

**An Analysis of the Macroeconomic
and Sectoral Impact
of the Capital Expenditure Programmes of
Eskom and Transnet
over the Period 2005 to 2010**

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1. INTRODUCTION

The expansion of a country's economic and socio-economic infrastructure is a prerequisite for sustainable growth and development. It is in this regard that government and public corporations play an invaluable role by facilitating and propelling the investment process by creating a conducive and investor friendly environment, including the provision of the necessary economic infrastructure, which will lead to the crowding-in of increased private sector fixed investment to enhance the country's productive capacity.

Over the past two and a half decades, fixed investment by public corporations declined on an ongoing basis, with their share of overall investment declining from 25% in 1980 to 10% by 2004. This adverse trend not only impacted negatively on the efficiency of service delivery by state owned enterprises (SOEs), but also contributed to the downscaling or even the demise of industrial activity in specific sectors of the domestic economy that supplied capital equipment, components and materials consumed by SOEs in their investment programmes.

The trend in SOE investment expenditure is set to be reversed in coming years, particularly through the massive R134 billion capital expenditure programmes of Eskom and Transnet planned for the next five to seven years in South Africa's energy and transport infrastructure, respectively. This will be the largest infrastructure development programme in many years and will provide a major stimulus for industrial development in the country. The importance of this capital expenditure (capex) becomes even more significant considering that total fixed investment in the country amounted to R226 billion in 2004, with public corporations contributing just over R24 billion to this amount in the same year.

Eskom's infrastructure investment is aimed at increasing the utility's generation capacity by 5 300 megawatts to 41 500 megawatts. The objective is to re-commission mothballed power stations such as Camden, Komati and Grootvlei, whilst also creating new generation capacity and increased transmission capacity in many areas of the country, including Johannesburg, Bloemfontein, Richards Bay and the Cape Peninsula, as well as supply lines to Coega (Budget Review 2005).

Transnet's capital expenditure programme is aimed at improving the quality and efficiency of the country's rail network, major ports and harbours. A substantial portion of this investment will be directed towards locomotives, wagons, signalling equipment and various types of cargo handling equipment (cranes, straddle carriers, etc.).

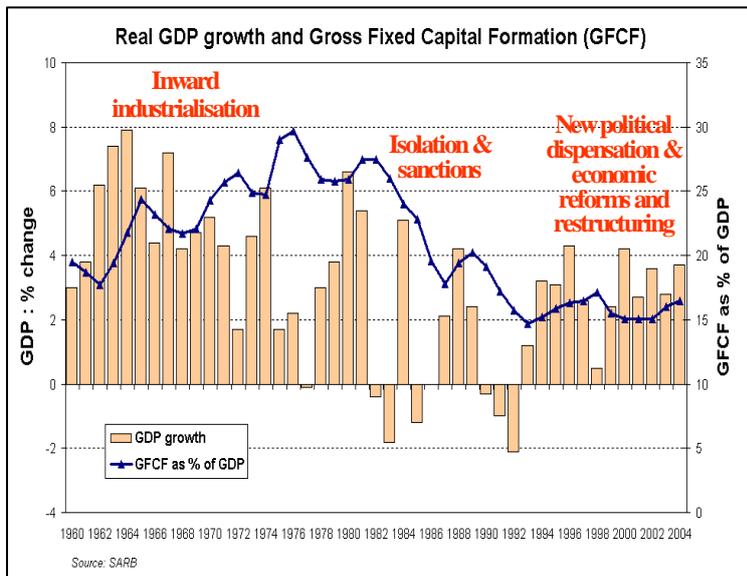
The investment plans of Eskom and Transnet are intended to address existing backlogs and capacity constraints, whilst creating a solid foundation for increased private sector fixed investment to expand its productive capacity and thus enabling the South African economy to achieve a substantially higher and sustainable pace of economic growth over the medium to long term.

2. FIXED INVESTMENT TRENDS IN SOUTH AFRICA

Fixed investment, or gross fixed capital formation (GFCF), is a crucial contributor to economic growth and development, as demonstrated by several newly industrialised countries where investment activity largely underpinned many of their well documented successes. Such investment includes capital spending on the expansion and maintenance of economic infrastructure such as roads, rail networks, port and harbour facilities, electricity supply, as well as telecommunication services. A rapid increase in fixed investment broadens a country's economic base and provides a robust base for future economic activity, increased levels of production capacity as well as the associated wealth creation.

It is in this regard that government can play a catalytic role, with the benefits of expanding a country's economic infrastructure manifesting themselves in the long term and being a pre-condition for an accelerated growth trajectory.

In recent years, the relationship between public and private sector investment activity in South Africa has generally been characterised by insufficient spending on infrastructure development and/or its maintenance, resulting in increased inefficiencies in the transportation network, particularly rail, as well as bottlenecks at the country's main ports and harbours. Such inefficiencies consequently translated into increased operational costs for the private sector, whilst the resultant delays also reduced the credibility and ability of local business enterprises to compete in an increasingly competitive international trading environment.



As illustrated in the accompanying graph, fixed investment spending expanded at a rapid rate during the 1960s and 1970s, mainly due to high levels of investment activity by public corporations. It was in this period that a number of strategic investments were announced, including the SASOL II expansion and new investments by various of its subsidiaries involved in the petrochemical industry. Very large expansions in the country's electricity generation capacity also took place during these two decades.

Moreover, the government of the time adopted a policy of inward industrialisation in an attempt to establish a strong domestic manufacturing industry in South Africa as it strived for self-sufficiency. This strong inward focus culminated in large domestic investments in support of the country's mining sector, as well as strategic investments in the petrochemical sector and in the basic iron and steel sector. Underpinned by numerous expansion projects undertaken by Eskom, Sasol and Iscor, the share of total fixed investment contributed by public corporations increased substantially over this period (refer to the table below), from a mere 6% of gross fixed capital formation in 1960 to around 25% by 1980.

Contribution to gross fixed capital formation: Average annual % share

Period	General government	Public corporations	Private sector	Total GFCF
1960 - 64	35.6	7.5	56.9	100
1965 - 69	35.4	10.2	54.4	100
1970 - 74	35.1	12.1	52.8	100
1975 - 79	31.8	20.2	48.0	100
1980 - 84	24.8	19.7	55.5	100
1985 - 89	24.3	16.3	59.4	100
1990 - 94	18.3	14.3	67.5	100
1995 - 99	16.1	13.5	70.4	100
2000 - 04	17.9	10.5	71.6	100

Source: SARB

Despite a rapid increase in private sector fixed investment during the same period, considering an average annual growth rate of just over 6% in real terms, its share declined from 58% in 1960 to 50% by 1980.

