jobs and an increase of N\$94.2 million in GDP are estimated.

Impact of Liberalization		Total of 12 countries	Namibia	Remarks
Deccondor	Before	6,107,300	577,800	81% increase within 12 countries and
Troffic	After	11,026,800	1,107,200	92% increase between Namibia and
Hallic	Increase	4,919,500	529,400	S.A.
Reduction in Air Fares		25-35%	25%	
Impacts on Econo	omic			
	Aviation sector	38,000	3,800	Both direct and indirect
Employmont	Tourism sector	75,100	4,500	
Employment	Trade, investment and Productivity	42,000	2,300	
Total		155,100	10,600	
Incremental GDP	(US\$ Million)	1,296.5	94.2	

 Table 6.12: Impact of aviation liberalization on the economy

Source: Transforming Inter-African Air Connectivity: The Economic Benefits of Implementing the Yamoussoukro Decision by InterVISTAS in July 2014 As mentioned above, liberalization of air services (Open Sky) has tremendous potential to generate profit not only for passengers but also the Namibian economy. Furthermore, enhancement of Namibia's air services by implementation of Open Sky is sure to contribute to make Namibia a logistics hub nation. Therefore, it's time for GRN to consider open sky policy seriously. Air Namibia has to improve and strengthen the company's business quality to withstand fierce competition among airline companies caused by the introduction of the policy. In the following part of this section, issues that Air Namibia faces at present and necessary countermeasures are discussed from this point of view.

6.4.2 Analysis of current situation of Air Namibia

6.4.2.1 Operation of unprofitable routes

In the past, Air Namibia had 2 international – Gatwick and Accra from HKIA - and 2 regional routes – Gaborone from HKIA and Cape Town from Eros, and 3 domestic routes – one from HKIA and 2 from Eros. However, Air Namibia already withdrew air services from these routes because of unprofitability.

As of October 2014, Air Namibia has total 11 routes including one international route, 6 regional routes from HKIA, and 4 domestic routes from HKIA and Eros airport. According to Air Namibia, in light of flight distance and average revenue per passenger for each route, only two routes – Luanda (regional) and Ondangwa (domestic) – make a profit and one route – Cape Town – sometime makes a profit. The other 8 are unprofitable routes although Air Namibia still intends to keep offering air services on these routes.

Categories	Airport	Present operating Routes (as of Oct. 2014)	Past routes
International	HKIA	Frankfurt (1)	Gatwick, Accra (2)
Regional	HKIA	Johannesburg, Cape Town, Luanda, Harare, Lusaka,	Gaborone (1)
		Victoria Fall (via Maun) (6)	
	Eros	No flight	Cape Town (1)
Domestic	HKIA	Walvis Bay, Lüderitz (via Oranjemund) (2)	Ondangwa (1)
	Eros	Ondangwa, Rundu (via Katima Mulilo) (2)	Walvis Bay, Lüderitz (via
			Oranjemund) (2)

 Table 6.13: Air Namibia's routes, present and past

Source: Air Namibia

Table 6.14: Ave	rage revenue p	er passenger	by Air	Namibia's routes
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Airport to/from		2009	2010	2011	2012	2013	
		Accra (Ghana)	0.00	2,531.33	2,945.09	2,431.69	2,424.95
HKIA Regi	International	Frankfurt	5,006.35	4,682.70	4,247.98	4,428.87	3,690.12
		Gatwick (British)	4,001.71	3,757.74	0.00	0.00	0.00
	Regional	Lusaka/Harare	0.00	1,489.98	1,494.67	1,505.97	1,232.56
		Johannesburg	1,408.93	1,267.52	1,256.18	1,126.72	822.75

6. Transport Network

	Airport to/from			2010	2011	2012	2013
		Cape Town	1,444.08	1,394.72	1,363.21	1,441.99	1,184.12
		Luanda	2,596.37	2,487.76	2,434.01	2,423.92	2,130.84
		Maun/Victoria Falls	1,690.83	1,655.69	1,758.83	1,775.02	1,301.89
		Gaborone	0.00	0.00	0.00	0.00	989.79
		Walvis Bay	1,167.94	722.48	714.70	622.98	473.92
	Domestic	Lüderitz/Oranjemund	0.00	0.00	0.00	1,026.20	1,149.65
		Ondangwa	0.00	0.00	760.10	703.84	0.00
	Degional	Cape Town	1113.35	1106.55	1096.61	-	-
	Regional	Maun/Victoria Falls	Ca	rgo Flight Only			
Eroc		Rundu/Mpacha	1843.33	1863.55	1892.51	1152.72	1018.16
Eros	Domostic	Walvis Bay	697.96	721.37	813.66	610.11	-
	Domestic	Lüderitz/Oranjemund	1373.18	1428.58	1529.24	-	871.3
		Ondangwa	1166.55	1248.06	1291.03	1195.09	1063.17

Note: Routes in bold characters are profitable ones.

