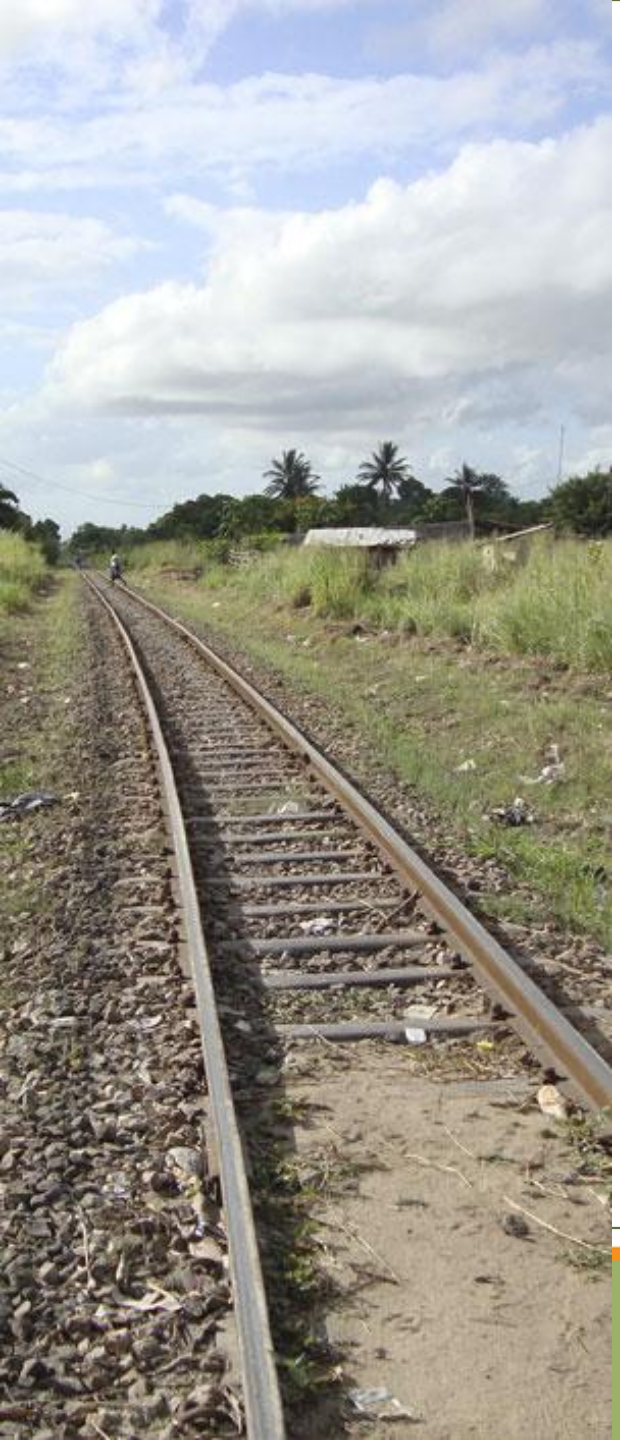

TradeMark Southern Africa

North South Corridor

Delivering an integrated and sustainable transport network

Regional Transport Roundtable

DBSA

30th October 2012

TMSA

Regional vs National Transport Infrastructure Planning

A regional approach to development and rehabilitation of surface transport infrastructure along transport corridors differs fundamentally from traditional, national approaches to project planning and implementation. It:

- Combines investment in infrastructure with programmes addressing trade facilitation and trade and transport regulation between countries;
- Takes a holistic approach to transport system planning and maintenance across national boundaries (covering rail, road and port links, border posts and the movement of goods between them);
- Works with multiple stakeholders - including Tripartite mechanisms, RECs, national governments, private sector and multilateral and bilateral donors;
- Deals with
  - The legal complexities of regional projects, e.g. defining international legal relationships, establishment of SPVs and corridor institutions, and assuring compliance;
  - Regionalizing safeguard, procurement and financial management issues;
- Seeks a progressive approach to financing that reflects both public good and commercial interests, matching different institutions' planning & financing cycles; and financial instruments and terms

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Improving Regional Multi-Modal Infrastructure - Challenges

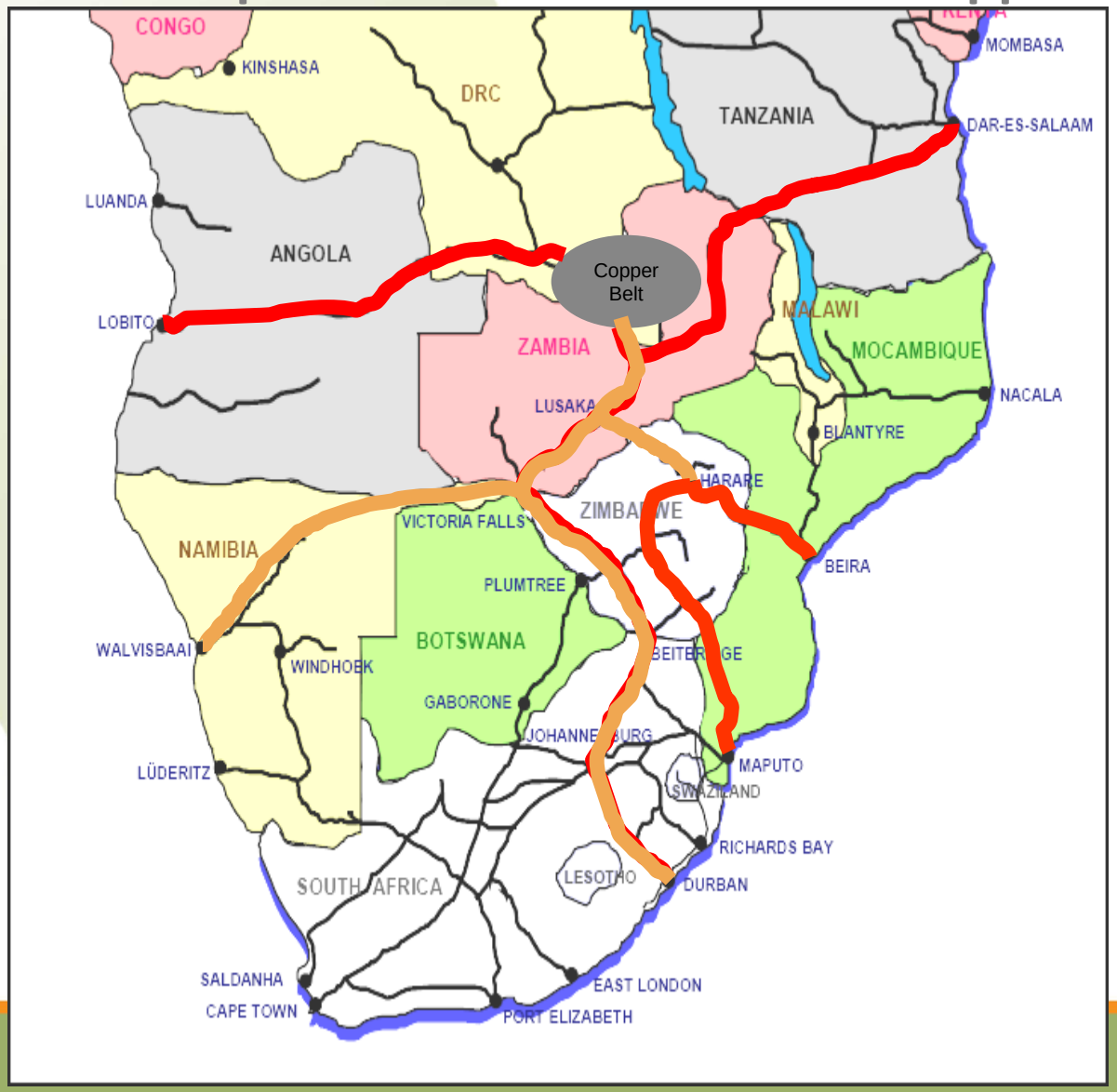
- **Prioritising** regional networks and modes of transport and national networks as a regional multi-modal network
  - At the national level determining what infrastructure should be prioritised. Criteria can be political, socio-economic or economic/financial;
  - Need for a model

