Minerals for Development: *The seminal importance of competitively priced steel*

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Cape Town, Sept,2010

Part I

History of Mining in Southern Africa

History of Mining in Southern Africa

Earliest use of minerals - *Homo habilis* (Sterkfontein and Kromdraai, 1.7 - 2 million years BP)

Oldowan chopper cores and flake tool, Olduvai Gorge, Tanzania

Earliest recorded "quarrying" by hominids

History of Mining in Southern Africa

Recent discovery: Heat treatment of silcrete to harden for the making of microlith tools: 80 -150 000 years BP, Pinnacle Point

The first human heat treatment

Engraved plaque of ochre (hematite iron ore) from Blombos Cave (Cape Province), 75 000 years BP

The earliest known example of symbolic art?

The first human "writing"?

History of Mining in Southern Africa

Underground iron ore ochre mine, Lion Cavern, Ngwenya, Swaziland, 20 000 - 43 000 years BP (Middle Stone Age)

The world's first underground mine (San people)!

History of Mining in Southern Africa

Iron and copper mining and smelting, from *c.* 200 AD

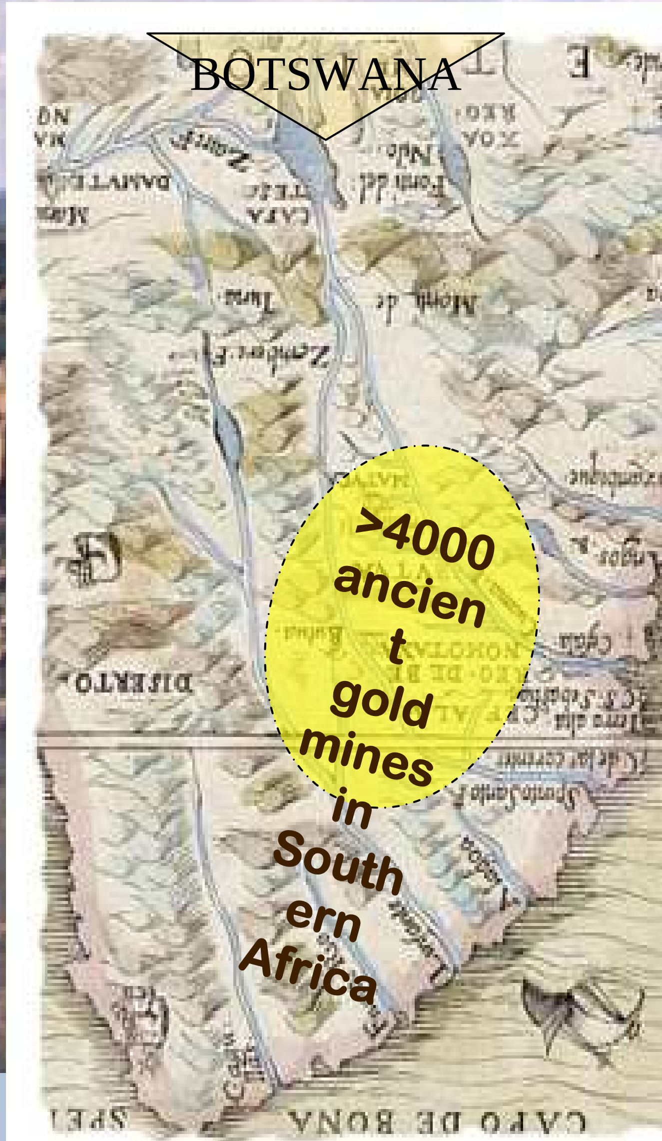
Venda-type iron smelting furnace, 1888. Traditional product till ~1950's

For axe heads, hoes, arrow heads, assegais, etc.

1000's of smelting sites across southern Africa!

History of Mining in Southern Africa

Mapungubwe, *c.* 1220 -1270: Gold trade via the eastern seaboard to the Middle East and Asia well- established by *c.* 900 AD



Ming porcelain

History of Mining in Southern Africa

Colonial period:

Alienation of land and minerals

- **Mining integrated into European economy (export-oriented)**
- **Local entrepreneurs excluded from the industry except as labour**
- **Racial exploitation intensified under "apartheid"**

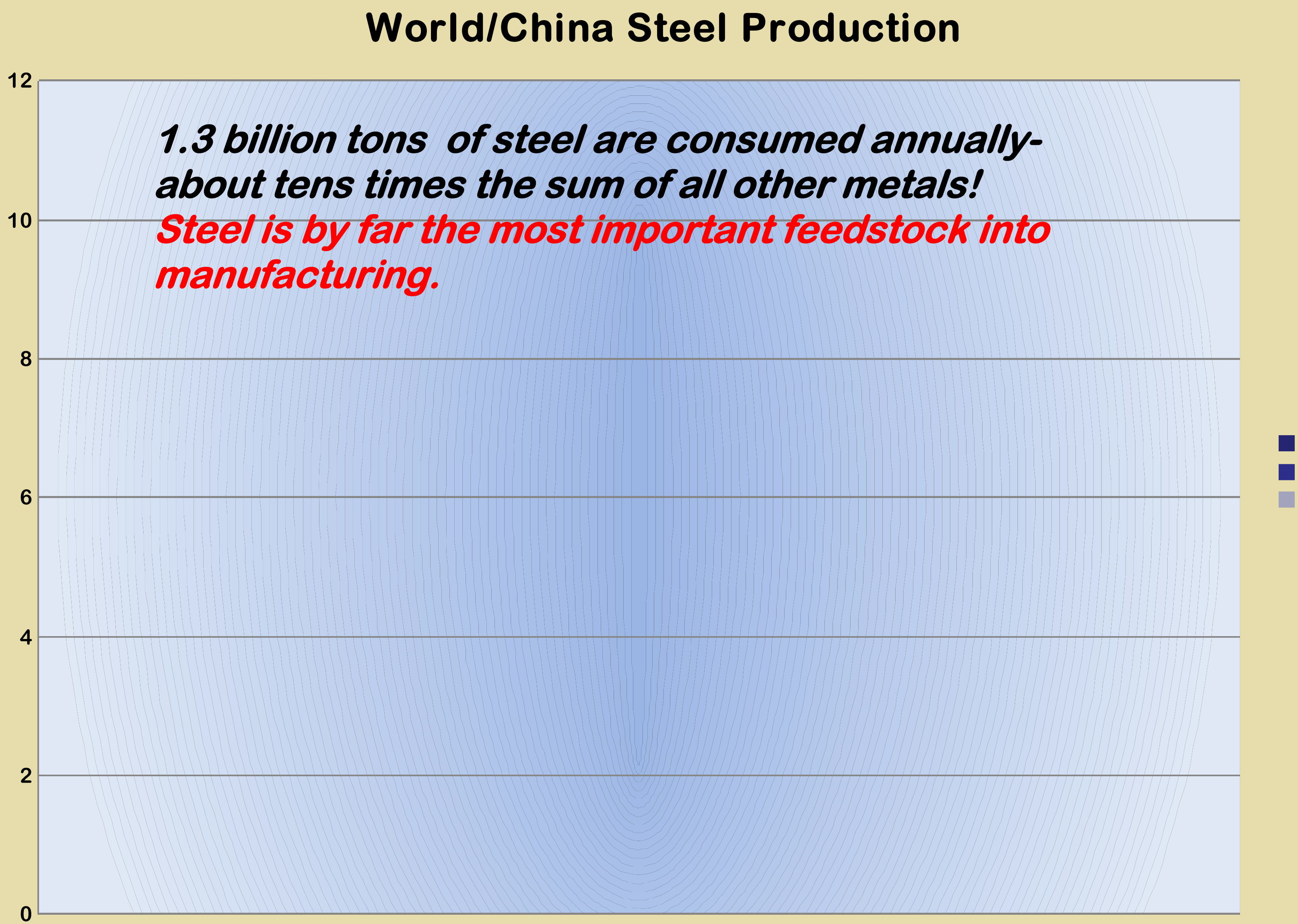
Liberation 1994

- *Minerals for development of all South Africans?*

Part II

Steel in Development

Global Steel Production



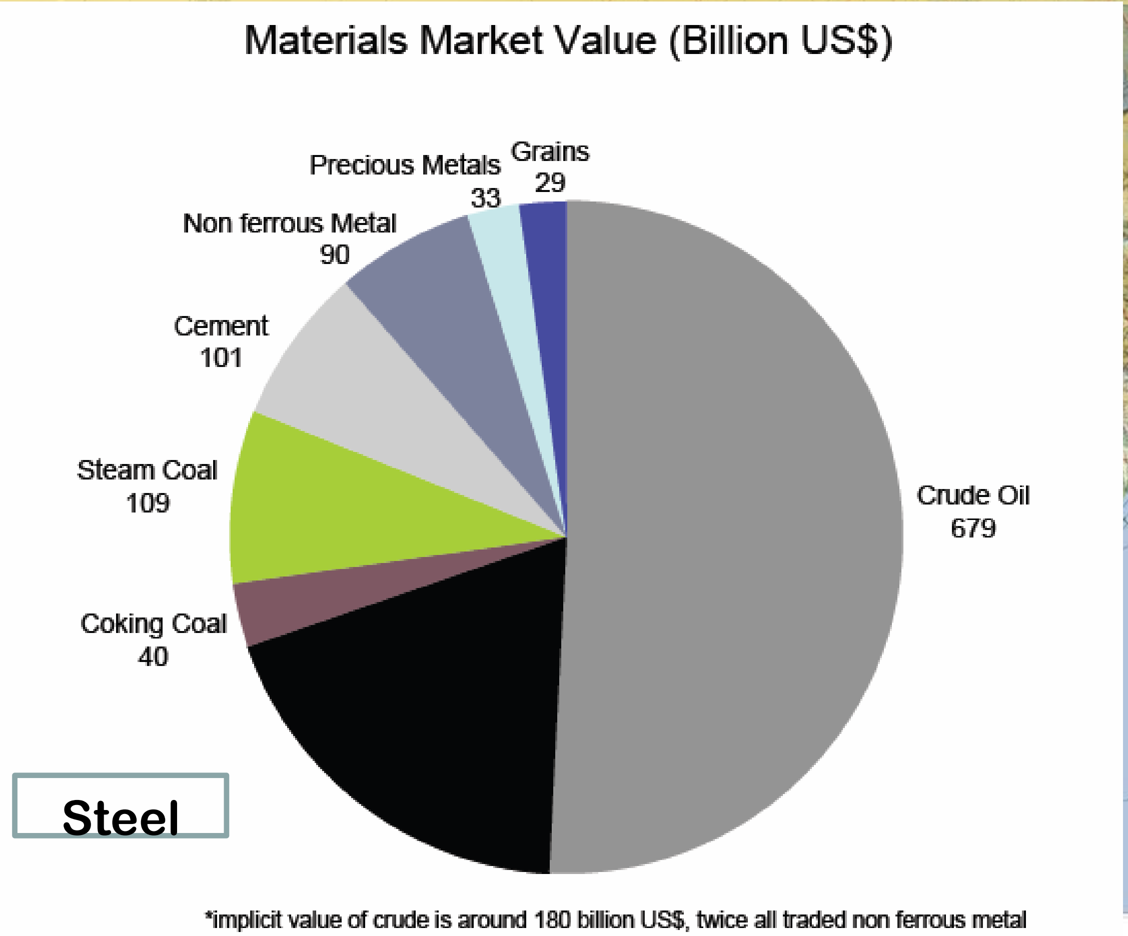
1.3 billion tons of steel are consumed annually- about tens times the sum of all other metals!

Steel is by far the most important feedstock into manufacturing.

SA Steel Production

Steel is the most important material into manufacturing, with high job creation potential.

