STRUCTURING MARITIME SUPPLY CHAINS FOR HIGHER EFFICIENCY

By

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2 February 2006

What makes this topic important?

- Development of South Africa's economy will continue to depend on foreign earnings for many years to come
- South Africa's maritime supply chains must be structured efficiently in order to develop the country's competitiveness in global markets
- Competitors in global markets are giving increasing attention to the development of seamless cost-efficient supply chains
- South Africa needs to do like-wise

Features of maritime supply chains

- The marine link predominates
- All maritime supply chains are intermodal chains
- Most maritime supply chains have multi-national participants
- Maritime supply chains compete internationally

Requirements for seamless maritime supply chains

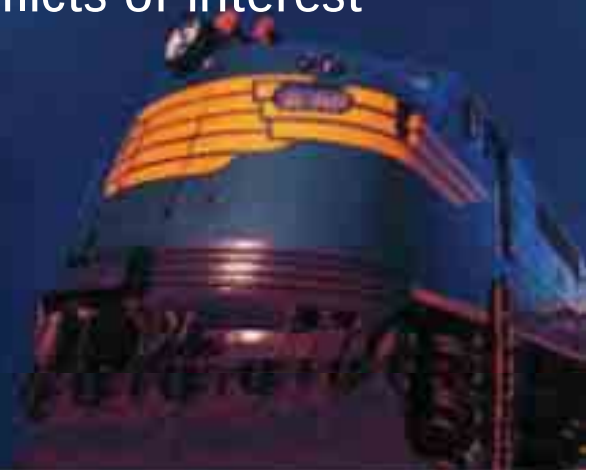
- A determinant of competitive success in global markets is the extent of link integration
- Link integration requires chain leadership

Basic problems encountered

Cost structures, business policies and the social obligations of the firms/enterprises providing the links in many of South African maritime supply chains preclude the construction of supply chains integrated to serve a single purpose.

Yet such integrated supply chains are potentially the most competitive in global markets.

Second best maritime supply chain structures involving public-private participation schemes can be devised, but the conflicts of interest are then difficult to resolve.