Source: Air Namibia

6.4.2.2 Domestic air transport service at two airports in Windhoek

Air Namibia had 421,971 international and 37,596 domestic passengers, and 7,696 international and 1,560 domestic flights via HKIA in 2013. Air Namibia also had 59,542 domestic passengers and 3,016 domestic flights via Eros Airport in 2013. Eros Airport is located 5 km from the central business district (CBD) of Windhoek. It is very convenient for airline users. This is the reason that Air Namibia has offered domestic air services at Eros Airport in spite of lower passenger numbers and planes than HKIA. Flight services at two airports in Windhoek impose double investment such as assignment of the company's staff at two airports. Although it is important to consider airline users first, improvement and strengthening of the company's management is also important for survival.

	Airports	Item	2009	2010	2011	2012	2013	Remarks
		Passengers	321,438	321,568	325,494	371,733	421,971	
	International	Av. daily passengers	881	881	892	1,018	1,156	
	International	No of planes	6,240	6,552	6,552	7,280	7,696	
		Av. daily planes	17	18	18	20	21	
		Passengers	2,437	4,716	4,436	14,925	37,596	
	Domostic	Av. daily passengers	7	13	12	41	103	Two routes: Walvis Bay
HKIA	Domestic	No of planes	728	728	728	1,144	1,560	and Luderitz/Oranjemund
		Av. daily planes	2	2	2	3	4	
		Passengers	323,875	326,284	329,930	386,658	459,567	
		Av. daily passengers	887	894	904	1,059	1,259	
		No of planes	6,968	7,280	7,280	8,424	9,256	
		Av. daily planes	19	20	20	23	25	
Eros		Passengers	32,356	27,069	26,630	42,684	59,542	
	Domostic	Av. daily passengers	89	74	73	117	163	Two routes: Ondangwa
	Domestic	No of planes	2,600	2,600	2,600	2,184	3,016	and Rundu/Mpacha
		Av. daily planes	7	7	7	6	8	

Table 6.15: Numbers of passengers and flights of Air Namibia at HKIA and Eros Airport

Source: JICA Study Team provided based on data from Air Namibia

Note: * Number of planes was estimated by the Team using the flight schedule obtained from Air Namibia

6.4.2.3 Limited code-sharing airlines

Air Namibia is continuously looking for partnerships with airlines. However, Air Namibia has only

two code-share agreements with Kenya Airways on the Windhoek-Nairobi route and TAAG Angolan Airlines. To encourage many airlines to call at Namibia, Air Namibia should enter into code-share agreements with other airlines.

Other than a code-share agreement, Air Namibia has extended interline e-ticketing agreement with Lufthansa for feeders between Frankfurt and about 62 European cities. Air Namibia also has an interline agreement with Delta Airlines to the USA and with Emirates and Singapore Airlines to the Far East.

6.4.2.4 Limited coordination between Air Namibia and Namibia Airports Company

According to Air Namibia, the route connecting Eros and Ondangwa is the only profitable domestic route. The Rundu route is said to have potential to get more passengers than the present, however, Air Namibia has fared poorly. There is a limitation to get more passengers and/or spur passenger demand by an airline company alone. Joint promotion and sales by an airport company and an airline company are very important to get more passengers. However, Air Namibia and NAC has never had a meeting for promotion and sales.

6.4.3 Development requirements

6.4.3.1 Separation between profitable routes and non-profitable routes

Out of 11 routes of Air Namibia, only two routes always make a profit and one sometimes makes a profit while the other 8 routes are non-profitable. Air Namibia has to make efforts to make these 8 routes profitable., If the situation is not changed in spite of Air Namibia's efforts, Air Namibia should consider to separate financially non-viable routes from the company's business.

There was news regarding the operation of a Low Cost Carrier (LCC) with fares from as little as R799 for flights between Windhoek and Johannesburg in October 2014. The operation is supposed to start in February 2015. It will then roll-out operation of scheduled regional flights from Namibia to South Africa, Zambia, Botswana and Zimbabwe. Air Namibia's fare from Windhoek to Johannesburg starts at N\$1,220. In addition, Air Namibia's average revenue per passenger between Windhoek and Johannesburg was N\$822.75 in 2013. Operation of a LCC will become a big threat to Air Namibia.