- **Preparation** of projects to a pre-feasibility and bankable stage – technical personnel and financing

- **Financing** of infrastructure projects:
  - Africa's infrastructure increasingly lag behind other regions
  - Fragmented political/economic structures increase the challenge
  - Existing services are twice as expensive as in other developing regions
  - Power is by far the biggest challenge
  - There are huge inefficiencies
  - Regional infrastructure is a even bigger challenge
  - Government resources and ODA are insufficient to meet the challenge

(WB Study: Africa's infrastructure - A Time for Transformation)

Selection of Corridor Development – the Need to Prioritise
An Example from the DRC-Zambian Copperbelt to Ports



1 Rail to Lobito – line due to open in 2012
2 Rail to Dar – TAZARA
3 Rail to Durban
4 Road to Harare and Rail to Maputo
5 Road to Harare and Rail to Beira
6 Road to Durban
7 Road to Walvis Bay

There are also other road-rail combination and plans to increase the number of routes and ports.

HOW TO PRIORITISE?

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Project Preparation Stages & Activities

IDENTIFICATION AND FEASIBILITY

1. ENABLING ENVIRONMENT

The enabling environment refers to policies, laws, regulations and institutions which allow and support the development of projects.

2. PROJECT DEFINITION

Early stage concept design required prior to the full feasibility study in order to define project parameters.

3. PROJECT FEASIBILITY

If pre-feasibility suggests that the project should proceed, more detailed studies are undertaken, including organisational, financial, economic, social, technical / engineering and environmental feasibility studies.

STRUCTURE AND TRANSACTION

4. PROJECT STRUCTURING

Creating an appropriate technical and financial structure for a project in order to attract finance / the right mix of finance (e.g. from public and / or private sources)

5. TRANSACTION SUPPORT PHASE

Moving projects from planning to implementation. Detailed work is undertaken to translate plans into tangible agreements and to procure goods and services.

IMPLEMENTATION

6. IMPLEMENTATION PHASE

- Fully Prepared - Funding to be Sourced for Implementation
- Award of Works and Supervision Contract (11 months)
- Works and Supervision (1 - 2 years, depending on length of road)
- Defects Liability Period (1 year)
- Monitoring and Evaluation (4 months)

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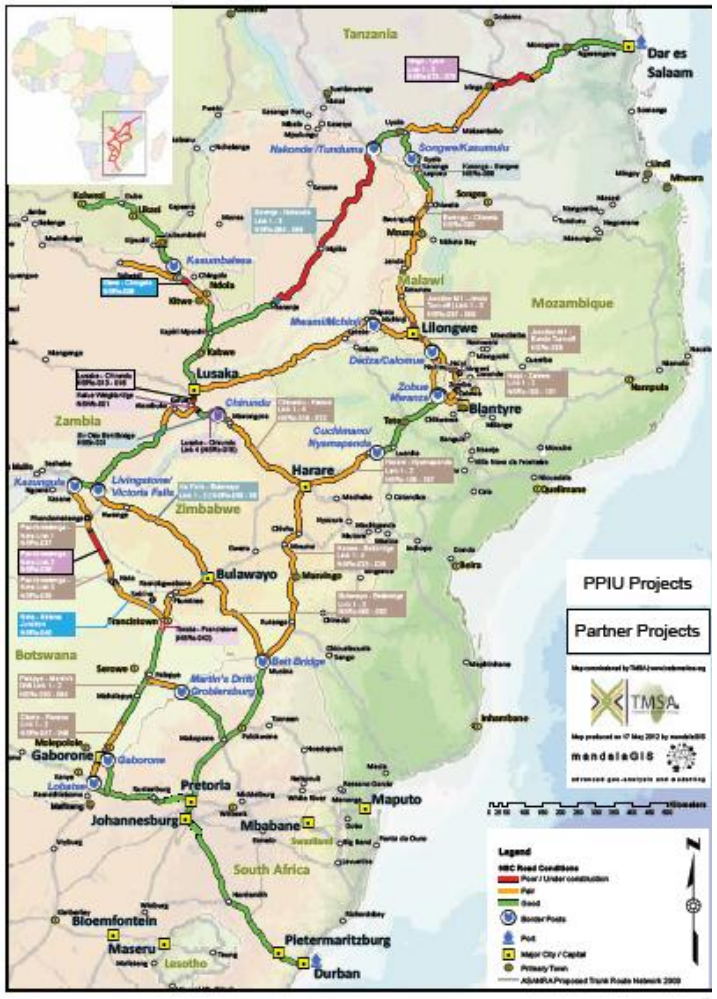
North South Corridor Road Transport Priority Projects



IDENTIFICATION AND FEASIBILITY PHASE

26 Projects | 2122,3 km

Projects are listed in table 5 (page 12 - 13).