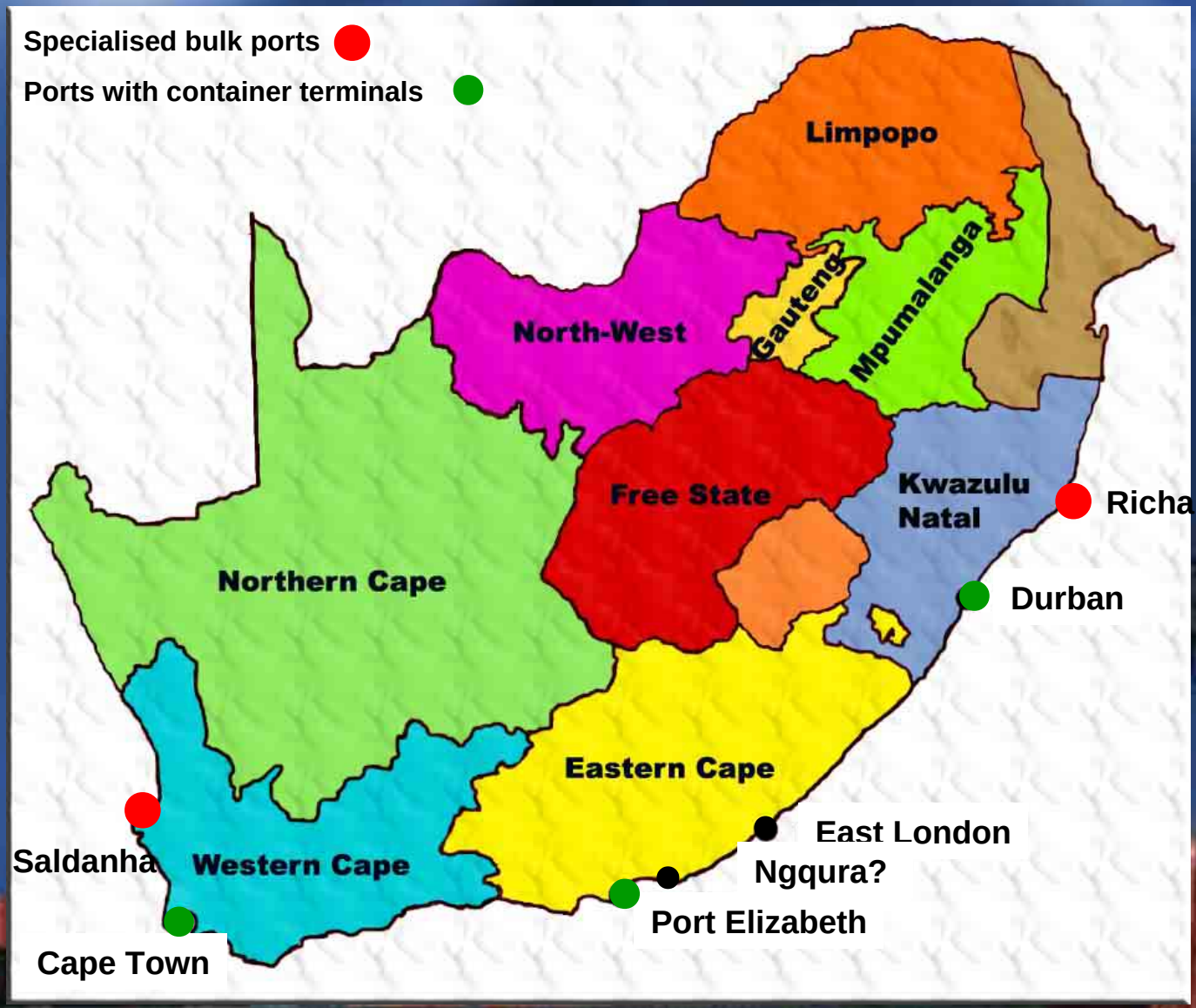
Examples of South African maritime supply chains

- Coal line (Mpumulanga - Richards Bay) – foreign importers
- Orex (Sishen – Saldanha) – foreign importers
- Containers (Imports and exports generally)
- Fresh fruit (Growers–Cape Town–European market)
- Automotive cargo
  - Imports (Cape Town – Rosslyn) [BMW] – from Europe
  - Imports (Port Elizabeth – Rosslyn) [Nissan] – from Europe
  - Exports (Manufacturers – Durban/East London) – foreign plants