Therefore, Air Namibia should concentrate on profitable routes and potential routes for healthy management of the company. Air Namibia should advise the government that it has to withdraw from the non-profitable domestic routes that have an aspect of a social service. If the government

wants to maintain those routes in future, the government should consign the air service of such routes to Air Namibia or other companies.

6.4.3.2 Integration of domestic flights to HKIA

Even if Air Namibia discontinues domestic air services in Eros Airport and transfers the services to HKIA, HKIA has sufficient capacity to handle these passengers and planes. Therefore, Air Namibia should integrate its services in Windhoek into HKIA and operate all domestic flights from there. Integration of domestic flights to HKIA is inconvenient for Eros Airport users because of longer travel time between HKIA and the city centre of Windhoek. However, integration of air services will make Air Namibia free from the burden of double investment to two airports in Windhoek.

6.4.3.3 Code-sharing with other airlines, then joining an airline alliance

An airline alliance is an agreement between two or more airlines to cooperate at various levels. There are three major passenger airline alliances – Star Alliance, One World, and Sky Team in the world. An alliance provides a network of connectivity and convenience for international passengers and international packages. An alliance also provides a brand name which is convenient for marketing to encourage travellers to use inter-airline codeshare connections within countries. Not only member airlines of an alliance but also passengers and travellers can get the following benefits from the alliance.

Airlines

- Extension of air network through code share agreements (many airlines start a code sharing network at first.)
- Reduction of costs due to sharing of sales office, maintenance facilities, operational facilities and staff, and investments and purchases

Passengers/travellers

- Lower prices due to lowered operational costs
- Increase of choices for departure
- Increase in destinations
- Shorter travel times as a result of optimized transfers
- Increased availability of airport lounges shared with alliance members

Air Namibia is not a member of any alliance at present. Usually, many airlines within an alliance enter into agreements on a code-share with other member airlines.

A code-share agreement is an aviation business arrangement. Under the agreement, two or more airlines share – publish and market flights under its own airline designator and flight number as part of its published time table/schedule – the same flight. Two or more carriers aim to enhance sales of seats and to improve operational efficiency by implementing this type of flight operation.

Therefore, firstly Air Namibia should try to enter a code-share agreement with airlines to North America, South America and the Far East to cover these areas and to increase the number of passengers/travellers.

Air Namibia has already entered into a code-share agreement with Kenya Airways and TAAG Angolan Airlines. Air Namibia also entered into an agreement with three airlines – Delta Airlines to the USA, and Emirates and Singapore Airlines to the Far East on an interline. Therefore, it is better for Air Namibia to try to enter into code-share agreements with these three airlines first for getting more passengers in future.

Airlines		Area	Alliance
Cada ahara	Kenya Airways	Africa	Sky Team
Code share	TAAG Angolan Airlines	Africa	No member of any alliance
Interline ticketing	Lufthansa	Europe	Star Alliance
	Delta Airlines	North America	Sky Team
	Emirates	Middle East	No member of any alliance
	Singapore Airlines	South East	Star Alliance

Table 6.16: Airlines agreed about code share/interline ticketing and its alliance

Source: JICA Study Team

6.4.3.4 Coordination between Air Namibia and NAC

Both Air Namibia and NAC are key players for the improvement and prosperity of the air service industry in Namibia. Joint promotion and sales by both companies is very important to get more passengers and improve the present business situation. Therefore, the companies should have regular meetings to discuss themes necessary for the improvement and prosperity of their business.

6.4.3.5 Development of a new route for making profit

Air Namibia should not only separate of profitable and non-profitable routes but also conduct a study on the development of new routes for making profit.

At present, frozen fish is transported from Walvis Bay to Windhoek by trucks, and flied to Frankfurt. In Europe, cargo is carried from Frankfurt to Spain by trucks. However, Air Namibia is looking at the feasibility of sending cargo directly to Spain from Walvis Bay. A new route between Namibia and Brazil is another option which Air Namibia is investigating.

Air Namibia has not implemented any studies yet. Therefore, a study should be carried out to find

business opportunity as soon as possible.