Approx £8.6 million needed to prepare detailed designs and bidding documents for 26 projects (not including outstanding feasibility or impact studies which may be required for some projects).

Construction and supervision cost estimated at £1.19 billion.

STRUCTURE AND TRANSACTION PHASE

7 Projects | 1 090 km + bridge

NSRo-064
Serenje - Nakonde Link 1
235 km

NSRo-065
Serenje - Nakonde Link 2
164 km

NSRo-066
Serenje - Nakonde Link 3
205 km

NSRo-058 | Victoria Falls - Bulawayo Link 1
220,5 km

NSRo-059 Victoria Falls - Bulawayo Link 2
220,5 km

NSBr-001
Sir Otto Beit Bridge

NSRo-096
Karonga - Songwe Rd
45 km

Approx £4.4 million needed to prepare 7 projects up to award-of-works-and-supervision-contract stage.

Construction cost estimated at £609 million.

IMPLEMENTATION PHASE

FULLY PREPARED - FUNDING TO BE SOURCED FOR CONSTRUCTION

1 Project | 140 km

NSRo-040
Nata - Sebina Junction Rd
140 km

Approx £72,000 needed to finalise tasks in preparation for implementation.

Construction costs estimated at £78 million.

FULLY PREPARED - FUNDING AVAILABLE FOR CONSTRUCTION

2 Project | 25 km + Weighbridge

NSWb-001
Kafue Weighbridge

NSRo-018
Lusaka Chirundu Link 4
25 km

Approx £19 million to complete construction and supervision of 25 km of road and one weigh-bridge (with funding from TTA).

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Regional Railways Network - Challenges

There are broadly two schools of thought on railways:

i) Railways have had their day and are now uneconomic and no further effort or funds should be put into railways but rather the road network needs to be upgraded, including roads for heavy haul

ii) Railways can be revamped and become economically viable, but need to be run as one regional network – this would save money, ease congestion on roads and border posts and make roads safer

Arguments in favour of revamping railways:

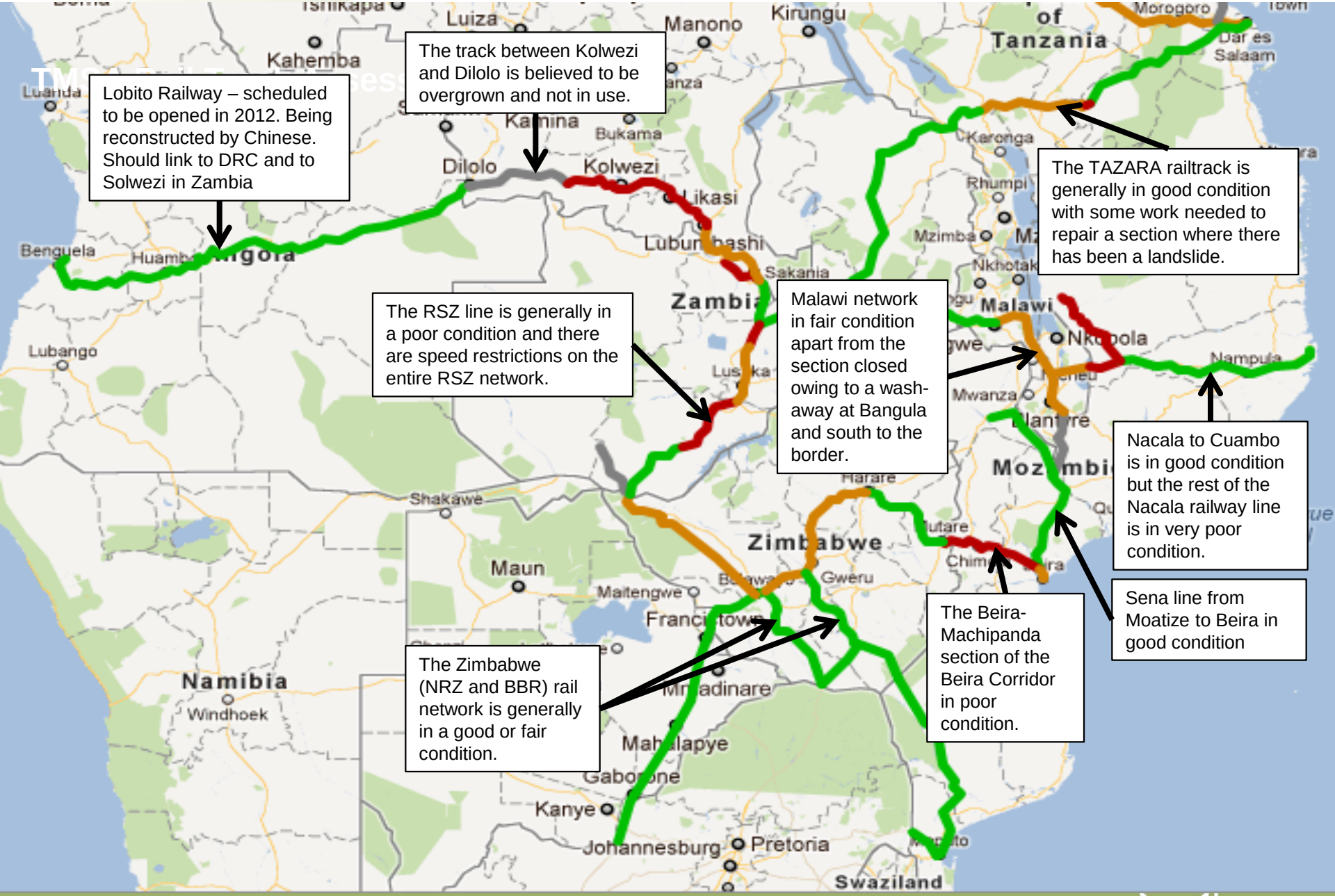
- Existing road networks cannot accommodate projected increase in freight traffic volumes over the next 10-30 years
- Rail better suited to transport large volumes of scheduled freight at a lower cost – a 40 wagon train with 20t axle loads can carry 2500t - equivalent to 80 road trucks
- Scheduled rail transport operations are cheaper, more secure and safer than road
- Rail is environmentally friendlier: fuel consumption is 25% that of road per t/km.

Work done to-date in the railway sector by TMSA includes:

-Desk based regional rail-track assessment ;

-Draft Strategic and Business plan developed for TAZARA; and

-Working with Southern Africa Railways Association (SARA) on a Regional Railways Revitalisation Initiative.



