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100
1918 · 2018

forward together · saam vorentoe · masiye phambili

Unpacking freight emissions and mitigation opportunities in sub-Saharan Africa

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Zane Simpson

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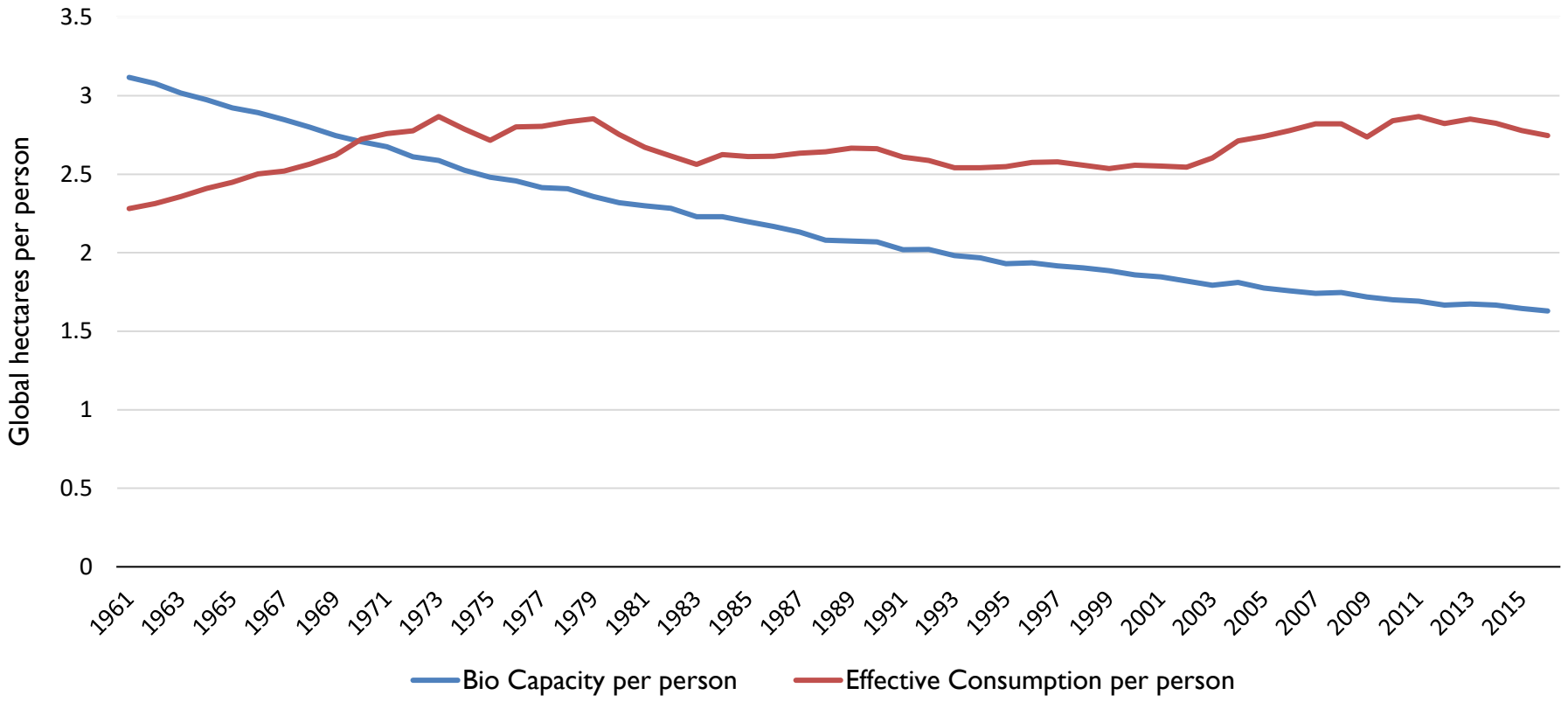
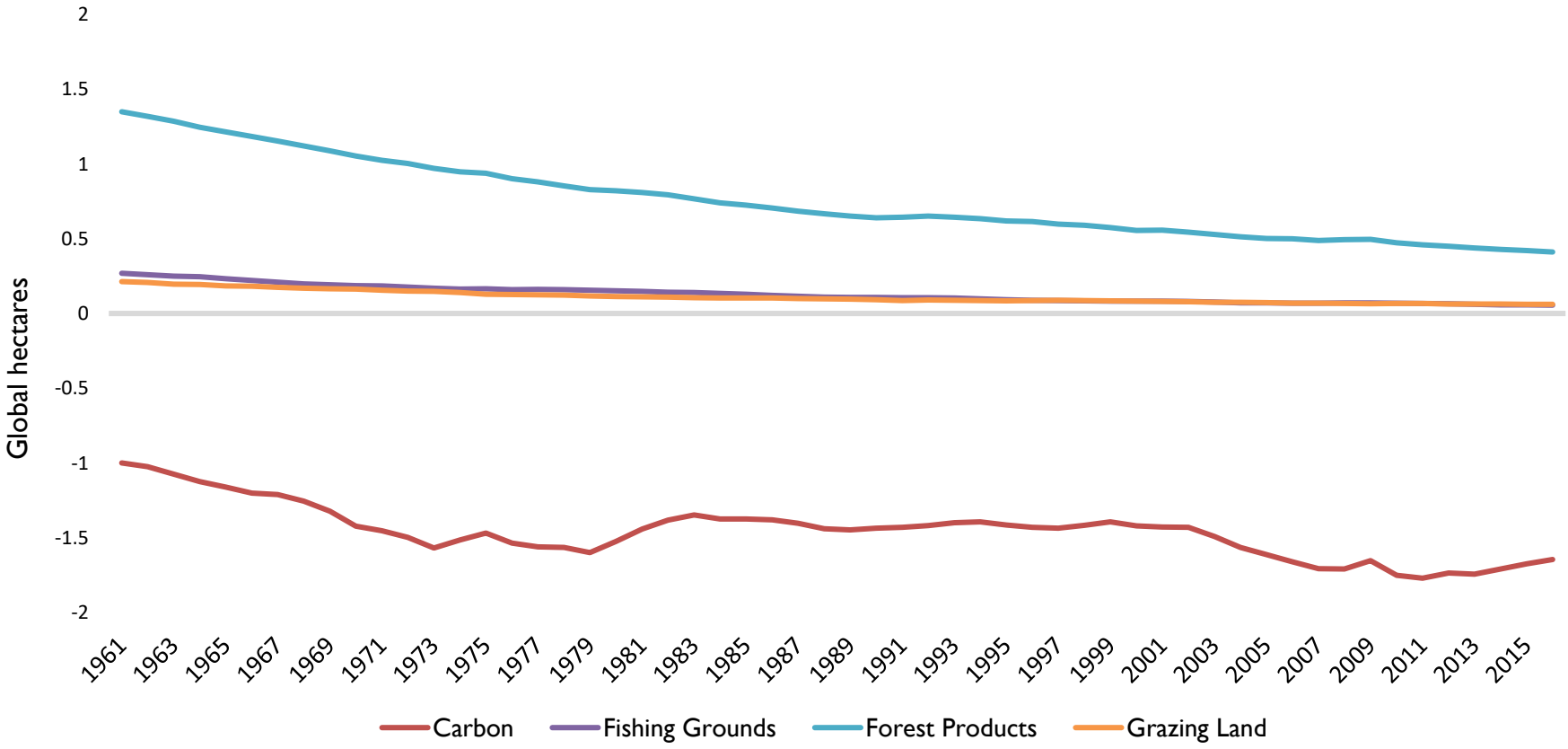
Global Capacity vs Consumption



