



Petra Diamonds — Cullinan Diamond Mine

SA COAL INDUSTRY: CHALLENGES AND PROSPECTS (PRODUCTION, EXPORTS INVESTMENT)

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**MINERALS COUNCIL
SOUTH AFRICA**

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The Minerals Council SA – Who are we?

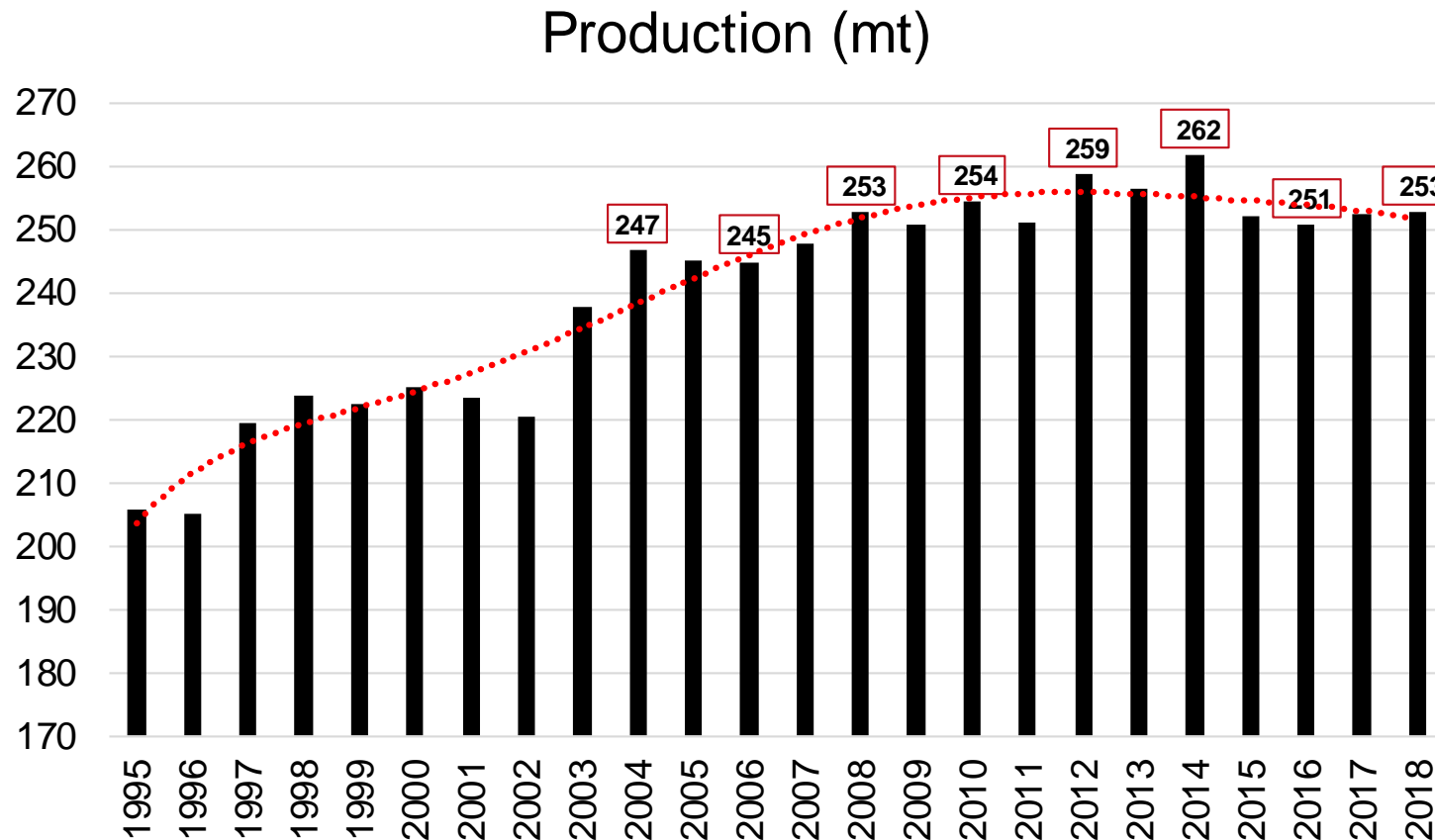
ABOUT THE MINERALS COUNCIL SOUTH AFRICA

- Formerly known as the Chamber of Mines until May 2018, the Minerals Council SA was established in 1889
- Objective to compile mineral statistics and to work along with government to develop policy conducive for the growth of the sector
- Represent >90% of mining companies in terms of production
- Organised into leadership forums:
 - Coal Leadership Forum (CLF)
 - Platinum Leadership Forum (PLF)
 - Diamond Leadership Forum (DLF)
 - Manganese Leadership Forum (MLF)
 - Gold....