During the first half of the 1980s, the contribution of fixed investment began to decline as South Africa became increasingly isolated from the global economy. This situation was aggravated when trade and financial sanctions were imposed upon the country in 1985, with detrimental implications for overall economic performance. The ratio of gross fixed capital formation to gross domestic product (GDP) declined from 27.5% in 1982 to 20% by the end of that decade, whilst average annual GDP growth measured a mere 1.2% p.a. over this period.

South Africa's remarkable transition to democracy in 1994 established a new platform for growth, with its re-entry into the global economy presenting a multitude of business opportunities through renewed market access. After years of stagnation and neglect due to international isolation and sanctions, the demand for investment goods (machinery and equipment) was revived from 1994 onwards, growing at an average annual rate of 8% until 1998.

Despite the strong growth in gross fixed capital formation (GFCF) over the past decade, its contribution to GDP has remained at unsatisfactory levels. However, as illustrated in the previous graph, this trend was reversed in the last two years with a marginal improvement in the fixed investment-to-GDP ratio from 15.1% in 2002 to 16.5% by 2004. In order to achieve a substantially higher GDP growth of 6% per annum or more, significantly higher levels of fixed investment are required and the fixed investment-to-GDP ratio should be raised to a level of at least 25%.

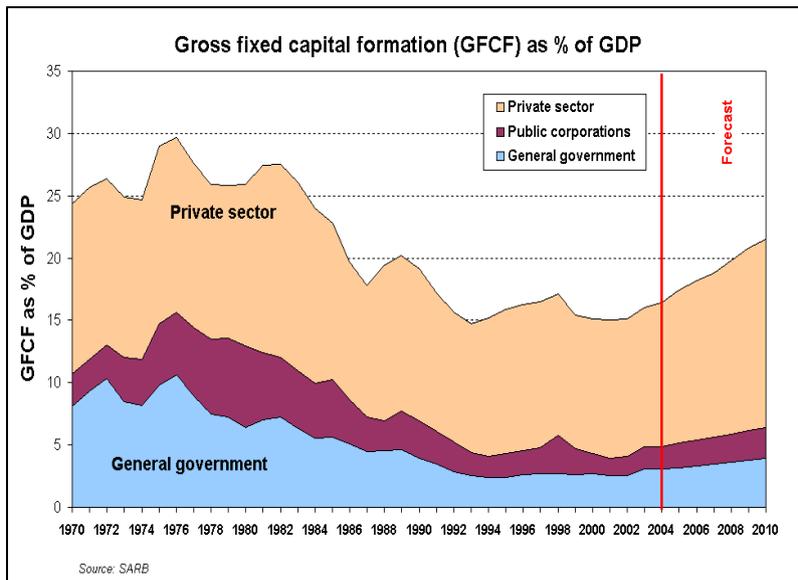
The turnaround witnessed over the past two years is encouraging, but remains unsatisfactory. Nonetheless, the prevailing lower interest rate environment (South Africa is experiencing the lowest interest rates in more than two decades) is conducive to higher investment activity in the country, whilst the strong Rand is also supportive of investment decisions from a cost perspective, as imported capital goods have become increasingly affordable. Local business enterprises should thus be taking advantage of this favourable set of circumstances to upgrade and/or replace existing equipment.

3. FIXED INVESTMENT AS A CONTRIBUTOR TO A SUSTAINED 6% GROWTH TRAJECTORY

Domestic demand, fuelled by a sharp increase in gross fixed capital formation and robust consumer spending, has been the key driver of the relatively strong growth performance experienced by the South African economy over the past two years. Supported by both the private and public sectors, fixed investment increased at a rapid pace of more than 9% p.a. in 2003 and 2004.

The medium-term outlook remains extremely positive, with average annual GDP growth forecast at roughly 4% p.a. over the next five years. A rapid increase in fixed investment and brisk growth in consumer spending should underpin the expected higher growth trajectory. The positive investment outlook is strongly supported by the R134 billion capex programmes of Eskom and Transnet, by the Expanded Public Works Programme (EPWP) and government spending on social infrastructure, as well as by the Gautrain project and the build-up to the 2010 Soccer World Cup, among others. Robust private consumption expenditure is also expected to propel expansions in productive capacity.

Gross fixed capital formation is forecast to expand at a fast pace of close to 9% p.a. over the next five years, compared to an average growth of 6% p.a. during the preceding five-year period.



As illustrated in the accompanying graph, the fixed investment-to-GDP ratio is expected to increase from the 16.5% level recorded in 2004 to 21% of GDP by 2010. Although a significant improvement, this ratio will still fall short of the generally accepted 25% investment-to-GDP ratio required to sustain a 6% annual growth path over the long term, and to make a substantial dent on the high unemployment levels facing South Africa.

It is against this background that the massive spending on economic infrastructure planned by Eskom and Transnet over the next five to seven years is analysed herein, so as to determine the potential impact on the South African economy, both from a broader macro-economic perspective as well as sectorally. This analysis focuses on the contribution of the projected SOE capital expenditure on GDP and employment creation in particular, whilst also establishing the potential balance of payments implications and the possible contribution to government revenue via indirect, personal and company taxes.

4. ESKOM'S CAPITAL EXPENDITURE PROGRAMME

South Africa is regarded as one of the cheapest electricity producers in the world, with Eskom, the state owned electricity utility, currently dominating electricity generation, transmission and distribution.

With a generating capacity of 39 810 MW (out of a total nominal generating capacity of 42 011 MW), Eskom is ranked 11th in world terms, whilst its 206 TWh in generated sales afford the state owned utility 7th position in global rankings (Eskom Annual Report 2005). Around 90% of the electricity produced is derived from coal resources, which are abundant in South Africa. Anticipated strong demand for electricity in the 1940s and 1950s led to large investments in regions where there were substantial supplies of coal, including parts of what is today Mpumalanga. These massive investments continued until the 1980s, resulting in excess generating capacity which made it possible for Eskom to continue providing electricity at a relatively low cost, without having to invest in new capacity in over twenty years.

