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Assessing the Impact of Transnet and Eskom's Infrastructure Investment Programmes on the Capital Goods Sector and Key Constraints

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ASSESSING THE IMPACT OF TRANSNET AND ESKOM'S INFRASTRUCTURE INVESTMENT PROGRAMMES ON THE CAPITAL GOODS SECTOR & KEY CONSTRAINTS

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INTRODUCTION

A key priority in the government's Accelerated and Shared Growth Initiative for South Africa (ASGISA) is providing targeted support for economic sectors demonstrating an ability to generate employment and stimulate rapid growth in the country. The capital goods industry is one such sector. Capital goods are products that have value for a specific industry through their capacity to directly enhance the production process and generate additional revenue through further commercialisation and application in other industrial sectors. While the sector is diverse in scope and size, the various inputs produced by the different firms engaged in the sector (engineering services and consulting firms, original equipment manufacturers, component suppliers, fabricators, and distributors and agents) play a fundamental role in the production process of any firm or industrial activity. Underpinning both the expansion and growth of the capital goods sector and the dynamism of the firms comprising it are domestic demand factors. The higher and more stable the domestic demand factor, the greater the direct and indirect macro-economic spin-offs.

The ASGISA identifies the main demand dynamic in the economy in the next five years as the major infrastructure spending across key industrial sectors in the economy. Investment will stem from three sources: the state-owned enterprises (SOEs); the private sector (notably mining); and the government's general public works programme (Gautrain, 2010 FIFA World Cup Soccer infrastructure, etc). Such spend will have a profound impact on the economy, particularly backward linkage effects[1] arising from the procurement of necessary capital equipment and service inputs required in the design, construction, management and ongoing operation of the projects planned. While most inputs (such as machinery and equipment and electrical equipment) will be sourced from the manufacturing sector, the metal products, construction, and transport sectors also stand to benefit, either directly or indirectly from increased demand.

Although many manufacturing capabilities and skills have been lost in the capital goods sector over the past two decades as a result of severe cut-backs in investment and broad industry restructuring, the infrastructure investment programmes, particularly the R160.8 billion planned by Eskom and Transnet, provides the catalyst needed to revive latent capabilities, encourage the emergence of new firms, and facilitate large-scale skills development throughout South Africa. The extent to which these goals are realised and local firms are able participate in the various projects, however, is dependent not only on the procurement patterns of the end-user firms and their decision to source locally rather than import, but also on the competitiveness and ability of local firms to meet end-user requirements.

[1] Backward linkages refer to the linkages arising between an industry and its suppliers and essentially make up the supply chain of an enterprise/firm.

Consultation with a sample of participants and stakeholders already involved in Eskom and Transnet's capital expenditure (capex) programmes reveals that there are a number of industry challenges, constraints and bottlenecks which are impacting on local firms' ability to participate effectively and meaningfully in the various projects. From a policy point of view, it is important to understand what these challenges are and what interventions are needed to alleviate them.

The aim of this paper is two-fold. Firstly, to provide insight into the impact that changing demand patterns arising from Eskom and Transnet's capex programmes will have on key product groupings in the capital goods sector. Secondly, to review the extent to which local firms are capable of capitalising on the opportunities arising from Eskom and Transnet's spend and the interventions needed to overcome them. The paper commences with a brief description of the capital goods sector, its centrality in the industrial development process, and the importance of local demand factors in facilitating its growth and dynamism. The impact of fluctuating demand patterns in South Africa and the new role envisaged for the SOEs in the economy, particularly with regard to reviving latent capabilities in the capital goods sector, is then undertaken. Key features and projects underpinning Eskom and Transnet's capex and opex programmes are briefly highlighted and product groupings that stand to benefit the most from increased expenditure (both in the short- and long-term) noted. The discussion then shifts to unpacking the critical debates and issues surrounding the competitiveness of local suppliers and their ability to harness opportunities. The discussion draws on findings from a series of interviews conducted in mid-2006 with key participants already involved in the capex programme[2] as well as an extensive review of available literature on the interface between SOEs and the supplier industry[3]. The paper concludes with some comments on the policy implications.