...at its peak the Minerals Council employed >5000 people; now <65 employees....indicative of the decline of the sector

Production, export volumes and investment (GFCF) have failed to respond to higher export prices

SA COAL PRODUCTION



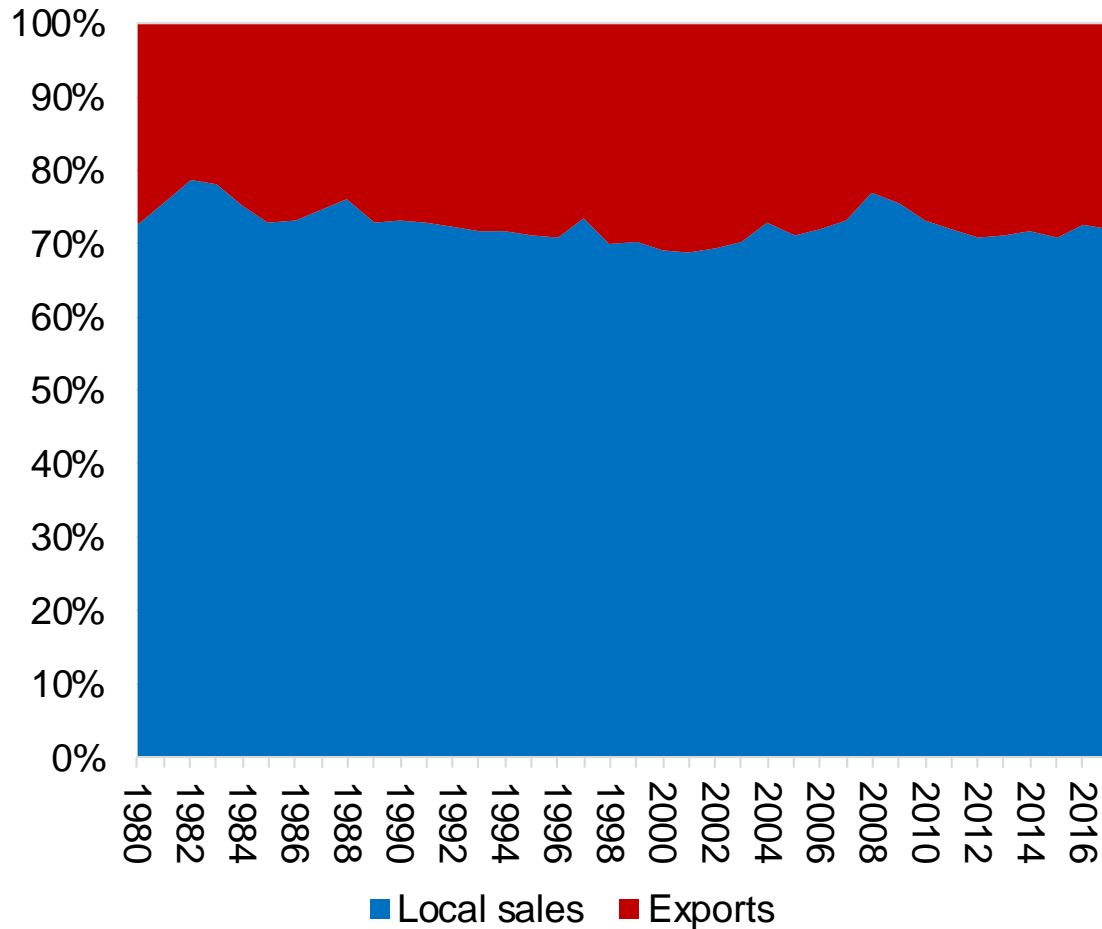
- Since 2008 production has remained almost flat ~250 mt
- Question is why...when SA is abundantly endowed with coal?
- We have failed to grow export volumes
- 70:30 historical split between local consumption and exports
-even as the export price soared export volumes failed to respond...