North-South Corridor Railways and Connections

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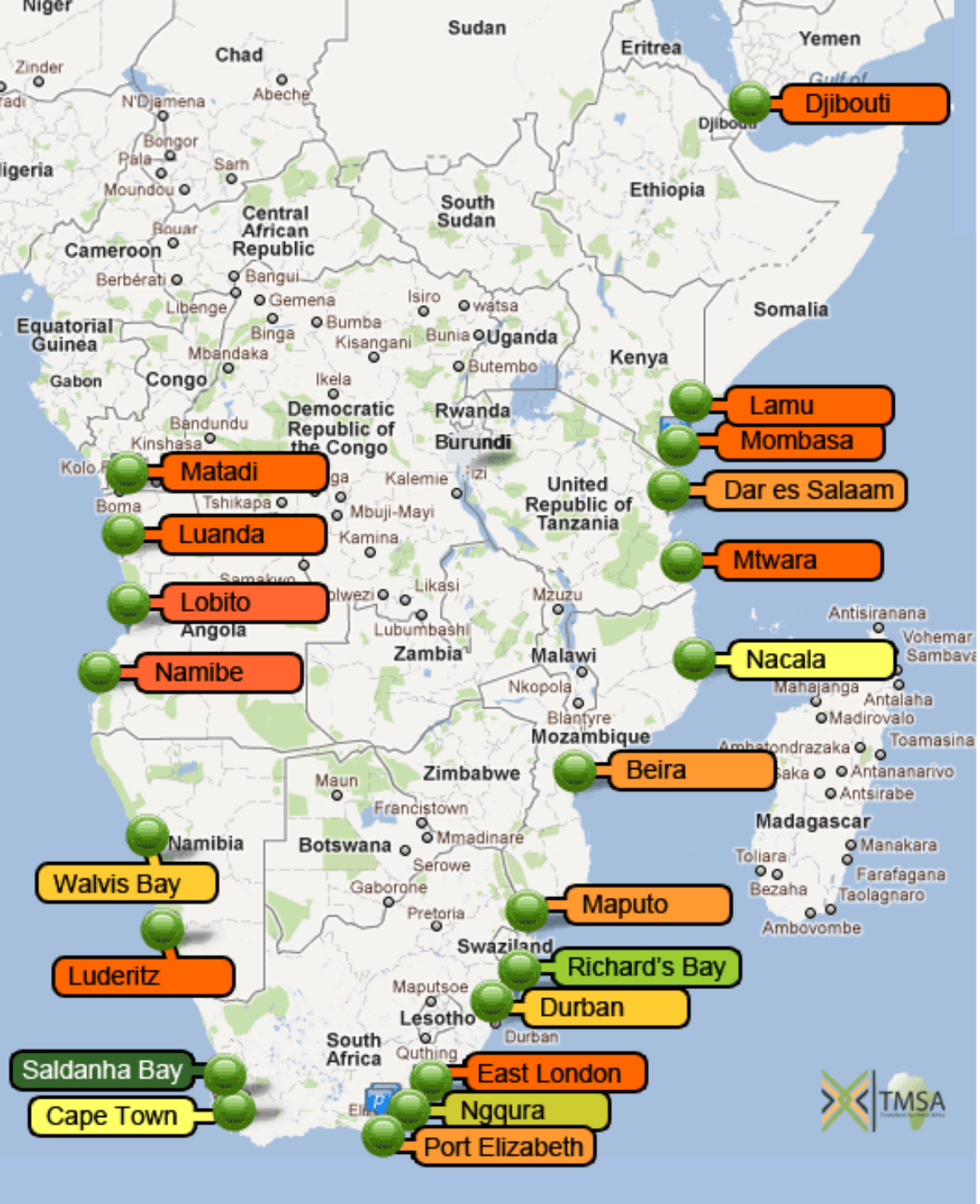
Major Sea Ports in Eastern and Southern Africa



Maximum Port Depths

- 11 m and less
- 12 m and less
- 13 m and less
- 14 m and less
- 16 m and less
- 18 m and less
- 22 m and more

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Likely Future Regional Port Developments

Port Upgrading

All regional ports, without exception, are undergoing or are planning upgrades and expansion. Works include greater depth, additional terminals, more equipment and improved access.

New Port Developments

New major ports are being planned at Techobanine (Mozambique), Tanga (Tanzania), Bagamoyo (Tanzania) and Lamu (Kenya). However these are all speculative and may not be implemented in the medium term.

More Hub Ports

With increased volume throughput, many of the regional feeder ports (e.g, Beira) will become hub ports with mostly direct calls.

Balanced Flows - More and better ports will lead to

- increased competition
- more balanced flows
- greater transport efficiency and
- lower costs and pricing.

Main New Regional Power Interconnectors

- **DRC-Zambia** – links DRC to SAPP
- **Ethiopia-Kenya** - 1,068km DC 500 kV to be commissioned late 2013. Power transfer capacity of up to 2,000 MW. Finance from AfDB, WB, ADF and governments.
- **Zambia-Tanzania-Kenya (ZTK)** – links EAPP to SAPP
- **ZiZaBoNa** (Zimbabwe, Zambia, Botswana, Namibia) will increase power trading among utilities and provide an alternative route to decongest the central transmission corridor through Zimbabwe.

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Border Posts – one-stop to no-stop?

- **Over the last few years** a number of border posts have
  - Received significant infrastructure investments in buildings, bridges and ICT systems. Others in east Africa are in the process of being upgraded; and
  - Achieved operational efficiency improvements including through pursuing approaches such as the OSBP model
- **Current trends** include
  - On the one hand, a move to increase open hours at border posts which may require more investments, e.g. in staff housing.
  - On the other hand, customs clearances increasingly taking place 'behind-the-border', reducing processing times 'at-the-border', and which will obviate the need for longer border hours and infrastructure investments.
- **Future question**
  - Continued infrastructure investments at border posts is likely to entrench processing at border posts, and perpetuate long transit times and high cross-border transaction costs.