OVERVIEW OF THE CAPITAL GOODS SECTOR

"Capital goods" can be defined as products or inputs which have value for a specific industry through their capacity to directly enhance the production process and generate additional revenue through further commercialisation and application in other industrial sectors. While the word "capital" implies a certain degree of monetary value, scale and strategic value in the resultant input, in reality the sector encompasses an assortment of equipment that varies in size, technology intensity and assembly complexity. Most capital goods are predominantly high-tech and niche-oriented in nature designed to meet specific industry/production challenges, however, the sector also includes low- and medium-tech products. In terms of their end-use, capital goods are basically intermediate products, used in sequence or combination with each other to achieve a certain function or fulfil a certain task. Taken on their own, however, each piece of capital equipment is a complete system in its own right, manufactured and assembled using a combination of different components of varying sizes and technological complexity.

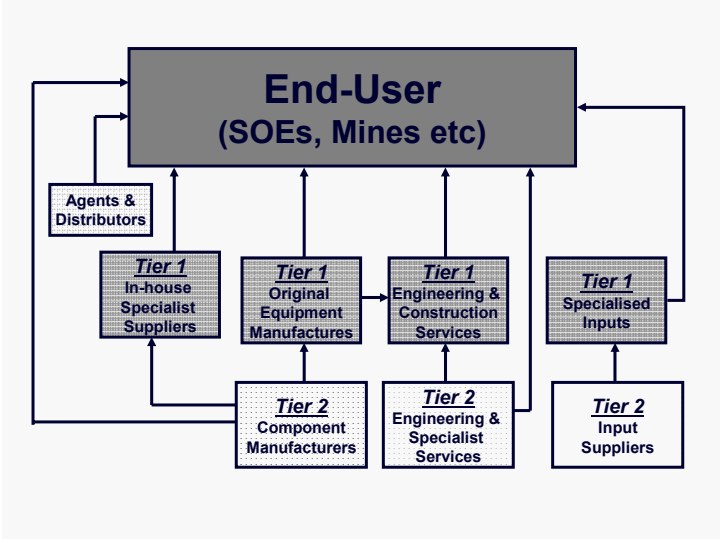
While "capital goods" are generally regarded as being tangible products, the sector also includes technical/engineering services which form an integral part of the value chains of industries and are increasingly being offered by input suppliers in conjunction with a particular piece of equipment. Firms that provide engineering/technical services only tend to be either spin-offs of government-based R&D centres or technical divisions of major industries/corporations (particularly in mining) or have emerged naturally because of industry demand-pull or push factors. Competitive advantage tends to be firm-and niche-specific and is usually the result of long and close interaction with end-users, local industries, and tertiary and research institutes. The particular personalities and capabilities of the engineers and

[2] A total of 20 firms were interviewed including specialised service providers, manufacturers of large items of capital equipment, fabricators of niche components, and refurbishment operations. Factory/plant visits included Transwerk's locomotive refurbishment operation & Lethabo Power Station.
[3] The literature review included commentaries, report, discussions and reviews published in various sources such as *Martin Creamer's Engineering News*, *Business Day, Mail & Gaurdian,* and *Financial Mail.* In addition, reference was made to company annual reports and websites, as well as pre-feasibility studies, impact assessments, and competition cases to gain insight into supplier dynamics, capabilities and key contracts awarded.

technical specialists within these firms embody and stimulate the development of "know-how", which drives the technical/engineering service supply sector.

In general, most firms comprising the capital goods (and services) sector fall within the manufacturing sector, of which the machinery and equipment and electrical equipment sectors account for the largest proportion of inputs[4]. Although there is no database that exclusively captures all capital goods suppliers active in South Africa, the Ezee-Dex "*Who Does What*" Directory (published and updated annually) gives some insight into the size and scope of the industry. Used to guide the procurement of capital goods, services, consumables and other inputs in South Africa, the 2006 Directory lists over 62 000 supply and service companies operating in the country, providing inputs in 200 000 product categories. The supply chain supporting capital goods and services industry can be broken down into three groups or tiers of companies depending on whether they provide inputs directly or indirectly (i.e. via an intermediary or aftermarket sales) to the end users (Figure 1).