Structural changes in the South African economy, coupled with a transformed political and social landscape have had a strong effect on electricity demand patterns and levels. As a result, demand for peak capacity has increased considerably while most excess is in base-load capacity. In order to meet this growing energy need, Eskom has embarked on an expansion programme that is intended to meet future capacity requirements. Indications are that Eskom would need new peaking capacity from 2006, based on moderate growth in electricity demand and base-load capacity by 2010.

Responding partially to these needs, as well as government's goals of an investment-led growth in the medium term, Eskom's five-year capital expenditure plan of R110 billion was announced in late 2004 by the Minister of Public Enterprises (this figure was subsequently reduced to R92.9 billion). According to Eskom, this will include the design, building and refurbishment of assets to meet South Africa's electricity generation, transmission and distribution requirements, the 'return to service' of the Simunye power stations (Camden, Grootvlei and Komati), as well as new capital expansion and network strengthening. Eskom has already initiated the process of bringing back the Simunye power stations that had been mothballed in the 1980s and early 1990s due to excess capacity at the time. The following table outlines Eskom's capital expenditure plans over the next five years. Eskom is expected to provide about 70% of the new capacity requirements, while the rest will be provided by the private sector through the introduction of independent power producers (IPPs).

Eskom Holdings Capex

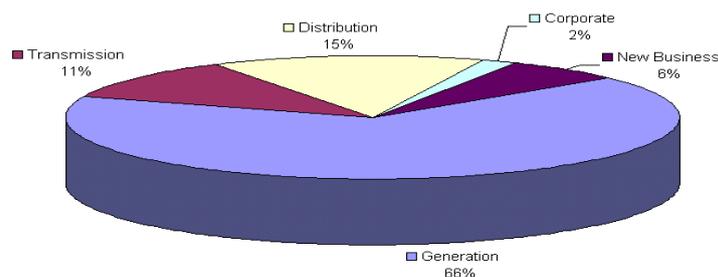
R million	2005	2006	2007	2008	2009	Total
Generation	6 789	10 275	14 391	14 478	15 999	61 932
Transmission	1 494	2 451	2 203	2 325	1 541	10 014
Distribution	2 857	2 790	2 646	2 465	2 851	13 609
Corporate	270	334	312	360	366	1 642
New Business	1 760	960	280	560	2 192	5 752
Total	13 170	16 810	19 832	20 188	22 949	92 949

Source: Eskom

4.1 Capital Expenditure per Eskom Division

The following charts illustrates the divisional allocation of Eskom's combined capital expenditure programme over the period 2005 to 2009:

Eskom capital expenditure by division (2005-2009)



4.1.1. Generation Division

The bulk of new energy capacity expenditure will be spent on generation, and this division accounts for about two-thirds of the total capital expenditure programme. Preliminary data indicates that over 14% of total generation will be spent on the return to service of the Simunye power plants. The upgrade and refurbishment of an existing coal plant will cost about 17.8% of the total, while combined cycle gas turbine plants at Saldanha and Coega, as well as an open cycle gas turbine and the building of a hydroelectric pumped storage scheme at Braamhoek, are expected to take about 29% of the spend. The rest of the new capacity expenditure is estimated at around 39%.

As pressure is anticipated to be on peaking capacity, priority projects will focus on meeting this demand, with Eskom planning to commission two open-cycle gas turbine (OCGT) plants by 2007, which will have a combined capacity of 1 000 MW. Five companies have qualified to bid for two oil-fired, open-cycle gas turbine power stations, with a combined capacity of about 1 000 MW. These will operate as peaking plants at sites in the Eastern Cape and KwaZulu-Natal, and are expected to come on stream in 2008 (Department of Minerals and Energy, 2005).

4.1.2 Transmission Division

According to Eskom, the distant location of most generating plants has called for the strengthening of the transmission corridor, particularly in the Cape, which has experienced phenomenal economic growth over time. The Cape strengthening will take the bigger portion – about 28% - of the estimated R10 billion transmission capital expenditure.

The Northern Corridor, which serves the platinum base, will also be reinforced, while transmission capacity in Richards Bay, Bloemfontein and Johannesburg, as well as supply lines to Coega (over 14% of total) and at decommissioned power stations, will be strengthened further.

4.1.3 Distribution Division

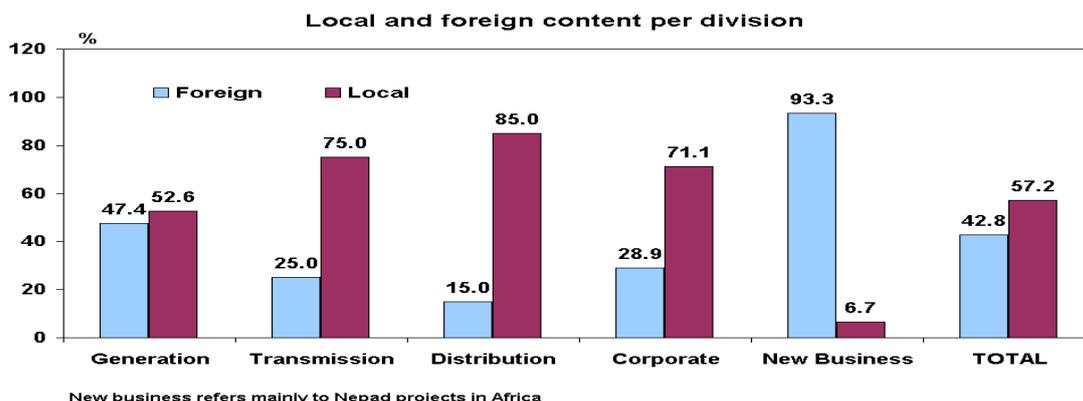
Over 80% of the capital expenditure on distribution will be spent on lines and cables, substations, reticulation, refurbishment and control systems.

4.1.4 Corporate and New Business Divisions

These two divisions account for around 8% of the capital expenditure programme. The new business expenditure is mainly on projects outside South Africa, specifically in the Democratic Republic of Congo. Capital spending on the Inga Hydropower and Inga Wescor Power line is estimated at around 53% of new business capital expenditure plan, while around 17% is for the Coega smelter.

4.2 Sectoral Distribution of Eskom Capex

Preliminary figures provided by Eskom indicate that the combined capital expenditure programme will have an import leakage estimated at 42.8%. This compares with a total import leakage of around 11% for the South African economy in 2004. While the imported component differs across the various Eskom divisions, on balance, it remains high due to the nature of the equipment required.