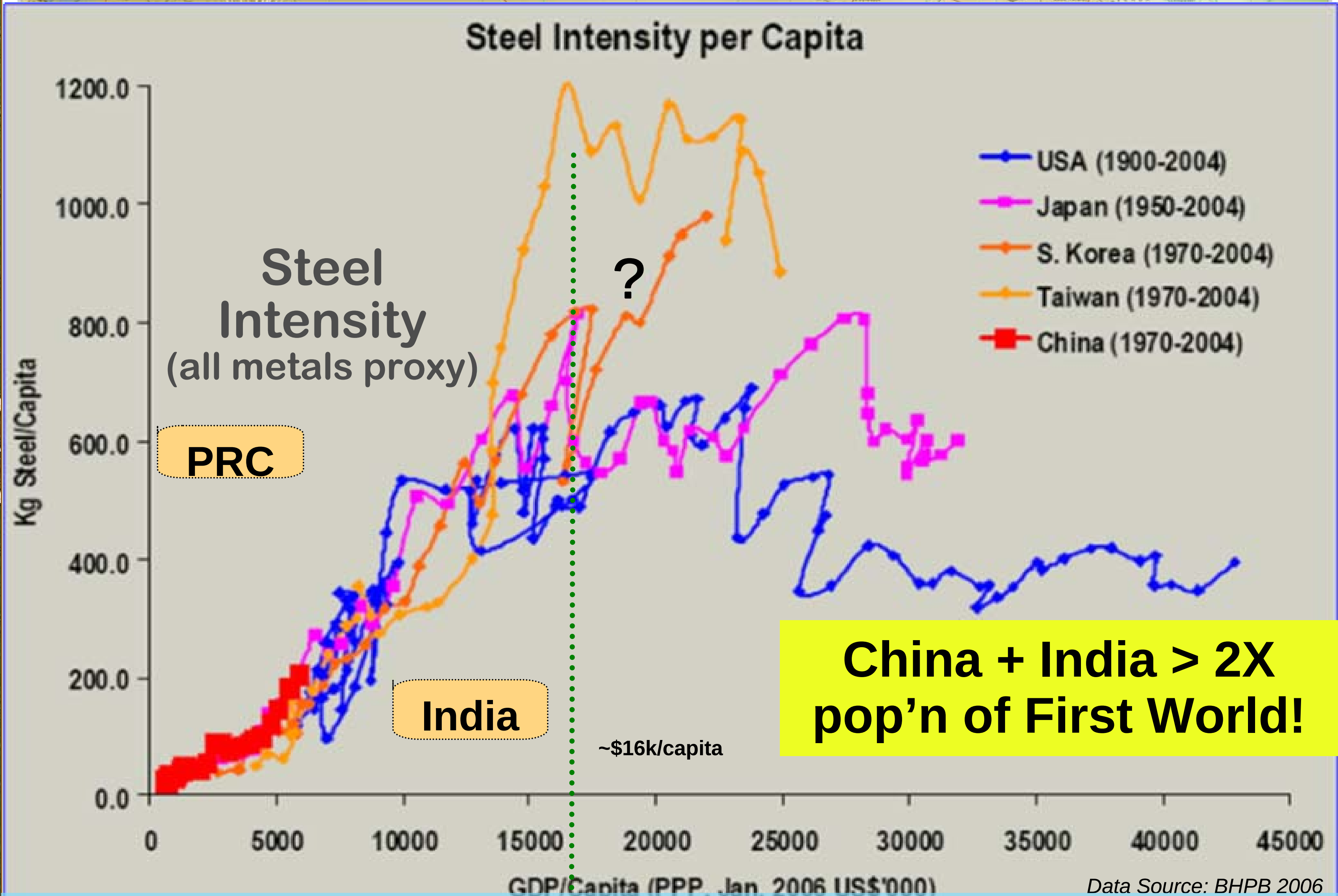
By value, steel is the 2nd largest global commodity, after oil



Global Steel intensity of use

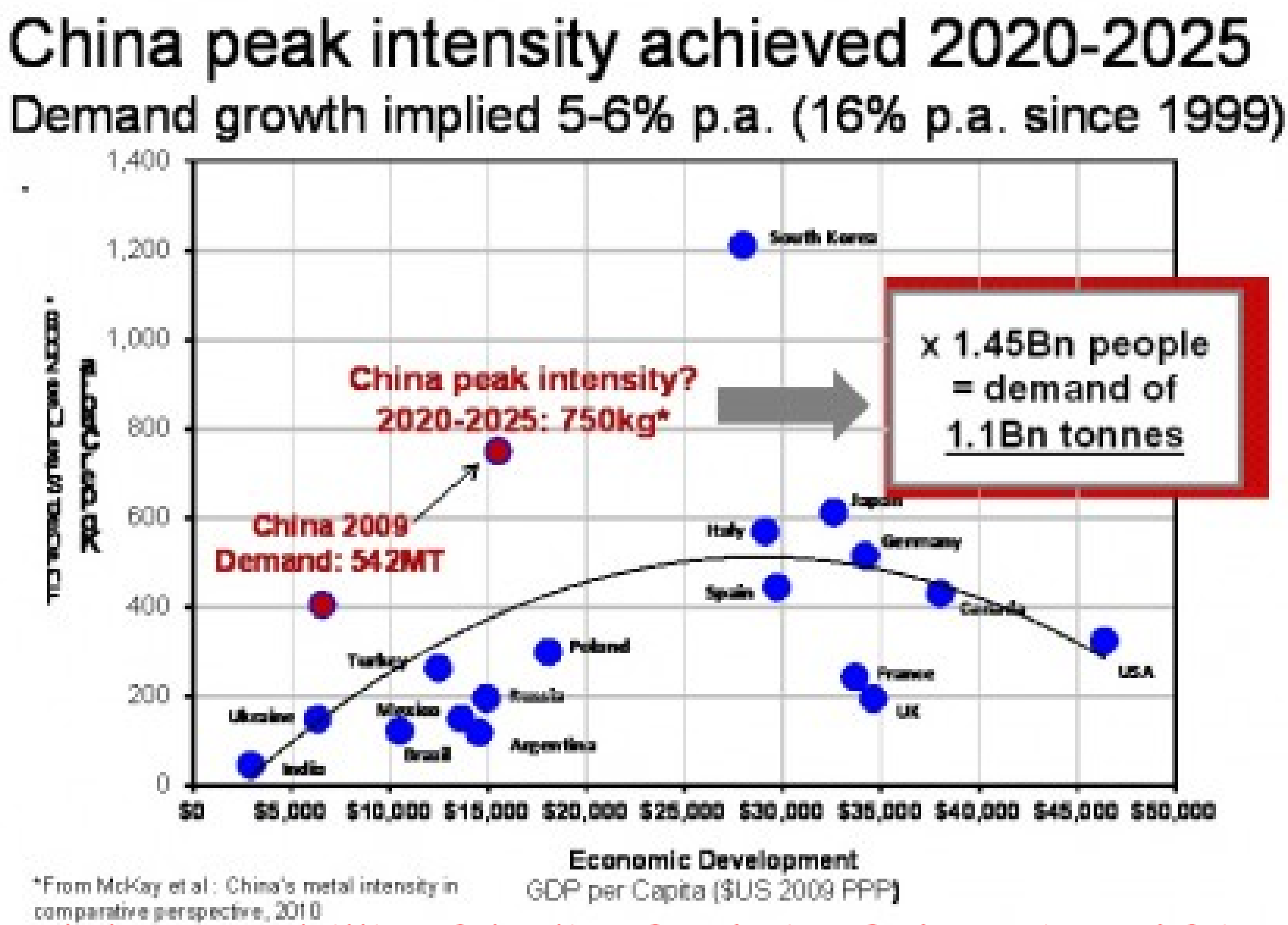
Steel- good proxy for most minerals

How long will boom last?



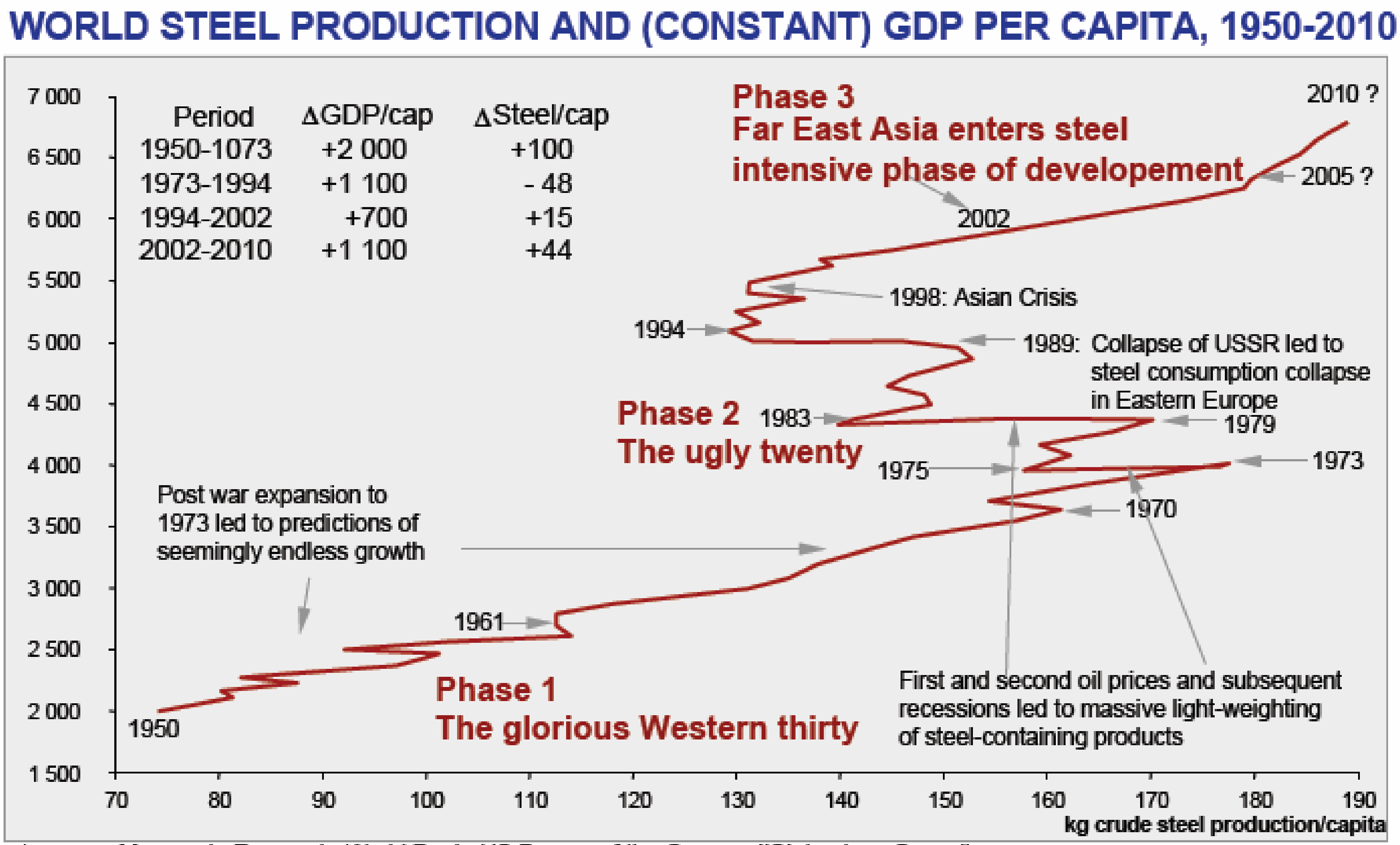
However, prices will fall with increasing supply over the medium-long term, but at a higher level (lower grades)

How long will boom last?



And the next billion? India, SE Asia, S.America, Africa?

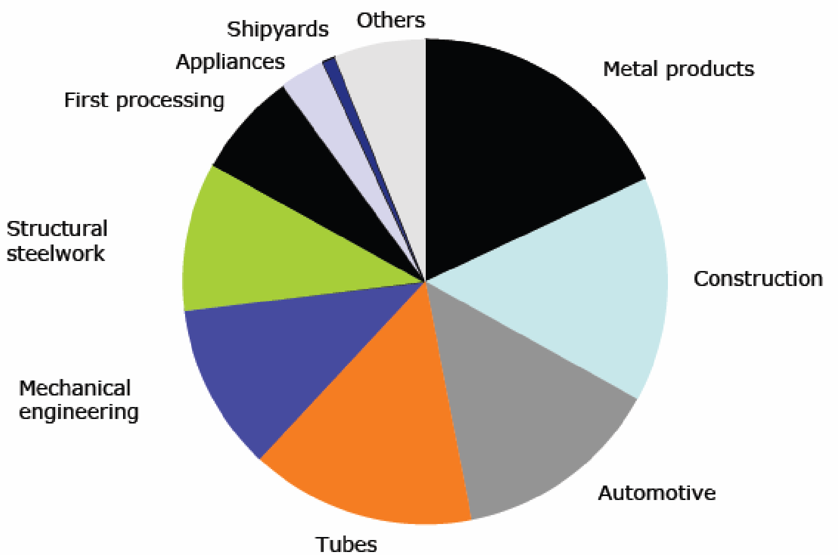
A OECD view of steel intensity



* source: Macquarie Research, World Bank, US Bureau of the Census, IISI, Laplace Conseil

Steel Demand (uses)