We "consumed" 2019 in July

Source: Global Footprint Network, 2018 National Footprint Accounts

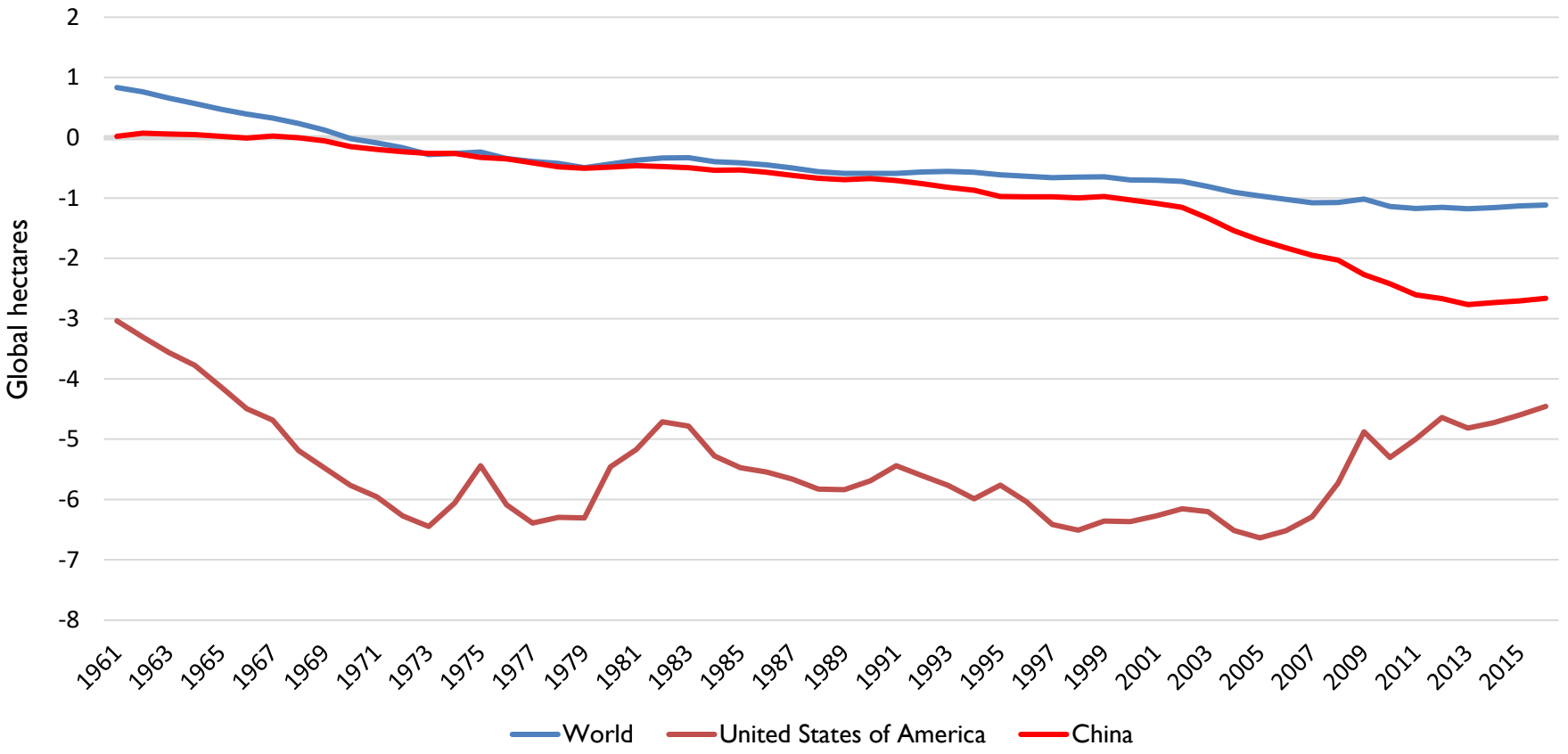
Global deficit per element



Built –up land and cropland are also measured but there are no deficit

Source: Global Footprint Network, 2019 National Footprint Accounts

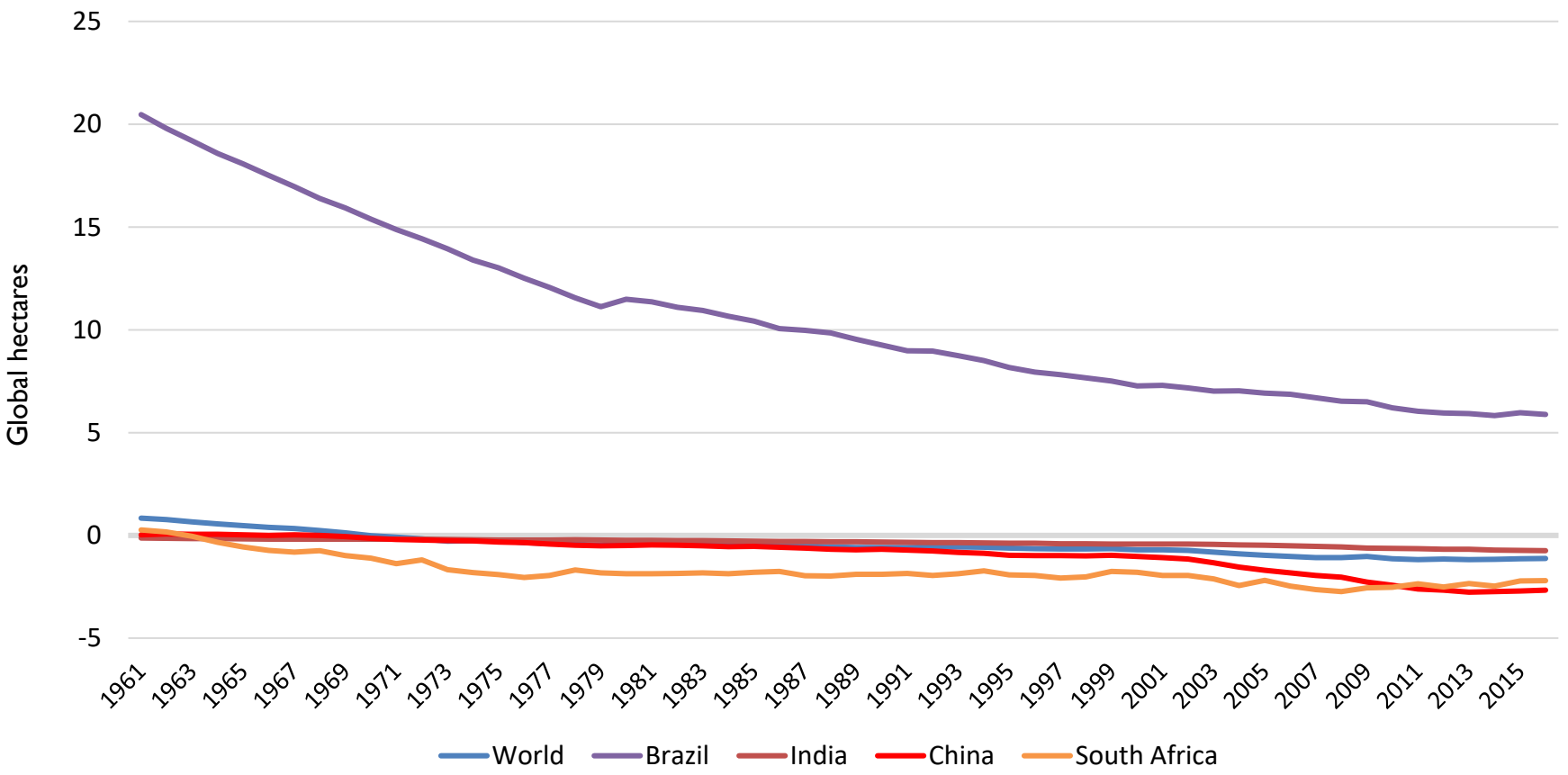
Global deficit Compared – USA and China



On what moral base will we decline a middle class in developing nations?

Source: Global Footprint Network, 2019 National Footprint Accounts

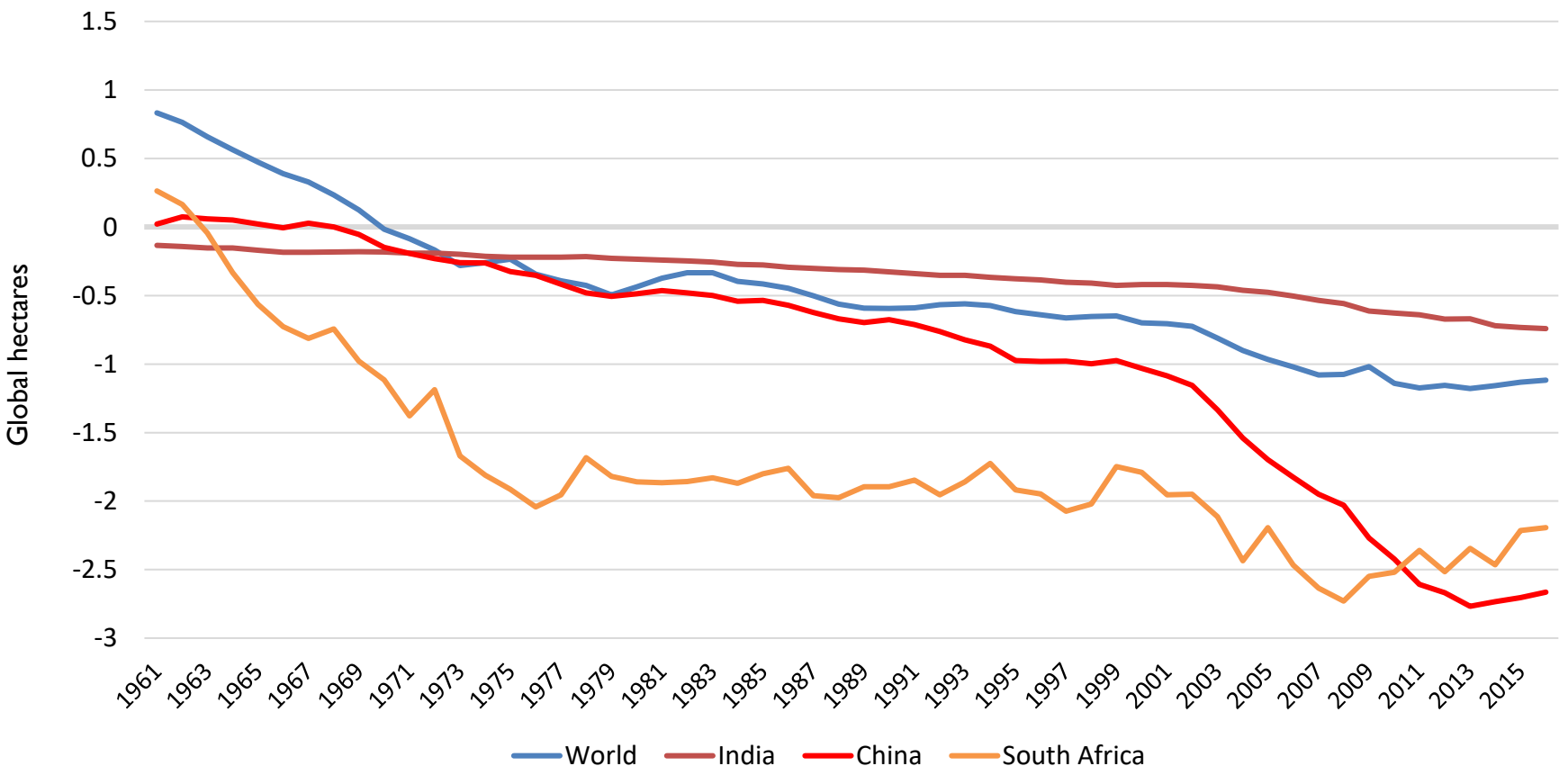
Global deficit Compared – BRICS



And what should our discussion with Brazil look like?

Source: The World Bank, 2018

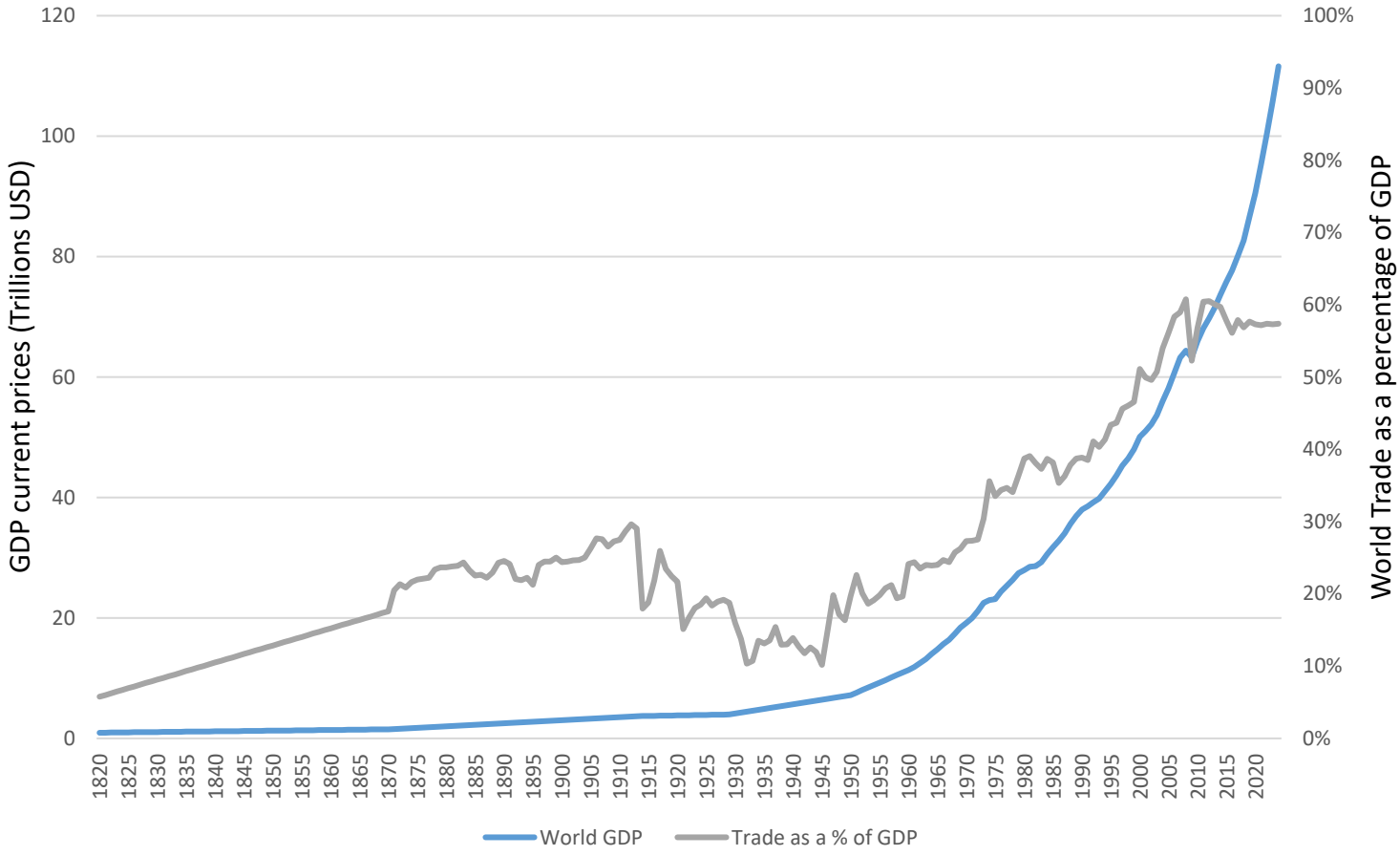
Global deficit Compared – RICS



And what should our discussion with Brazil look like?