TMSA focuses on

- **4 major NSC border posts**
  - **Beitbridge** (SA /Zimbabwe)
  - **Chirundu** (Zimbabwe/Zambia)
  - **Kasumbalesa** (Zambia/DRC)
  - **Nakonde-Tunduma** (Zambia/Tanzania)

and

- **less on 3 smaller ones**
  - **Forbes/Machipanda** (Mozambique/Zimbabwe)
  - **Nyamapanda/Cuchimano** (Malawi/Zambia)
  - **Plumtree/ Ramokgwebana** (Zimbabwe/Botswana)

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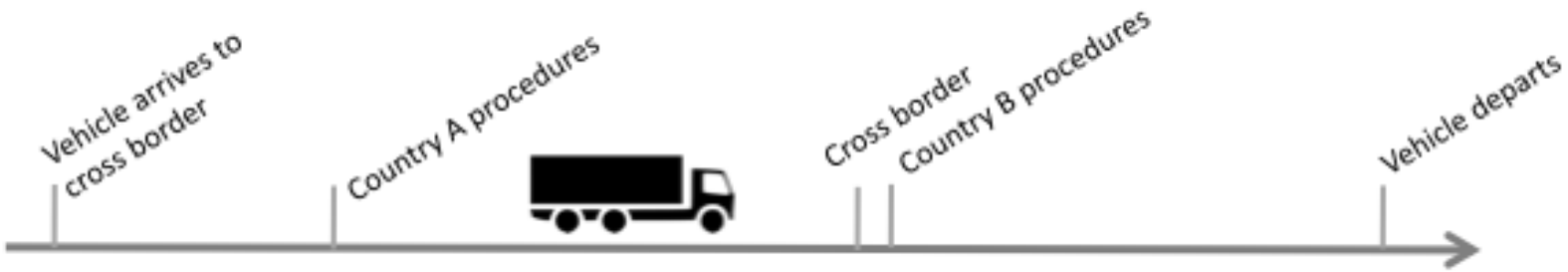
Border Post Performance Monitoring

BORDER

	Country A Border Post		Country B Border Post	
Vehicle arrives and joins queue to cross border (if any)	Time at Clearing Agent	Time at Customs	Time at Clearing Agent	Time at Customs
	Time for Payments of other fees	Time at Immigration	Time for Payments of other fees	Time at Immigration
	Time at other Border Agencies	Other Time	Time at other Border Agencies	Other Time



Total Border Crossing Time

Vehicle X moving from Country A to Country B

From the time a vehicle physically arrives at the exporting country border post and joins the queue to cross the border (if there is any) to the time the vehicle leaves the importing country border post gate. This includes all activities at the border posts of both countries, i.e. queuing time, time at clearing agent, time at immigration, time at customs, payment of duties, etc. It excludes possible driver idle time before joining the queue (if any) to cross the border.

Border Post Monitoring Methodology

1. GPS MONITORING

For tracking physical movement of a vehicle (ie. time spent in the border area)

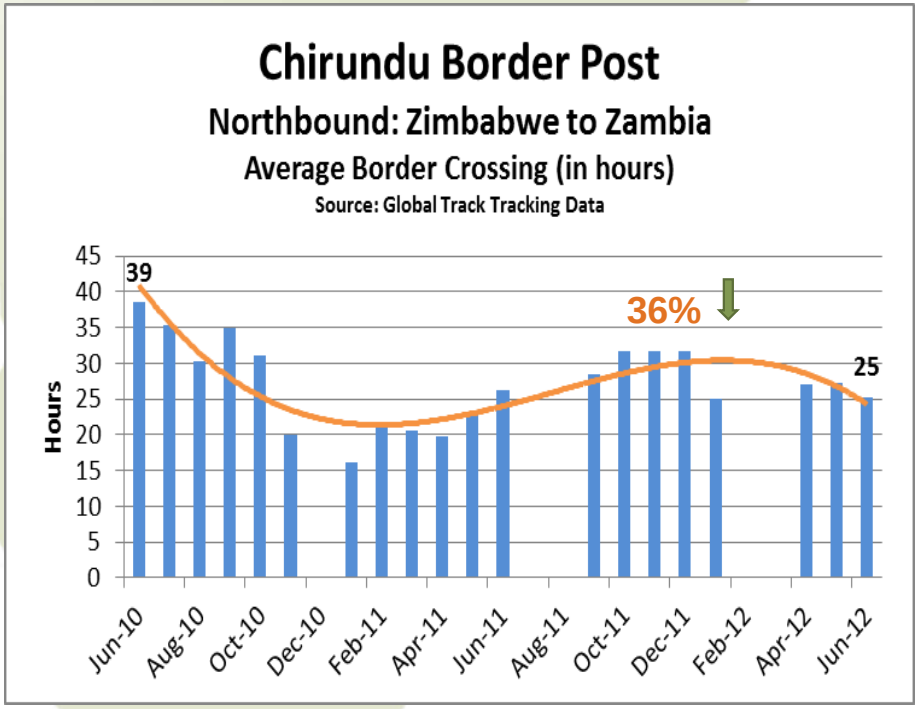
2. PHYSICAL MONITORING

For detailed time studies measuring discreet processing times by various border agencies

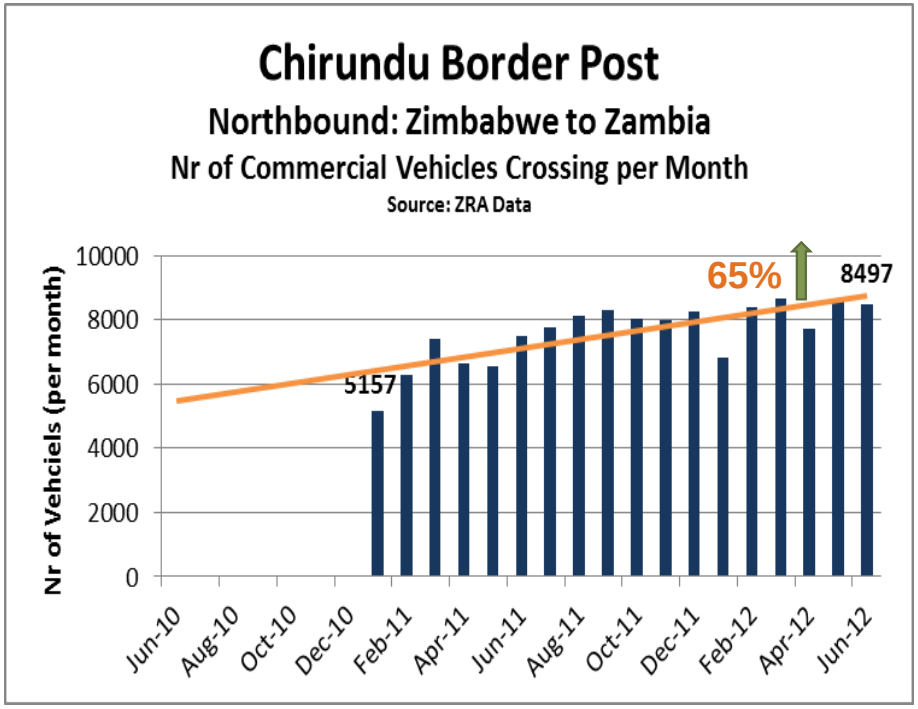
Border Monitoring with GPS – Results

June 2010 – June 2012

Border Crossing Time reduced by >$^1/_3$



Nr of Vehicles increased by $^2/_3$



Note: Before December 2009, average border crossing time was between 72 and 120 hours