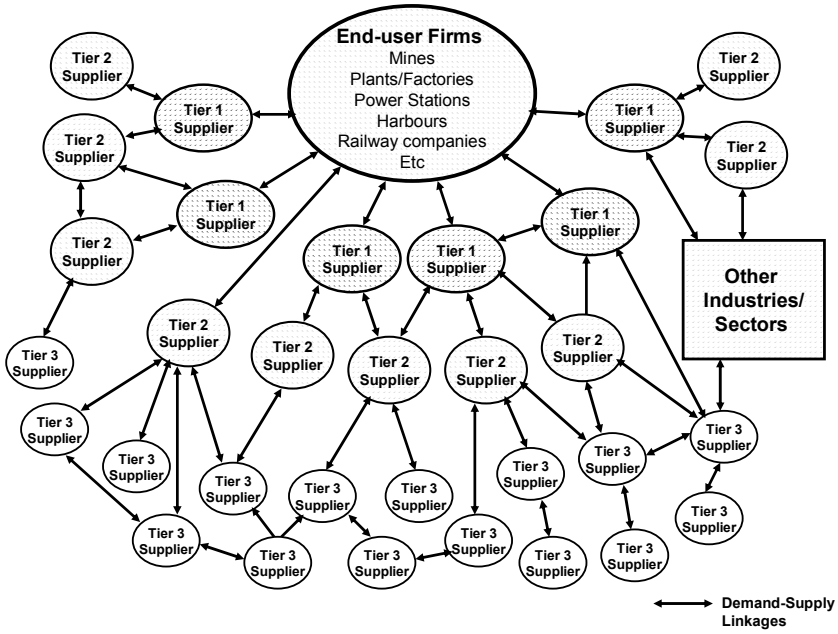
Figure 1 Generalised structure of the inputs industry



Tier 1 firms include in-house specialist suppliers, engineering and construction service providers; original equipment manufacturers (OEMs), specialised input suppliers, and agents and distributors. Tier 2 firms include specialised engineering and service companies; component manufacturers; and input providers. Tier 3 firms would include any additional input suppliers to these firms. The number of suppliers providing goods and service inputs increases exponentially as one moves down the hierarchy (Figure 2). Although supplier companies are distributed throughout South Africa, the majority of the capital goods and services companies tend to be geographically concentrated in the Gauteng Province. The largest concentration of engineering and equipment manufacturing firms in South Africa are located in Ekurhuleni, while specialist engineering and consultancy firms are primarily located in the Northern and Central regions of the Province.

[4] Includes the Standard Industrial Classification (SIC) categories: 356 (general purpose machinery); SIC 357 (special purpose machinery); SIC 361-365 (electrical machinery/apparatus). The sector also include SIC 3841 (building and repairing of commercial ships, boats and floating vessels); SIC 385 (railway and tramway locomotives and rolling stock); and SIC 386 (aircraft and spacecraft).

Figure 2 Size and scope of the capital goods sector



Rationale for Growing and Supporting the Capital Goods Sector

It is well-established in the literature that the production of machinery and equipment (i.e. capital goods) lies at the heart of industrial development and plays a determining role in the evolution of an economy from one developmental state to another – from primary resource-dependent growth to higher-tech, knowledge-based sustainable growth and development. The vital ingredient is the strength and nature of the local demand dynamic – a significant and stable level of demand, coupled with a demanding customer base, provides the foundation upon which an internationally-competitive supplier network can emerge and expand (Rosenberg, 1963; de Ferranti *et al.*, 2002; Abdi, 2004; Gür, 2004; Hausmann, Hwang and Rodik, 2005).