Specialised links in maritime supply chains

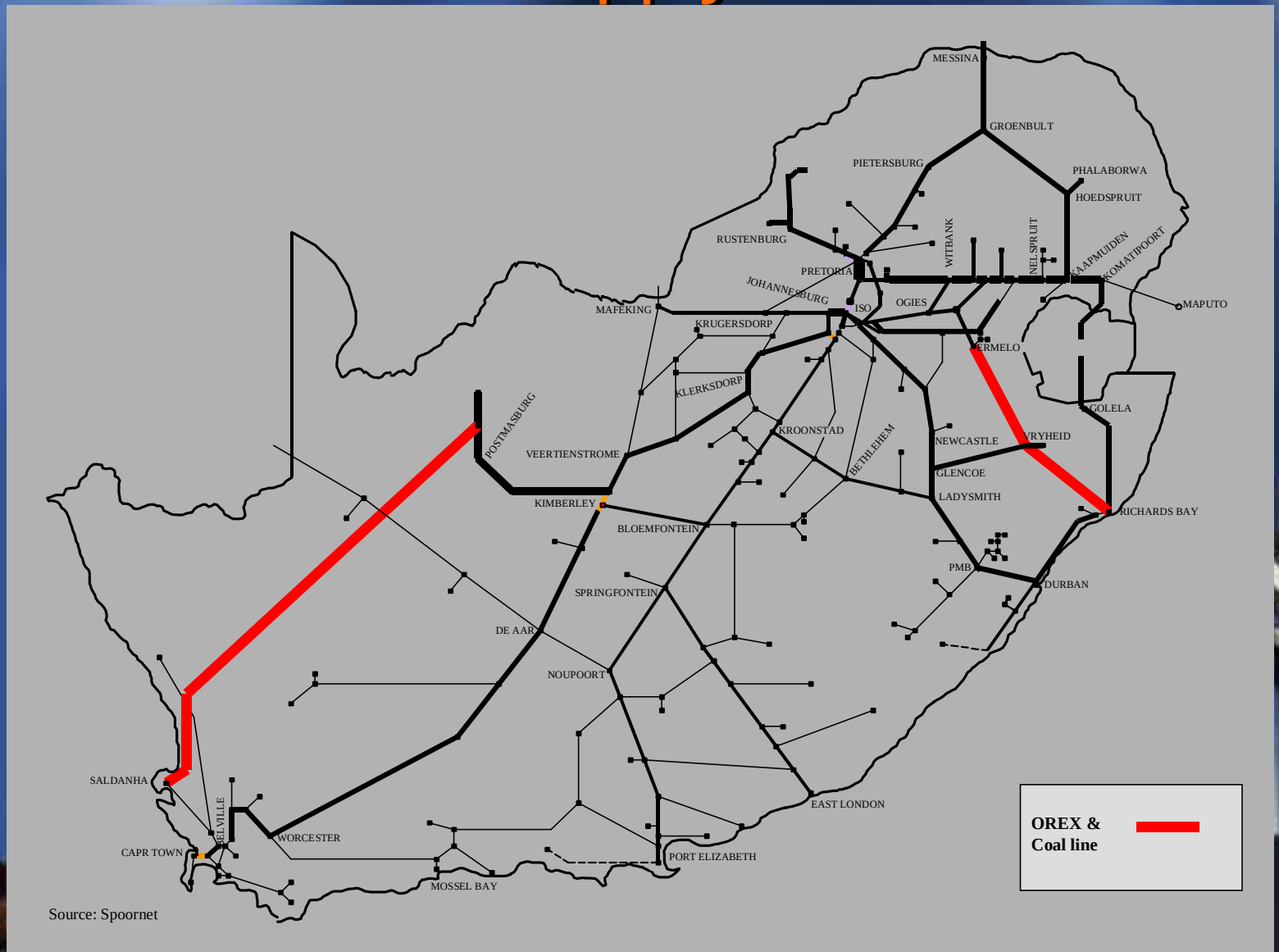
- Bulk export supply chains depend upon specialised railways as well as specialised port terminals with deep water berths
- Maritime supply chains moving containerised goods require specialised port terminals in order to function efficiently

Bulk and container ports of South Africa



Source: National Ports Authority of South Africa,2005

Specialised rail links in South African bulk supply chains



Source: Spoornet, 2005.

Major South African bulk supply chains

- OREX: Sishen Iron Ore Mine – Port of Saldanha
- Coal line: Mpumalanga coal mines – Ermelo – Port of Richards Bay

Coal supply chain

Current annual tonnage: 67 547 591

Elements	Mines	Coal line	Coal Terminal	Port of Richards Bay
Ownership and operation	Private	Public	Private	Public
Statistics/ Description	44	Length: 250km Trains: 200 wagons 20 800gt 2.5km long	Loading appliance plus covered and bin storage	Draught: -19m Ships: 150 000dwt

Promised project investment by Transnet = R4.79 billion

Port of Richards Bay

- South Africa's largest port
- Handles more than 57% of South Africa's seaborne cargo
- 80 955 275 million tonnes in 2002/03
    - 77 891 692 mt bulk
    - 3 063 583 mt breakbulk
    - 4 464 teus
  - Total vessel calls = 3 902