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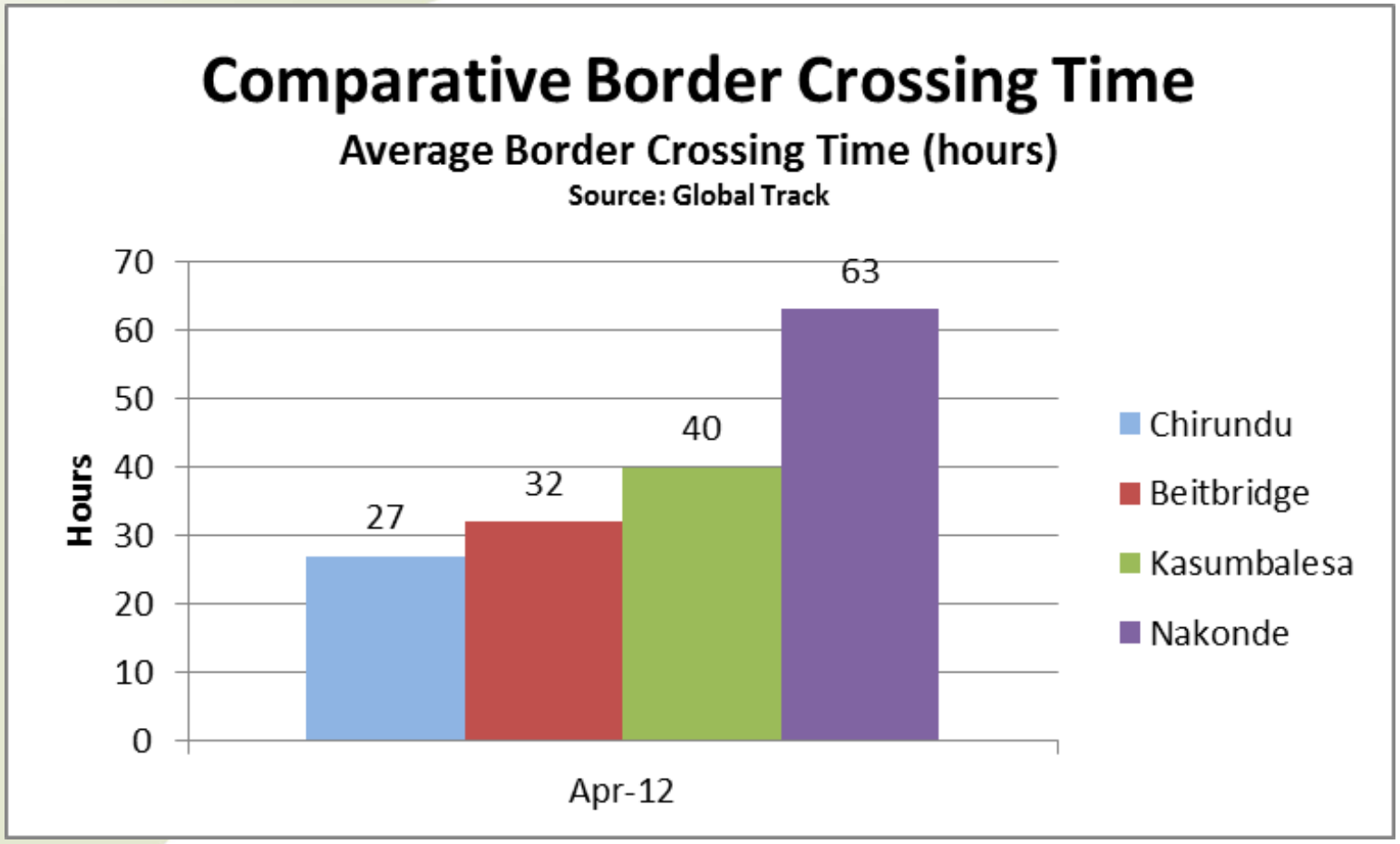
Border Monitoring with GPS – Results

4 Border Posts - April 2012



Note: Chirundu average border crossing time down to 25 hours in June 2012

Modelling Infrastructure

TMSA in partnership with CSIR is using a modelling tool to assist with the prioritisation of infrastructure and procedural interventions along regional trade corridors in Southern and Eastern Africa.