Drawing on successful case studies of countries (e.g. Finland, Sweden, USA, Canada, Germany, Japan) that have successfully captured changing domestic demand requirements to facilitate industrial development, there are four reasons why the development and growth of the local capital goods and service sector should be actively promoted and developed in South Africa. Firstly, a well-established and vibrant capital goods sector facilitates economic diversification and stability. Manufacturing sectors exhibit greater learning effects than do primary sectors. An economy that remains specialised in primary production would thus forgo the benefits of external economies inherent in industrial production. Technical progress and productivity increases are the keys to growth and improvement of living standards, and these are 'embedded' in non-resource based sectors and high technology sectors (Porter, 1990; Vuori and Ylä-Anttila, 1992; Humphreys, 2000; Blomström and Kokko, 2002; de Ferranti *et al*., 2002). The unique developmental aspect of the capital goods sector rests in the 'know-how' component embodied within the final products manufactured by the various firms. The intangible assets created through the product development process provide the opportunity for the application and transfer of the acquired knowledge into similar activities (along the value-added chain) as well as in non-related, but technologically-similar, activities and in so doing facilitating the emergence of new higher-tech activities (Vuori, 1997; Sybille, 1998). South Africa is unlikely to catch up with other countries unless it is able to move beyond the export of primary and semi-processed resources (which are finite, static and susceptible to cyclicity and long-term real price decline), into dynamic, less price-sensitive, technology-based manufacturers (Lall, 2001; Hausmann and Klinger, 2006).

Secondly, a vibrant local capital goods industry provides competitive strength to the underlying industries that purchase its inputs. Inputs allow for productivity enhancements and for the commissioning of new mines/plants/projects which only becomes possible with the advent of new technology in processing and capital goods and services. Developments at the end-user level in turn trigger concomitant spin-offs at the supplier level resulting in the emergence of a 'virtuous cycle of innovation' between the end-users and supplier network.

Thirdly, from the perspective of ASGISA, the capital goods sector has the ability to itself become a significant generator of output, skills and foreign exchange earnings as it matures into a competitive player on the global scene. Although the manufacture of capital goods sector requires advanced technology and sophisticated skills in order to be competitive, the manufacture of machinery is a labour intensive process and a large number of semi-skilled and unskilled employees can potentially be employed, particularly in component manufacturing and fabrication activities further down the supply chain. While such spin-offs are not always immediate and are strongly influenced by the level of demand from an industry for a particular good or service, they can nevertheless be significant over the long-term (CSID, 2004).

Lastly, the case for ensuring the presence of a large, well-functioning domestic capital goods sector capable of meeting end-user requirements is strengthened by changing global demand patterns for specific goods and services. Industrial expansion programmes in China and India, in particular, are altering supply patterns of niche products and delays are already being experienced in the manufacture and delivery of certain items. Both countries are also in the process of developing roadmaps for their capital goods sector and implementing policies to preserve and grow their local suppliers. It is a matter of urgency, therefore, for the existing base of expertise and competencies in manufacturing in South Africa to be broadened and strengthened to offset the impact that such supply patterns will engender in the medium- and long-term.

While factors such as access to competitively-priced inputs, a skilled workforce, and reliable services influence the dynamics of the sector at a firm-level, the long-term growth and evolution of the capital goods sector is dependent on the strength and stability of the local demand dynamic and the ability of suppliers to meet end-user requirements in a competitive and cost-effective manner.