Iron ore supply chain

Current annual tonnage: 24 970 561

Elements	Mine	OREX	Iron ore terminal	Port of Saldanha
Ownership and operation	Private	Public	Public/Private	Public
Statistics/ Description	One	Length: 863km Train: 211-216 wagons 21 600gt 2.3km long	Tippler Stock pile Conveyor belt Sampling plant	One jetty Draught: -21.5m Ships: 180 000dwt

Promised project investment by Transnet = R1.83 billion
Promised project investment by Kumba = R2.96 billion

Port of Saldanha

- Deepest and largest natural port of South Africa
- 30 927 153 million tonnes in 2002/03
  - 28 697 530 mt bulk
  - 2 229 623 mt breakbulk
- Total vessel calls = 432

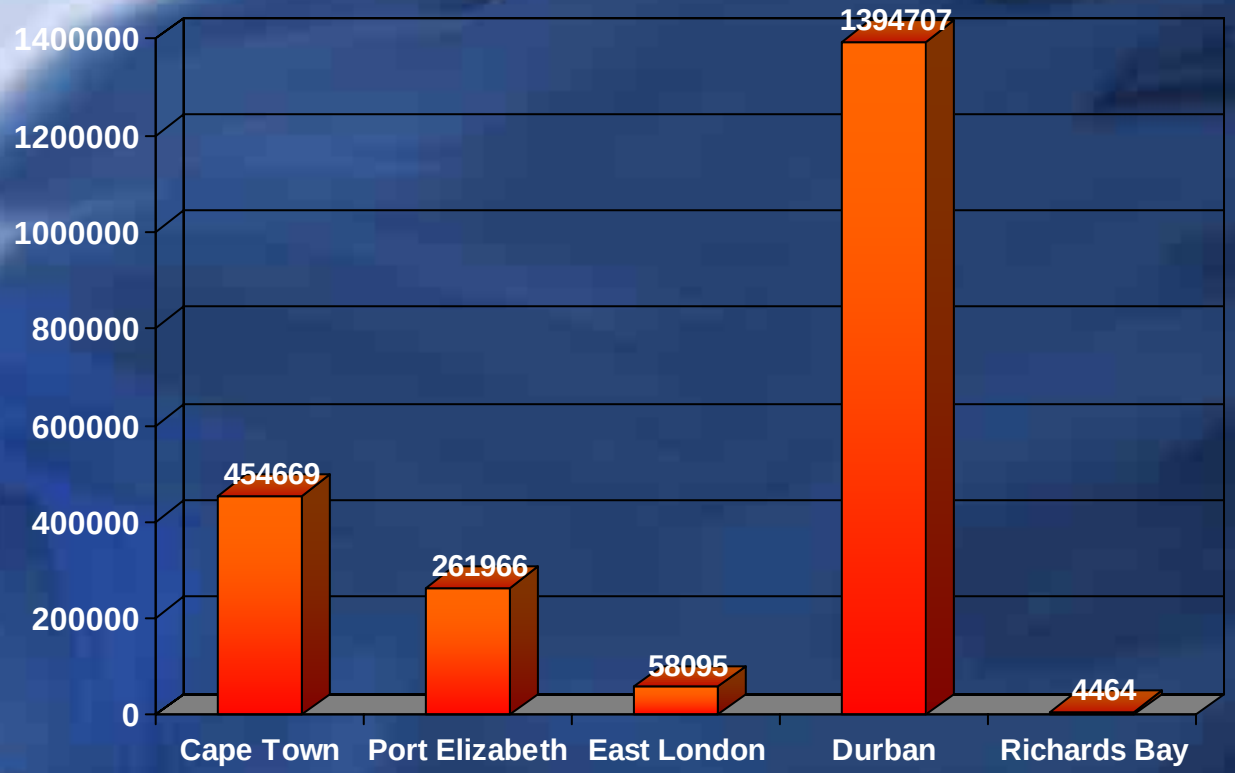
South African container supply chains

Many containers move between origin and destination in a chain of supply tracked by the liner companies and other link operators

BUT

Few of those chains are managed or controlled as entities

Containers handled in SA ports
2002/03



Source: National Ports Authority of South Africa, 2004.