Breakdown of steel consumption by sector in Europe



Source : Eurofer

PRC Steel Consumption by Sector

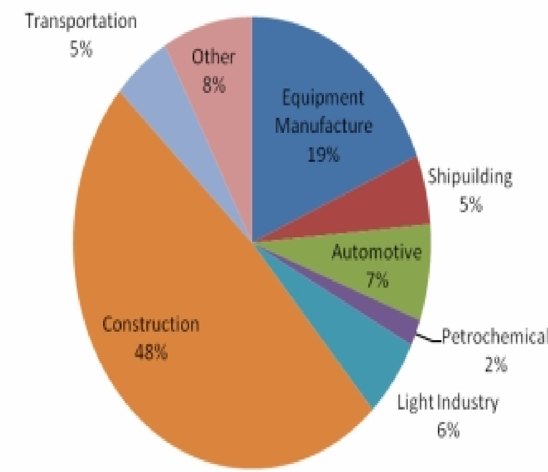
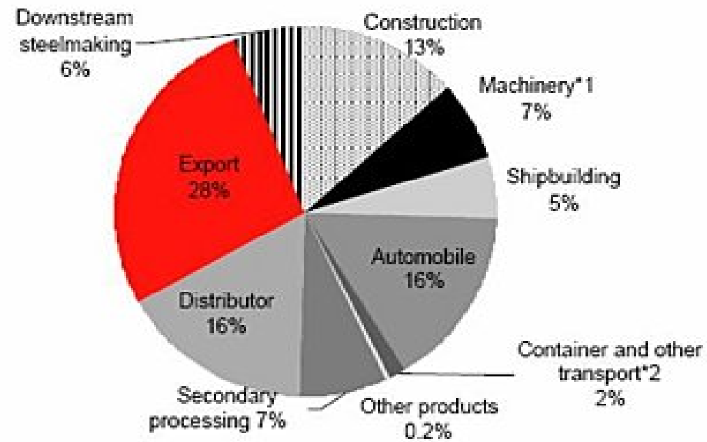


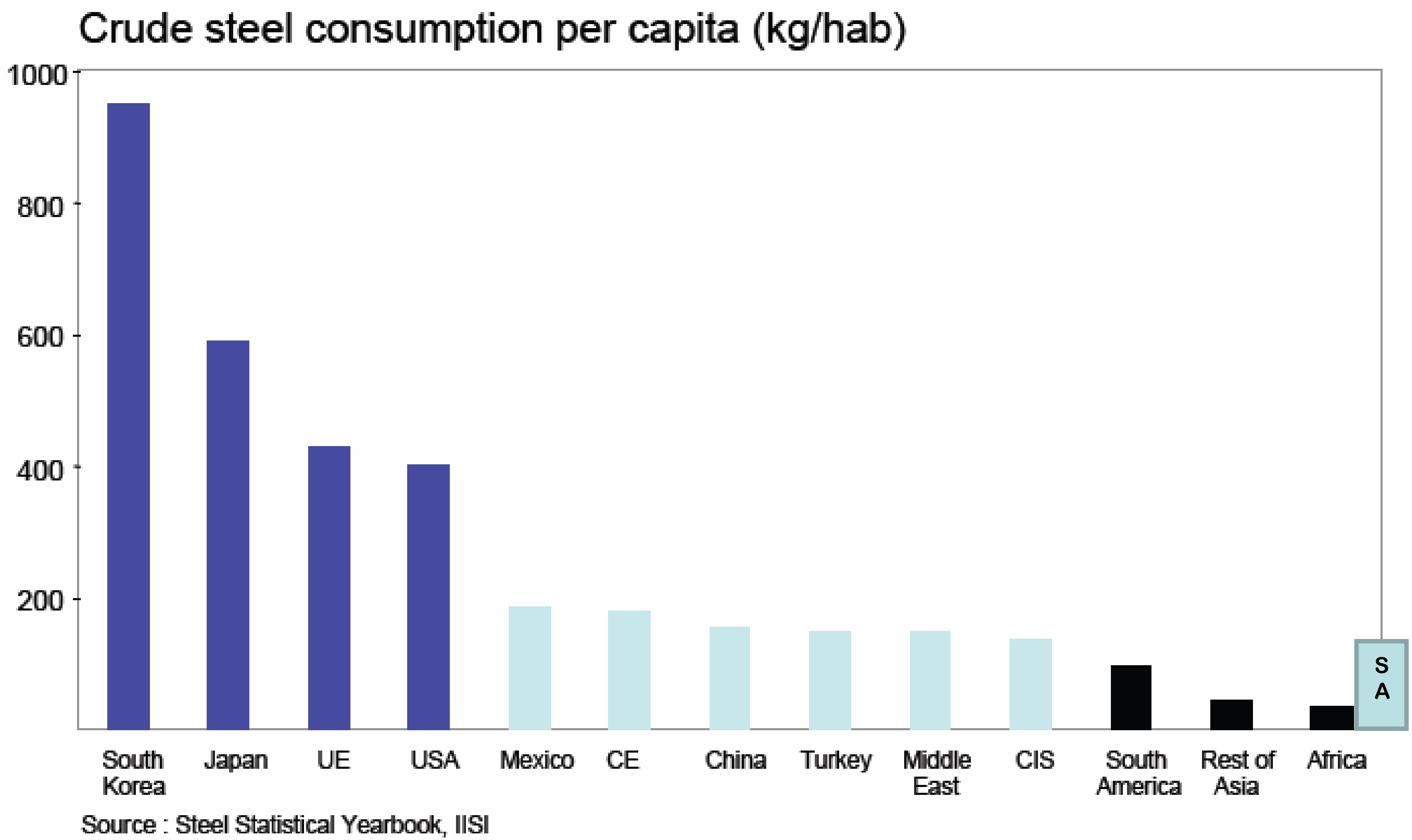
Fig 7 Breakdown of Japan steel demand by industry



*1 Including industrial machinery, electrical machinery and machinery for household and business use.
*2 Including railroad, transportation and containers.

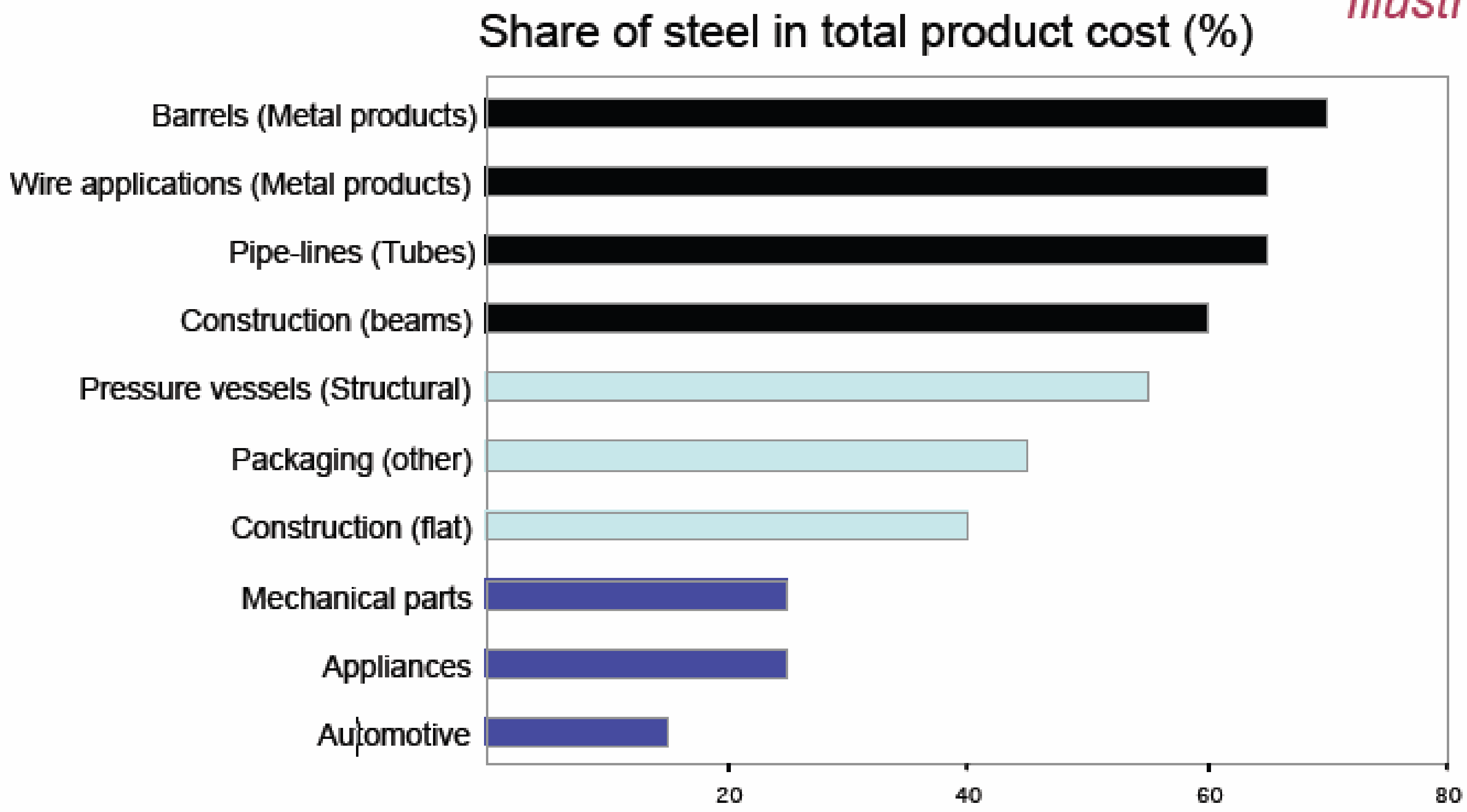
Source: JISF, Macquarie Research, February 2008

Global Steel Consumption



Product steel intensity

Illustrative



Shipbuilding? ~ 40%?

Global Steel Pipeline

Minimill Sector : 650 companies;
882 plants; 2198 EAF's;
537 Mt crude nameplate capacity; 350 Mt Production

Turnover : 65 Billion US$ worldwide
(Scrap purchase 35 BUS$)

Independent Transformers
VA : 30 B US$
Rerollers
Tube makers
Wire drawers
...

Integrated Sector : 165 companies
207 plants; 733 BOF's + 211 OHF
774 Mt crude capacity; 550 Mt production

Turnover : 160 Billion US$ worldwide
(iron ore and coking coal 53 BUS$)

Top 10 companies	: 26 %
Top 20	: 37 %
Top 100	: 75 %

2005 data- further consolidation since then (state driven in China)

Traders 2 BUS$

Service Centres
VA : 20 BUS$

Transport 30 BUS$

- Others
- Structural steelwork
- Construction
- Tubes
- Metal products
- Mechanical engineering
- Appliances
- Automotive

In all so-called "developmental states" (command economies) the state ensured that steel was supplied at competitive prices (often "utility" returns) resulting in much higher growth rates than the western "free market" states.

SA: The importance of steel in downstream sectors

Sector	Sub-sector	% Direct inputs	% Direct inputs + Indirect inputs
Metal products	Structural metal products	32.0%	42.7%
	Other fabricated metal products	36.6%	42.2%
	Treated metal products	35.8%	40.9%
Machinery and Equipment	General machinery	19.3%	24.9%
	Mining machinery	18.8%	24.4%
	Food machinery	18.4%	23.4%

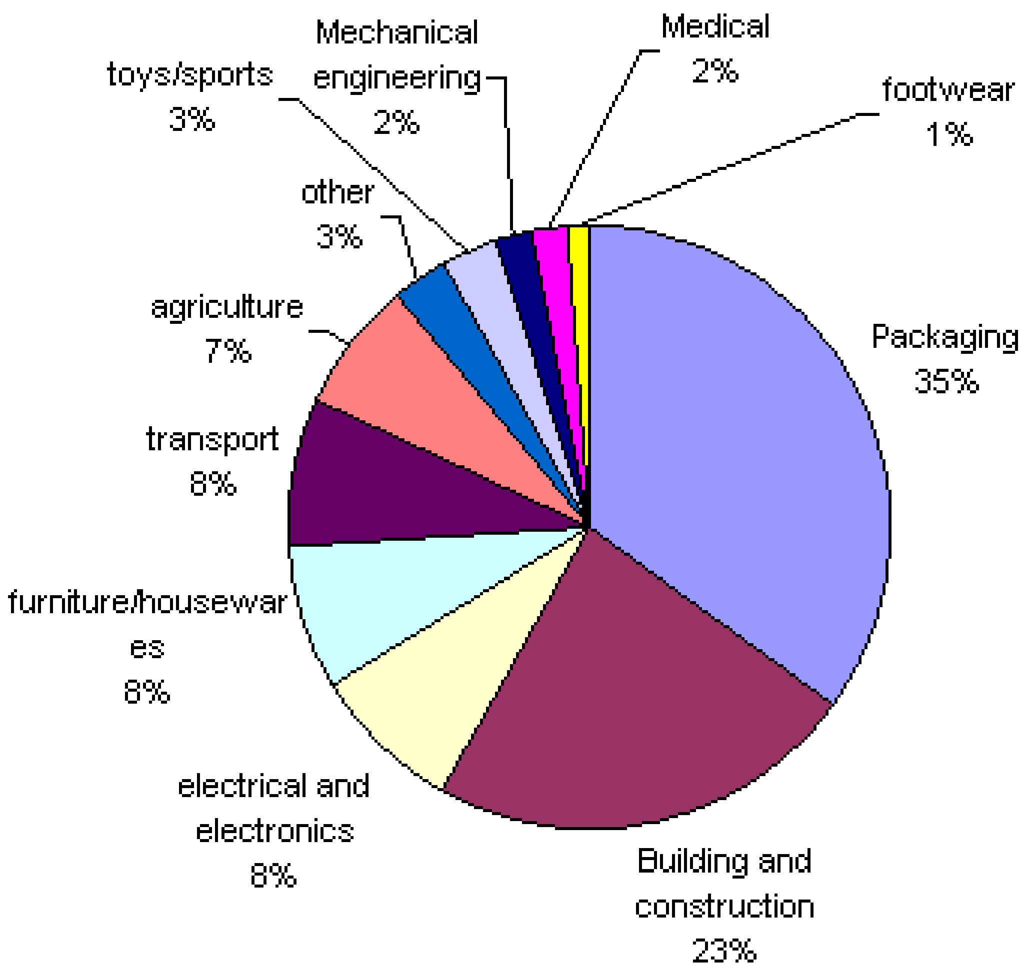
Polymers are the 2nd most important feedstock into manufacturing