6.5 Aviation: Namibia Airports Company

6.5.1 Analysis of current situations of Namibia Airports Company

6.5.1.1 Operation of non-profitable airports

Namibia Airports Company (NAC) operates and manages 8 airports – HKIA, Eros, Walvis Bay, Keetmanshoop, Lüderitz, Katima Mulilo, Rundu and Ondangwa. However, according to NAC, 4 local airports – Keetmanshoop, Lüderitz, Katima Mulilo and Rundu – always suffer from deficits. The number of passengers using these 4 airports in 2011/2012 and 2012/2013 only accounts for 1% or less of the total number of all airport users. The number of flights taking off and landing at these 4 airports also accounts for a very low percentage of the total number of flights. Airport staff, equipment and machines necessary for airport operation and management are assigned and provided at each airport in order to comply with minimum requirements regardless of the number of passengers and flights.

rubie en rubie er passengere by an pert							
Airporto	2011/20	12	2012/2013				
Allports	No of passengers	Share (%)	No of passengers	Share (%)			
HKIA	772,096	77.5	802,811	76.2			
Eros	78,089	7.8	91,071	8.6			
Walvis Bay	88,021	8.8	88,614	8.4			
Keetmanshoop	2,098	0.2	2,158	0.2			
Luderitz	3,903	0.4	6,184	0.6			
Katima Mulilo	8,437	0.8	14,917	1.4			
Ondangwa	36,617	3.7	41,099	3.9			
Rundu	6,435	0.6	6,374	0.6			
Total	995,696	100.0	1,053,228	100.0			
Note: Airports in blood characters are non profitable ones							

Table 6.17: Number of passengers by airport

Note: Airports in blood characters are non-profitable ones Source: Annual Report 2012/2013, NAC

Operation of these unprofitable airports has an aspect of social service to the local people requested by the government, which to have kept the company operating those airports. NAC made a profit of about N\$18.3 million in 2012/2013. On the other hand, NAC suffered from about N\$ 21.8 million and N\$ 20.0 million losses in 2011/2012 and 2013/2014 respectively. Operation of these unprofitable airports is a burden for NAC.

		U			
Airport	2011/20	12	2012/2013		
Allport	No of flights	Share (%)	No of flights	Share (%)	
HKIA	15,990	27.8	17,061	28.6	
Eros	26,305	45.7	28,127	47.2	
Walvis Bay	5,111	8.9	4,591	7.7	
Keetmanshoop	1,105	1.9	921	1.5	
Lüderitz	1,241	2.2	1,623	2.7	
Katima Mulilo	934	1.6	921	1.5	
Ondangwa	2,920	5.1	2,945	4.9	
Rundu	3,978	6.9	3,422	5.7	
Grand Total	57,584	100.0	59,611	100.0	

Table 6.18: Number of flights by airports

Airports in blood characters are non-profitable ones Note:

Source: Annual Report 2012/2013, NAC

Items of revenue and expense		2011/2012	2012/2013	2013/2014
		19 months	12 months	12 months
	Operating Income	270,026,332	191,133,177	200,536,340
Revenue	Other Operating Income	6,278,882	7,537,944	4,658,267
	Total	276,305,214	198,671,121	205,194,607
Expenses		298,129,937	180,416,227	225,163,090
Profit (Deficit)		-21,824,723	18,254,894	-19,968,483

Table 6.19: Revenue and expenses of NAC

Source: Annual Report 2012/2013; Annual Financial Statements as of 31 March 2014, NAC

6.5.1.2 Operation of two airports in Windhoek

NAC operates two airports in Windhoek at present. HKIA is positioned to be the gateway from abroad by air to Namibia and Windhoek, the nation's capital. On the other hand, Eros Airport is located 5 kilometres from the central business district (CBD) of Windhoek and is the busiest airport in Namibia in terms of number flights. This airport is used mainly for domestic air service, such as passenger flights by Air Namibia, scenic and pleasure flights, and occasional VIP flights. It is also recently started to use Eros Airport as a maintenance service base for small regional passenger aircrafts (ATR42/72) in SADC region². Thus, the functions of two airports are different.

However, operation of two airports situated close to each other requires duplication of operational expenses for NAC unless functions are reasonably demarcated. This applies to Air Namibia as well. It is considered to be reasonable to concentrate passenger services more at HKIA when "hub and spoke" operation is preferred on the side of airlines. HKIA will have sufficient capacity to handle all passengers and flights of Eros Airport on top of its current use once a new terminal building is completed.

² Rheinland Air Services (RAS, a german comapny) specialized in ATR 42 and ATR 72 aircraft parts, recently acquired Aviation Centre (Pty) Ltd., an aircraft maintenance business that is located at Eros Airport in Windhoek, Namibia. This facility is becoming RAS's base for maintenance and parts in Africa.

		i U	U		
Airport	Pas	ssenger and Flight	2011/2012	2012/2013	Remarks
	Deccondore	Total no of passengers	772,096	802,811	
	Passengers	Average of daily passengers	2,115	2,199	
ΠΝΙΑ	Flight	Total no of flights	15,990	17,061	
	Flight	Average of daily flights	44	47	
Total Passengers at Eros Airport Passengers of	Total no of passengers	78,089	91,071		
	at Eros Airport	Average of daily passengers	214	250	
	Passengers of	Total no of passenger	42,684	59,542	
	Air Namibia	Average of daily passenger	117	163	
Free		Total no of flights	26,305	28,127	Air Namibia, charter and private
EIUS		Average of daily flights (total)	72	77	
	Elighte	Total no of Air Namibia flights	3,022	2,708	Estimated figure
	Flights	Average of daily flights (AN)	8	7	Air Namibia
		Total no of other flights	23,283	25,419	
		Average of daily flight (others)	64	70	