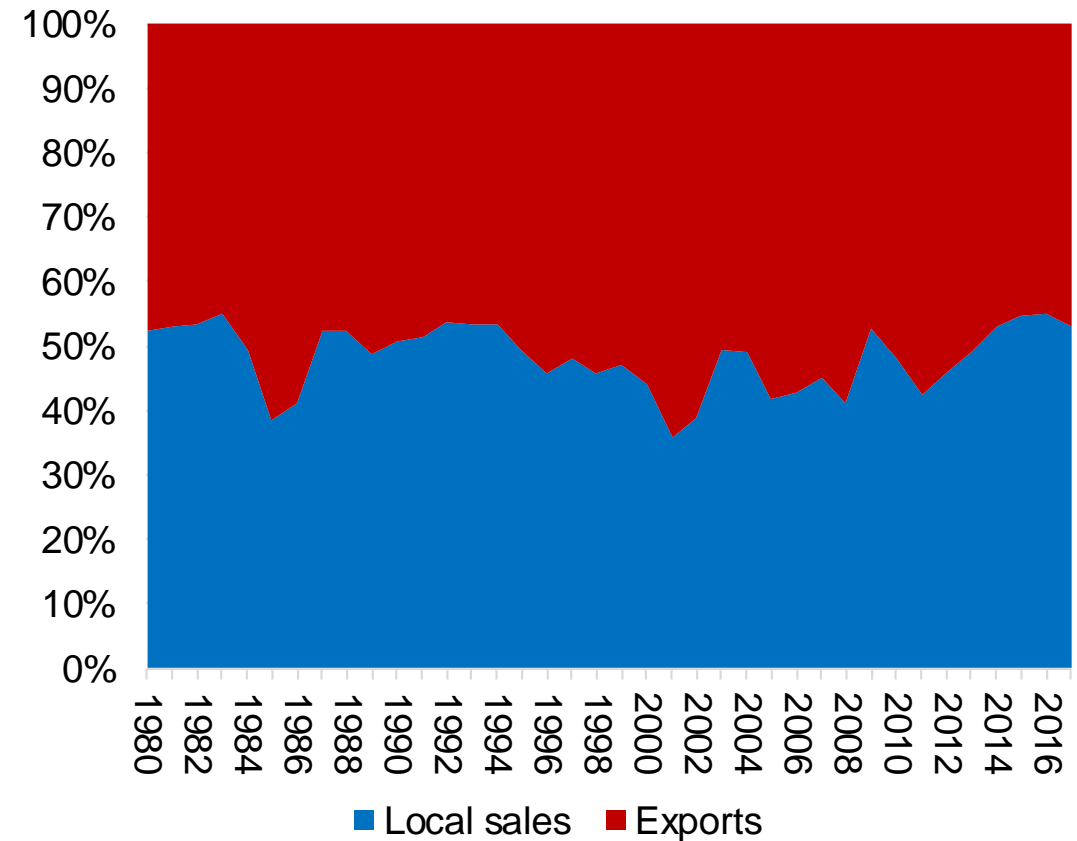
RATIO OF COAL SALES: LOCAL VS EXPORTS

- Historically, local sales volumes account for ~70% of total production
- Local sales earnings have averaged 48% of total earnings an indication of lower domestic prices

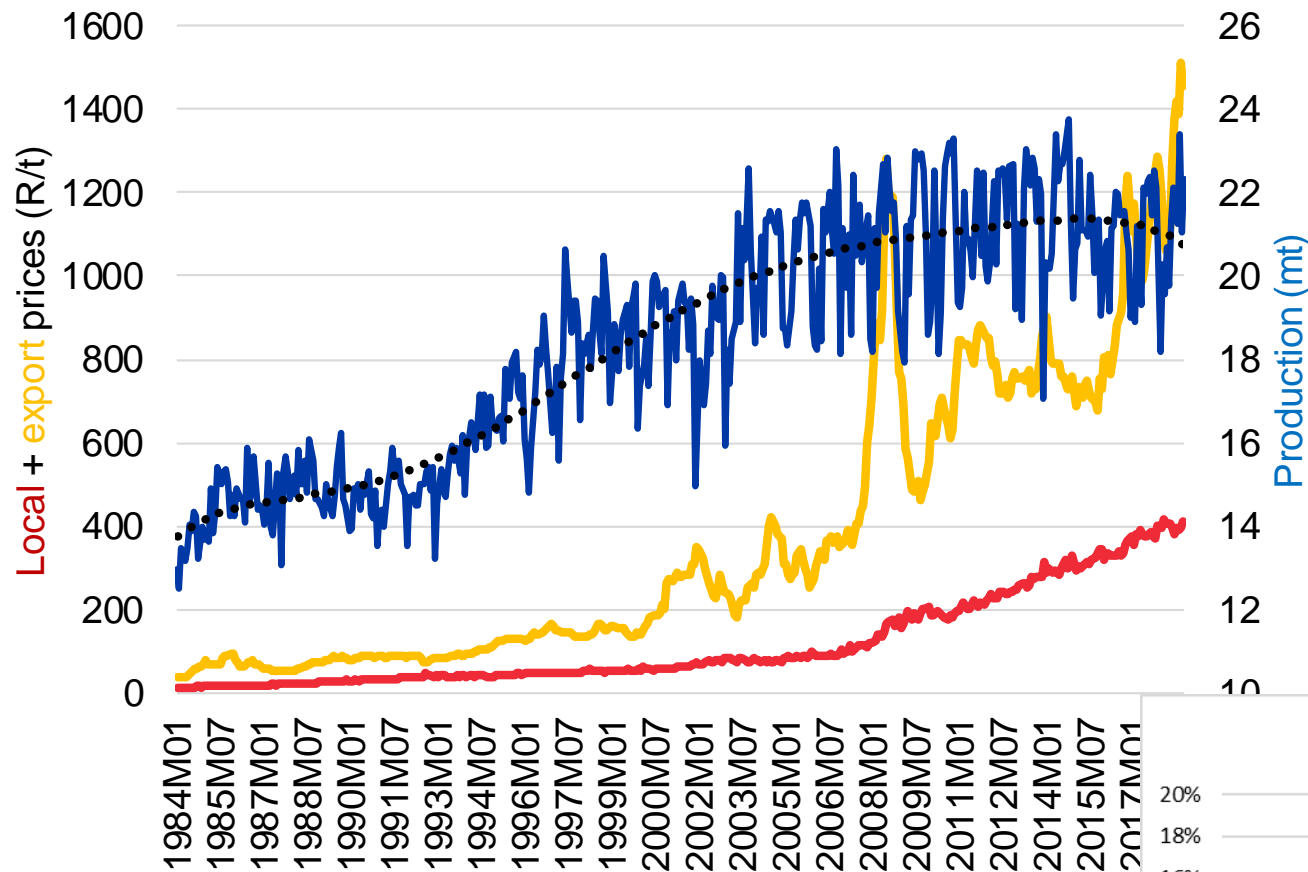
Coal: Local vs export sales volume (%)