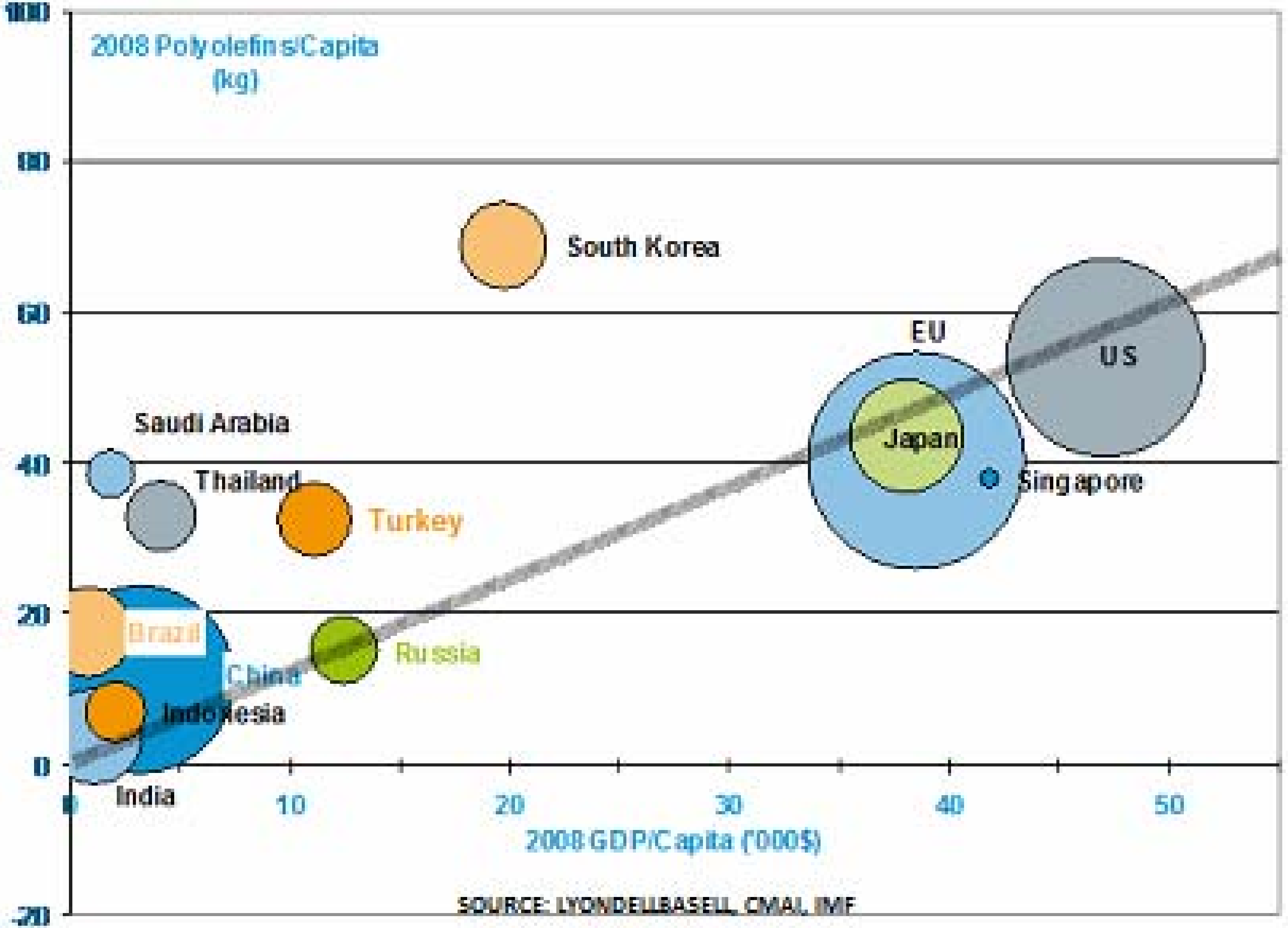
World Consumption – Polymers
(Thousand metric tonnes)

Market sector	2006	2016	2006-2016 CAGR, %
Food	42,025	71,774	5.5%
Textiles	32,176	51,630	4.8%
Furniture	13,687	22,993	5.3%
Printing	780	1,220	4.6%
Plastic products	43,500	78,361	6.1%
Fabricated metals	1,519	2,259	4.0%
Machinery	2,397	3,658	4.3%
Electrical/electronic	13,810	25,499	6.3%
Other transportation	9,330	16,181	5.7%
Vehicles & parts	10,746	15,625	3.8%
Other equipment	3,852	6,334	5.1%
Other manufacturing	21,238	33,569	4.7%
Construction	45,886	72,919	4.7%
Total	240,947	402,022	5.3%

	Net trade - 2016 (kmt)
Canada	697
US	(4,231)
Mexico	(2,886)
Brazil	553
Argentina	(1,301)
Other South & Central America	(4,412)
Western Europe	(406)
Russia	1,439
Other Central & Eastern Europe	(2,375)
China	(15,588)
India	1,148
Japan	155
South Korea	5,278
Taiwan	3,679
Thailand	1,030
Australia New Zealand	(1,302)
Other Asia Pacific	(3,534)
Middle East	25,251
Africa	

Uses of Plastic





100
2008 Polyolefins/Capita (kg)
80
60
40
20
0
-20
South Korea
EU
US
Japan
Singapore
Saudi Arabia
Thailand
Turkey
Brazil
China
Russia
Indonesia
India
0
10
20
30
40
50
2008 GDP/Capita ('000$)
SOURCE: LYONDELLBASELL, CMAI, IMF

Part III

South Africa: Minerals for Development?

South Africa's Natural Resources

SA's natural (static) comparative advantage lies in its natural resources endowment as well as potential, particularly:

- ***Minerals & energy;***
- ***Agriculture & Animal husbandry;***
- ***Forestry & Biomass;***
- ***Water;***
- ***Fisheries & Aquaculture; and***
- ***Tourism (natural endowment-based).***

- *However, of these only its **mineral and tourism** resources could be considered as "exceptional" in global terms.*
- *Its **energy** resources are predominantly problematic as they are mainly based on fossil fuels (coal, CBM, gas), though there could be long-term solar potential with new technologies.*
- *South Africa is a **water scarce** country with increasing water imports, which also curtails its agricultural & animal husbandry potential (2/3 <500mm/an = minimum for dry-land farming).*
- *Natural harvesting of **sea fisheries** has peaked, but its ~2500km coastline could give a relative mariculture advantage (still nascent).*
- *Natural harvesting of **forests** is in decline and plantation forestry has reached its limit, if not over-reached it, in terms of water consumption.*

SA is well-endowed with critical mineral feedstocks to underpin a competitive economy:

- Iron ore: steel- manufacturing & construction
- Coal : polymers- manufacturing
  Energy- all activities
- Fertilizer minerals: Agriculture
- Base metals: manufacturing & construction
  Ferro-alloys: manufacturing

However the mineral-based feedstocks are generally sold at predatory prices (monoply), severely compromising downstream job!

Steel: SA is well-endowed with the main minerals for steel making for competitive manufacturing sector:

- Iron ore
- Coal & Coking Coal
- Ferro-alloys
- Fluxes

However the resultant iron & steel is made available at monopoly prices (IPP), destroying tens of thousands of potential downstream jobs in manufacturing!

Yet the minerals belong to the people as a whole?

Blast Furnace Route Steelmaking Costs 2010

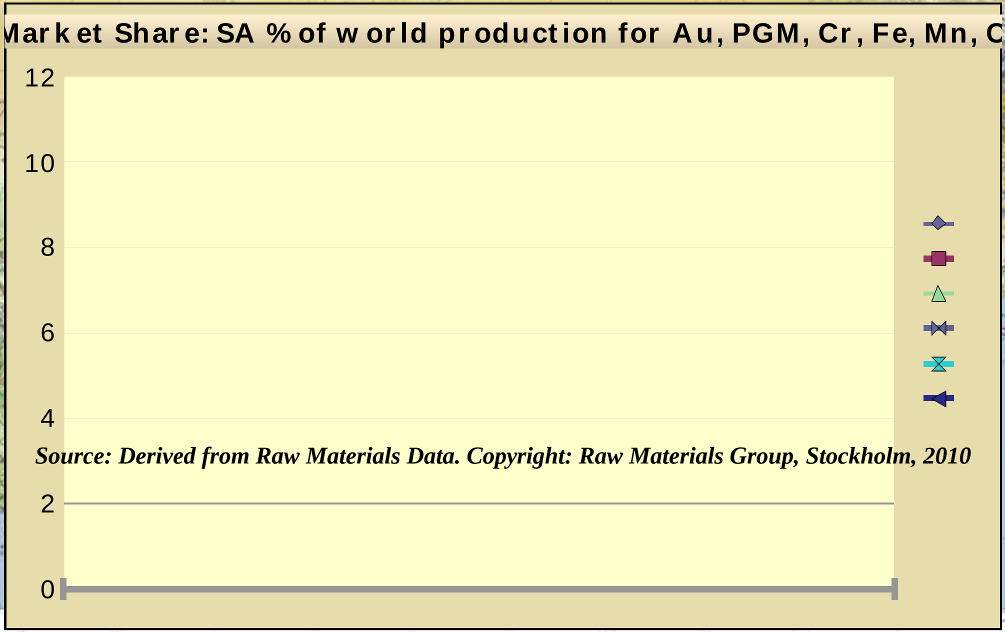
Blast Furnace Route Steelmaking Costs 2010
Conversion costs for BOF steelmaking

Conversion costs for BOF steelmaking: Integrated steelmaking - crude steel cost model

Item $/unit	Factor		Unit cost	Fixed	Variable	Total	%	SA
Iron ore	**1.435**	**t**	**62**		**88.97**	**88.97**	**23%**	**+++**
Iron ore transport	1.435	t	20		28.7	28.7	8%	++
Coking coal	**0.519**	**t**	**128.5**		**66.69**	**66.69**	**18%**	**+++**
C. coal transport	0.519	t	19.5		10.12	10.12	3%	++
Steel scrap	**0.162**	**t**	**325**		**52.65**	**52.65**	**14%**	**~**
Scrap delivery	0.162	t	5		0.81	0.81	0%	~
Oxygen	80	m3	0.08		6.40	6.40	2%	+
Ferroalloys	0.014	t	1400		19.60	19.60	5%	+++
Fluxes	0.521	t	30		15.63	15.63	4%	++
Refractories	0.011	t	600		6.60	6.60	2%	++
Other costs	1		13	3.25	9.75	13	3%	~
By-product credits					-20.00	-20	-5%	~
Thermal energy,	-2.68	GJ	12.50		-33.50	-33.5	-9%	~
Electricity	0.122	MWh	150	2.75	15.56	18.3	5%	++
Labour	0.64	Man hr	35	5.6	16.8	22.4	6%	+
Depreciation				40.00		40.00	11%	~
Interest				44.00		44.00	12%	-
Total				**95.6**	**284.78**	**380.37**	**100%**	**++**

The "failure" of South Africa to take full advantage of the 2003-2008 resources boom is often opportunistically blamed on the allegedly onerous mining regime by interests seeking an even more "liberal" regime. However, is this the reason? Infrastructure and resources constraints appear to be the predominant cause:

1. **PGMs** – increased market share: expanded into the boom, tho' Platreef development constrained by water. Ni & Cu limited by PGMs, as by-products;
2. **Gold** – lost market share: constrained by limited reserves (the Wits resource)
3. **Coal** – lost market share: constrained by rail/terminal capacity;
4. **Iron ore** – lost market share: constrained by rail/terminal capacity;
5. **Chromium** – slightly lost market share: FeCr limited by elec crisis;
6. **Manganese** – kept share, despite rail constraints;
7. **Copper** – lost market share: constrained by limited reserves (Phalaborwa) and the PGM mining shift from the Merensky Reef to UG2 (less Cu & Ni);



Source: Derived from Raw Materials Data. Copyright: Raw Materials Group, Stockholm, 2010

Part V

Beyond a hole in the ground: Resource Sustainability?