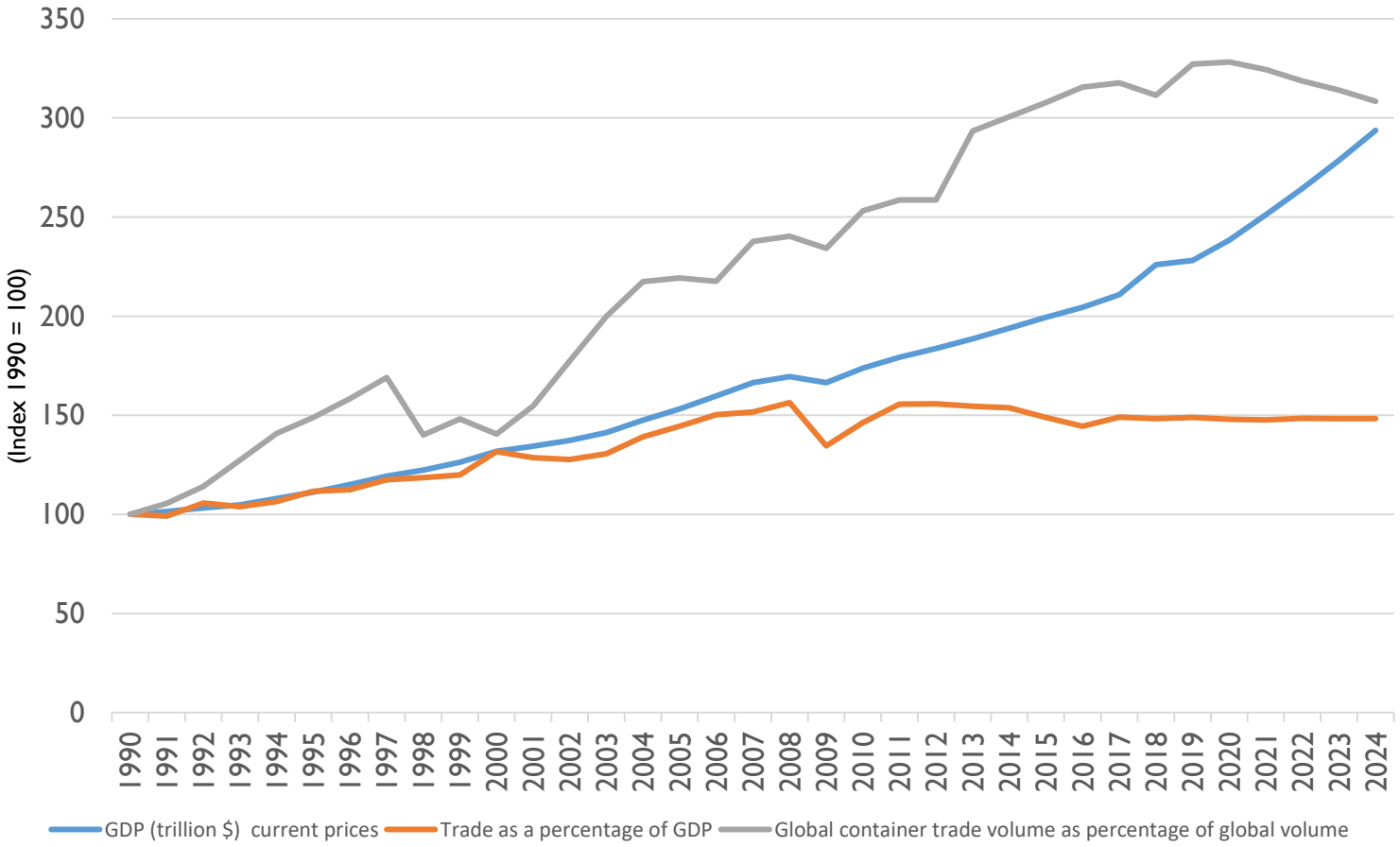
Source: The World Bank, 2018

Global trade growth has reached a ceiling – before COVID



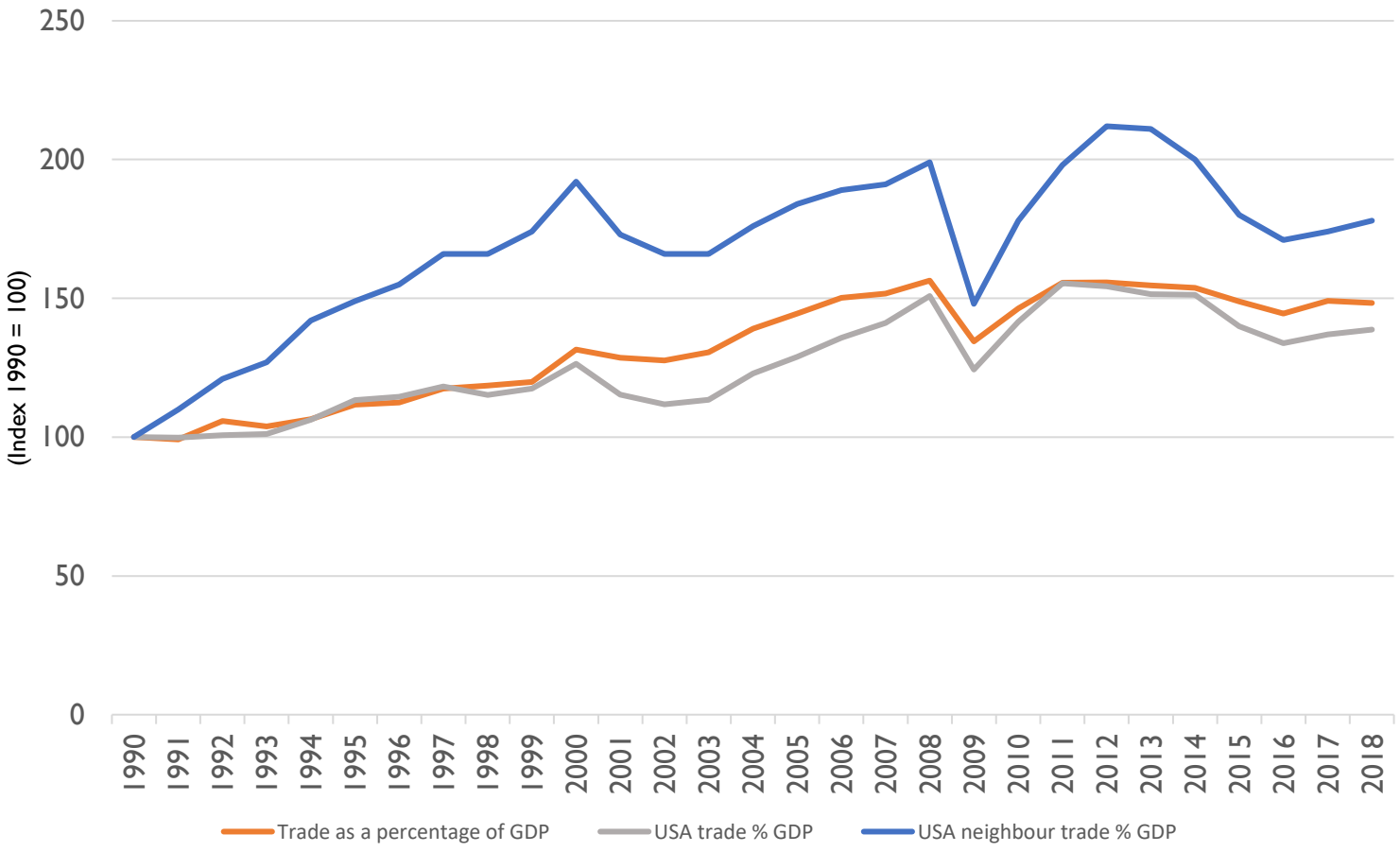
Source: Our World in Data, World Bank, and OECD data

But the previous crisis confirmed a permanent trend



Sources: World Bank, Our World in Data, 2020

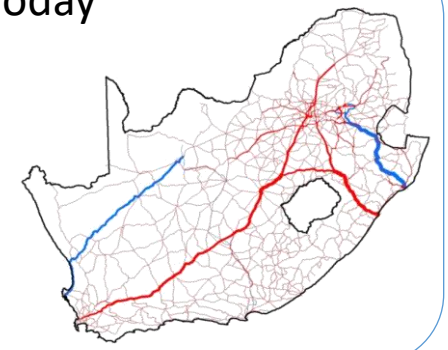
Not all continents are the same, but clear developments in this direction



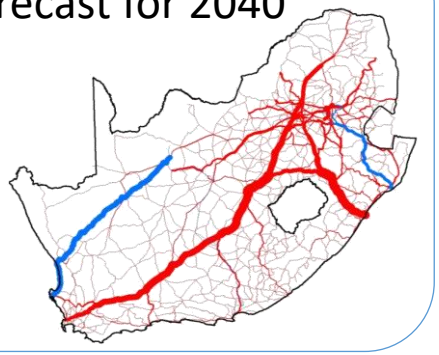
Sources: World Bank, UN Comtrade Data base, 2020