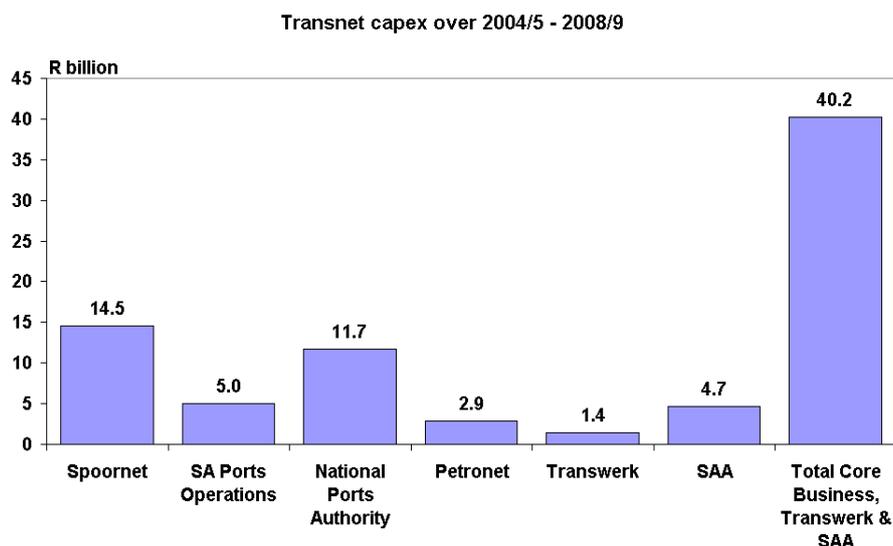


Domestic spending is expected to be on the following sectors:

- Construction, particularly civil engineering: Approximately R14.6 billion will be spent on services provided by this sector of economic activity;
- Metal products, excluding machinery: An estimated R9.4 billion will be spent on these items, which include structural metal products, steel power and poles, as well as conductors;
- Electrical machinery: R8 billion is likely to be spent on transformers, cables and conductors, circuit breakers, isolators, metering panels, as well as protection panels and other related equipment;
- Non-electrical machinery: Expenditure in this sector is expected to total R6.3 billion;
- Coal mining: Over R6 billion will be spent on refurbishing the coal plants;
- Financial and business services: An estimated R1.9 billion will be spent on services provided by this sector; and
- Motor vehicles, parts and accessories: Approximately R1 billion will be required for the purchase of fleet and accessories.

5. TRANSNET'S CAPITAL EXPENDITURE PROGRAMME

The Transnet Group strategy comprises elements associated with four core businesses, namely Spoornet, South African Port Operations (SAPO), National Ports Authority (NPA) and Petronet. A divestment strategy is in place for non-core businesses such as South African Airways (SAA), whose ownership is anticipated to be transferred to government. Transnet is set on radically improving its infrastructure and service delivery to its clients. The planned investment can be divided into maintenance that operates the system at reasonable efficiency levels and investment that would expand port and railway infrastructure. The combined Transnet capex programme for the period 2004/5 to 2008/9 is valued at R40.8 billion, to be funded primarily from operational cash flows and borrowings. The consolidated capex expenditure, together with the portions pertaining to each of the five main business areas (including SAA), is reflected in the following illustration:

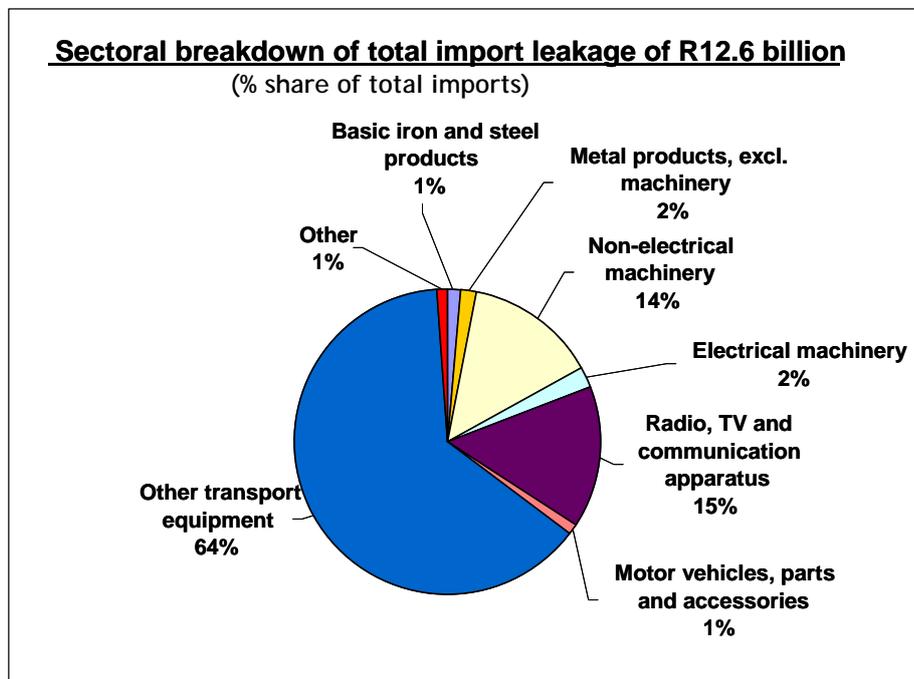


Transnet's capex programme places most of the emphasis on the core business, that is, rail, ports and pipeline. The following table reflects Transnet's capex expenditure amounting to R34,1 billion, excluding SAA and Transwerk, for the period 2004/2005 – 2008/2009.