Optimising the developmental impact!

Minerals Sustainability?
Resource Industry Linkages
(beyond resource rents)

1. INFRASTRUCTURE:
Puts in critical infra (transport, energy) for other non-minerals economic potential

2. UPSTREAM Inputs:
Plant, machinery, equipment, consumables, services, (export)

Use wasting asset to underpin growth in sustainable

H R D

3. DOWNSTREAM
Value-addition
Beneficiation
Export of resource-based articles

4. TECHNOLOGICAL Linkages:
"Nursery" for new tech clusters, adaptable to other sectors

If the mineral linkages cannot be made, the people's mineral assets would be best left in the ground (only get one chance to optimise)!

Resources provide opportunities for *up-, down- & side-stream linkages*

expl. capital goods
- *geophysical*
- *drilling*
- *survey*
- *etc.*

Exploration

exploration services
- *GIS*
- *analytical*
- *data processing*
- *financing*
- *etc*

mining capital goods
- *drilling*
- *cutting*
- *hauling*
- *hoisting, etc.*

Mining

mining services
- *mine planning*
- *consumables/spares*
- *sub-contracting*
- *financing*
- *analytical, etc*

processing cap. goods
- *crushers, mills*
- *hydromet plant*
- *materials handling*
- *furnaces, etc.*

Mineral Processing

processing services
- *comminution*
- *grinding media*
- *chem/reagects*
- *process control*
- *analytical, etc*

Refining Cap. Goods
- *Smelters*
- *Furnaces*
- *Electro winning cells*
- *Casters*

Smelting & Refining

Refining services
- *Reductants*
- *Chemicals*
- *Assaying*
- *Gas & elec supply*

Fabrication Cap.goods
- *Rolling*
- *Moulding*
- *Machining*
- *assembling*

Fabrication

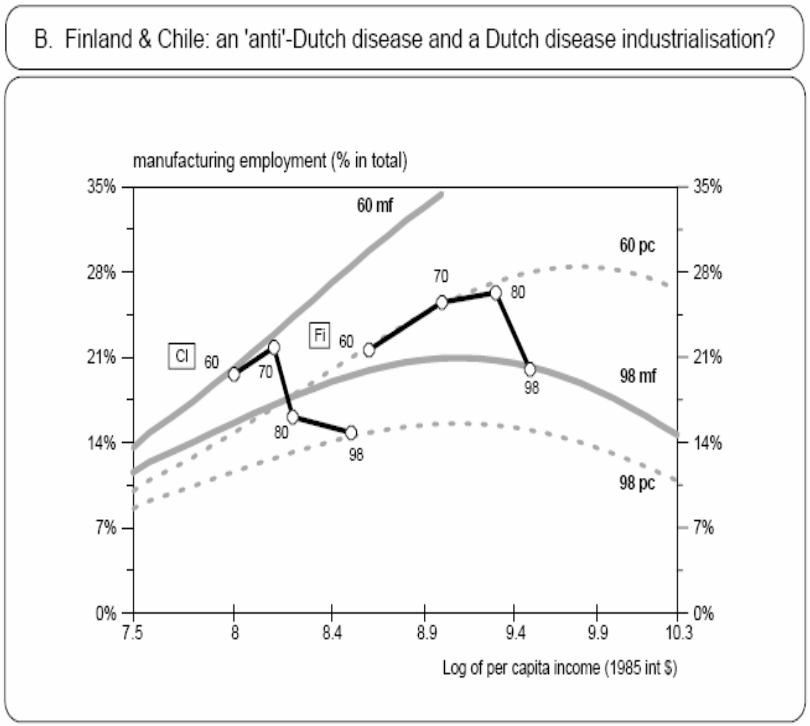
Value adding services
- *Design*
- *Marketing*
- *Distribution*
- *Services*

Resources inputs sector (up-stream) has a comparative advantage in:

1. ***Relatively large local market***
2. ***Development of techs for local conditions***
3. ***National asset: permits for concessioning with strong linkages conditionality***

The resource curse can be avoided!

"Deepening" the resource sector linkages: *development of the resource <u>inputs</u> & <u>outputs</u> industries is critical , but requires the development of a resources tech capacity!*



Finland: 1970 on primary commodities (pc- mining & forestry) inverted U-curve, but shifts to 1998 manufacturing curve (mf- resources inputs &

Chile: 1970 on manufacturing U-curve (ISI), but shifts to 1998 primary commodities (mining & agriculture) curve, after opening up its economy (coup) in the 70's.

Finland managed to shift from a 1970 resources (pc) trajectory to a 1998 manufactures (mf) trajectory, through the development of its resources inputs (machinery) and outputs (value-addition) sectors (source Palma, G. 2004)

Using a *natural comparative* advantage to develop a *competitive advantage*

Finland: The mature forestry industrial cluster 1997a

BACKWARD LINKAGES

1. **Specialized inputs**
   Chemical and biological inputs (for production of fibres, fillers, bleaches)
2. **Machinery and equipment**
   For harvesting (cutting, stripping, haulage)
   For processing (for production of chips, sawmills, pulverization)
   For paper manufacture (30% of the world market)
3. **Specialized services**
   Consultancy services on forest management
   Research institutes on biogenetics, chemistry and silviculture

NATURAL COMPARATIVE ADVANTAGE

Abundant forestry reserves and plantations (400-600m3 per capita)b

SIDE LINKAGES

Related activities
Electricity generation
Process automation
Marketing
Logistics
Environment industries (paper)
Mining (sulphuric acid)

FORWARD LINKAGES

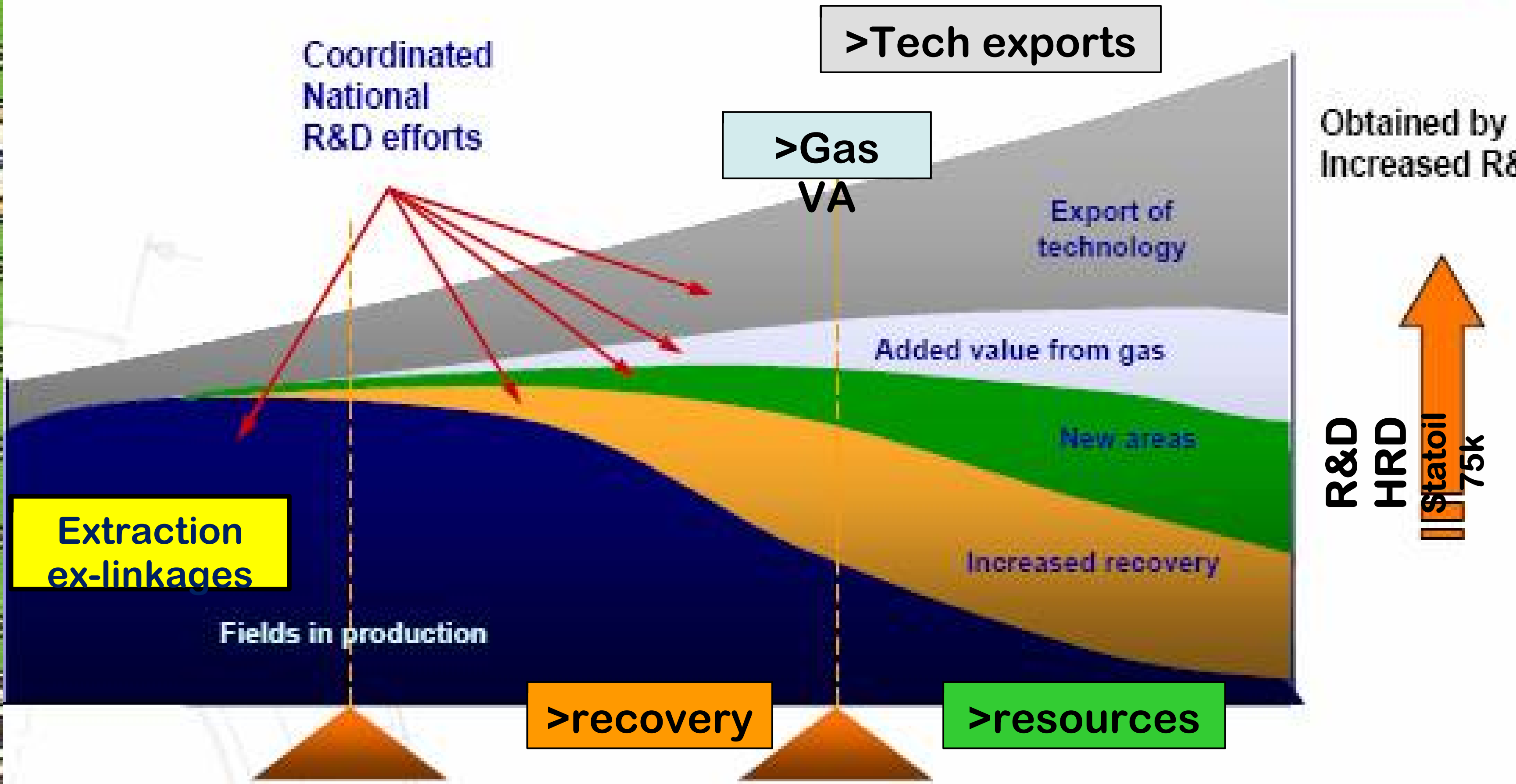
1. **Roundwood**
   Sawnwood
   Plywood (40% of the world market)
2. **Wood products**
   Furniture
   For construction
3. **Wood pulp**
4. **Paper and cardboard**
   Newsprint
   Art paper (25% of the world market)
   Toilet paper
   Packaging
   Special products

Source: Ramos 1998 p111 (CEPAL Review, #68, 12/1998);

a: Generates 25% of Finland's exports;
b: Compared with 25-30m3 per capita in the rest of the world.

HC Development Strategy:
(Norway: OG21 tech strategy)

Prolong the life of the resources, migrate to exports of resource techs and value-added products: ***survive beyond resource depletion!***



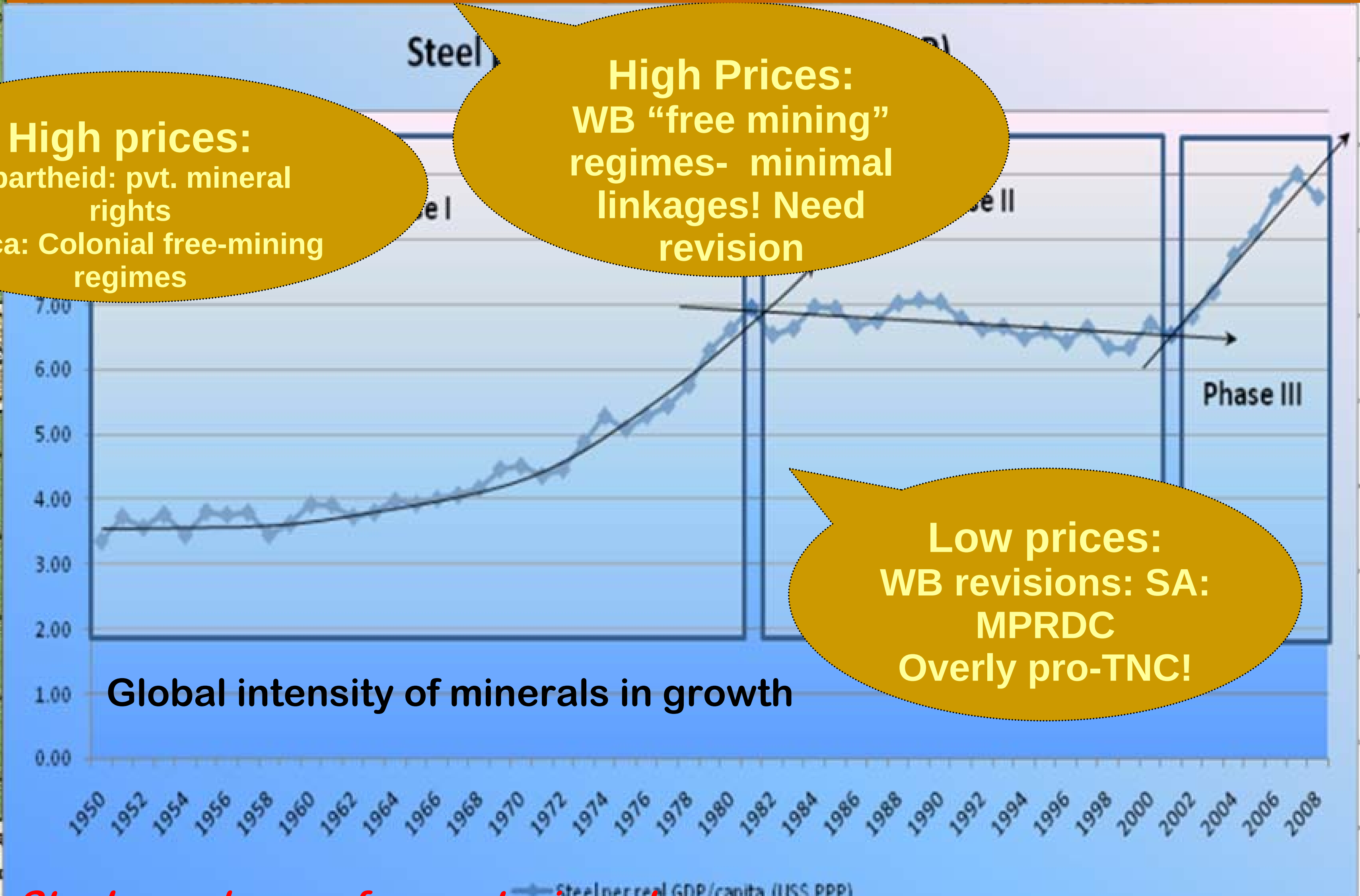
TNCs also tend to locate their high level HRD in OECD countries (often linked to their R&D university partners), which could deny states the development of this seminal capacity;
In the longer term there are clearly political downsides to a resource sector dominated by foreign capital;
Finally there is the TNC "core competence" (dirt-digging = no linkages) conundrum.

