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# The Future of Rail: Drivers and Bottlenecks

Jan Havenga Zane Simpson

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INTERNATIONAL UNION OF RAILWAYS





### Key messages

- The strategic marketing imperative also holds for rail
- For rail it requires total freight flow knowledge
- Freight flow segmentation highlights market spaces
- Global rail systems differ in this position
- The developing world has specific challenges
- Move to higher value freight specific requirements



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# Theodore Levitt's classic article is actually based on rail



- Marketing myopia
- Defining your business
- An LSP that can take on the role of 2PL or 3PL



- This was successful in the developed world
- The developing world a different position
- Unique challenges of South Africa and India



# South Africa's freight demand is high





#### India has the same problem



- GDP
  - India \$2.60 trillion
  - Europe \$19.70 trillion

Total tonne-km (billion)



	Road	Rail
Current	2 492	585
Optimal split	1 777	1 300

In the spatially challenged developing world rail is asked to solve this demand side problem



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To achieve this we've developed freight flow models for various countries and regions



# The South African model is detailed with forecasts





10 updates – 50 000 hours



#### The India methodology





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# In South Africa, the high value market gap





But the high value market is more stable, less price sensitive and higher returns

How does the railways insert itself into the high value supply chains?

#### Rail Market share per segment



# Broad term flow segmentation leads to specific types of train solutions (India)



- <u>Heavy haul</u> In India more mining and agricultural heavy haul is certainly possible. Densities and distance opportunity exists
- <u>Siding to siding traffic</u> This is typically intermediate manufacturing flows. Such as for instance steel coils from a steel plant to an automotive plant. Dedicated sidings when density is high enough provides good opportunities
- <u>Palletised</u> FMCG This traffic is usually between logistics hubs in major centres. It is stable traffic (as food, clothing and other consumables are not as price elastic) and easily serviceable with intermodal heavy haul between logistics hubs, reducing road freight on corridors







#### What is rail market share in India?







#### Distance and hub segmentation



# Process to identify 200 million tonnes of rail friendly freight





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### In order to make this work, a logistics hub and spoke system is required





This should fit into super terminals that connect industries, ports and consumers A visual presentation of the core to core opportunity – This is often called the "missing" railway in other countries



Total tons = 164 million Rail market share = 5.9% 600 Fonnage (millions) 500 400 300 200 100 \* Not to same scale Wider -Core Core -Wider Core Wider

# Not all core to wider flows rail-friendly – significant opportunities still exist





# The wider to wider market is best established





# In order to capitalize on these opportunities:



- Railways should "insert" themselves into supply chains
- It requires:
  - A mature and concentrated LSP industry
  - Strong relationships between these, railways and industry
  - Railways knowing when to:
    - Wholesale (selling bulk trains to intermediaries)
    - Retail (creating own direct freight owner relationships)
    - Develop own 3PL capabilities





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# Developing world railways – national challenges rather than capitalistic





Source (Global: UIC 2012, South Africa, own analysis)

Countries in these comparisons carry 93% of global rail tonne-kms



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# The developing world has specific challenges



- Large national capital outlays are required
  - For this more evidence for network design is required
- National central planning is inevitable
  - The developed world doesn't have this luxury
  - With total freight flow knowledge the impact can be great
- Developed world railways are "inserted" in supply chains
  - This is not the case in the developing world
  - There is a subconscious belief that capacity will "attract"
    - This might be the case, but if rail doesn't react now:
      - It will take longer to see national "returns"
      - It will be more complicated to fix later
      - Rail will be forced into a wholesale position



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### Clustering logic to "find" terminals





- High density catchment areas lead to more efficient terminals
- Connections between these areas can lead to more dense flows
- We've done the same work to "find" 30 terminals in India

### Heavy intermodal can do it





A Scottish case study proved significant savings over a distance of 140km						
	HGV's	Trains				
Journeys per year	6,312	263				
Typical journey distance	86 miles	86 miles				
Total annual distance	542,832 miles	22,618 miles				
Fuel efficiency	<b>7 miles per gallon</b> / (~0.65 litres per mile)	(~0.7 miles per gallon) / <b>7 litres per mile</b>				
Annual fuel use	77,547 gallons / 352,538 litres	34,827 gallons 158,326 litres				
CO2 burden	927 tonnes	416 tonnes				

#### UK forecast of 10 years ago of domestic and regional intermodal growing the fastest was realised

Great Britain	Great Britain Industry 10 Year Forecast (2005 – 2015)				
Commodity	Minimum Growth Estimate	Maximum Growth Estimate			
Coal	-8%	9%			
Metals	12%	39%			
Ore	-5%	-3%			
Construction	20%	45%			
Waste	-9%	14%			
Petroleum & Chemicals	4%	5%			
Channel Tunnel	200%	266%			
Domestic Intermodal*	177%	838%			
Maritime Containers	42%	83%			
Auto	25%	76%			
Total	26%	28%			

- During the recession the European market declined by 9.1%
- At the same time, the domestic market grew by 17.3%

#### This illustrates the case for Domestic Intermodal to target (Fast Moving) Consumer Goods

### The typical FMCG long distance supply 1000 chain requires domestic intermodal



M = Manufacturing DC = Distribution Centre R = Retailer

# Leading to the most important opportunity 1000 for the economy and the railway



### We've develop many business cases – South Africa





		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
	Emissions ('000 tonnes)			400

# The developing world doesn't always understand domestic intermodal





Most developing world railways do this

Often not this



#### In summary

- Not all railways are the same
- Current systems in the developed world cannot be transferred "as is" to the developing world
- In the developed world railways are already "inserted" into supply chains reasonably efficiently
- In the developing world this is not the case:
  - Rail must still find rail economic attractive spaces
  - The mode must then be "inserted" into that space:
    - Either as 2PI or 3PL
    - As 2PL it will eventually become a wholesaler
  - This can only be done through full freight flow knowledge

# If God had intended us to fly, he'd have never given us railways.

**Michael Flanders**