Transnet Core Business Capex: 2004/5 to 2008/9

Subsidiary	2004/5	2005/6	2006/7	2007/8	2008/9	2004 to 2009
Spoornet	2,451	2,814	2,902	2,869	3,496	14,532
SAPO	816	1,089	1,043	1,132	882	4,962
NPA	488	1,854	3,466	3,733	2,205	11,746
Petronet	160	313	719	910	798	2,900
Total	3,915	6,070	8,130	8,644	7,381	34,140

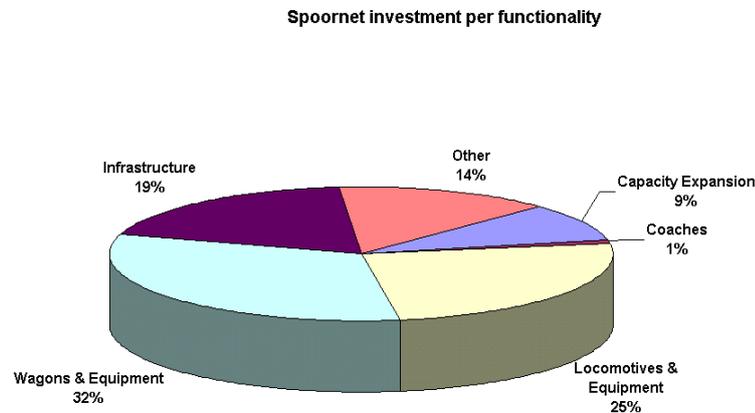
Transnet's import requirements are estimated at about 31% of the capex amount, or R12.6 billion. This figure was derived by assuming the average import leakage per sector for those sectors directly associated with Transnet's capital expenditure, including: basic iron and steel; non-electrical machinery; civil engineering; radio and communication; motor vehicles, parts and accessories; and other transport equipment. Such an assumption proved necessary due to the unavailability of the required import data from Transnet.



5.1 Spoornet

Spoornet's locomotive and wagon fleet is very old, which increases operating costs, reduces reliability and leads to poor performance. The poor state of the fixed infrastructure also warrants concerns over safety and efficiency. Spoornet's planned investment should be viewed within this context. Of the total capital expenditure of R14.5 billion planned by Spoornet, a major portion is destined for commercial vehicles (largely locomotives and wagons, together with related equipment). The four major Coega projects, costing just over R1 billion in total, are developmental investments to rehabilitate locomotives and wagons. The total investment programme for locomotives and wagons is R3.6 billion and R4.7 billion, respectively. This will benefit customers transporting commodities such as timber and grain. Many of the commercial projects will have a developmental impact because, in their absence, economic growth would be constrained due to lack of rail capacity. An additional R2.8 billion will be spent on the rehabilitation of signalling and power supply systems.

As illustrated below, approximately 19% of Spoornet's planned capital expenditure is aimed at fixed infrastructure, while the bulk relates to transportation and related equipment, particularly wagons and locomotives.



5.2 South African Ports Operations

SAPO's investment programme over the five-year period totals almost R5 billion. The objective of the programme is to reduce transportation costs by handling increasing cargo volumes and reducing waiting times at the ports.

The investment programme is dominated by equipment for container terminals, which account for about 65% of the total for the top twenty projects. Dry bulk terminal equipment accounts for 24%.

Investment for the top 20 SAPO projects: 2004/5 to 2008/9

CARGO TYPE	R billion	% share
Containers:		
Ship-shore Gantries	1.24	45%
Straddle carriers	0.39	14%
Rubber-tyred gantries	0.16	6%
Sub-total for containers	1.79	65%
Dry bulk	0.65	24%
Cars	0.09	3%
Other	0.19	8%
TOTAL	2.71	100%

Container traffic is forecast to increase at 7% p.a., thereby rising by more than 40% over the five-year period. The SAPO investment programme for equipment is intended to handle the forecast traffic. It is anticipated that with the improvements in productivity and a reduction in downtime for maintenance purposes, the need for equipment could be reduced in the long term.

5.3 National Ports Authority

The investment programme proposed by NPA over the next five years totals R11.75 billion and is aimed at increasing capacity to handle rapidly increasing traffic.

Major NPA projects over the next five years include:

- In Durban, the container terminal expansion at Salisbury island, the widening and deepening of entrance channel, and the rehabilitation of the Maydon Wharf;
- In Coega, the relocation of manganese ore to Ngqura;
- In Saldanha Bay, a liquefied natural import terminal and the expansion of ore terminal;
- In Richards Bay, additional berthing capacity, including a coal export berth; and
- In East London, a new container terminal.

5.4 **Petronet**

The total capital expenditure by Petronet is projected at R2.9 billion and is largely commercial oriented. This investment is important to avoid a major demand constraint on the economy. Investment in logistics and terminalling is required to make more effective use of current capacity, pending the introduction of further pipeline capacity.

Petronet's capex is destined largely for the development of a new multi-products pipeline designed to expand capacity and improve operational efficiency. The remainder pertains to the upgrade of the gas pipeline and terminalling and logistics.

Capital expenditure for maintenance purposes should be seen within the context of under-spending against budgeted figures since 1999 (actual spending of R552 million over the period 1999 to 2004, as compared to a budgeted expenditure of R1.2billion). Hence, approximately R1 billion of the capital expenditure will be funded through funds accruing from the under-expenditure of previous years.

6. **IMPACT OF THE CAPEX PROGRAMMES OF ESKOM AND TRANSNET**

To summarise, Eskom and Transnet are planning to invest approximately R134 billion over the next five to seven years, with Eskom accounting for the majority of total capital spending (refer to the following table). This combined capital expenditure programme is envisaged to have a substantial impact on the South African economy in terms of value addition and job creation.

However, it will impact negatively on the balance of payments due to its extraordinarily large direct import leakage. The import intensity of the capex program is demonstrated by an exceptionally high import leakage of almost R53 billion, which is equivalent to 40% of the total capital expenditure. As previously stated, this ratio compares extremely unfavourably with the average import leakage (import-output ratio) of 11.2% for the economy as a whole in 2004.

Capex spending in R billion			
	Eskom	Transnet	Total
Total Capex	92.9	40.8	133.8
Domestic spending	52.7	28.2	80.9
Import leakage	40.2	12.6	52.9

Despite the magnitude of the capex programmes of the two SOEs, only the R80.9 billion projected to be spent in the domestic economy will generate additional economic activity and subsequent spin-offs in terms of job creation and sectoral development. It is against this background that the economic impact analysis has been conducted.

The SOE capex programme will have a major impact on the South African economy due to extensive linkages with a number of local suppliers of goods and services, which will cause

ripple effects throughout the economy. The IDC's *Economic Impact Model*, which is based on the Supply and Use tables (converted into an Input-Output model), was utilised for the impact assessment (refer to Annexure A for a description of the methodology adopted). An Input-Output model depicts economic relationships between different components of an economy by identifying monetary flows (expenditures, receipts) between various units. These models normally focus on inter-industry relationships on a detailed sectoral base, whereas a macro-econometric model emphasises relationships between macro-economic aggregates as depicted in the national accounts of a country.