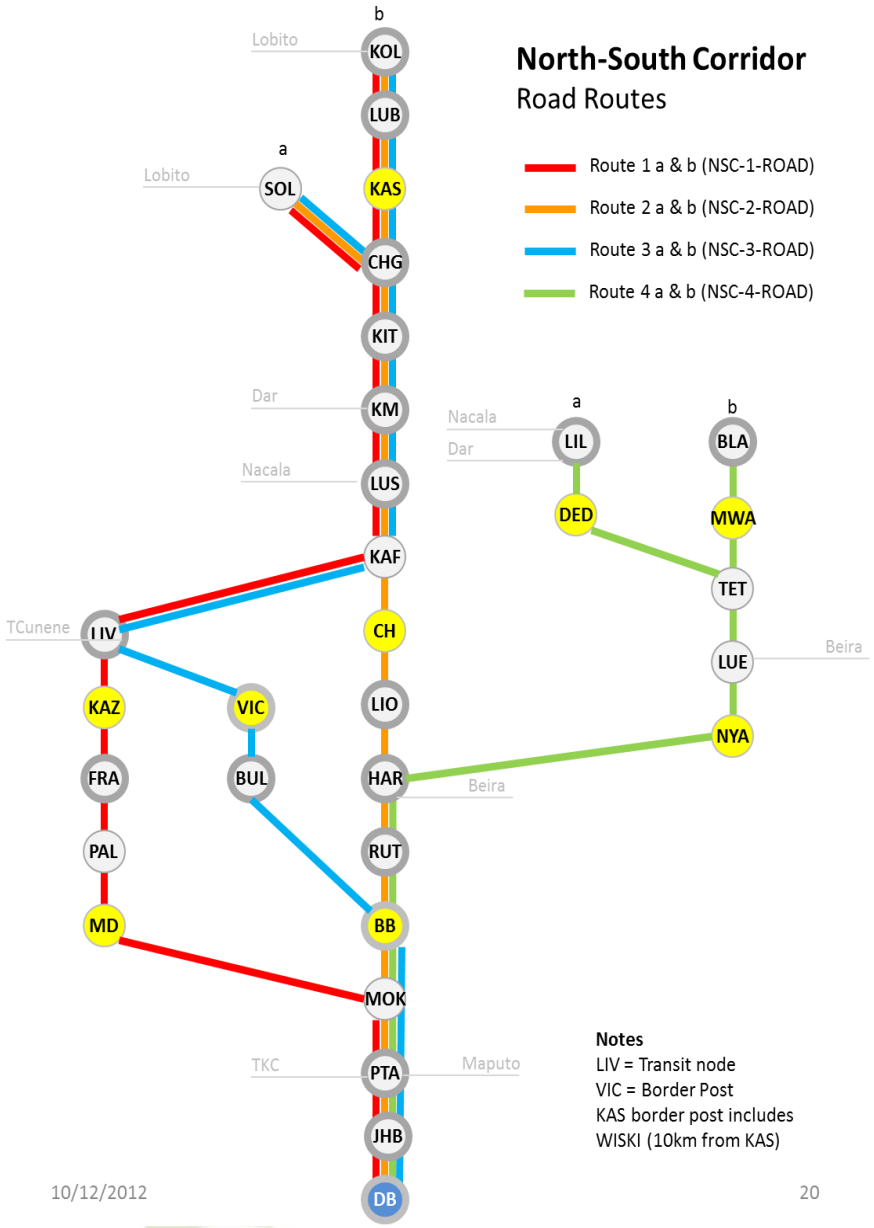
This dynamic, discrete-event, stochastic simulation modelling will

- be used to model the movement of goods by multiple transport modes along regional trade corridors

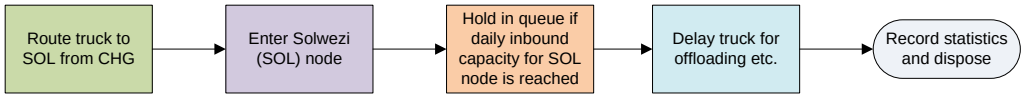
- allow for evaluation of multiple scenarios on corridor performance (e.g. increasing the trade volumes, reducing delays along routes, switching certain volumes to rail, switching freight volumes between corridors and ports, etc.).

- allow for ‘stress-testing’ corridors to determine resultant bottlenecks and priority projects to alleviate such bottlenecks. For example, as traffic increases particular weighbridges along the corridor may be identified as the biggest problem and projects to link these into the corridor weighbridge network would become priority projects

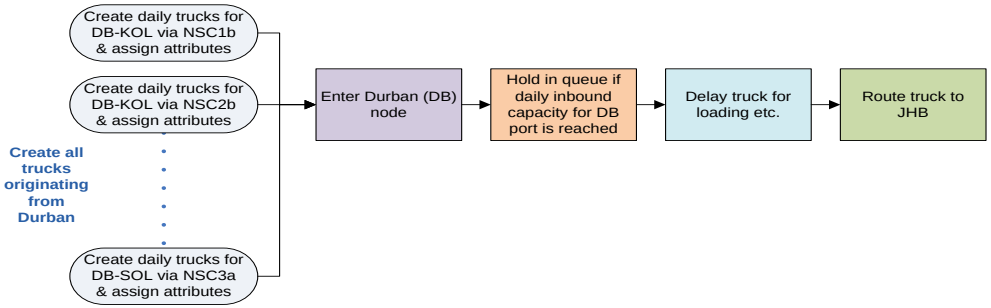
Modelling Infrastructure



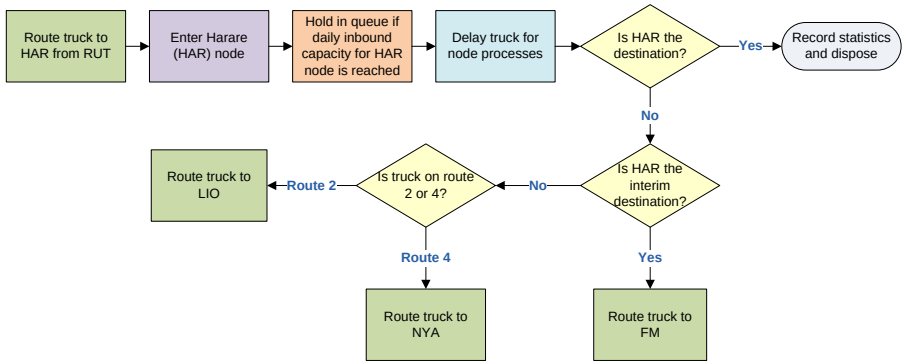
Example of Model Logic for Destination Node (single corridor): Road