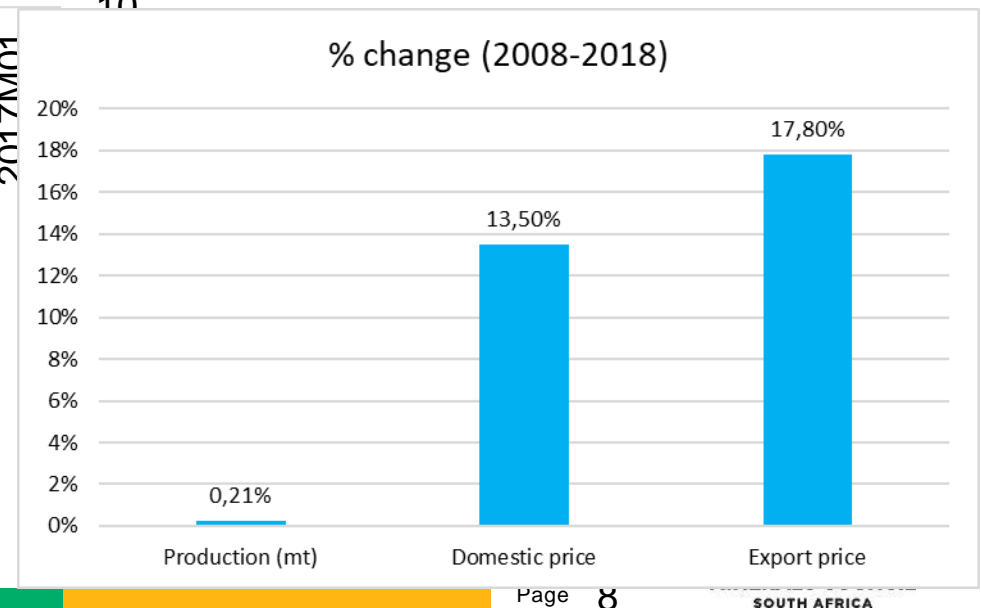
Coal: Local to export sales earnings (%)



COAL PRODUCTION HAS FAILED TO RESPOND TO INCREASES IN EXPORT PRICES



-even as prices (local and exports) increased, production has failed to respond since circa 2007
- In 2018 we did a study to test the impact of policy and regulatory factors on the performance of the mining industry....



POLICY AND REGULATORY CONSTRAINTS HINDERING GROWTH IN MINING

| Performance of Peer Stock Exchange Resource Indices (%)* | | | |
|--|-------|-----------|---------|
| | JSE | Australia | Toronto |
| 1 Year | 37.08 | 38.29 | 20.73 |
| 3 Years | -2.98 | 8.51 | 5.76 |
| 5 Years | -8.78 | 3.61 | 2.88 |
| 10 Years | -44.2 | -4.04 | -5.19 |

Source: ShareNet, S&P

* As of June 2018

Diagnostic test: What is responsible for the decline in mining?