At the macro level, the total capital investment associated with the programmes announced by Eskom and Transnet should fuel economic growth by adding an estimated R90.3 billion to overall GDP over the next five years (refer to the table below).

Impact of R133.8 bn CAPEX on the South African economy in 2004 (R million)			
Economic impact variable	Eskom	Transnet	Total Capex
Total Capital Investment	92,949.0	40,812.0	133,761.0
<i>Domestic spending</i>	52,717.0	28,167.2	80,884.2
Impact on the SA economy:			
Gross Domestic Product (GDP)	60,158.3	30,166.7	90,325.0
Balance of payments			
<i>Direct imports</i>	40,232.0	12,644.8	52,876.8
<i>Import leakage (indirect)</i>	13,948.3	8,385.2	22,333.5
Total imports (direct & indirect)	54,180.3	21,030.0	75,210.3
Government revenue (tax collections)	7,435.3	3,773.1	11,208.3
Employment (number)	32,215	23,043	55,258

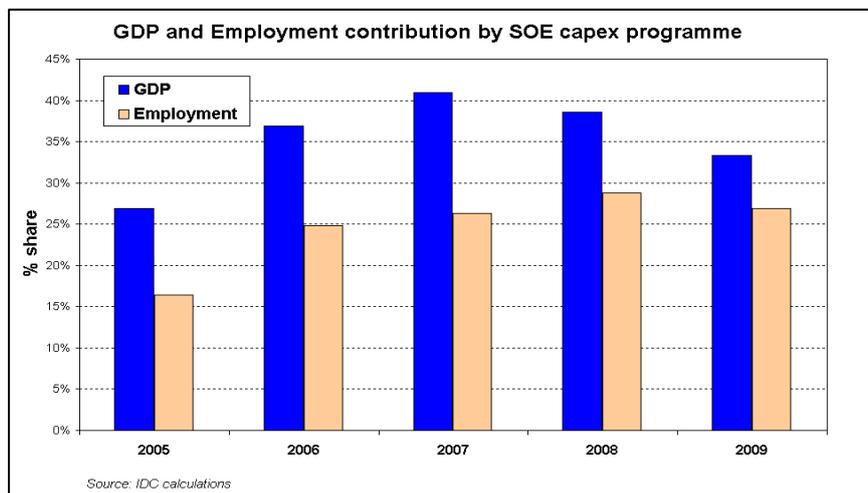
The average annual contribution to GDP over the five-year period is equivalent to 1.3% of national GDP (in 2004 terms). This is a significant impact, taking into consideration the high demand for imported goods. Nonetheless, the estimated R53 billion in direct import requirements (pertaining largely to machinery and equipment such as transformers, turbines, metering panels as well as locomotives and other transport equipment) provides reason for concern. Furthermore, due to the relatively high import propensity of South African industry, additional imports in the region of R22.3 billion are likely to be required by local industries in order to accommodate the increased demand for domestic goods and services. This is expected to translate into a net impact on the current account of the balance of payments of over R75.2 billion in additional import demand over the next five years.

Job creation remains one of the key challenges facing the South African economy. During the past decade, local industries have had to adapt to a fast changing and increasingly competitive global trading environment following South Africa's re-entry into the global economy. In order to become world players or to remain competitive, many industries went through significant restructuring, often involving capital intensification and adopting new technologies. Consequently, the labour absorption capacity of the South African economy was significantly reduced. The SOE capex programme is estimated to create 55 200 sustainable jobs over the next five years, approximately 33 000 of which within the construction sector. However, the latter may be regarded as temporary jobs that are unlikely to be sustained upon completion of the capex programmes of Eskom and Transnet. The impact analysis also indicates that the cost per job opportunity is extremely high at just over R2.4 million per additional job.

Government revenue is projected to increase by slightly over R11 billion during the course of the five-year period due to tax collection. The additional tax revenue will derive from:

- Corporate taxation via linkages with domestic suppliers of goods and services associated with the capex programme;
- Personal income tax paid by all employees for work rendered through linkages with the programme; and
- Indirect taxation such as value-added tax and customs and excise duties payable by South African businesses or individuals whose incomes may be linked either directly or indirectly with the capex programme.

The economic impact of the SOE capex programme becomes even more meaningful when compared to the projected GDP growth and estimated job creation over the period 2005 to 2010. The South African economy is forecast to expand at a fairly rapid rate of approximately 4% p.a. over this period, whilst job creation is expected to expand at an average rate of 2.5% p.a.. From this analysis it would appear that the capex programme contributes around 35% to additional GDP over the forecast period, whilst in terms of job creation, this contribution is substantially lower at an average annual ratio of 25%. However, the economic impact could be even higher if specific interventions were to be undertaken to reduce the import leakage associated with Eskom's and Transnet's planned capital expenditure.



At the sectoral level, the construction sector (which comprises building construction and civil engineering) is likely to be the main beneficiary in terms of new job opportunities. From the estimated 55 200 jobs that are expected to be created, more than 60% are likely to occur within the construction sector.

Sectors which will experience a large short term impact		
<i>(% of total GDP and Employment generated by Capex program)</i>		
INDUSTRY	GDP	Employment
Construction (incl. civil engineering)	9.7%	60.3%
Machinery & equipment	6.9%	5.2%
Iron & steel, metal products	9.9%	8.0%
Transport equipment	2.5%	2.4%
Financial & business services	21.1%	4.8%
Other services	5.8%	2.1%
Electricity, gas & water	2.7%	1.5%
Transport, storage & communication	9.1%	2.9%
Wood, paper & printing	1.7%	1.0%
Other	30.5%	11.8%
Total	100.0%	100.0%

The iron and steel sector is projected to claim 8% of all additional jobs, whilst 5.2% of the job creation associated with the SOE capex programme is likely to emanate from the machinery and equipment sector.

As indicated in the above table, the financial and business services sector is expected to account for the largest portion, at just over 21%, of the value added (GDP) resulting from the SOE capex programme. Although this might appear surprising, cognisance should be taken of the fact that all sectors of the economy have, to a greater or lesser extent, linkages with the financial and business services sector. Moreover, the GDP/output ratio in this sector is amongst the highest of all sub-sectors in the South African economy. The construction sector, the fabricated metals (iron and steel as well as metal products) sector and the transport services sectors are also likely to benefit substantially in terms of increased economic activity (value added).