South Africa's freight demand is high

Today



Forecast for 2040



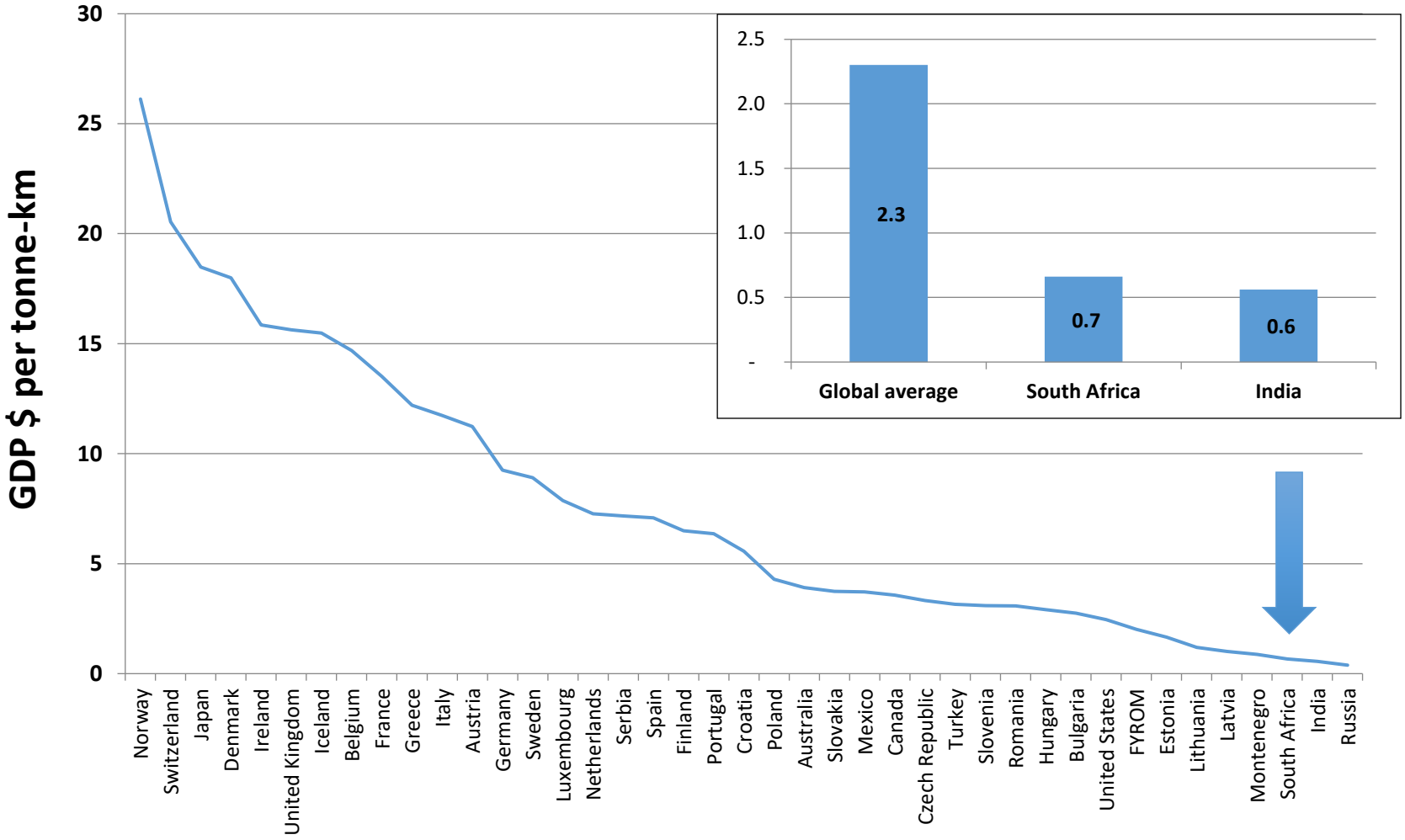
- GDP
  - South Africa $0.35 trillion
  - Europe $19.70 trillion
  - France/Germany $6.26 trillion

Line haul tonne-km (billion)

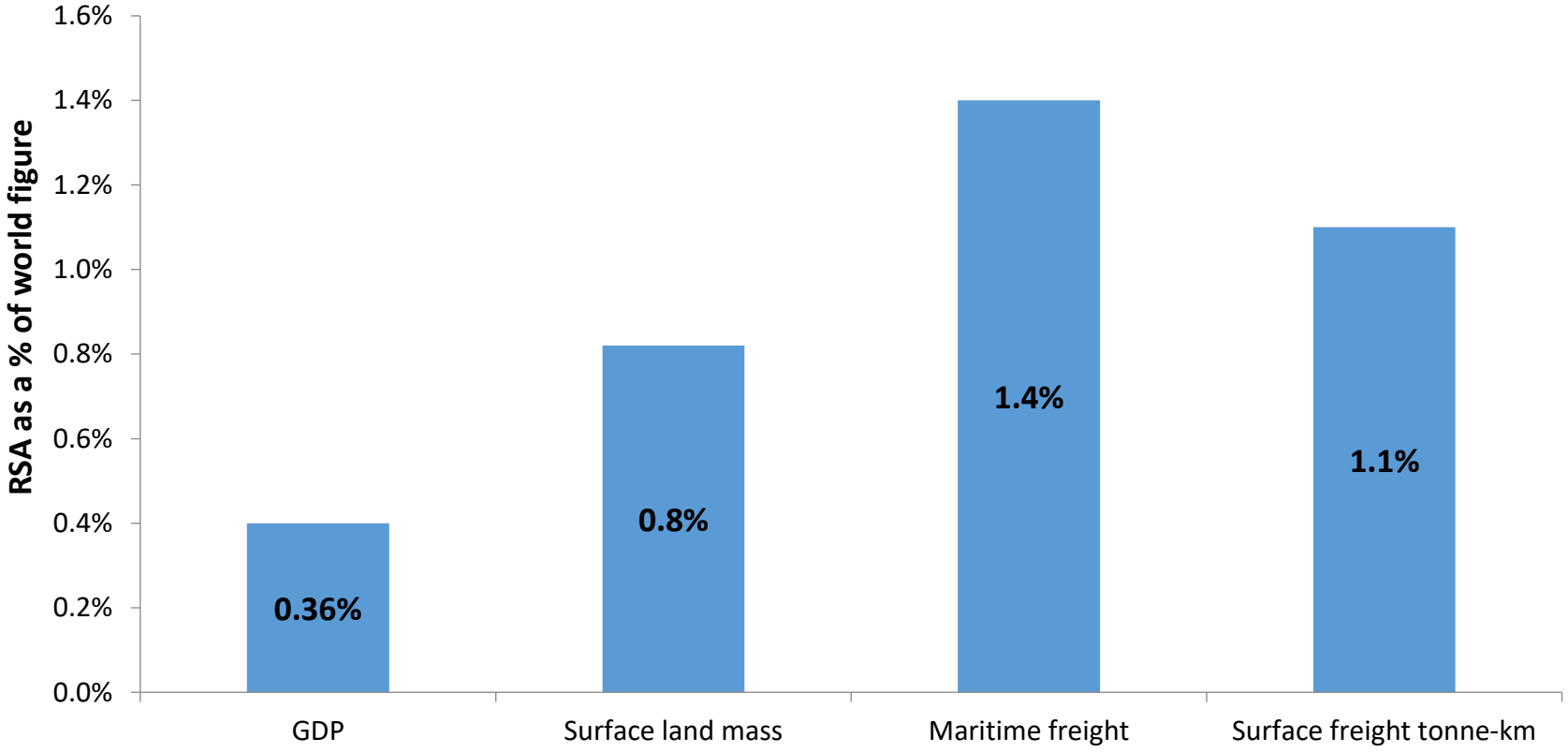
	Road	Rail
Current	164	149
Optimal split	134	179
10 year target	167	200

- Last mile tonne-km 132 billion
- Also:
  - 8 billion in pipelines
  - 1 billion on conveyor belts

In fact tonne-kilometre "productivity" one of the worst in the world



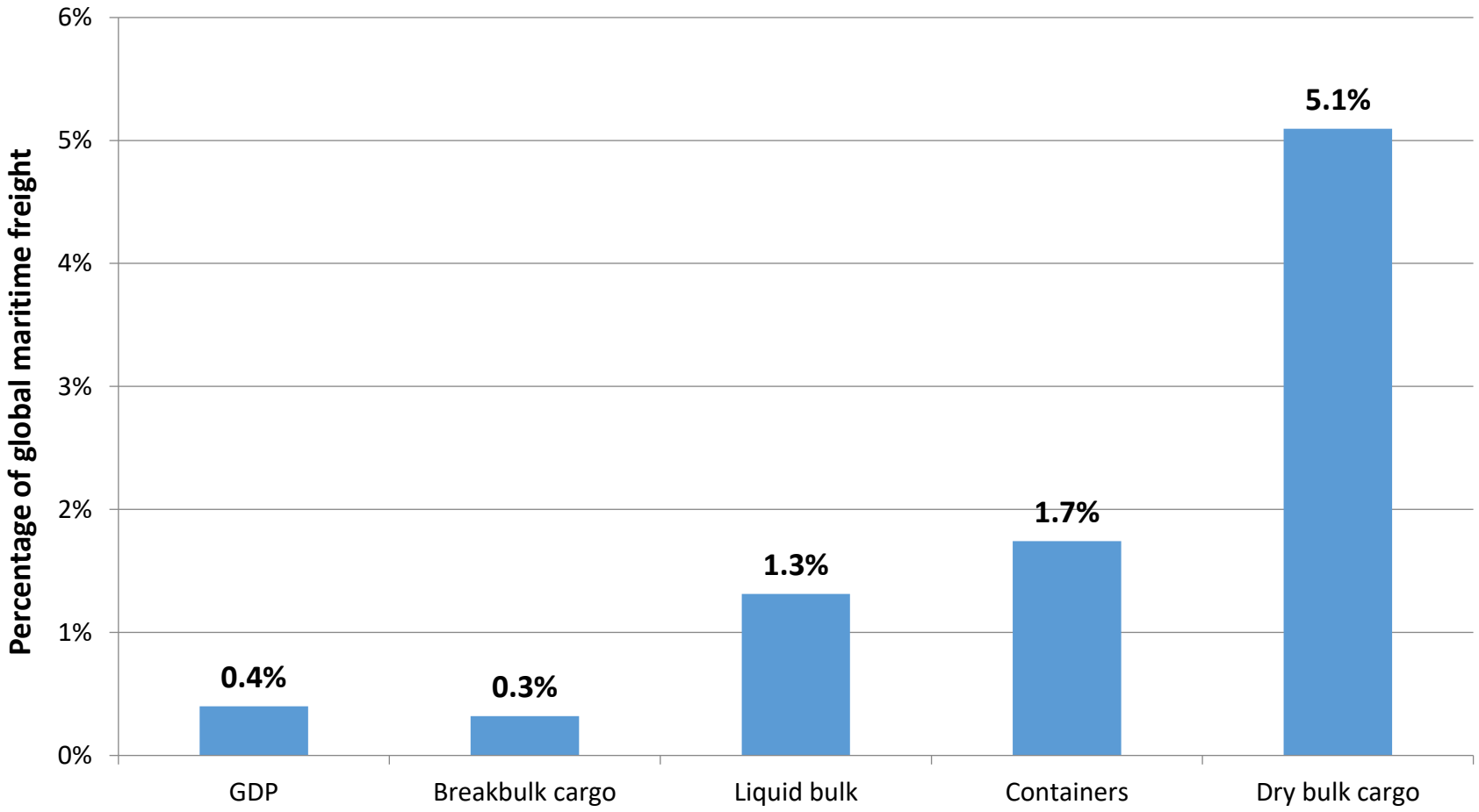
Because we're a spatially challenged country