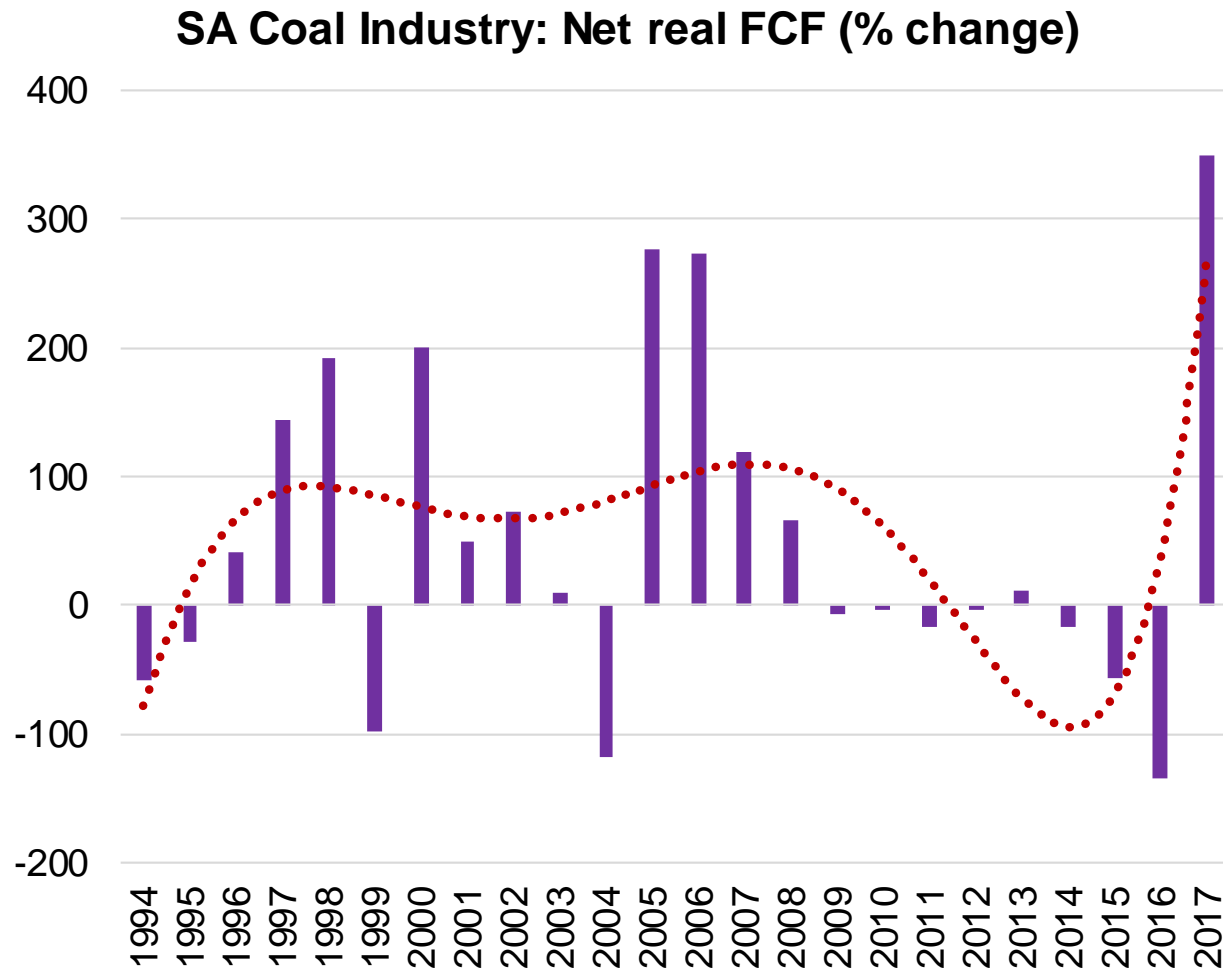
Our conclusion was that the performance of the JSE resource index indicated lingering concerns relating to regulatory and policy uncertainty. The table indicates that the longer-dated performance, as measured in three, five and 10 years, recorded decreases of -3%, -8.7% and -44%, respectively.

....**and this is despite the fact that the world economy has been growing since the GFC**



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SA COAL: NET INVESTMENT POST GFC