The impact of the capex programme may also be measured in terms of additional value added (GDP) and employment creation at the sectoral level. For example, as illustrated in the following table, value added in the construction sector is projected to increase by as much as 8.4% p.a. compared to the level recorded in 2004.

Additional GDP & Employment as result of Capex spending as % of sectoral GDP and Employment in 2004				
INDUSTRY	(Average annual p.a.)		(Cumulative over 5 years)	
	GDP	Employment	GDP	Employment
Agriculture	0.81%	0.04%	4.05%	0.04%
Mining	1.57%	0.37%	7.84%	0.37%
Food, Beverage & Tobacco	0.83%	0.33%	4.17%	0.33%
Textiles, Clothing, Footwear & Leather	0.87%	0.09%	4.34%	0.09%
Wood, Paper & Printing	1.28%	0.36%	6.38%	0.36%
Chemicals, Rubber & Plastics	1.36%	1.03%	6.82%	1.03%
Non-metallic mineral products	3.57%	0.72%	17.86%	0.72%
Iron & steel, metal products	4.20%	2.78%	21.01%	2.78%
Machinery & equipment	5.60%	1.95%	27.99%	1.95%
Transport equipment	1.93%	1.38%	9.65%	1.38%
Other manufacturing (incl. Furniture)	0.73%	0.32%	3.65%	0.32%
Electricity, gas & water	1.67%	1.85%	8.34%	1.85%
Construction	8.40%	10.32%	41.99%	10.32%
Trade, catering & accommodation	1.09%	0.10%	5.43%	0.10%
Transport, storage & communication	1.31%	0.77%	6.57%	0.77%
Financial & business services	1.48%	0.23%	7.38%	0.23%
Community & other services	0.39%	0.04%	1.96%	0.04%
Total	1.47%	0.66%	7.34%	0.66%

Thus, over the five-year period, value added in the construction sector will have expanded by 42% relative to its 2004 level. In terms of employment creation, however, this sector is projected to employ roughly 33 000 additional workers due to the capex programme, which is equivalent to 10% of its labour force in 2004.

7. CONSTRAINTS AND CHALLENGES

The planned government-led infrastructural investment has the potential to boost the economy, contribute to job creation and simultaneously remove some of the supply bottlenecks currently faced by many economic players in South Africa. The degree of success and domestic impact of its roll-out will largely depend on the ability of local industry

to accommodate, in a competitive manner, significantly higher levels of demand, as well as the availability of critical skills.

Interactions with potential suppliers revealed a reluctance to invest in the necessary production capacity due to scepticism over the roll-out of governmental and parastatal investment as well as the sustainability of demand for additional capacity. Apart from generalised concerns over the ability of the public sector to deliver effectively on its plans, this despondency also has its origins in the traumatic experience of key supplier manufacturing sectors (particularly capital equipment) over the last fifteen years: The decrease in SOE investment resulted in a sudden drop in demand and the sale or scrapping of manufacturing plant, as well as in the dispersion (and often immigration) of relevant skills – particularly in the engineering and the skilled artisan fields. This process was further exacerbated by the introduction of cheap imports from China and India combined with the high costs of key inputs (particularly steel and chemicals) as a result of import parity pricing.

A consequence of this experience has been the creation of a climate of insecurity with respect to investing in plant and capabilities that have a long term pay-back horizon on the back of government plans. Industry is of the view that with security of demand, the private sector will aggressively invest in plant and skills to close existing gaps.

Over and above the legacy of apartheid, severe skills constraints developed progressively as individuals with the relevant skills (engineering and technical skills) moved to other areas of work or emigrated following the closing down or curtailment of many manufacturing operations, while numerous professionals reached retirement. The skills problem has been exacerbated by progressively lower enrolment levels for such professions at academic or technical institutions, and by the failure on the part of SOEs to maintain their artisan apprenticeship programs.

The problem of skills constraints has been well documented in the news media over the last few months. It has been estimated that South Africa will need an additional 1 500 to 4 000 civil engineers over the next ten years in order to deliver on the projects expected over the period. According to a survey commissioned by the National Advisory Council on Innovation (NACI) in 2003, the construction industry alone needed an additional 5 400 skilled mechanical, electrical and instrumentation artisans to successfully implement the projects scheduled for 2004.

The roll-out of Eskom and Transnet's investment plans will run in parallel with several other governmental and parastatal projects, including the Gautrain, infrastructural upgrades and new developments in preparation for the 2010 World Cup (e.g. building new soccer stadiums and upgrade existing ones, improvements to airport facilities and the road network, etc.), as well as private sector investments. This will place considerable strain on an already overstretched construction sector and supporting industries, and aggravate the skills deficit in specific professional fields.

Other factors that could restrain the successful implementation of the SOE capex programme or prevent local industry from capitalizing fully from the associated procurement include:

- Import parity pricing practices by upstream suppliers, which may adversely impact on cost structures and undermine the competitiveness of local industry;
- Increased competitive pressures for domestic industries as tariff liberalization progressed and, more recently, the rand appreciated in an unprecedented manner. An example is the foundry industry, which faces poor capacity and technological capabilities and, consequently, is placing further strain on the capital equipment industry;
- With too many large projects over the same period, the risk of poor delivery and continuous delays must not be ruled out. The SOE capital expenditure programme,

together with other announced public and private sector investments, will test the capacity of the construction sector and associated industries, such as the cement industry.

The above factors highlight some of the constraints that are likely to be encountered and the challenges that all relevant stakeholders need to work on in order create an environment in which the impact of these sizeable investments could be fully maximised for the benefit of the country as a whole.

8. TOWARDS ADDRESSING SECTORAL DEVELOPMENT CHALLENGES

The results of the modelling exercise on the SOE capex programme point towards a sizeable impact on the South African economy in general, and specific sectors in particular, based on the current status quo. However, the opportunity costs associated with the related import leakages, both direct and indirect, are disconcerting.

Various interventions and initiatives are deemed essential to maximise the impact of such a massive investment spending. The overall objective should be to stimulate and facilitate the expansion of the productive capacity of relevant local industries and ensuring that they are in a position to compete successfully in forthcoming tender processes.