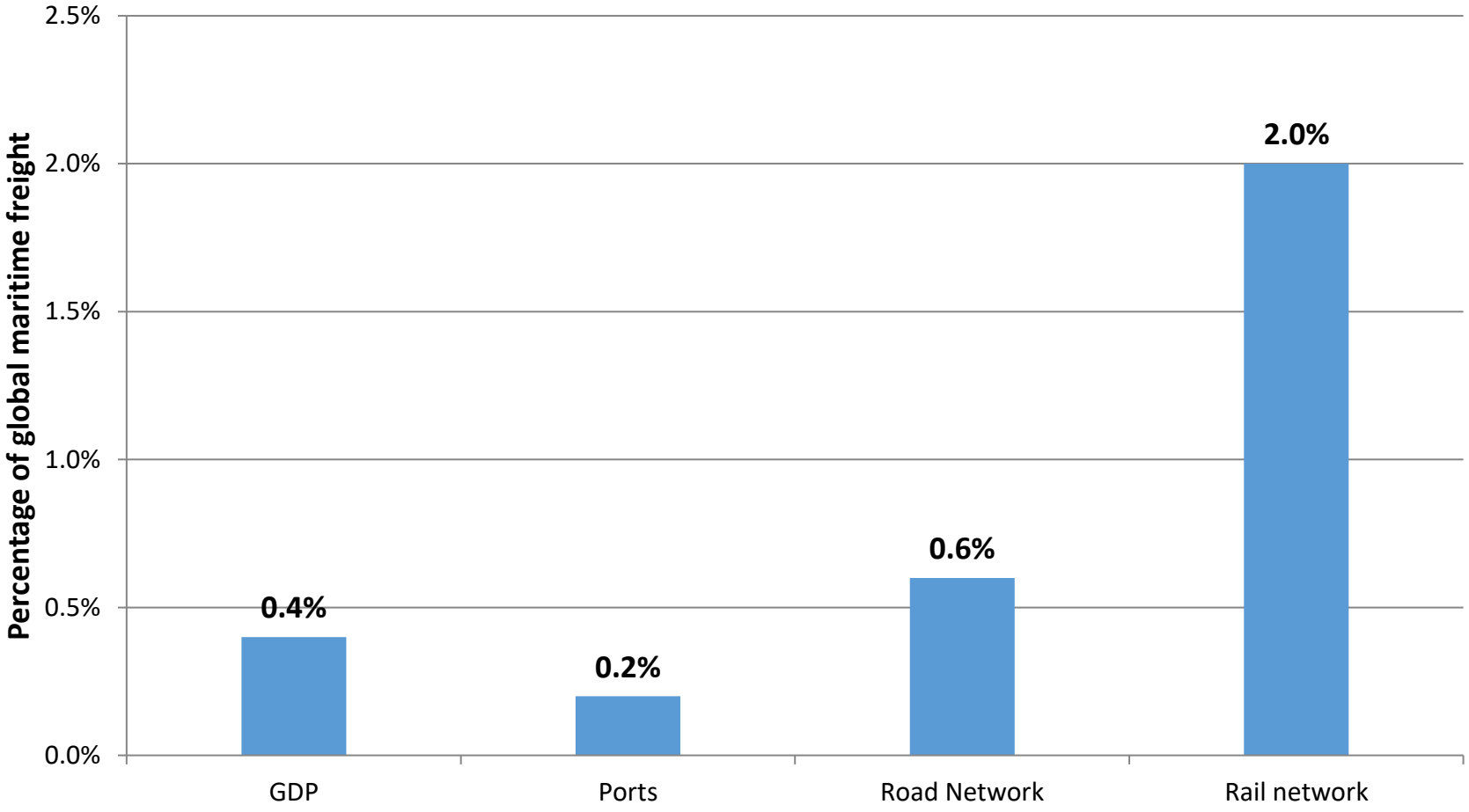
The current share of GDP is forecasted to decrease to **0.35%** in **2050**
The current share of surface freight tonne-km is forecasted to decrease to **0.9%** in **2050**

Source: *In 2004 the world produced about 49 000 Mt CO2 - equivalent of which South Africa emitted 440 Mt CO2 – equivalent roughly 1% -Scenario Building Team (SBT) 2007, Jones, T.Rodrigue, J.P., Gielen, D. – low calculation based on 2002 data / Comparison of Datamonitor 2009 (2008 data) and world GDP (2008) – high calculation*

Also with relatively high maritime volumes



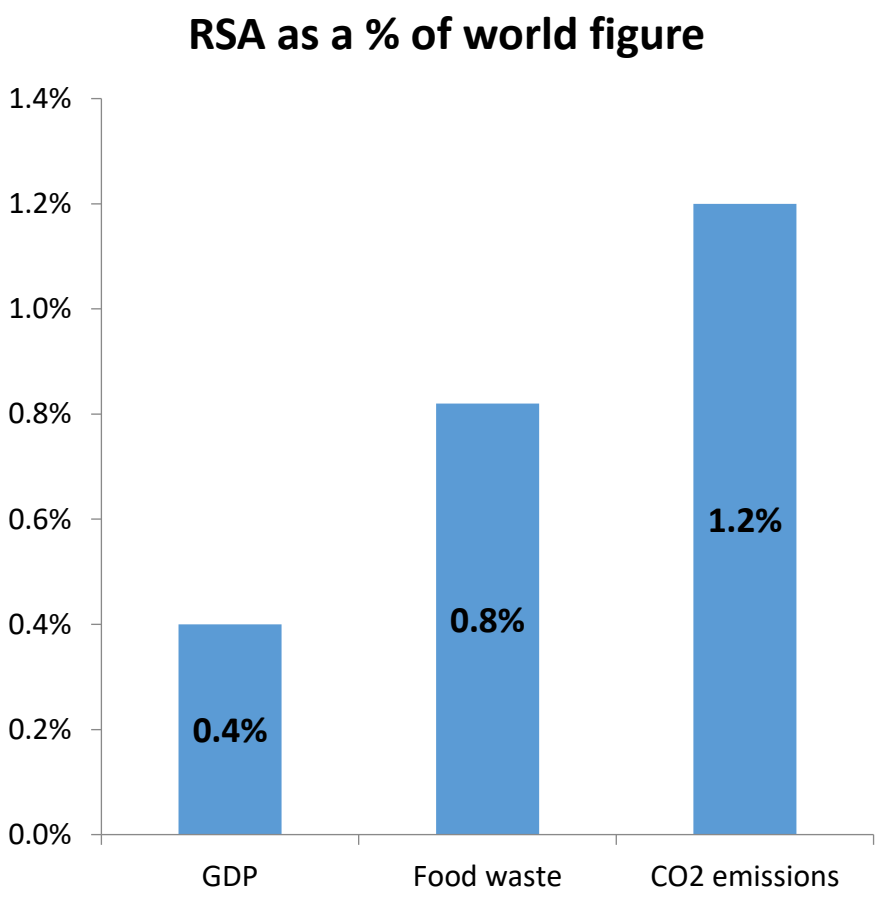
A high infrastructure requirement

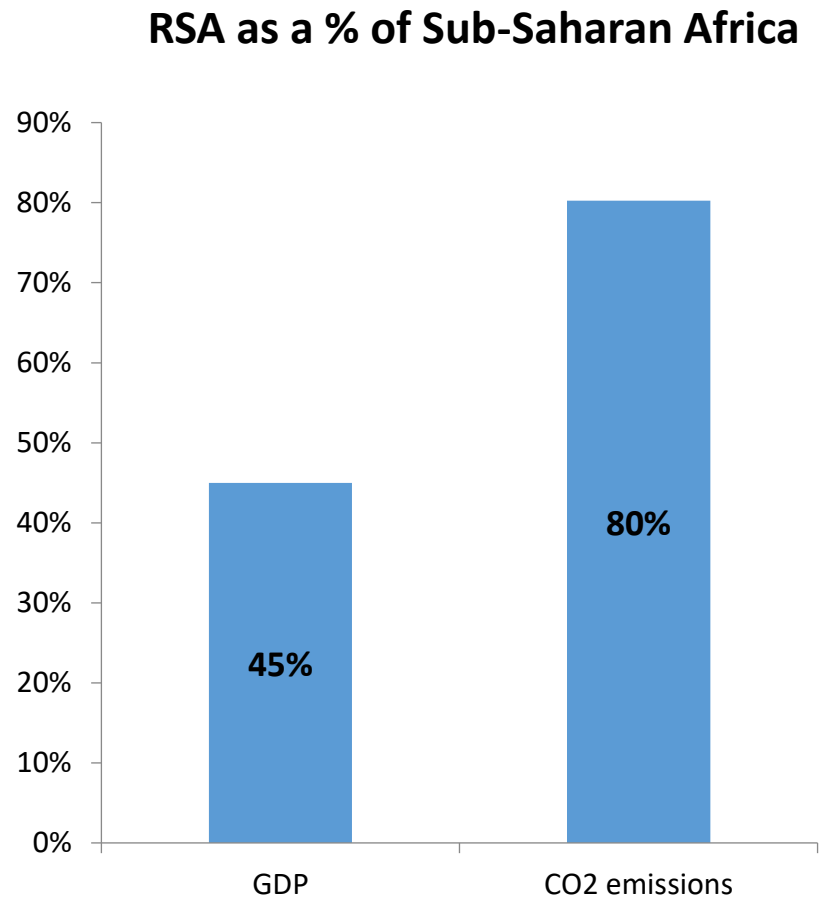


Worldportsource.com. n.d [Online]. Available: http://www.worldportsource.com/countries.php [2018, June 20].

Logistics Barometer South Africa 2015

And with sustainability issues





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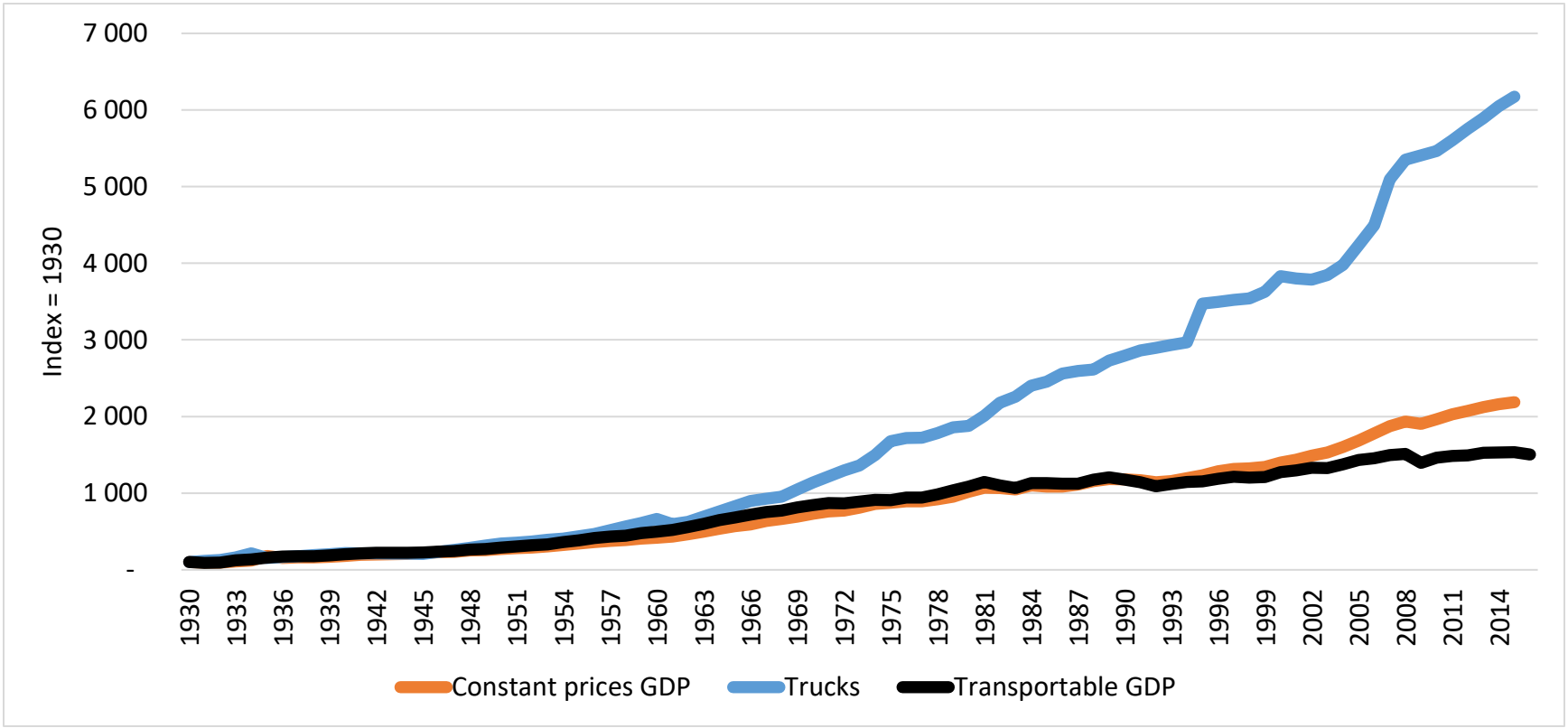
We've invested heavily in road transport



Sources:

Sanral Vehicle data

Botha, D.P.J. 1970. Gross Domestic Product at Factor Cost, 1911-1968. Report: Pretoria.