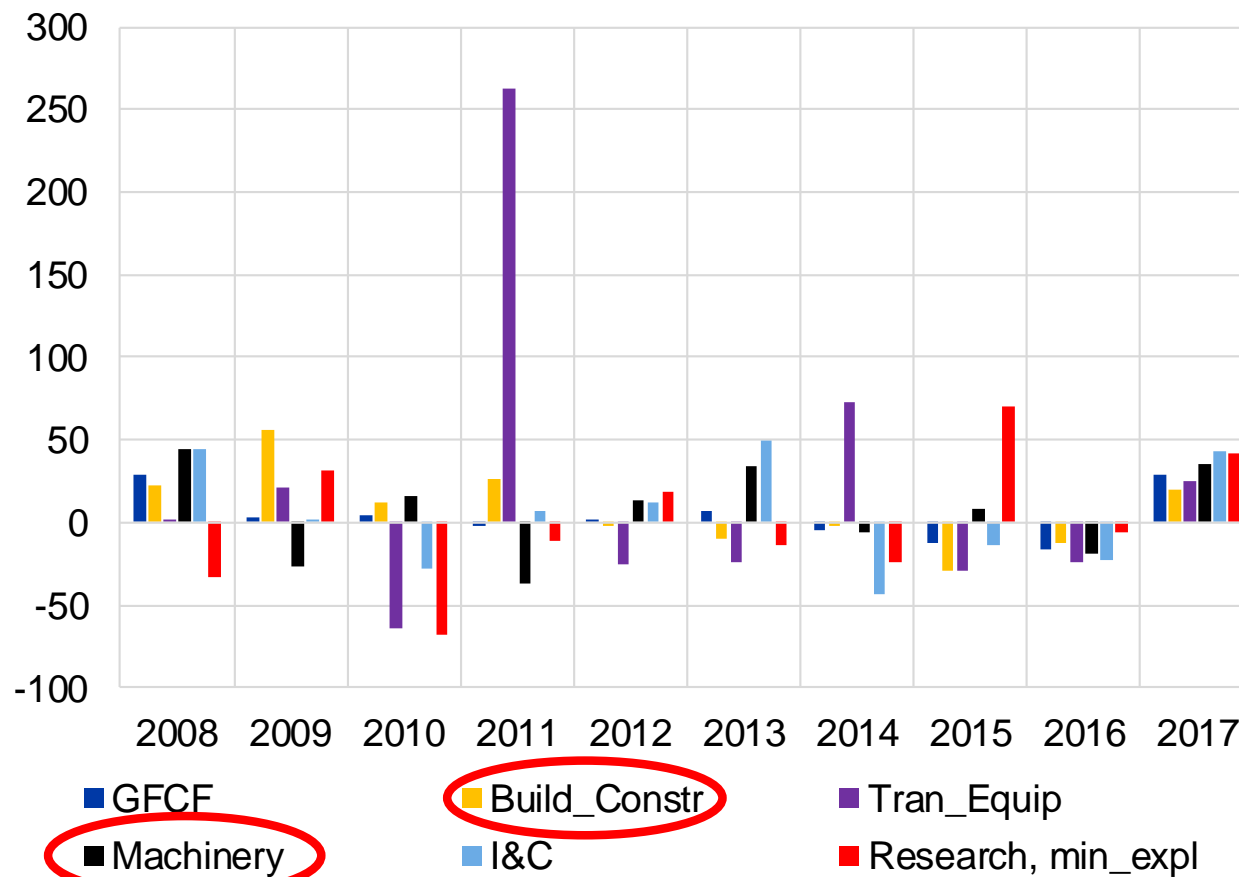


Net investment = Gross Fixed Capital Formation (GFCF) – Consumption of capital (Depreciation)

- Whilst the world economy recovered post the GFC...mining investment (incl. coal) did not recover

COAL MINERS NOT BUYING NEW MACHINERY

Components of real GFCF (% change)



- Real reason for the uninspiring performance in (real) GFCF is that companies were not investing/buying new machinery
- ...which is explained by companies not constructing new mines (-ve growth since 2012)
- For the first time in as many years all components of GFCF registered positive growth (**Note:** smell of political winds of change?)

That said, export prices have served as a bulwark for the industry....

SA TOP 10 EXPORT MARKETS (1998 – 2007)

| SA Coal Exports (R m) | | | | | | | | | | | |
|-----------------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
| 1 | Netherlands | 1 155 | 1 166 | 1 611 | 2 816 | 4 307 | 3 408 | 3 749 | 4 574 | 5 346 | 5 428 |
| 2 | Spain | 616 | 1 075 | 1 064 | 1 587 | 2 561 | 1 435 | 2 121 | 2 530 | 2 449 | 3 262 |
| 3 | India | 306 | 483 | 507 | 538 | 826 | 265 | 119 | 997 | 662 | 3 003 |
| 4 | Italy | 500 | 549 | 562 | 1 199 | 1 202 | 1 047 | 1 553 | 1 558 | 1 551 | 1 831 |
| 5 | United Kingdom | 249 | 179 | 643 | 2 044 | 2 554 | 2 261 | 2 616 | 3 411 | 2 805 | 1 543 |
| 6 | Israel | 539 | 720 | 704 | 1 310 | 1 359 | 1 143 | 1 574 | 1 551 | 1 244 | 1 369 |
| 7 | France | 617 | 712 | 714 | 959 | 1 362 | 611 | 772 | 1 422 | 1 262 | 935 |
| 8 | Denmark | 255 | 250 | 257 | 447 | 385 | 396 | 325 | 494 | 808 | 818 |
| 9 | Pakistan | - | - | - | - | 84 | 80 | 9 | 31 | 33 | 552 |
| 10 | Portugal | 205 | 185 | 337 | 374 | 636 | 370 | 296 | 551 | 400 | 532 |

Source: South African Revenue Service (SARS), Quantec

- Europe used to be a major export market
- Top ten export markets: Europe = Eight countries in the top 10
- Asia: India + Pakistan