In order to rapidly acquire the requisite capital and skills, African states have opted to realise their resource endowments through attracting foreign resource companies (TNCs & JRCs), rather than mainly relying on domestic capital. SA domestic mining houses have "converted" into foreign TNCs (relistings/sales) with concomitant disadvantages. The foreign investment (DFI) "trade-off" comes with several possible "threats"

1. TNCs usually have global **purchasing** strategies which are less likely to develop local suppliers (linkages),
2. TNCs tend to optimise their global **processing (beneficiation)** facilities which can deny local downstream opportunities;
3. TNCs locate their **tech development (R&D)** in OECD countries, thereby denying the development of this critical side-stream capacity;
4. TNCs also tend to locate their **high level HRD** in OECD countries (often linked to their R&D university partners), which could deny states the development of this seminal capacity;
5. In the longer term there are clearly **political downsides** to a resource sector dominated by foreign capital;
6. Finally there is the TNC "**core competence**" (dirt-digging = no linkages) conundrum.

However, all of these threats can be overcome or ameliorated through appropriate state actions, policies and interventions!

Inappropriate Mineral Regimes Africa is not capturing mineral rents!



Steel- good proxy for most minerals

"Free Mining" Colonial Mineral Regimes

The MPRDA is essentially based on the principle of *free mining*, or "free entry," Free mining includes:

1. *"a right of free access to lands in which the minerals are in public ownership,*
2. *a right to take possession of them and acquire title by one's own act of staking a claim, and*
3. *a right to proceed to develop and mine the minerals discovered."**

The MPRDA broadly fits into the World Bank's revision of African mineral regimes from the 80's till current.

"..certain elements of the free mining doctrine that animated the nineteenth-century formulation of mining regimes in the American and British spheres have also guided the liberalisation process of African mining regimes over the 1980s and 1990s. One of the ways this came about was through the retrenchment of state authority, which in turn contributed to the institutionalisation of asym-metrical relations of power and influence that had important consequences for local political processes, local participation, and community welfare."+

Free mining originated in small enclaves in Medieval Europe but was formalised in California and other European colonies in the 19th century, as a vehicle to promote dispossession & colonisation.

But is the wholesale application of this doctrine in the interests of South Africa?

(origin of the KIO-AMSA mineral rights mess)

*Sources: *Barton 1993 & +Campbell 2010*

Extracting Greater Benefits?

Beyond "free mining" regimes?

Exploration Terrains

Unknown assets

Partially Known

Known assets

Exploration Terrain

Geo-Reserve Terrain

Delineation Terrain

Exploration License

RoR*/RRT tax

Mining Charter type conditions

- **Further geo-survey:**
- **Risk exploration for future step-in rights.**

Auction on:

- **Rent share (RRT)**
- **Infra development**
- **Up/downstream invest**
- **BB-BEE/State free-carry**
- **HRD & R&D, tech transfer**
- **Community development**

Mining Concession/License

**RoR: Rate-of-Return*

Resource rent taxes (RRT);
Annual investment into local HRD & R&D

Excess capex: over-dimensioning of project infrastructure for use by other sectors (transport, power, water, etc.)
Upstream investments (project inputs);
Downstream investments (beneficiation)
Technology transfer & local R&D and HRD
Local community development

Bid evaluation should be based on several transparent weighted criteria:

- State revenue over the life of the concession;
  - Tax,
  - Royalties,
  - Resource rent taxes (RRT),
  - Annual investment into local HRD & R&D

- Excess capex: over-dimensioning of project infrastructure for use by other sectors (transport, power, water, etc.)
- Upstream investments (project inputs);
- Downstream investments (beneficiation)
- Technology transfer & local R&D and HRD
- Local community development

SA Example- *The lost potential impact of concessioning the state's manganese assets against developmental goals*

In 2002/3 the state's manganese assets were given a diverse group of B-B BEE companies that have failed to optimise the potential developmental impacts of this world-class mineral asset (possibly the best unexploited manganese property in the world).

Before these assets were "given" to the B-B BEE interests several steel majors had shown a great interest in acquiring them. This led to a high level check, in India & China, on the appetite for steel companies to establish a world scale steel plant in South Africa in exchange for this asset and the response was positive. Consequently it was that the state's unique manganese resources should rather be auctioned against the following criteria:

- Job creation (direct & indirect);
- Downstream beneficiation (ferro-alloys, Mn, Mn salts, etc.);
- The establishment of a world-scale steel plant for flat & long products that would sell into the SA market at EPPs (export parity prices) and thereby discipline Mittal's monopoly pricing;
- Revenue stream to government (royalty, taxes: RRT?);
- Technology transfer & local R&D;
- B-B BEE.

Unfortunately this proposal was rejected and instead these assets were given to several B-B BEE companies that lacked the resources to optimise the propulsive impact of these national assets. A rough calculation on the potential jobs lost by this "give away" came up with a figure of over 100,000, mainly due to the impact of lowering steel prices to our manufacturing sector by 30% to 50% (after labour, steel is the most important input by

Importance of steel pricing to downstream development

Estimated output and employment responsiveness of downstream steel firms to reductions in the domestic price of steel

% reduction in the domestic price of steel	% of firms that would increase output by more than 10%	% of firms that would increase employment by more than 10%
10% lower steel prices	43.5%	21.8%
20% lower steel prices	67.7%	44.9%
30% lower steel prices	80.9%	56.7%

Source, Zalk (dti, 2010) from CSID

Facilitation of up- and down-stream linkages

1. **Minerals are a finite national asset: build linkages into the concession (license) conditions (through "price discovery")**
2. **Access to competitively priced feedstocks:**
- **Downstream: restrict exports of crude resources: export tariffs?**
- **Upstream: Capital goods- steel and special steels (poss. for regional iron/steel production facilities);**
3. **Access to concessionary capital: DFIs: local, regional,continental & global. Venture capital funds (PPPs with TNCs?);**
4. **Competitive currency (forex rate): Ameliorate the Dutch Disease by keeping windfall rents offshore and committing to long term physical & social infrastructure (drip-feed back into economy)?**
5. **Access to requisite skills: Dedicated HRD institutions (JV's w/foreign Universities). Concession HR "indigenisation" conditions. Strategy to repatriate the huge African skills "Diaspora"?**
6. **Access to technology: Establish resources up- and down-stream research facilities (R&D PPPs?) and use of resource rents for R&D. Make tech transfer/development a concession condition!**
7. **Access to supply contracts: Ensure that equitable access for local suppliers. Judicious use of tariffs for infant industries. Ensure foreign supplier localisation through local content milestones?**
8. **Infrastructure: Establish world-class human (skills)& physical infra (transport, energy, water, telecoms, etc.) using resource rents.**

Catalyse other Sectors & Areas (agri, tourism, etc.)

Recap:

Infrastructure: transport, energy, skills, R&D

Manufacturing (e.g. cap goods)

Exploitation capital goods:
e.g. plant, equipment, after-market, etc.

Processing capital goods

Intermedi capital go

Resources Exploitation → **Processing** → **Intermediates (feedstocks)** →

Feed stocks & Tech. (bene

Exploitation services:
e.g. financial, technical, consumables, logistics, energy, skills, etc.

Processing services

Intermediates services

Resource inputs: key to tech development

Catalyse other Sectors & Areas (agri, tourism, etc.)

Infrastructure: transport, energy, skills, R&D

Manuf acturin g (e.g. cap goods)

Exploitation capital goods:

e.g. plan

eq

Processing capital goods

Intermedi capital go

BEYOND COMMODITIES?

Use Asian resource demand to kick-start a Resource-based South African Development Strategy

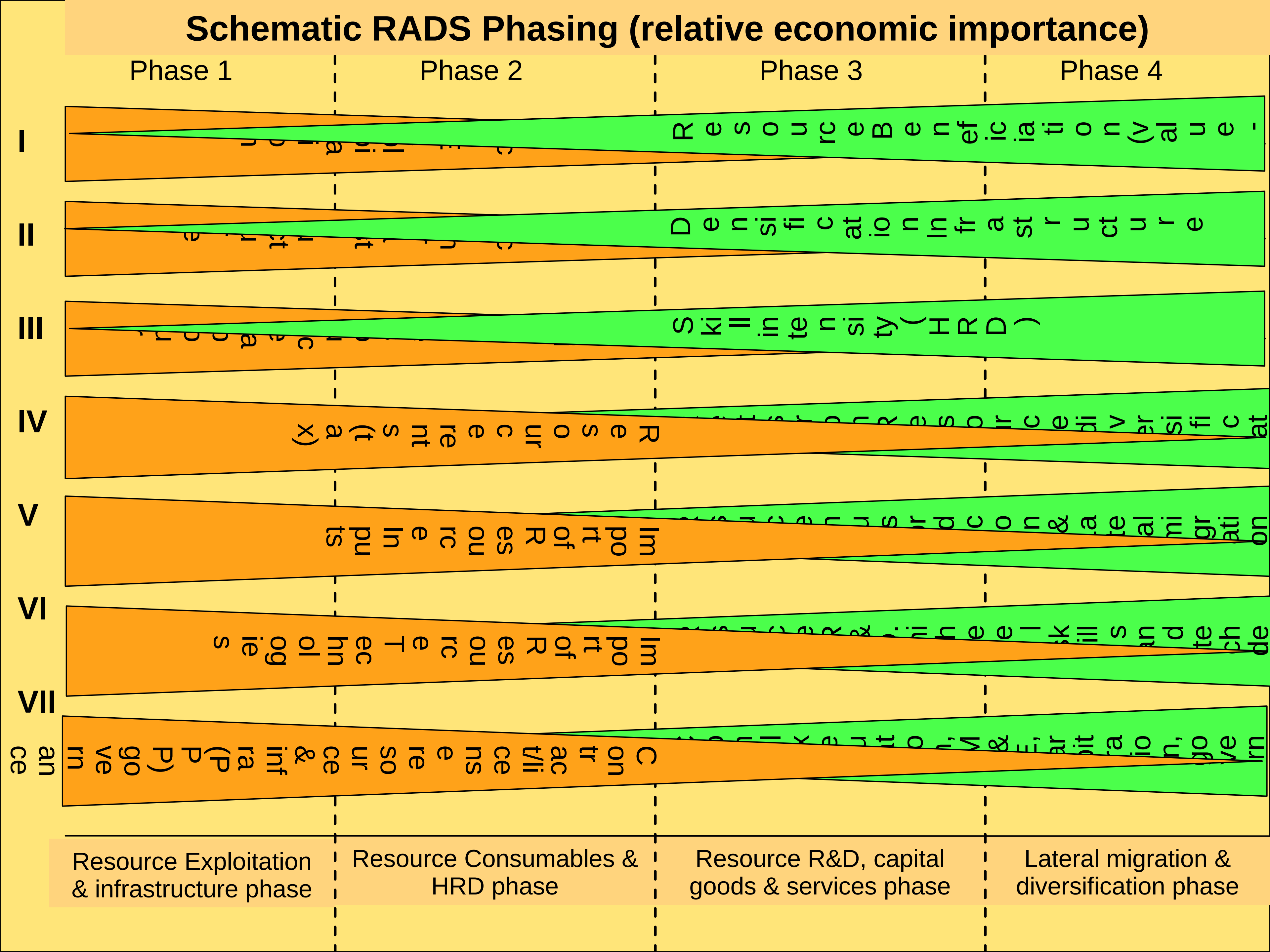
Exploitation services:

e.g. financial, technical, consumables, logistics, energy, skills, etc.