Historical GDP, www.resbank.co.za

Statistics South Africa. 2017. Gross Domestic Product (GDP), 2nd Quarter 2017: Statistical release P0441 [Online]. Available: http://www.statssa.gov.za/publications/P0441/P04412ndQuarter2017.pdf [2017, September 1].

National Traffic Information System. 2017. Live vehicle population as per the National Traffic Information System – Enatis. [Online]. Available: http://www.enatis.com/index.php/statistics/13-live-vehicle-population [2017, August 20].

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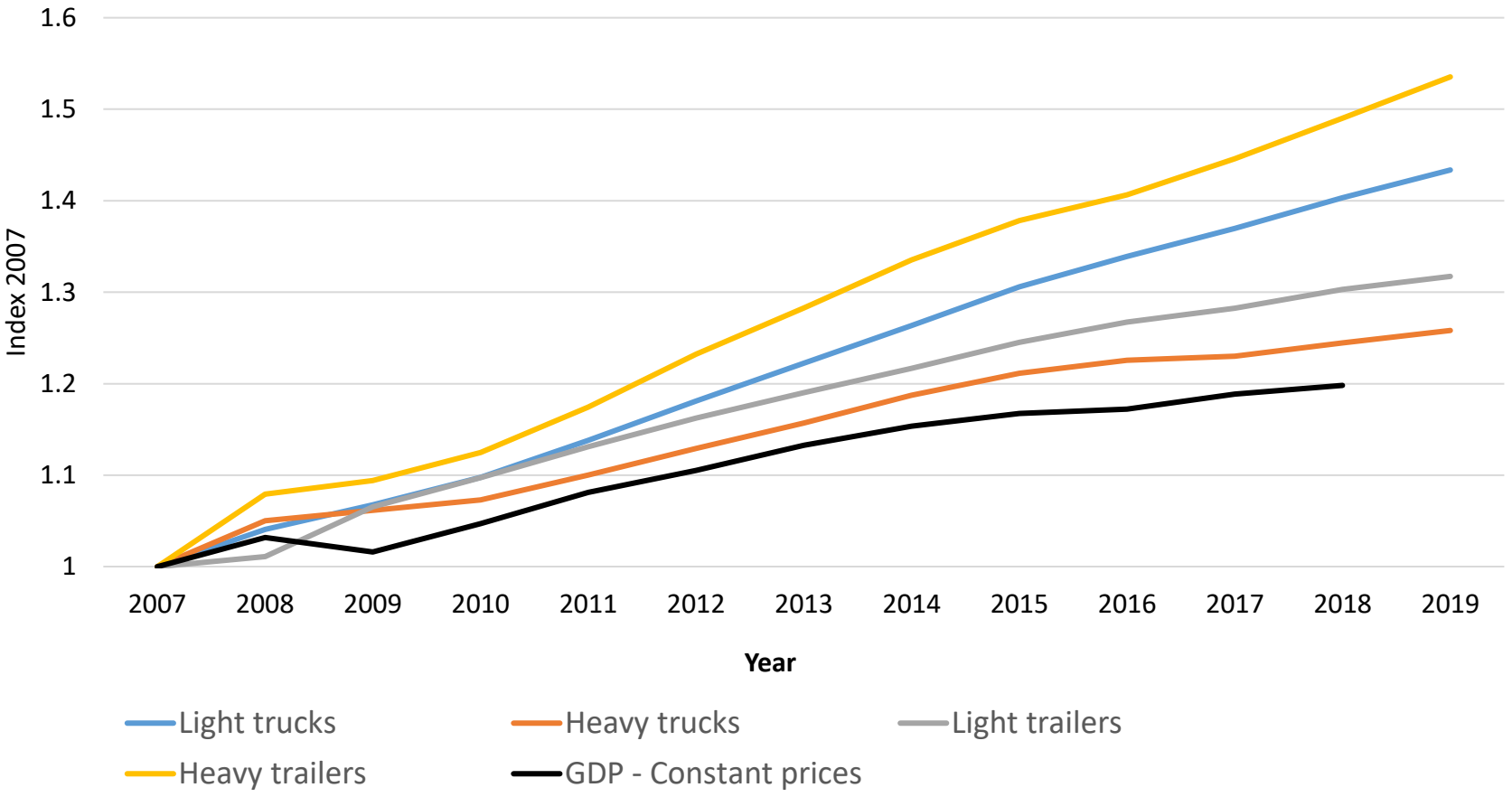
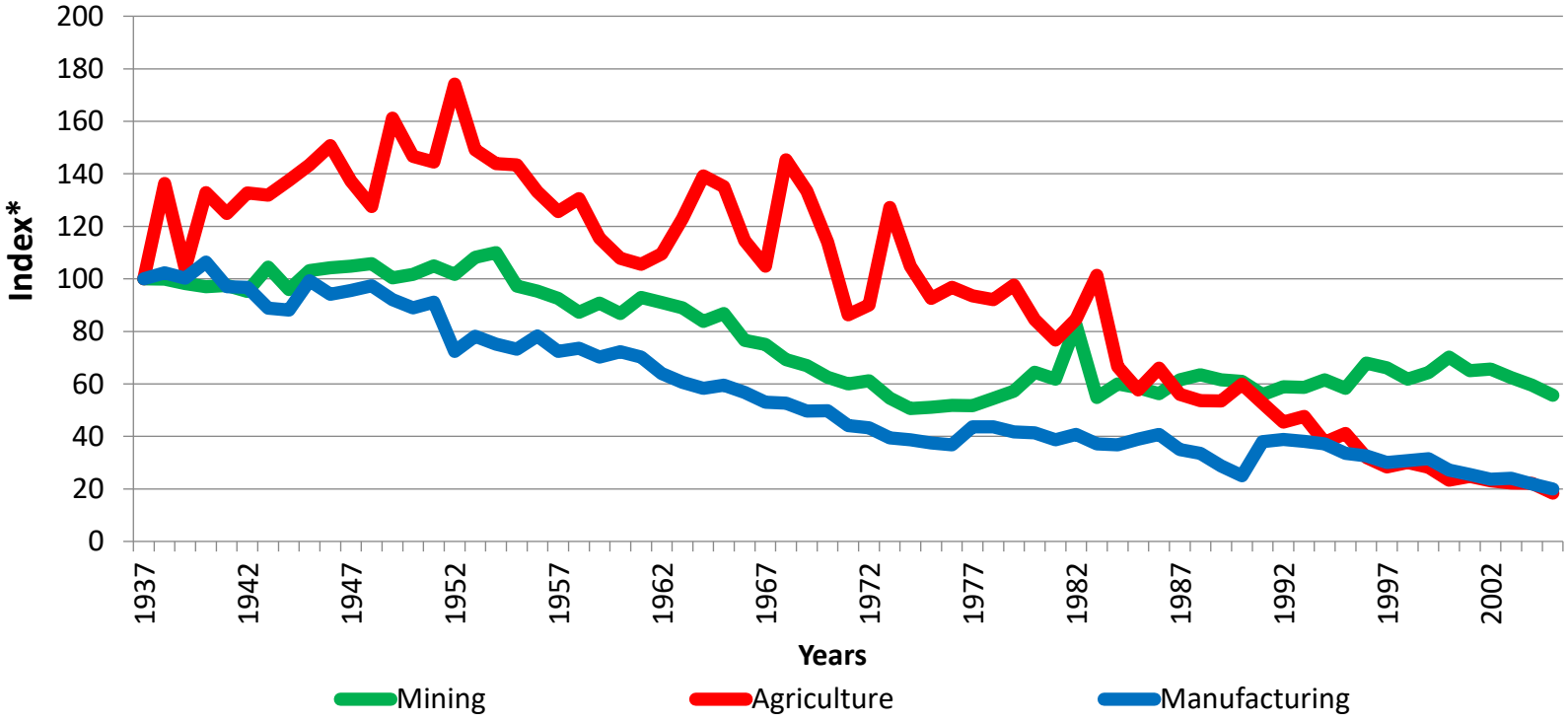