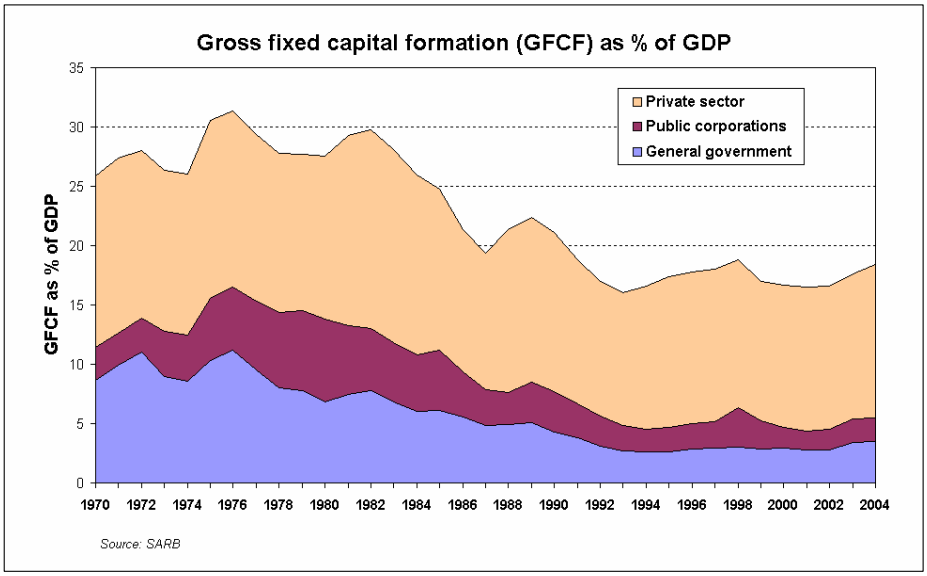
The Performance of the Sector

The capital goods sector has recovered somewhat in recent years following the effects of very weak domestic demand linked to low levels of investment spending in the 1980s and 1990s, particularly by the public sector (Figure 3). Public sector capital formation declined from a peak of about 16% of GDP in the late 1970s to 4% of GDP by the early 2000s, with most of the decline happening in the 1980s, with another dip in the late 1990s (Roberts, 2004; DPE, 2005a; 2005b). The private sector accounted for the majority of investment in South Africa, with a share of 74.9% in 2001 (Hirsch 2004; Roberts, 2004).

These fluctuations in fixed capital investment have severely impacted on the performance of the capital goods sector. Apart from capabilities developed around the extraction and processing of minerals, a local base of design and manufacturing expertise existed in the 1970s and 1980s in niche areas in the energy and logistics sector (locomotives, boilers, port handling equipment, etc). The gradual contraction in demand from Eskom and Transnet for new generation capacity and replacement locomotives over the past two decades, together with broad industry restructuring in the 1990s (largely in the mining industry) has eroded the diversity and range of skills and manufacturing capabilities in South Africa. Only a small base of expertise currently remains. The sustainability of this base is threatened by a shortage of skills, rising trade deficit (although exports in the capital goods sector have

been increasing in recent years, there has been a concomitant increase in imports), and low overall levels of innovation and R&D (CSID, 2004; Walker and Minnitt, 2006).

Figure 3 Gross fixed capital formation (GFCF) as a % of GDP, 1970-2004



The recovery of the capital goods sector is expected to increase and even accelerate in the next few years in light of the Government's decision to become more "developmental" with regard to its involvement in the economy. Specifically, the government aims to increase the contribution of public sector investment by 20% above its current level in order to create a base from which to attract additional investment, "crowd-in" private sector resources, and stimulate spill-over effects throughout the economy, particularly in the development of new firms, black economic empowerment (BEE) deals, and the export capabilities of companies (DPE, 2005; *Engineering News*, 2005). The state-owned enterprises (SOEs) are envisaged as the core 'tool' with which the state aims to facilitate this. At present there are only two SOEs – Transnet and Eskom – that have submitted five-year investment programmes with targeted projects to the Department of Public Enterprises (DPE), and are in the process of establishing contracts with specialist consultants and key equipment suppliers throughout the country.

IMPACT OF CHANGING DEMAND PATTERNS IN THE SOEs

The combined value of expenditure by Eskom and Transnet over the period 2006-2011 is around R244.8 billion, with R162 billion to be spent on capital improvements (infrastructure and equipment), and approximately R82.2 billion on operational activities. Projects consist of both new-build/greenfield and refurbishment/brownfield ones. The local and foreign content across the two SOEs varies according to the type, scale and value of projects undertaken, the design specifications and strategic importance of equipment, the existing base of local suppliers and their ability to meet end-user requirements, and the procurement practices of the SOEs. The expenditure by the two SOEs is intended to address the severe backlog of logistics and energy infrastructure and capacity requirements in South Africa. A breakdown of the capital and operational expenditure (capex and opex) and notable projects planned by the two SOEs over the next five years is provided below (Table 1).