Example of Model Logic for Origin Node: Road

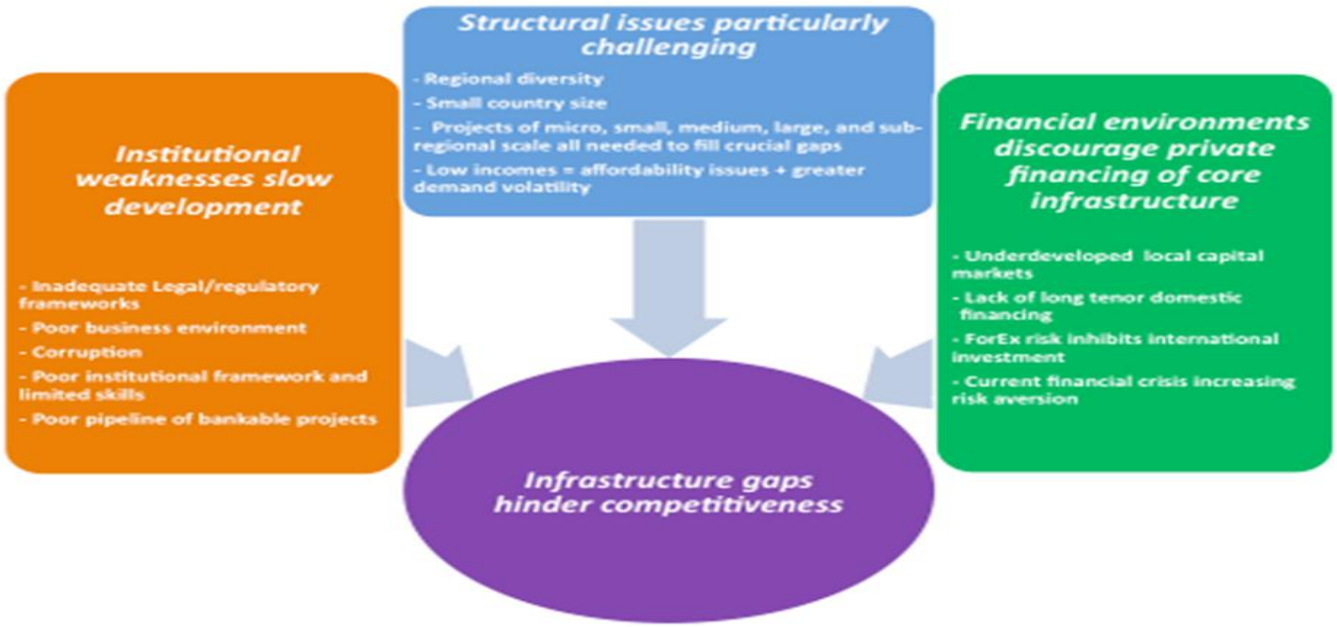


Example of Model Logic for Corridor Switch: Road



Financing Infrastructure

The Tripartite region is facing a number of **mutually reinforcing economic, financial, institutional and technical constraints,** which are affecting infrastructure finance from the private sector



TMSA is preparing a discussion document which establishes transport infrastructure requirements of the Tripartite, and the potential sources of finance, financing instruments and mechanisms, supplemented by specific case studies from the region.

Estimating the Carbon Footprint of Road Projects

TMSA is currently endeavouring to estimate the carbon footprint of road projects to:

- Determine Greenhouse Gas (GHG) emission status of NSC road projects
- Improve cost-benefit analyses of NSC transport projects and modes
- Identify strategies to reduce these projects' harmful effects on the environment and human health, particularly as trade and freight flows expand (e.g. by switching to, or mixing, alternative transport modes)
- Determine mitigation options for the intensity of carbon emissions for future transport projects

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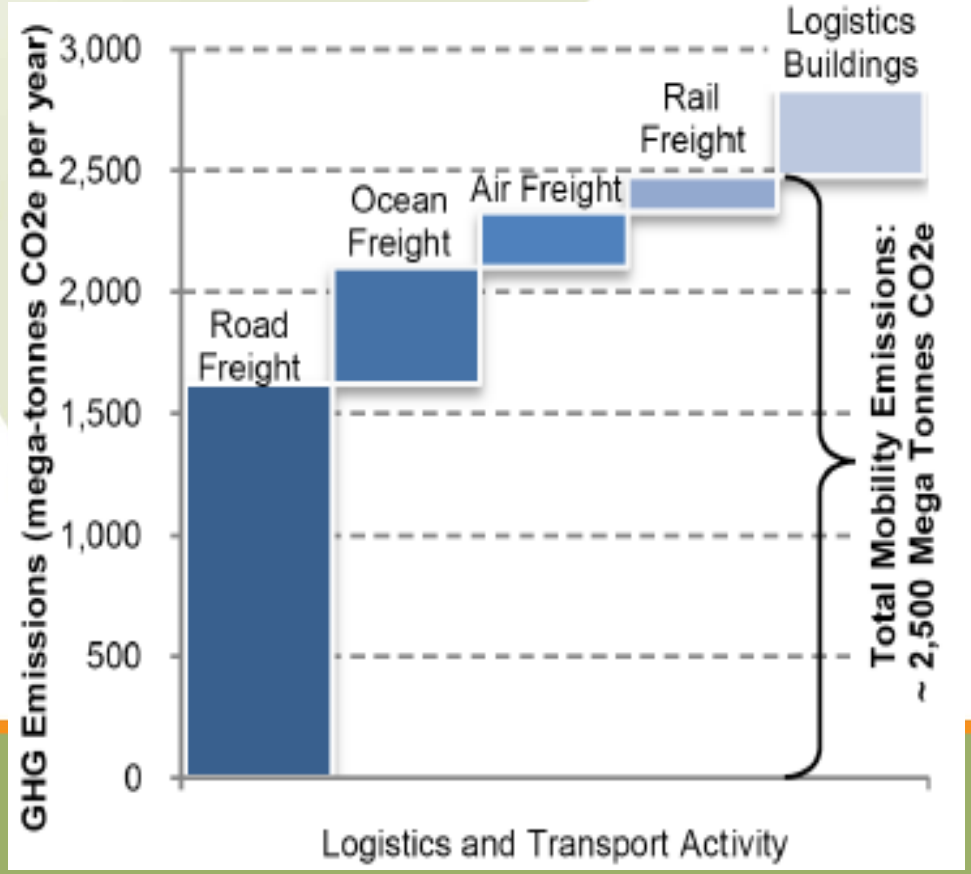
Estimating the Carbon Footprint of Road Projects

- **Transport** is responsible for approximately 25% of global CO_2 emissions and 15% of global GHG emissions from fossil fuel burning, with the road sector largely dominating
- **Global transport CO_2 emissions have grown** by 45% from 1990-2007 and are expected to grow by approximately 40% from 2007-2030.



- **Logistics** account for 2,800 mega-tonnes CO_2e per year or 5.6% of total GHG emissions.
- **Road freight logistics** are the largest contributor to GHG emissions at approximately 1,600 mega-tonnes CO_2e per year or 3.2% of total GHG emissions.

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Estimating the Carbon Footprint of Road Projects

TMSA's methodology

- **The Carbon footprint of a road** can be defined as the total amount of carbon dioxide (CO_2) and other greenhouse gases (GHG), such as methane (CH_4) and nitrous oxide (N_2O), emitted directly & indirectly over the full life-cycle of a road (i.e. over construction, operations, and maintenance phases).

- **Most studies** focus on CO2 (primary GHG) and the operational phase of roads (which accounts for 93% of GHG emissions).

- **TMSA, for better results**, will cover
  - All life cycle phases of a road – maintenance, rehabilitation and operational phases
  - All GHG - CO_2 , CH_4 and N_2O, emitted directly & indirectly over the full life-cycle of a road.

TMSA's work is already contributing to lowering GHG emission along NSC through

- **Improving the conditions of roads;**
- **Alleviating congestions at borders (OSBPs & IBM);**
- **Designing more efficient logistics systems; and**
- **Promoting the use of alternative modes of transport.**

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Thank You

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