Sources: eNatis vehicle population, and StatsSA GDP

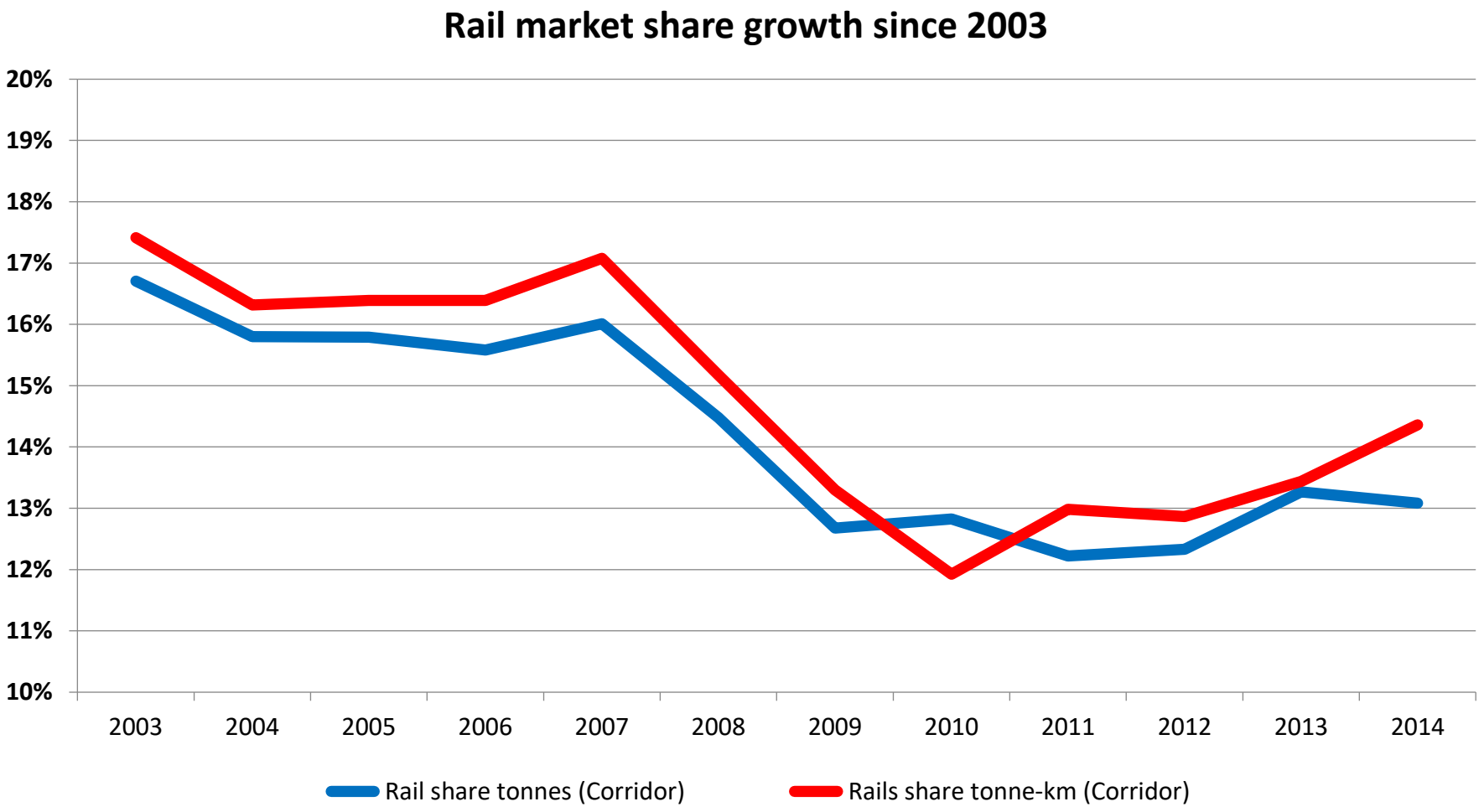
Rail market share decline

- Transnet's transported tonnes to GDP have decreased as follows up to 2007:
  - Mining: 40%
  - Agricultural & manufacturing: 80%



*Indexed correlation of the relationship between rail transport and physical production in the economy

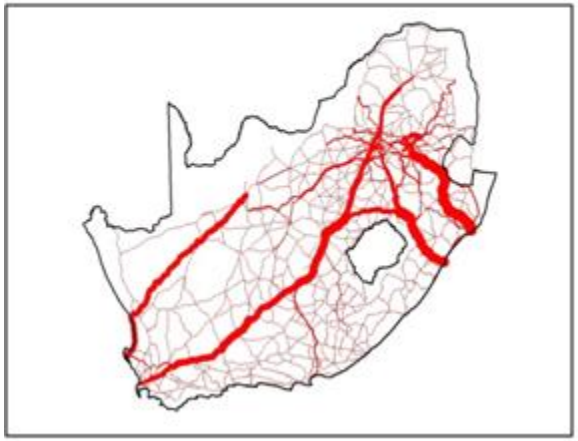
Recent renaissance



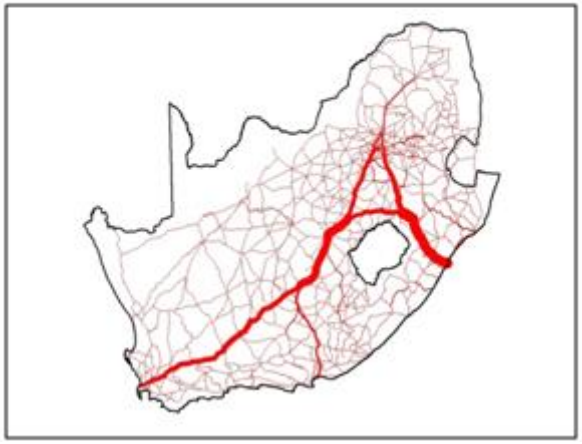
Source: GAIN Freight Demand Model

But the railways mostly still compete in the low value market

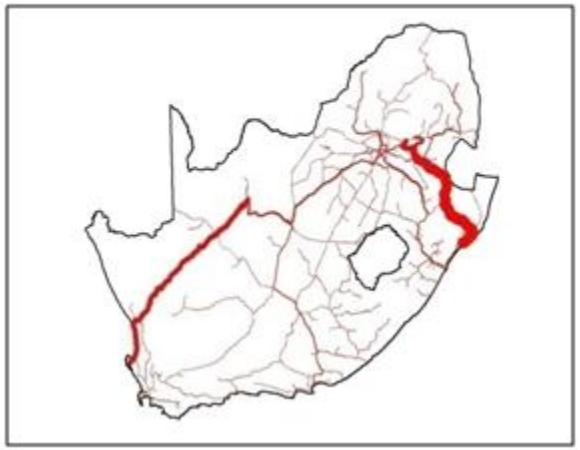
Flow of Volume



Flow of Value

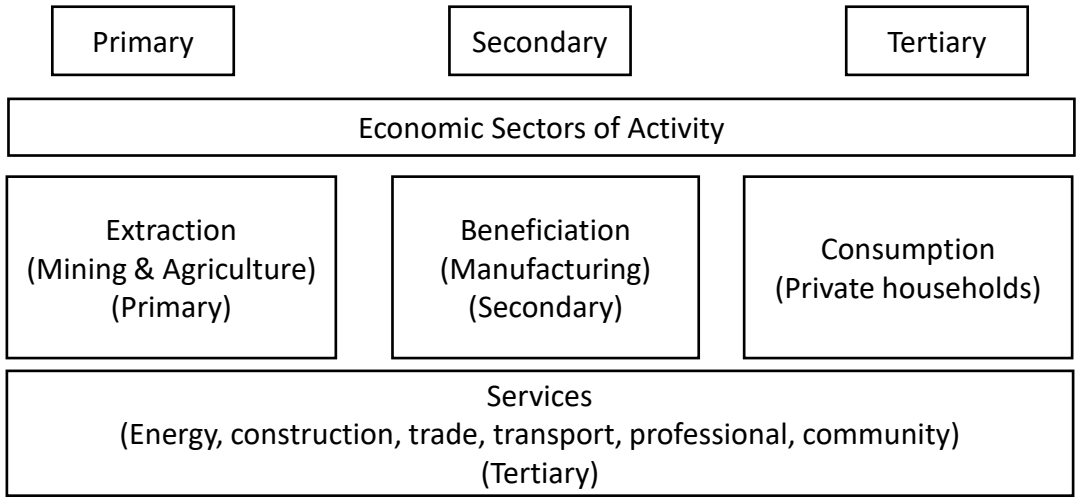


Rail Flows

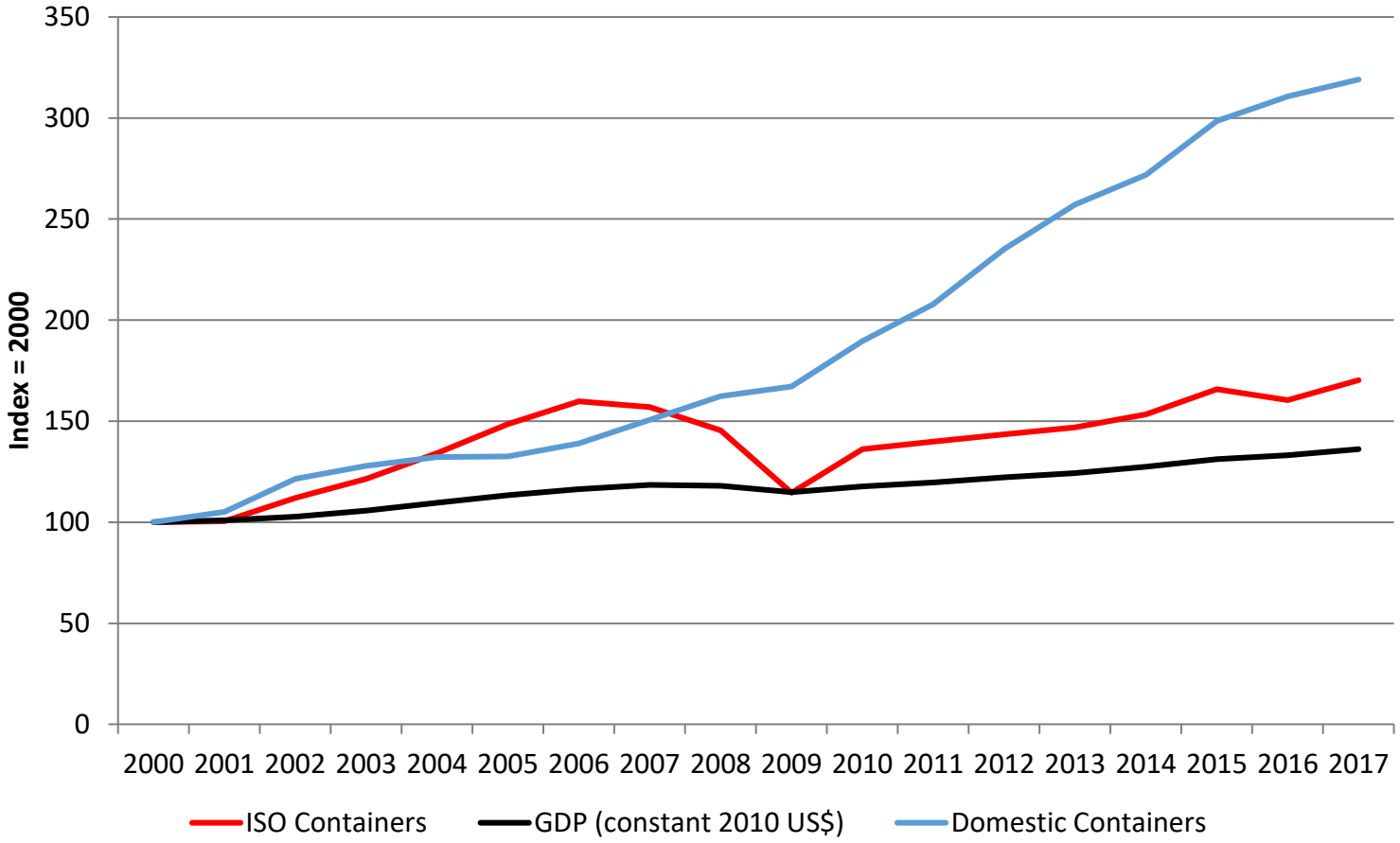


Source: GAIN Freight Demand Model

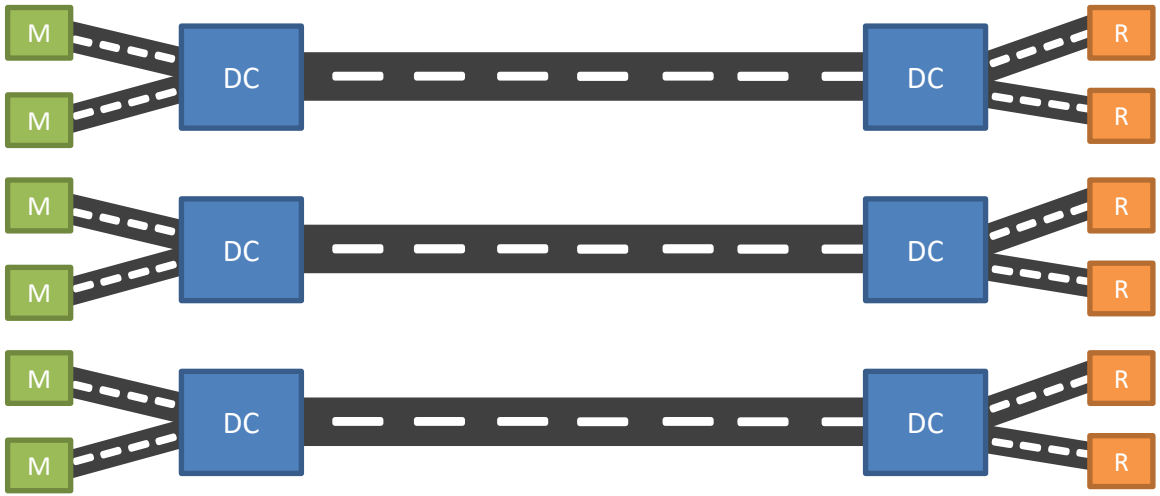
We consider freight flow "categories" to consider the railways' role