Potential interventions impacting on sectoral development include:

- The provision of better information to industry about SOE long term capacity growth plans and the introduction of long term strategic supplier relationships in designated areas to enable the investment in plant and skills and increased competitiveness. These objectives are likely to be attained by establishing effective, SOE-led collaborative supplier forums, which will entail reviewing SOE procurement policies and processes so as to enable the development of long term strategic relationships with local industry;
- The establishment of a projects database, particularly projects by government and government-related institutions, which will provide the breakdown of the requirements of the projects and anticipated bottlenecks;
- The establishment of a cross-departmental and industry investment action group that will be tasked with providing concrete progress reports and projections on projects to be undertaken; and
- The development, by government, of specific support measures tailored around the requirements of the relevant sectors.

With regard to strategic supplier relationships, three categories are being investigated:

- Importation of large capital items: This could be accompanied by an offset agreement whereby the supplier would make an investment in South Africa (and potentially transfer technology to local industry) which would be integrated into the supplier's global supply chains;
- Re-establishment of industries that have ceased to exist: Based on the forecast SOE demand and probable Africa growth, specific sectors that have disintegrated can now be reconstructed on the back of a long term relationship with an SOE; and
- The enhancement of the competitiveness of existing strategic suppliers: This will also involve long term relationships and targeted support interventions with a quid pro quo from the supplier.

In addition, government will provide support in the form of development finance through institutions such as the IDC, and possibly through the provision of concessionary funding for plant acquisition and technology support. Such support may be based on the supplier continuously improving productivity and passing a portion of the benefits of this improvement to the SOE. Sectoral development opportunities are presented in the box overleaf.

As previously mentioned, industry capacity and skills constraints will need to be addressed as a matter of urgency, while various stakeholders including government and the SOEs having to play a significant role in this regard. The following interventions have been proposed:

- Fast tracking joint training programmes by the SOEs and the relevant SETAs; and
- Re-establishing training centres of excellence, such as the National Casting Technology Centre using Denel's existing mothballed foundry infrastructure.

SA SUPPLIER BASE: OPPORTUNITIES FOR REVIVAL OF PREVIOUSLY VIABLE INDUSTRIES, EXPANSION OF EXISTING INDUSTRIES, AND INTRODUCTION OF NEW INDUSTRIES

• Stakeholders have identified a number of previously viable industries that are strong candidates for revival:

- Forging and casting
- Boilers
- Tooling
- Several sub-component manufacturers
- Railway lines

• A number of existing industries have been identified for expansion or for developing an export orientation:

- Locomotives (refurbishment/upgrading), wagons & coaches
- Railway sleepers
- Alloys
- Transformers
- Pumps
- Valves
- Taps
- Cables
- Overhead transmission lines
- Conductors

• Areas for new investment by multi-nationals possibly as part of an offset program have also been identified:

- Produce components of turbines
- Assemble turbines
- Produce components of engines (electrical as well as diesel)
- Produce components of switchgears

In conclusion, the SOE capex programme is expected to augment South Africa's projected annual rates of growth in gross domestic product by an additional 35% over the forecast period, whilst expanding forecast job creation by an additional 25%. However, through interventions such as the ones outlined in this concluding section, which include the successful implementation of collaborative procurement, focused sectoral development strategies and addressing skills constraints, the impact could be amplified substantially.

ANNEXURE A

METHODOLOGY

The IDC's **Economic Impact model** is based on the Supply and Use tables (converted into an Input-Output model). An Input-Output model depicts economic relationships between different components of an economy by identifying monetary flows (expenditures, receipts) between various units. These models normally focus on inter-industry relationships on a detailed sectoral base, whereas the macro-econometric model emphasises relationships between macro-economic aggregates as depicted in the national accounts of a country.

Input-output models give a further breakdown of the national accounts, with the advantage thereof being that the economy can be analysed on a sectoral basis. Not only is it possible to determine the economic structure of a country at a specific point in time, but, through the inter-industry linkages, it is also possible to calculate the overall impact on the domestic economy through changes in demand for products produced by a certain sector/industry or by introducing a new project into the economic system.

Furthermore, the relationship between the initial spending and the total effects generated by the spending is known as the **multiplier** effect of the sector, or more generally as the **impact** of the sector on the economy as a whole. For this reason the study of multipliers is also known as **impact analysis**.

To obtain a full appraisal of the **macro-economic impact** of a project on the national economy, a distinction can be made between different stages of a project's impact, namely the initial, first round, indirect and the induced effect. The **initial impact** is the contribution that the specific project under consideration makes to various economic aggregates such as GDP and employment. The **first round impact** is caused by those suppliers (industries) who deliver goods and services directly to the project, whilst the **indirect impact** is caused by those industries which, on their part, deliver goods and services to the first round suppliers. The **induced impact** captures additional economic effects by means of household income generation through payments for labour services and the associated private consumption expenditure on goods and services.

For this study, however, results are shown only for the overall economic impact. The above mentioned impacts are referred to as **backward linkages** and are determined only by the **domestically** sourced raw materials and overheads, as imported goods and services do not generate direct economic activity within the country.

The **Economic Impact model** used in this study is of a demand driven nature and was only applied to calculate backward linkage effects in the economy. This model does not determine any **forward linkages**¹ of an industry with other sectors in the economy.

Project impact analysis as conducted by means of this model is in terms of the following economic variables:

- Gross domestic product (GDP);
- Employment creation;
- Income generation;
- Balance of payments;
- Capital utilisation, and
- Exchequer account (government revenue).

¹ Forward linkages can only be calculated if specific information of downstream projects, directly linked to the project under investigation, is available.

The impact on the GDP and job creation is straightforward and clearly understandable as this refers to additional economic activity and new jobs created. However, with regard to the balance of payments, capital utilisation and the exchequer account certain clarification is necessary:

- *Balance of Payments:* Exports refer only to direct project exports, whilst imports consist of direct project imports of goods and services as well as indirect import requirements by all suppliers to the project and those suppliers who are in one way or the other affected by the initial project;
- *Capital utilisation:* This is the total capital requirement to sustain the level of production as a result of the project, both at the project as well as at all other industries that are associated with its activities; and
- *Exchequer account:* Government revenue consists of a number of taxes such as personal income tax, company tax, customs duty, excise duty, fuel levy, property income and value added tax. Any direct government subsidies applicable to the project must also be considered as a cost to government and, thus, resulting in a net effect for the exchequer.