SA TOP 10 EXPORT MARKETS (2008-2017)

| SA Coal Exports (R m) | | | | | | | | | | | |
|-----------------------|-------------|-------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| 1 | India | 5 133 | 10 222 | 13 164 | 13 231 | 15 837 | 15 237 | 20 215 | 21 817 | 27 022 | 30 267 |
| 2 | Pakistan | 511 | 720 | 781 | 630 | 782 | 1 870 | 2 624 | 2 613 | 4 444 | 9 094 |
| 3 | South Korea | 424 | 295 | 1 225 | 2 598 | 1 073 | 106 | 250 | 217 | 2 653 | 8 543 |
| 4 | Taiwan | 182 | 1 091 | 1 796 | 2 849 | 3 589 | 4 482 | 1 074 | 887 | 855 | 3 270 |
| 5 | Spain | 3 801 | 2 886 | 1 695 | 1 777 | 1 768 | 1 536 | 2 424 | 1 576 | 811 | 2 406 |
| 6 | Sri Lanka | - | - | - | - | - | 134 | - | 795 | 1 783 | 2 392 |
| 7 | Turkey | 813 | 810 | 1 258 | 2 071 | 2 229 | 1 991 | 2 729 | 3 295 | 1 968 | 1 961 |
| 8 | Netherlands | 7 589 | 4 956 | 1 988 | 2 105 | 2 515 | 5 486 | 7 735 | 1 677 | 2 261 | 1 947 |
| 9 | Israel | 2 525 | 2 444 | 1 821 | 2 368 | 3 884 | 2 338 | 1 915 | 1 900 | 1 016 | 1 318 |
| 10 | Mozambique | 546 | 767 | 812 | 2 246 | 1 798 | 1 167 | 918 | 546 | 452 | 1 316 |

Source: South African Revenue Service (SARS), Quantec

2017:

- India replaced the Netherlands as a leading export market
- In terms of value India makes >50% of SA's coal export earnings
- Pakistan (15%), South Korea (14%), Taiwan (5%), Spain (4%)...the Netherlands (~3%)



Prospects

PROSPECTS: FOR PRODUCTION, LOCAL CONSUMPTION AND EXPORTS?

1. Judged on reserves alone the prospects are rosy...
 - Of the R30 trn worth of SA mineral reserves, R6 trn are coal reserves (>30 billion tonnes of reserves)
2. Policy is likely to undermine these prospects:
 - Pressure from policy instruments (e.g. IRP + MYPD)
 -from communities/NGOs
 - ...demanding that mining companies provide services that are the purview of local government. (**Note:** Community protests in Mpumalanga cost the industry ~R20mn/day)



Integrated Resource Plan (IRP)

**Multi-Year Price Determination
(MYPD)**

PROSPECTS: IRP

- Short term: IRP will result in lower investment
- Long term: Decline in investment; job losses; decline of Eskom as anchor domestic customer

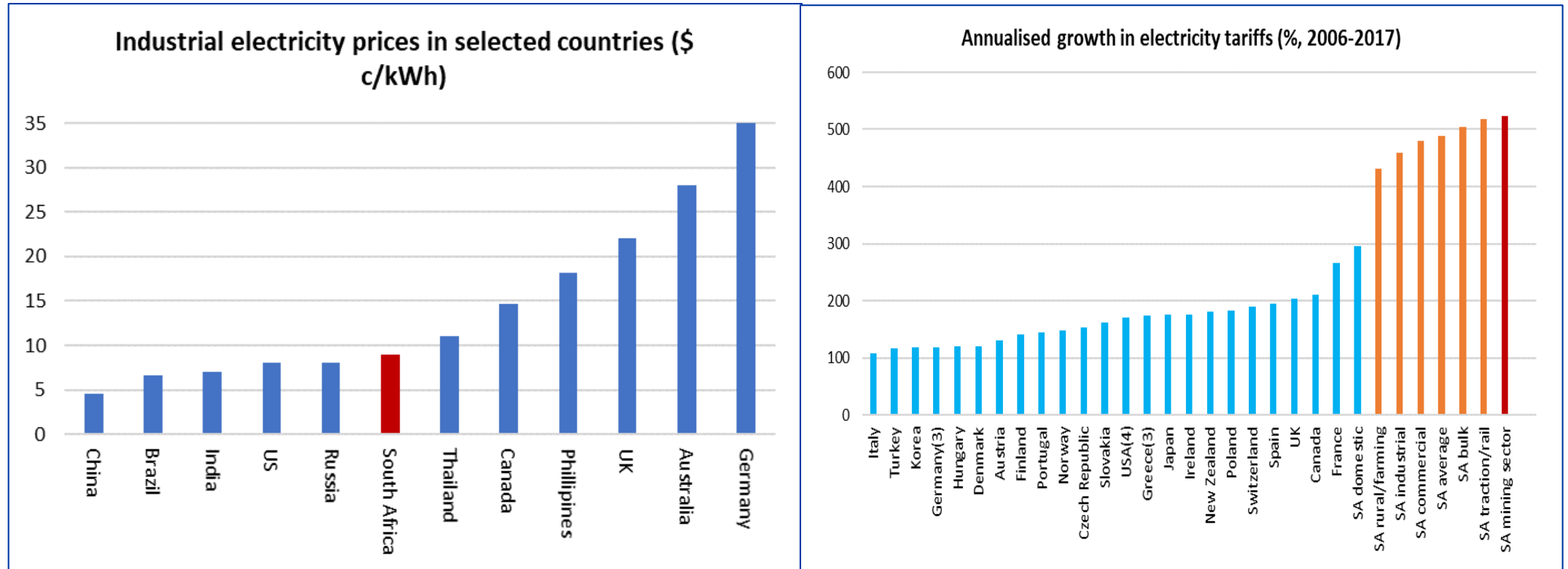
| | Coal industry employment as per IRP 1 | | | | | |
|--------------|---------------------------------------|---|---|------------------------------------|-------------------------------|--------------------------------------|
| | Coal consumed by Eskom (Mt) | Jobs in the mining sector as a result of coal power | Direct Eskom employment in the electricity industry as a result of coal | Total coal mining sector and Eskom | Eskom installed coal capacity | Electricity sent out/generated (TWh) |
| 2015(actual) | 119 | 37 318 | 43 771 | 81 089 | 37 754 | 204 |
| 2017(actual) | 115 | 37 834 | 42 300 | 80 134 | 37 868 | 202 |
| 2030 | 116 | 34 162 | 42 667 | 76 829 | 33 847 | 205 |
| 2040 | 61 | 20 067 | 22 436 | 42 503 | 17 847 | 108 |
| 2050 | 38 | 12 500 | 13 976 | 26 476 | 11 147 | 67 |