Domestic intermodal growth in the USA a significant example

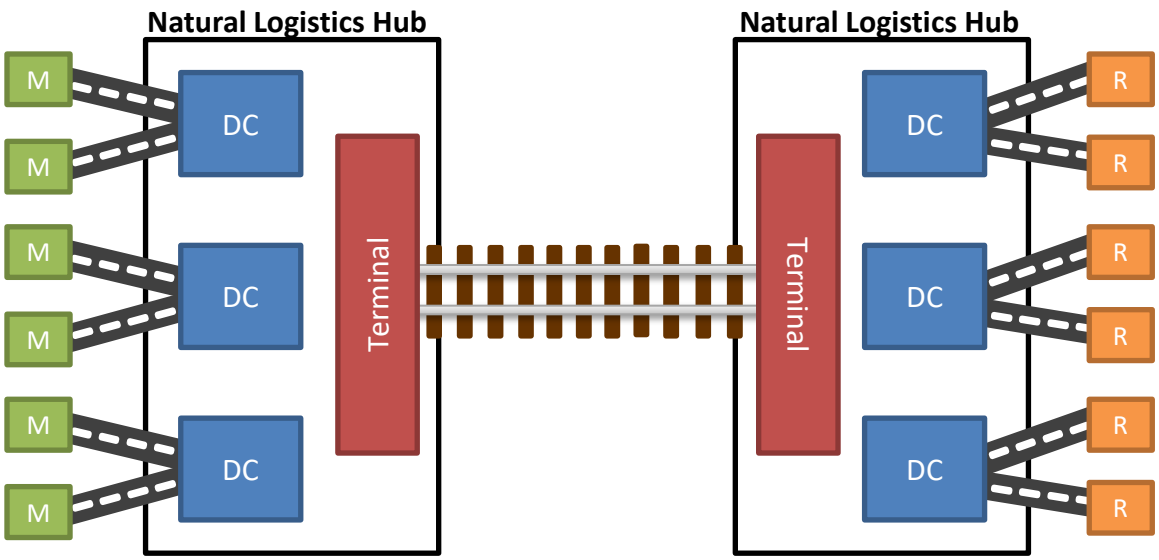


The typical FMCG long distance supply chain requires domestic intermodal



M = Manufacturing
DC = Distribution Centre
R = Retailer

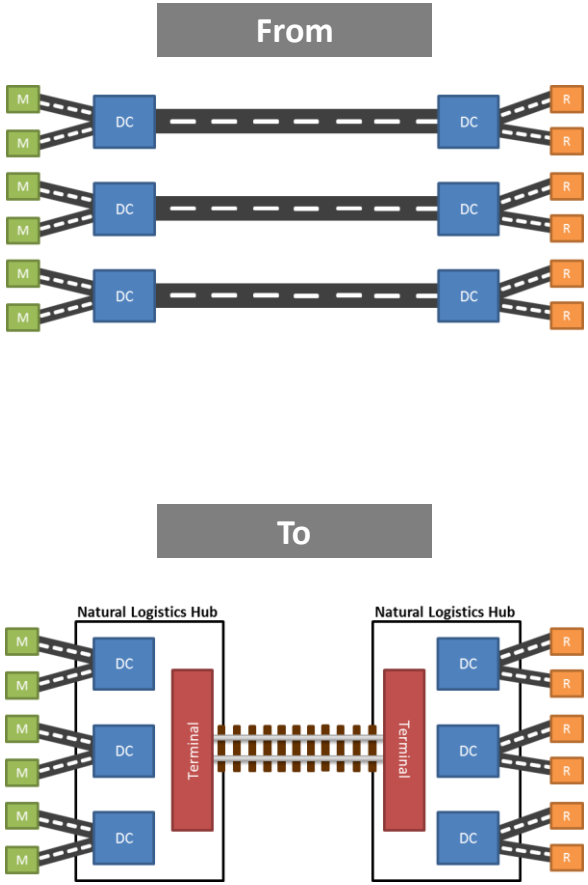
Leading to the most important opportunity for the economy and the railway



We have in fact no choice – 30 year N3 truck volume scenario

	Current fleet	Trips per day (laden)
Current	3 500	2 000
Aggressive rail	8 000	4 500
Current rail	11 000	6 500
Stagnant rail	14 000	8 000

Significant savings



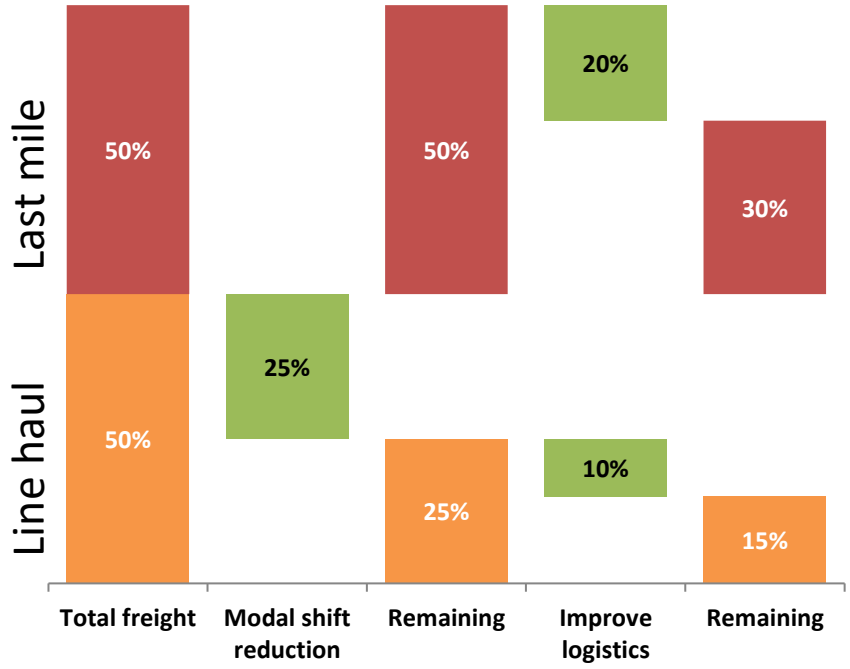
Volumes and Savings

		South Africa	Corridors	2 corridors only
Volumes	Tonnes (million)	50	30	20
	Tonne-km (billions)	30	16	13
Savings	Costs (Billion R)	7	6	4
	Emmissions ('000 tonnes)			400

Calculating rail pathway? Look at road "overspend"

- Emissions reduction roadmap

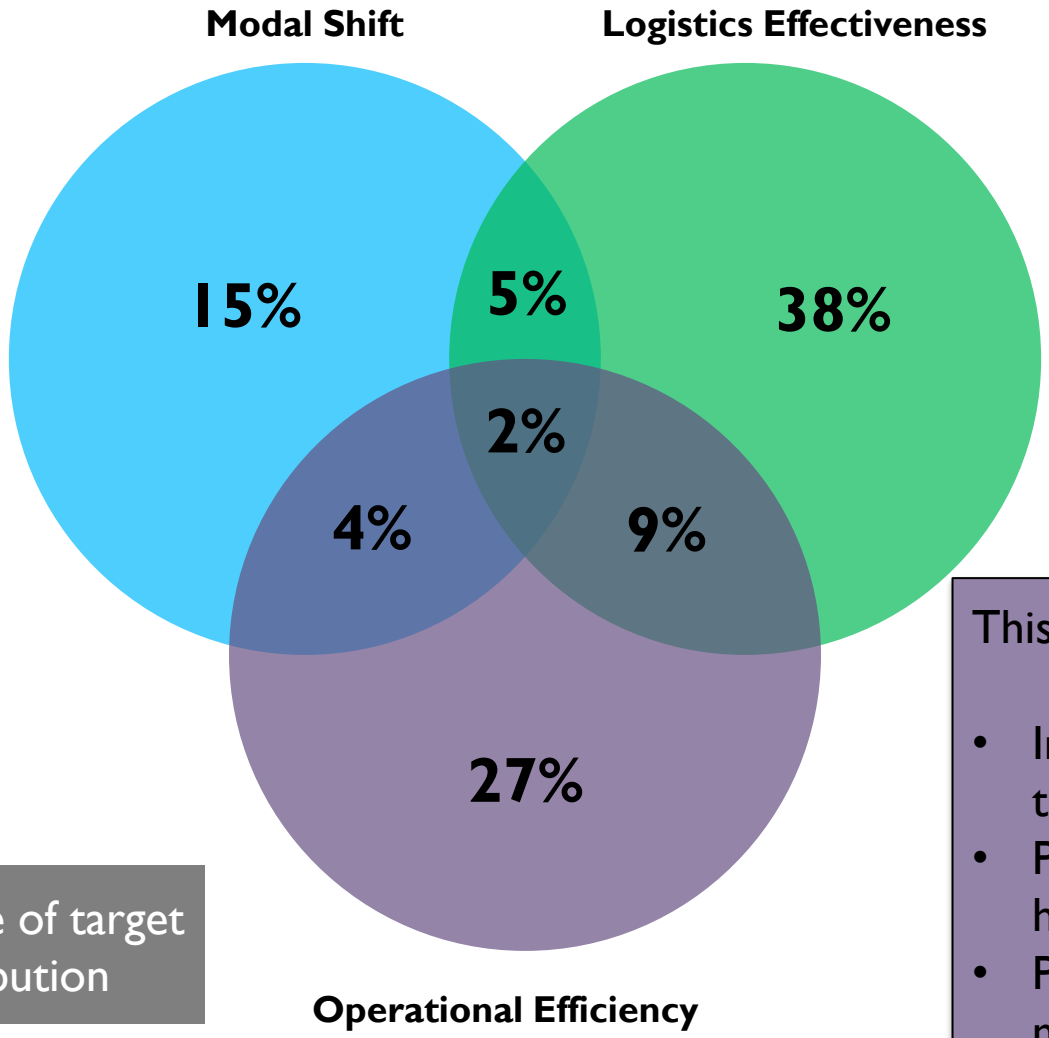
- Kilometer reduction roadmap



Target deconstructed

This is caused by:

- Poor modal choice
- Wrong investments
- Rail service levels and decline



This is caused by:

- Missed slot times
- Unnecessary trips
- Poor load factors

This is caused by:

- Inefficient trucks
- Poor driving habits
- Poor maintenance

Percentage of target contribution

Thank you