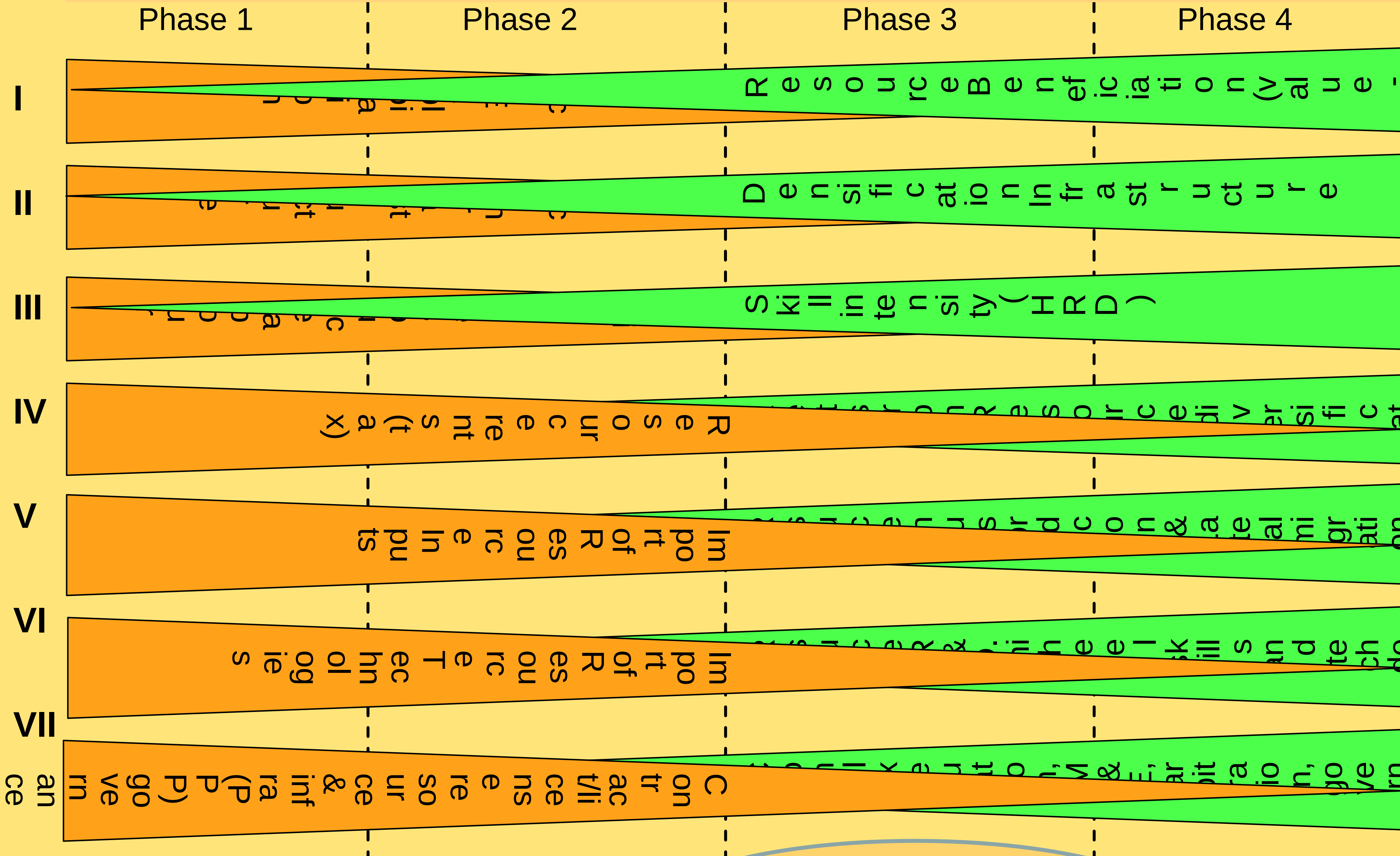
services

services

Resource inputs: key to tech development


Schematic RADS Phasing (relative economic importance)
Phase 1
Phase 2
Phase 3
Phase 4
I
Resource Beneficiation (value-
II
Densification Infrastructure
III
Skill intensity (HRD)
IV
Resources (tax)
V
Import of Resource Inputs
VI
Import of Resource Technologies
VII
Contract/licence & infra (PPP) governance
Resource Exploitation & infrastructure phase
Resource Consumables & HRD phase
Resource R&D, capital goods & services phase
Lateral migration & diversification phase

Schematic RADS Phasing (relative economic importance)

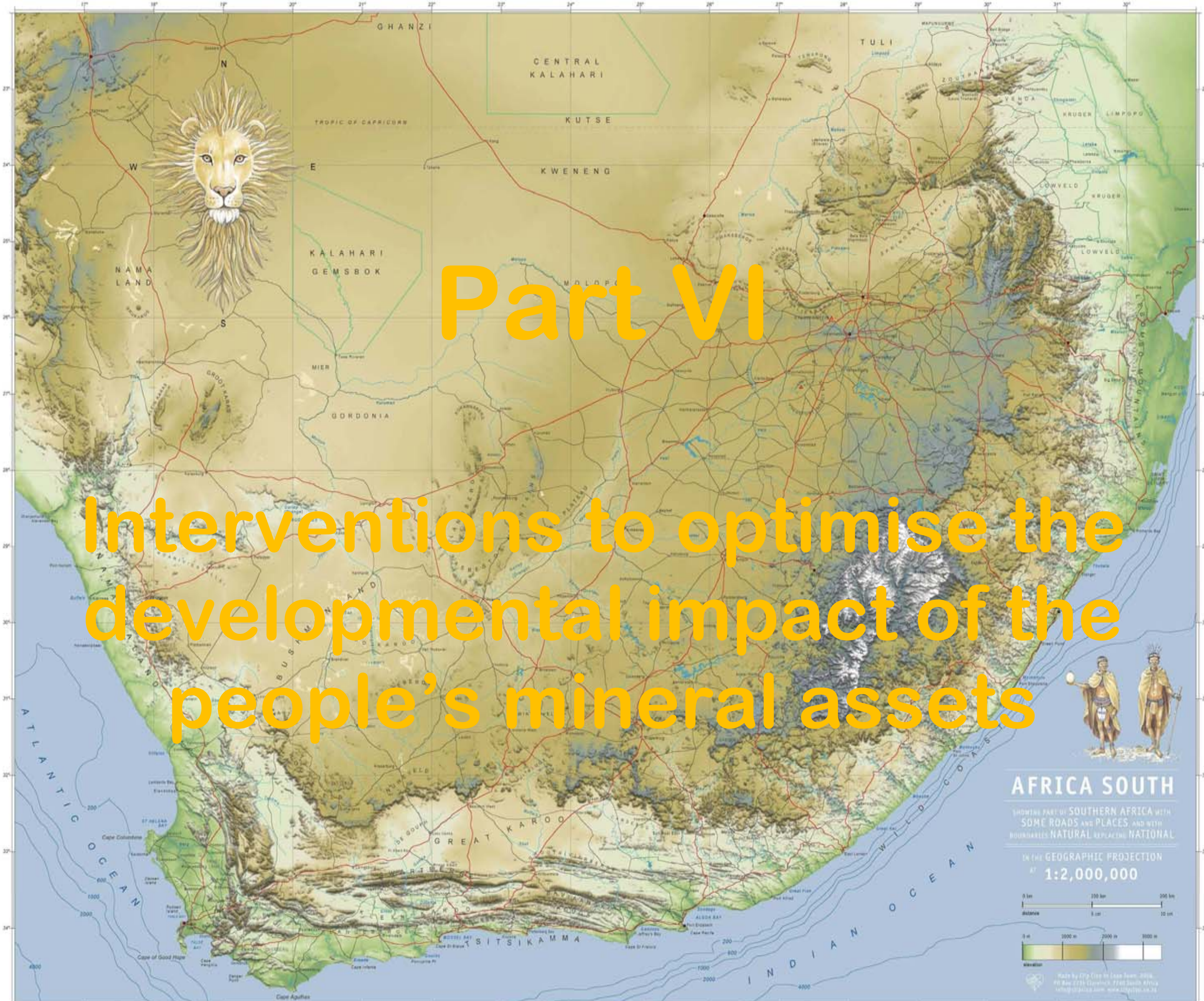


Resource Exploitation & infrastructure phase	Resource Consumables & HRD phase	Resource Retail, capital goods & services phase	Lateral migration & diversification phase

SA would be in Phase 3, but falling back into Phase 2!

Part VI

Interventions to optimise the developmental impact of the people's mineral assets



Possible Interventions

MPRDA:

- **Amend the MPRDA by making the optimisation of the developmental impact of minerals (particularly the realisation of linkages into the local & regional economy) an explicit objective of the Act, including technology transfer and development;**
- **Insert the requisite clauses to permit the Minister to make the concession (license) conditional on realising the mineral linkages;**

All unallocated mineral properties (& other national resources: water, land/servitudes, etc.), should be transparently and competitively auctioned to optimise the developmental impact. Establish a Resources Concessions & Compliance Commission (RCCC) under the National Treasury to:

develop best practice guidelines, with the Treasury PPP Unit, for competitive resources concessioning to realise price discovery & the optimal developmental impacts (linkages) of the auction;

oversee all mineral and other state resources (water, land, rights, etc.) concessioning/leasing, with, for the proposed "Mindevco" & DMR and other appropriate state departments/SOEs; and

to monitor ongoing compliance of resource exploitation companies with the terms & conditions of their concession/license;

Transparent & Competitive Concessioning to optimise the developmental impact:

1. Impose a freeze on all new exploration licences until the CGS confirms that the terrain has no known minerals assets;
2. Task the CGS with categorising South Africa into areas of "known", "unknown" and "partially known" mineral resources;
3. All future concessions of "known" state mineral assets by competitive & transparent auction process that optimises price discovery and the developmental impacts;
4. All unallocated mineral properties (& other national resources: water, land/servitudes, etc.), should be transparently and competitively auctioned to optimise the developmental impact. Establish a Resources Concessions & Compliance Commission (RCCC) under the National Treasury to:
   1. develop best practice guidelines, with the Treasury PPP Unit, for competitive resources concessioning to realise price discovery & the optimal developmental impacts (linkages) of the auction;
   2. oversee all mineral and other state resources (water, land, rights, etc.) concessioning/leasing, with, for the proposed "Mindevco" & DMR and other appropriate state departments/SOEs; and
   3. to monitor ongoing compliance of resource exploitation companies with the terms & conditions of their concession/license;

Smart Interventions (cont'd)

Use-it-or-lose-it:

1. Reinforce prospecting regulations to ensure genuine exploration (and not "squatting" of state mineral assets), with min. work & expenditure (per Ha). Make transferability conditional, &impose a capital gains tax of 50% on holders that "flip" (on-sell) their exploration rights, before establishing a mining operation;
2. Resource the CGS to effectively monitor all exploration (prospecting) licenses to ensure that the minimum work requirements are fulfilled, failing which the licences should be cancelled and the properties re-concessioned/auctioned to optimise their developmental impact;
3. Impose a "use it or lose it" clause on all extant mining licenses that includes clear investment (deposit & linkages development) milestones. If the concessionaire has failed to achieve the milestones (without a force majeure), the licence could be cancelled and the deposit competitively re-concessioned (auctioned) against developmental criteria (linkages);

Smart Interventions (cont'd)

But hasn't the horse already bolted?

Corrective Action:

Under the MPRDA, exploration (prospecting) licenses should have been given on a "first-come-first-served" basis ("free mining"), but it is common knowledge that certain applications were moved to the top of the pile. Accordingly the state should invest in an experienced and competent legal team to scour all the licenses granted and, where proper procedures were not followed, to cancel them, but where the concessionaire had made significant investments "in good faith", to grant them a commensurate free-carry right in the consequent auction of the asset;

Smart Interventions (cont'd)

Mineral Linkages

1. Downstream Linkages:
   i. Impose selective and judicious ***export tariffs*** on unprocessed minerals where there is a viable case for further beneficiation and amend the Income Tax Act to effect this;
   ii. Consider the use of differentiated ***infrastructure tariffs*** (transport, power, water, etc.) to incentivise value-addition (beneficiation);
   iii. Insert a clause in all mineral concessions (mining licenses) obligating the operator to sell all products into the domestic market at ***competitive (export parity) prices*** and on-obligating local customers likewise,
   iv. Consider the efficacy of a system of ***varying royalties*** for each mineral that decrease with increasing value-addition, to encourage beneficiation;
   v. Develop and implement detailed ***sub-sector strategies*** (DMR, DTI & EDD) for the provision of low-cost critical feedstocks for manufacturing, particularly steel & polymers, including the possible re-creation of state utilities to supply these feedstocks, to underpin manufacturing competitiveness and job creation;

Smart Interventions (cont'd)

Mineral Linkages

2. **Upstream (backward) linkages:**
   i. Develop clear *local content milestones* (5, 10, 15 year targets) for all mining contracts (licenses) in order to maximise local value addition. Such milestones should also reward regional content, possibly at a discount to SA content, to encourage regional sourcing of inputs. The concession contract should make it clear that failure to achieve the asset owner's targets could result in a cancellation of the contract and the re-concessioning of the asset;
   ii. Make *local content commitments a bid variable* with significant weighting (30%?) for all new competitive mineral concessions ;
   iii. Change the current BB *BEE procurement* obligation to a *BEE value-added obligation* to eliminate fronting, decrease job destruction and to increase the upstream developmental impact, and amend the Mining Charter to cater for this;
   iv. Task DTI (with DMR & EDD) with developing and implementing comprehensive *industrial sub-sectoral strategies* to grow the mineral upstream sectors (capital goods, services, consumables) including the use of instruments such as import tariffs, investment incentives, innovation stimuli, market access, etc.