Table 6.20: Number of passengers and flights at HKIA and Eros Airport

Source: Compiled by JICA Study Team from provided based on data from NAC (Annual Report 2012/2013, flight schedule)

6.5.1.3 Air cargo transport in Namibia and SADC

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 6.21). HKIA handled about 87% of the total cargo in 2009.Walvis Bay Port handled around 5 million tons in 2008 and 2009. Compared to the port handling volume, cargo volume handled at the airports is very small.

		Unit: ions
Airport	2008	2009
HKIA	7,464	6,362
Walvis Bay	110	14
Eros	1,028	934
Lüderitz	9	5
Total	8,611	7,315
Total	8,611	7,31

Table 6.21: Cargo handling volume at airports in Namibia

Source: World Airport Traffic Report 2009

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

		•			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%			

Table 6.22: Air cargo volume in SADC countries in 2009

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Countries	Air cargo volume (A)	Share	Major airport	Air cargo volume (B)	Share (B/A)
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

6.5.1.4 Coordination between NAC, airlines, and other parties

Joint efforts by an airport company and an airline company are very important to improve over-all services and get more passengers. Coordination between NAC and airlines to formulate promotion strategies should be further encouraged. NAC is in a good position to assess overall customer satisfaction of airport services including some aspects that are actually in hands of airlines, security checks, immigration, or customs.

6.5.2 Development requirements

6.5.2.1 Separation between profitable airports and non-profitable airports

NAC has the responsibility to operate and manage 8 airports including 7 domestic airports. Although NAC has to make effort to make these 8 airports profitable, 4 airports – Keetmanshoop, Lüderitz, Katima Mulilo, Rundu – have always suffered from deficits. NAC should cooperate with Air Namibia in operating the domestic airports for making profit. If the situation is not changed in spite of NAC's efforts, NAC should consider separating non-profitable airports from the company's business. Non-profitable airports have an aspect of social service to local people. Therefore, NAC should concentrate on profitable airports and potential airports to ensure the healthy management of the company. NAC should negotiate with government on withdrawal from non-profitable airports to meet social needs, the government should outsource the airport services to NAC or other companies rather than to order NAC to cross-subsidise them and mix their loss within their business account.

6.5.2.2 Market research on air cargo demand

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

Potential cargos for Walvis Bay airport are fresh fish to Europe and import of mining

machine/equipment. Currently, fresh fish is transported to HKIA, and transported to Spain via OR Tambo Airport. NAC receives some offers to transport mining equipment/machines from mining companies but it cannot transport them now. As a result the mining equipment/machines are transported by ship and land.

NAC intends to develop cargo handling facilities at HKIA and Walvis Bay Airport. However, potential volumes of the cargos mentioned above are not clear. It is also necessary to investigate other potential cargos to invite cargo flights. Therefore, market research on air cargo demand is needed.

6.5.2.3 Coordination between NAC and all parties involved with airport operation

The necessity of coordination between NAC and airlines has already been mentioned. NAC is in a best position to assess overall customer satisfaction of airport services including some aspects that are in hands of airlines, security check, immigration, or customs.

Close coordination with airlines such as Air Namibia, South African Airways, TAAG Angola Airlines, and all the other parties involved with airport operation is very important for NAC to generate a synergy effect in the aviation business; therefore, NAC should organize regular meetings involving all parties to discuss themes necessary for improvement and prosperity of their business.

6.6 Bypass development

6.6.1 The development of bypass roads

The development of bypass roads is one of the important components of the International Logistics Hub from the following reasons:

Bypass restricted right of way for road in towns: when the traffic volume increases in low-density areas, it is not so difficult to improve the road capacity by widening roads and altering its alignment. However, it is difficult to widen the road in built-up areas, thus a bypass road is required.

<u>Reduction of travel time in corridors:</u> If it takes a long time for trucks to pass through the towns, it increases the time required for travelling along the corridor and thus jeopardising the competitiveness of Namibian route in comparison with other routes. In order to maintain competitiveness, it is necessary to develop bypass roads.

Securing safety in towns: If a number of large trucks pass along narrow roads in built-up areas, the

number of traffic accidents might increase and environmental pollution may occur. In addition, illegal parking in residential areas also cause trouble. In order to avoid such situations, bypass roads should be developed.