Examples of controlled maritime supply chains

- Fresh fruit exports for just-in-time delivery to European markets
- Automotive imports by BMW and Nissan for just-in-time delivery to factories

Fresh fruit supply chain

- Unique feature = one body controls chain
- Efficiency is key
- Mainly Port of Cape Town
- Just-in-time of cardinal importance

Automotive supply chains

- Just-in-time import supply chains
  - BMW (Cape Town to Rosslyn)
  - Nissan (Port Elizabeth to Rosslyn)
- Vehicle exports through port car parks
  - Distribution systems rather than controlled supply chains

Marine links in bulk supply chains

- Bulk cargo owners export f.o.b.
- Therefore foreign importers control marine link

Marine links in container supply chains

- Virtually all liner companies carrying SA imports and exports are foreign-owned
- All the ships involved are foreign-flagged

Impediments to structural development of South African maritime supply chains

- State stakeholding in maritime supply chains
- The Government is the sole supplier of port and rail services
- Thus cargo handling involves three separately-managed links
- Chronic lack of investment by the State in rail and port infrastructure and superstructure

Alternatives for structural development

- Privatisation of State's rail and port assets
  - No longer an option in South Africa
- Public-private partnerships
  - Ownership of land used for ports, railways and roads and port infrastructure will remain that of the State
  - No cherry picking of State assets by the private sector

Models for bulk supply chains

Link description	Existing structures				Alternative structures			
	Model 1a		Model 1b		Model 2		Model 3	
	Asset owners	Operators[1)]	Asset owners	Operators[1)]	Asset owners	Operators[1)]	Asset owners	Operators[1)]
Mines:								
land	Private firms	Private firms	Private firms	Private firms	PPP[2)]	PPP	Private firms	Private firms
loading appliances	Private firms	Private firms	Private firms	Private firms	PPP	PPP	Private firms	Private firms
Railway:								
land	Transnet	Spoornet	Transnet	Spoornet	Transnet	Transnet	Private firms	Private firms
infrastructure	Transnet	Spoornet	Transnet	Spoornet	PPP	PPP	Private firms	Private firms
equipment	Transnet	Spoornet	Transnet	Spoornet	PPP	PPP	Private firms	Private firms
Port:								
land	NPA[3)]	NPA	NPA	NPA	NPA	NPA	NPA	NPA
terminal	NPA	SAPO[4)]	Private firms	Private firms	PPP	PPP	Private firms	Private firms
infrastructure	NPA	NPA	NPA	NPA	NPA	NPA[5)]	NPA	Private firms
Ships	Shipowner	Foreign importer	Shipowner	Foreign importer	Shipowner	PPP[7)]	Shipowner	Private firms[11)]
Ancillary shipping services[6)]	Private firms	Private firms	Private firms	Private firms	PPP	PPP	Private firms	Private firms

Source: Compiled by the author for the purpose of the study.

Legend:	
State enterprise	
Private enterprise*	
Foreign participant	

*Public-private partnerships are regarded as private enterprise

Notes:

Model 1a: Sishen - Saldanha iron ore chain

Model 1b: Mpumulanga - Richards Bay Coal line

Model 2: Proposed link integration through public-private partnerships

Model 3: Privatisation (in practice)

1) Operators include managers in this table

2) PPP: Public-private partnership

3) Presently Transnet, of which the NPA is a division - in terms of Act 12/2005, the NPA will eventually become an autonomous body

4) SAPO: South African Port Operations, division of Transnet

5) Marine services (i.e.tug assistance, pilotage, mooring) - could be provided by private undertakings