Smart Interventions (cont'd)

Mineral Linkages

3. **Technology Linkages:**
   i. The ANC has mandated government to significantly expand *"…the resources devoted to our capacity as a people for knowledge production and expanding the resources devoted to innovation and research, including through an innovation management framework"*. The Ministry of Science & Technology could be tasked with setting up a **Mineral Resources Technology Commission ("MRTC")**, with other state (DMR/DTI), private & labour stakeholders, to develop a **national mineral resources technology strategy**, that ensures the development of appropriate local techs (esp. safer techs) and products (capital goods), to resuscitate SA's minerals technology capacity (particularly mining tech) and to ensure the supply of the requisite skills, with HEIs, etc.
   ii. Engage Treasury in the consideration of **using a proportion (50%?) of all mineral royalty payments** to fund MRTC's R&D and HRD, in partnership with the private sector and labour (unions);
   iii. All mineral licenses must stipulate that all HRD and R&D related to the exploration and exploitation of the mineral asset **must be done in-country**, where feasible, order to facilitate further growth of the upstream cluster and related sectors;
   iv. **Investment commitments** for new upstream (supplier) industries, particularly mineral capital goods and R&D facilities, should form part of the evaluation matrix for all competitively concessioned mineral assets.

Smart Interventions (cont'd)

Resource Rents:

1. ***Resource Rent Tax*** (RRT) of 25% to 50% on all mining operations,trigger in above the "expected" rate of return (Treasury long-bond rate + 5%?) from the concessionaire's investments
2. ***Exploration right transfer tax*** of 50% capital gains tax on the gains from prospecting license transfers ("flips") before mining;
3. ***Regional Sovereign Fund***: Assess the efficacy of creating an offshore minerals "sovereign" fund, financed from the RRT & mineral export tax, for reinvestment over 10 - 15 years into long-term technology development and long-term infrastructure development, both in South Africa and the region. Such a regional fund, for long-term physical, human & technology infrastructure, could form part of the financial architecture for an extension of the SACU, together with the revenue-sharing formula, to increase the southern African market size and intra-regional trade. The government should also encourage other SACU states to contribute a portion of excessive mineral profits to such a fund to facilitate an equitable distribution of the benefits of integration;
4. ***Royalties:*** Consider the efficacy of a mineral royalties system that incentivises downstream investment (beneficiation) through decreasing royalty rates with increasing value addition;
5. ***Minerals Marketing***: Establish a minerals auditing office within SARS (as per the RDP) and stipulate (within Mining License conditions) that a small proportion (possibly 10%?) of all production must be sold through a ***local minerals/metals exchange***, where appropriate, to flush out a competitive and transparent prices. Amend the MPRDA to realise this.

Smart Interventions (cont'd)

State Minerals Development Company :

Task the IDC with establishing a ***State Minerals Development Company*** ("Mindevco ") under it to:

1. ***hold all the state's holdings*** (ex-PIC) in mining & hold all known (but un-concessioned) resources. To prepare them for auction, with the RCCC;
2. ***hold selected "partly-known" mineral prospects***, to carry out further exploration to determine their potential for competitive concessioning,
3. ***hold the state's free-carry*** (10-20%?) in each competitive concession (the % free-carry could be a biddable variable, with a low weighting),
4. ***hold and develop strategic mineral deposits/assets*** as determined by the state and SOEs, to cater for the nation's future energy and other strategic needs. If necessary, **establish key feedstock producers to supply at EPP/cost plus**;
5. develop and execute a strategy to ***optimise the mineral linkages*** industries;
6. ***partner B-B BEE*** mineral companies (<50%) in developing new mineral properties and to optimise their developmental impact;
7. ***fund R&D*** into critical requisite technologies for safer and efficient mining & processing & mineral inputs, especially capital goods; and
8. ***develop the appropriate human resources*** to optimise the developmental impact of the nation's mineral assets.

"Mindevco" should be given first-sight of all new state-funded CGS geo-data, for a limited period (3 months?), in order to identify potential state assets, requiring further exploration and to prepare them for competitive concessioning, under the proposed "RCCC";

Smart Interventions (cont'd)

Ownership

1. ***Relistings:*** **Impose *moratorium on all offshore relistings* until government has developed guidelines to govern such applications, that include an assessment of anti-developmental implications, particularly the loss of local linkage industries and activities and the loss of leverage over such companies, in pursuit of a DDS.**
2. ***BB BEE equity*: As the representative of the people, the state's holdings in all mineral enterprises should be considered as effective BB BEE holdings (ex-PIC), to ensure that such holdings promote genuine broad-based empowerment through the optimisation of job creation. Consideration could be given to increasing the BB BEE equity minimum (currently 26%) to cater for this. Amend the Mining Charter to effect this;**

With 35% black unemployment, the ultimate empowerment is a JOB!

3. ***Critical feedstocks: State ownership should be considered if other measures fail to discipline monopoly pricing by the producers of critical feedstocks.***

Proposed Governance of DDS Mineral Resources

Parliament

SA Government

Stakeholders:
Labour, Business, Civil Society

Ministries:
DMR, DME, EDD, DTI, DST, NT, DPE, etc.

SOEs & State Institutions

(Nat. Treasury) "Future Fund"

- Offshore fund to accumulate min. rents: RRT &, poss, royalties.
- "Drip feed" back into local & regional economies for long-term:
  1. *infrastructure,*
  2. *HRD,*
  3. *geo-knowledge &*
  4. *tech development*

(EDD) IDC: "Mindevco"*

- Hold all state equity in mining & beneficiation;
- Hold & develop state Strategic Mineral assets;
- Hold & dev. "partially known" mineral assets;
- 1st sight of all new CGS geo-data (3m);
- Partner BEE co's, <50%.

(Nat. Treasury) "RCCC"*

- Develop systems for resources competitive concessioning;
- Dev. assessment criteria & relative weightings;
- Oversee resource auctions/concession s;
- M&E of concessions & licenses.

(DMR) CGS

- Categorise SA into "known", "unknown" & "partially known" assets;
- M&E of all exploration/ prospecting licenses;
- Work w/Mindevco in ID & dev. of new assets;
- Accel. geo-mapping & ID of new assets

(DST) "MRTC"*

- Develop a SA resources tech & HRD strategy;
- Rebuild/reinforce the tech cluster: Mintek, Necsa, CSIR (ex Comro), etc. & HRD cluster (HEIs);
- M&E of resource tech cluster & resource HRD institutions (HEIs, etc.).

** proposed "Mineral Development Corporation", "Resources Concessions & Compliance Commission", "Mineral Resources Technology Commission"*

A SA DDS: Smart Interventions (cont'd)

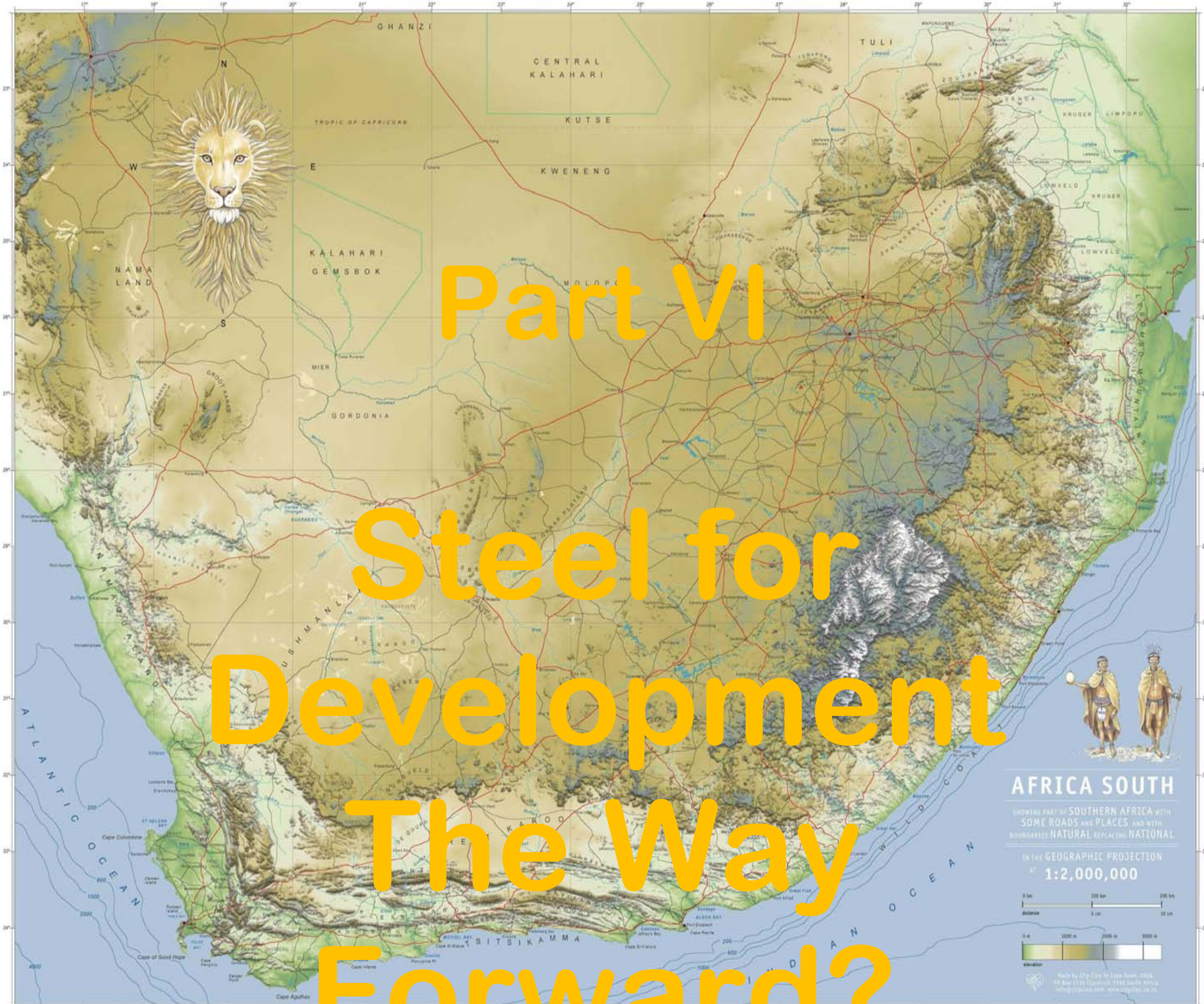
Regional Integration – Economies of Scale

1. Urgent consideration should be given to **expanding the SACU to increase the local market size for resources linkages industries** and activities (up-, down- and side-stream) and the tariff structures should be reviewed (within WTO constraints) as part of a comprehensive regional resources-linkages strategy, that optimises such opportunities within South Africa and within the region. Common external tariff integration should be part of an overall regional economic strategy that includes energy, transport & regional spatial development (SDIs) and investment funds to facilitate the **equitable distribution of benefits**. Establish an inter-departmental task force to assess this.
2. Assess the efficacy of **linking into the enormous hydro-power** (HEP) potential in the region (SADC- SAPP) as a sustainable **long-term** alternative to fossil fuels, to underpin the competitiveness of southern African industries and to enable low-cost electricity to households across the sub-continent, to be effected as part of a broader regional integration exercise. Establish an inter-departmental task force to assess this.

Part VI

Steel for Development

The Way Forward?



The KIO-AMSA-ICT Mess

- **State must cancel the prospecting license immediately in the national interest- If they take the state to court, then so be it. The loss to the economy would be much, much greater than any compensation.**
- **The Steel Task Team should enter into negotiations with AMSA to give them access to the ore in exchange for implementable and enforceable competitive pricing (EPP) into the domestic market. Failure to adhere to this condition should lead to the cancelation of the mineral rights**
- **If AMSA don't play ball, put the property out to auction against the establishment of a new steel plant in SA that would sell into the domestic market at EPP. If necessary bundle in other Fe resources.**

Other Actions:

1. Amend the MPRDA to make the realsation of mineral backward and forward linkage an explicit objective of the Act, to allow the state to attach the appropriate conditions to mining licenses
2. Insert a competitive pricing condition into all mining licences that obligates the concessionaire to sell all mineral products into the local market at EPP, and on-obligates local customers likewise
3. Freeze the granting of all exploration licenses until the CGS has determined that the area has no known resources. All known resources should be transparently and competitively auctioned against developmental criteria (linkages).

Thank You
Ke a leboga
Ngiyabonga
Dankie