Some people may worry about the decrease of business opportunities if trucks would not pass built-up areas. In order to keep business opportunities, truck stops should be planned as well to promote economic activities of the residents of these towns. The truck stop concept will be discussed in the later section 6.7.

6.6.2 Selection of target towns for bypass road development

The following 3 criteria are used to select the towns where the bypass roads need to be constructed.

- Traffic volume: from a viewpoint of smooth transport, it is better to develop a bypass road if the traffic volume (AADT) reaches 10,000 vehicles.
- Traffic safety: traffic of large vehicles is a threat to road safety.
- Vehicles speed in towns: alignments of existing roads and congested traffic in the town causes speed reduction of passing vehicles.

Result of the assessment is indicated in Table 6.23. Usakos, Karibib, Omaruru, Otjiwarongo, Ondangwa, Grootfontein and Rundu are selected as the target towns. Each local authority needs to develop urban plans and reserve land for future bypass road development. Table 6.24 summarises proposed bypass alignment of 7 towns.

Name of towns	Criteria 1: Traffic volume	Criteria 2: Traffic safety	Criteria 3: Vehicle speed in towns	Results of assessment
Swakopmund	Х	Х	Х	The bypass route has been constructed already.
Arandis	-	-	-	-
Usakos	Х	Х	Х	Target town for bypass development
Karibib	Х		Х	Target town for bypass development
Omaruru		Х	Х	Target town for bypass development
Otjiwarongo		Х	Х	Target town for bypass development
Otavi	-	-	-	-
Tsumeb	-	-	-	-
Ondangwa	Х	-	-	Target town for bypass development
Grootfontein	-	Х	-	Target town for bypass development
Rundu	-	Х	-	Target town for bypass development

Table 6.23: Selection of target towns for bypass development

Note: X means criteria are applicable.

Source: JICA Study Team



Table 6.24: Proposed bypass alignment

Source: JICA Study Team

6.7 Development of truck stops

6.7.1 Concept for truck stops

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 also has facilities such as a fuel station and a maintenance workshop, etc.

Walvis Bay Corridor Group conducted a study on truck stop development titled "The Establishment of

Truck Stops Along the Walvis Bay Corridors³, in 2009. The report provides interesting data that 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.

There are many stakeholders involved for construction and operation of truck stops. The development and operation of truck stops provide the following benefits to stakeholders.

Local authorities and inhabitants: Trucks are parked in one place at the outskirts of a town. Thus the hazards of noise and air pollution are greatly reduced in the town. Decrease of illegal parking also contributes to increasing road safety and improving the living environment.

Local business: Economic benefit from the driver's consumption such as purchasing goods and paying for various services

Truck drivers: Drivers can take a rest and stay overnight in safe and tidy conditions. An increase in stopover options will improve their working conditions through decreasing night-time driving and taking frequent rests. In addition, truck drivers can enjoy buying goods and services.

Passenger vehicle users: Truck stops are not only for truck drivers. Passenger vehicle users also stop by at these facilities during long journeys.

Truck companies: The operation cost of trucks may be decreased by reduction of accidents and regular maintenance of trucks. Truck stops can also provide low cost parking and electricity for overnight stays, especially for refrigeration trucks.

6.7.2 Selection of locations

As mentioned in section 6.7.1, the WBCG report mentioned that if the distance between truck stops exceeds 120km, the rate of traffic accidents increases. This can justify establishing a truck stop at certain intervals along the corridor. It is also taken into consideration that existing fuel stations along the corridors play a minimum function of the truck stop; therefore it is appropriate to use these facilities for the time being.

³ http://www.wpi.edu/Pubs/E-project/Available/E-project-051109-222249/unrestricted/WBCG_Report_HXA-NO93.pdf Retrieved November 2014.



Source: JICA Study Team

Figure 6.6: Distance between municipalities and towns along corridors

Figure 6.6 shows distances between towns. All towns along the corridors have a potential to locate truck stops. However, some towns have comparative advantages according to their location. For example, border towns and isolated towns being a significant distance from the neighbouring town has an advantage because trucks might stop due to constraints of fuel, long driving time and border facility operation hours. Considering those conditions, Walvis Bay, Katima Mulilo, Oshikango and Rundu are more competitive⁴. Otjiwarongo has an advantage because the town is located at the junction of WNLDC/Trans–Cunene Corridor and B1 Road connecting to Windhoek, Trans–Kalahari Corridor and Trans–Orange Corridor. Those towns with these geographical advantages have the potential to have large truck stops as discussed hereinafter in this section.