Source: Minerals Councils South Africa, Eskom, and Department of Energy (Draft IRP2018)

Problems with the draft IRP 2018:

- 1...did not include clean coal technologies
2. "Least cost" was on the basis of overnight costs to the exclusion of levelised cost of electricity (LCOE)

PROSPECTS: MYPD



- Successive Eskom double-digit price increases driving consumers to embedded generation (mainly solar PV)

PROSPECTS: MYPD

| Job losses resulting from a 15.5% increase in electricity tariffs* | | | |
|--|--------------|---------------|---------------|
| | Gold | Other mining | Total mining |
| 2006 | 693 | 721 | 1 415 |
| 2007 | 721 | 814 | 1 535 |
| 2008 | 722 | 886 | 1 608 |
| 2009 | 694 | 830 | 1 525 |
| 2010 | 681 | 865 | 1 547 |
| 2011 | 628 | 961 | 1 590 |
| 2012 | 617 | 1 010 | 1 627 |
| 2013 | 572 | 1 009 | 1 581 |
| 2014 | 516 | 1 012 | 1 528 |
| 2015 | 499 | 989 | 1 489 |
| 2016 | 506 | 913 | 1 419 |
| 2017 | 490 | 951 | 1 441 |
| Total | 7 341 | 10 962 | 18 303 |

Source: Minerals Council SA calculations based industry/sector coefficients

*The jobs impact was calculated based on electricity tariffs coefficients resulting from times-series estimation

| Reduction in investment resulting from a 15.5% increase in electricity tariffs (R mn) | | | |
|---|---------------|---------------|----------------|
| | Gold | Other mining | Total mining |
| 2006 | 971 | 4 449 | 5 420 |
| 2007 | 1 214 | 5 722 | 6 937 |
| 2008 | 1 492 | 7 220 | 8 711 |
| 2009 | 1 542 | 7 675 | 9 217 |
| 2010 | 1 452 | 7 428 | 8 880 |
| 2011 | 1 473 | 7 742 | 9 215 |
| 2012 | 1 427 | 7 675 | 9 102 |
| 2013 | 1 404 | 7 799 | 9 203 |
| 2014 | 1 392 | 7 953 | 9 345 |
| 2015 | 1 346 | 7 907 | 9 253 |
| 2016 | 1 264 | 7 642 | 8 906 |
| 2017 | 1 080 | 7 931 | 9 011 |
| Total | 16 056 | 87 144 | 103 201 |

Source: Minerals Council SA calculations based industry/sector coefficients

The average increase in electricity tariffs between 2006 and 2017 was 15.5% and it resulted in **18 303** job losses. [In total the industry shed **>53 000 jobs** in the same period.]

It has also led to a cumulative reduction in fixed investment of R103.2 billion.

PROSPECTS: EXPORT MARKETS

| | ...in operation | ...planned or under construction |
|-------------|-----------------|----------------------------------|
| China | 579 | 575 |
| India | 49 | 395 |
| Vietnam | 2 | 57 |
| Japan | 44 | 52 |
| South Korea | 38 | 18 |
| Taiwan | 1 | 9 |
| Philippines | 0 | 1 |
| Indonesia | 3 | 32 |

To grow the export market it is imperative to have an offtake agreement with a domestic customer such as Eskom....

Thank You



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