6) Ships agency, chandling, forwarding, documentation, shiprepair

7) As charterers

Description of models

- Model 2
  - Link integration through public-private partnerships
  - Operation by PPP from mine to the loading of cargo on board ship
  - Excludes only ownership of rail and port land and port infrastructure
  - Thus, PPP operates entire chain with Transnet and NPA as third party service providers only as owners of land and infrastructure
  - Opportunity for BEE enterprises to get involved in basic port ativities

- Model 3
  - Privatisation – not acceptable in South Africa

Models for container supply chains

Link description	Existing structures				Alternative structure	
	Model 1a		Model 1b		Model 2	
	Asset owners	Operators[1]	Asset owners	Operators[1]	Asset owners	Operators[1]
Consignors:						
suppliers	Private firms	Private firms	Private firms	Private firms	Private firms	Private firms
forwarders	Private firms	Private firms	Marketeer	Marketeer	LSC	LSC
Inland terminal:			n.a.	n.a.		
land	Transnet	Transnet			LSC	LSC
infrastructure	Transnet	SAPO[2]			LSC	LSC
Railway:			n.a.	n.a.		
land	Transnet	Transnet			Transnet	Transnet
infrastructure	Transnet	Spoornet			PPP[3]	PPP
equipment	Transnet	Spoornet			LSC	LSC
Road:						
infrastructure	State	Government bodies[4]	State	Government bodies	State	Government bodies
vehicles	Private firms	Private firms	Private firms	Marketeer[5]	LSC	LSC
Port:						
land	NPA[6]	NPA	NPA	NPA	NPA	NPA
terminal	NPA	SAPO	NPA	Marketeer	NPA	LSC
infrastructure	NPA	NPA	NPA	NPA	NPA	NPA[7]
Ships	LSC	LSC	LSC	Marketeer[8]	LSC	LSC
				LSC[9]		
Ancillary shipping services[10]	Private firms	Private firms	Private firms	Private firms	LSC	LSC

Source: Compiled by the author for the purpose of the study.

Notes:

Model 1a: City Deep - Durban corridor (example)

Model 1b: Fresh fruit supply chain

Model 2: Liner shipping company (LSC), as chain leader

1) Operators include managers in this table

2) SAPO: South African Port Operations, division of Transnet

3) PPP: Public-private partnership between Transnet and LSC

4) or toll road concessionares

5) Hire

6) NPA: Presently Transnet, of which the NPA is a division - in terms of Act 12/2005 the NPA will eventually become an autonomous body

7) Marine services (i.e.tug assistance, pilotage, mooring) - could be provided by private undertakings

8) Charterer of refrigerated ships

9) Cargo shipped on liners

10) Ships agency, chandling, forwarding, documentation, shiprepair

Legend:
State enterprise
Private enterprise*
Foreign LSC

*Includes PPP's and other private enterprises

Conclusions

- Some conclusions concern:
  - Supply chain structures
  - Public participation in supply chain development
  - Chain leadership
  - Efficient models

Supply chain structures

- None of South Africa's maritime supply chains are integrated supply chains – no unified management or overall control of links exists

Public participation

- South Africa's bulk export supply chains depend largely upon investment by Transnet in infrastructure and upon the management of Transnet of the rail links

- South Africa's container supply chains of imports and exports all depend upon investment by Transnet in infrastructure and handling equipment, and upon its handling of containers in the ports.

Chain leadership

- With the exception of the fruit export supply chain, none of South Africa's maritime supply chains has unified leadership

Efficient supply chain models

- The competitive success of international supply chains depends largely upon investment co-ordination and managerial integration of the links

Overall conclusion

The South African Government as the major link provider in the maritime supply chains (on which the export perfomance of the economy depends) needs urgently to promote supply chain integration through public-private participation schemes or the disposal of state transport assets to maritime supply chain developers.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