It is appropriate that other towns (Usakos, Karibib, Omaruru, Grootfontein and Ondangwa) should start with small-scale truck stops. Since there are also three sections where the distance between fuel stations exceeds 80 miles (around 130 kilometres) as shown in Table 6.25, these sections will need truck stops as well. Those locations are Omuthiya, Mururani, Divundu and Kongola.

Identified towns and appropriate types of the truck stops are summarized in Table 6.26 while their locations are indicated in Figure 6.7.

⁴ Truck stop at Walvis Bay is located inside Logistics Hub Centre and the development is dealt with in the Logistics Hub Development Project in Chapter 5. Development of truck stops at Oshikango and Katima Mulilo is discussed in a part of border management in Chapter 7.

Sections	Distance	Existing fuel stations	Remarks				
Tsumeb-Ondangwa	252km	Omuthiya	One truck stop is required.				
Grootfontein-Rundu	254km	None	One truck stop is required				
Rundu–Katima Mulilo	516km	Divundu: 207km from Rundu Kongola: 103km from Katima Mulilo	Two truck stops are required				

Source: JICA Study Team

		-
Type of truck stop	Municipality, town and area	Reasons for developing truck stops
Larger-scale truck stop	Oshikango, Katima Mulilo, Walvis Bay	Border or terminal of corridors
	Rundu, Otjiwarongo	Construction of bypass roads; long distance from the
		neignbouring towns
Small-scale truck stop	Usakos, Karibib, Omaruru, Grootfontein, Ondangwa	Construction of bypass roads
	Omuthiya, Mururani, Divundu, Kongola	Long distance between the sections

Note: Truck stop at Walvis Bay is located inside Logistics Hub Centre and the development is dealt with in the Logistics Hub Development Project. Development of truck stops at Oshikango and Katima Mulilo is discussed in a part of border management.

Source: JICA Study Team



Note: Truck stops will be constructed at Walvis Bay, Oshikango and Katima Mulilo, too. The truck stop at Walvis Bay is located inside Logistics Hub Centre and the development is dealt with in the Logistics Hub Development Project. Development of truck stops at Oshikango and Katima Mulilo is discussed in a part of border management.

Source: JICA Study Team; Investment Profile: establishment of truck stops along Trans–Kalahari Transport Corridor Figure 6.7: Proposed location of truck stops

Trans-Karahari Corridor Secretariat prepared a report on development of truck stops along Trans-Karahari Corridor, Trans-Cunene Corridor and WNLDC, titled "Investment Profile: establishment of truck stops along Trans-Kalahari Transport Corridor". The report selects 4 sites (Otavi, Gobabis, Rundu and Kang in Botswana) as truck stops should be constructed in short and medium term, and conducted feasibility studies. The report also recommended introducing PPP for development and operation of the truck stops. It is necessary to coordinate with the Trans-Karahari Corridor Secretariat in selecting locations of truck stops and clarifying business model. The ideal sites for truck stops are where it has easy access from existing roads and bypass roads proposed in section 6.6. Then both the passenger cars and citizens living in towns can have access to the facility. Detailed locations should be studied in the town planning schemes or structure plans.

6.7.3 Types of truck stops

From the concept described in section 6.7.1, truck stops should have the following facilities as indicated in Table 6.27.

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	In general, simple maintenance services such as replacement of tires, engine oil and transmission oil, bulbs	
	garage	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	An Information Board will provide drivers with traffic information and Customs and Immigration information	
	services	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	Well-maintained tidy toilets should be provided to drivers. In some toilets, shower facilities are also to be	
	showers	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	1 Wellness centre According to the questionnaire survey conducted by the WBCG study, a wellness centre is one of the popul 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.	

Table 6.27: Facilities of truck stops

Source: JICA Study Team

Judging from the future traffic volumes and numbers of truck stops needed along the corridors, not all truck stops need all functions. Therefore, two categories of the truck stops are proposed: namely, a large-scale truck stop and small-scale truck stop. All functions are required for a large-scale truck stop, while a small-scale truck stop is equipped with some of the functions. Two different types of truck stop are defined as follows.

Large-scale truck stop: This has all functions of truck stops mentioned in the previous section. A conceptual layout is shown in Figure 6.8. It is possible to start with a small-scale truck stop with a reserved area for further expansion. When the traffic volume increases, it can be expanded to full scale. The area required for a large-scale truck stop is from 3 to 5 ha.

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Source: JICA Study Team

Figure 6.8: Sample layout of large-scale truck stop

Small-scale truck stop: This truck stop is basically only to serve as a rest station for drivers, not to provide facilities such as accommodation. Therefore, functions are limited to reduce initial and operation costs. A conceptual layout is shown in Figure 6.9. The area required is from 1.5 to 2 ha.



Source: JICA Study Team

Figure 6.9: Sample layout of small-scale truck stop

6.7.4 Organizations for development and operation of truck stops

Public private partnership (PPP) could be introduced in construction and operation of the truck stops which are jointly developed with bypass roads. A provisional structure of the company is described in Figure 6.10. 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 and bypass road development and land preparation for a truck stop.

The local authority is the landowner of the truck stop and provides land to the operating company in forms of in kind investment. The operating company leases the land to key tenants in the truck stop.

It also leases land for common facilities to the tenants. The relationship of the operating company, landowners, investors and tenants are shown in Figure 6.10.



Source: JICA Study Team

Figure 6.10: Relationship between the operating company, tenants and investors of truck stop The existing petrol stations at Omuthiya, Mururani, Divundu and Kongola could be upgraded to the truck stops. The local authorities may prepare land use plan for expansion of the existing facility, and support the upgrade if necessary.



Source: JICA Study Team

Figure 6.11: Concept of organizational structure for truck stops

Figure 6.11 shows organizational structure for truck stops. AS well as the Logistics Hub Centre, the National Coordinating Body⁵ will monitor performance of the truck stops in terms of customer

⁵ Roles, responsibilities and organization of the National Coordination Body are explained in Chapter 11.

satisfaction.

6.7.5 Procedures to develop truck stops

Development of the truck stops which are jointly developed with bypass road will be phased as follows.

- Planning phase: Further study on function, scale, location, and operating body; approval of own planning scheme.
- Business planning phase: establishment of operation company; preparation of business plan
- Construction phase: Land purchase or expropriation; development of land, major roads and utilities.
- Operation phase: Land lease to the operating company; promotion and advertisement to potential investors; selection of tenants and land lease.

6.7.6 Corridor Net: ICT service at truck stops.

The study team proposes the installation of "Corridor Net" along the major roads to provide ICT services for transporters running through the corridors and using truck stops. Corridor Net is a system to provide free Wi-Fi service to transporters (truck drivers) with information such as congestion at ports, Logistics Hub Centre, roads, parking space and restaurants in truck stops, and border posts as illustrated in Figure 6.12. Truck drivers and passengers can receive such information through information boards at information centres at the truck stops, through SMS, and smartphone network. A private subcontracting company commissioned by Ministry of Works and Transport or Ministry of Trade and Industry manage this system.



Figure 6.12: Concept of Corridor Net

6.8 Necessary actions for efficient transport network

Based on the discussions in this chapter, the following actions (programmes and projects) in Table 6.28 are needed for efficient transport network. The actions are divided into two categories. The first one is improvement of transport infrastructure by modes and conducted by MWT and parastatals. The second one is improvement of towns along the corridors, and conducted by towns with close coordination with MRLGHRD and Roads Authority.

Ke	ey elements of an International Logistics Hub	Actions (programmes/projects)
(3)	(3) Efficient	Road
Transport	 Upgrade of trunk road section of Swakopmund - Karibib. 	
	(by Mode)	 Upgrade of trunk road section of Karibib - Otjiwarongo.
	Re-introduce beneficiaries pay principle.	
	 Maintenance of trunk roads along the corridors. 	
	Railway	
	 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 by commodities. 	
		 Maintenance and upgrade of rail tracks along the corridors to comply with SADC axle load standard.

Table 6.28: Necessary actions for efficient transport network

Key elements of an International Logistics Hub	Actions (programmes/projects)
	Preparation and development of "Grootfontein - Katima Mulilo" rail link.
	 (Depends on coalmines in Botswana.) Preparation and development of "Trans-Kalahari Railway (TKR)".
	Maritime
	 Examine 5 different alternatives in expanding 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.
	Preparation and development of North Port Phase 2 (Multi purpose bulk terminal)
	 (Depends on coalmines in Botswana and TKR.) Preparation and development of North Port Phase 3 (Botswana coal terminal).
	Aviation
	 Promotion of negotiations on open sky with neighbouring countries.
	 Market research on air cargo demand at Walvis Bay Airport.
	 Market research on air cargo demand at HKIA Airport.
	Human resources development and better customer service information system.
	 F/S and implementation of air cargo projects (in accordance with the results of market research).
(4) Efficient	Towns along the Corridors
Transport	Land use-planning program.
(by Towns)	 Preparation of bypass road development projects.
	 Preparation of truck stop development projects.
	 Development of bypasses and truck stops in 7 towns.
	Development of truck stops in other towns where viable.

Source: JICA Study Team