Table 1: Breakdown of Eskom and Transnet's capex and opex plans

ESKOM		TRANSNET	
Capital Expenditure		**Capital Expenditure**	
Value:	R97 Billion (59.8% of total spend)	Value:	R63.8 billion (39.2% of spend)
Duration:	Five years	Duration:	Five years
Projected import leakage	Total: approximately 41.92% • Power Generation – 47.4% • Transmission – 25% • Distribution – 15% • New business (Nepad) – 93.3% • Corporate – 28.9%	Projected import leakage:	Total: approximately 45% • Rail – 50% • Port operation – 20% • Ports – 80% • Petronet – 50% • Transwerk – 20%
Objective:	To increase energy supply by 7 579 MW (to 45 079 MW) and improve transmission and distribution in SA	Objective:	Improve logistics infrastructure and equipment in South Africa and the delivery of services to clients
Breakdown of spend:	• Power Generation – R65.4 billion • Transmission – R10.9 billion • Distribution – R15.4 billion • New business (Nepad) – R1.6 billion • Corporate – R3.6billion	Breakdown of spend:	• Rail – R31.8 billion • Port operations – R18.6 billion • Ports – R6.3 billion • Petronet – R4.6 billion • Transwerk – R2.5 billion
Composition of projects & commissioning date):	1. New build: • 2x Open cycle gas turbine (OCGT) plants – R3.5 billion (2007, 2009) • New coal-fired power station (2010) • Fluidised-bed combustion plant (2012) • 2x Combined cycle gas turbine (CCGT) plants (2010, 2011) • 2x Pump storage hydro plants (2012, 2015) • Pebble bed modular reactor (PBMR) 2. Refurbishment: • Camden, Grootvlei & Komati power stations – R12 billion (2005-2008)	Composition of projects	1. Port infrastructure upgrades & expansions: • Durban Harbour – R7.4 billion • Ngqura Harbour – R3.75 billion • RBCT – R2.84 billion • Saldanha Port – R2.28 billion • Cape Town Container Terminal – R2.31 billion 2. Improved port operations – R6.3 billion 3. Rail infrastructure expansion – around R12.5 billion • Iron-ore line – R2.7 billion • Coal line – R7.9billion • Other – R1.8 billion 4. Rail fleet upgrade – R18.5 billion • Capitalisation of maintenance – R8.1 billion • General freight – R10.8 billion

ESKOM		TRANSNET	
Operational Expenditure		**Operational Expenditure**	
Annual estimated spend on 3 main divisions (based on 2004 figures) was R11.439 billion		Annual estimated spend for external activities (based on 2004 figures): R5 billion	
Breakdown of spend:	1. Power Generation – R4.2 • Turbine Maintenance – R989 million • General Maintenance – R814 million • Boiler & Mill Maintenance – R495 million • Auxiliary Plant Maintenance – R389 million • Nuclear – R361 million • Consulting – R291 million • Protection, Control & Measuring –	Breakdown of spend:	1. Energy – R2.0 billion • Diesel – R1.146 billion • Electricity – R775.46 million • Petrol – R69.74 million • Other – R57.64 million 2. Operational commodities – R2.4 billion • Component repairs – R1 billion • Rolling stock maintenance – R408 million • Wheels – R300 million

R273 • Waste Management – R250 million • Miscellaneous – R179 • Business Services – 156 2. Transmission – R1.5 billion • Transformers – R349 million • Line construction – R225 million • Network primary plant – R115 million 3. Distribution – R5.8 billion • Electrification & reticulation – R 1.586 billion • Miscellaneous – R639 million • Fleet – R548 • Consulting – R387 million • IT Services – R368 million	• Permanent way rental – R230 million • Traction & wagons – R92 million • Stevedore – R73 million • Operating service & outsourcing – R62 million • Project equipment – R58 million • Brake shoes – R53 million • Other – R69.2 million • Cargo handling equipment – R43 million 3. Infrastructure, Transport & Buildings – R1.5 billion • Transportation & vehicles – R674 million • Turn outs – R148 million • Permanent way – R137 million • Signalling – R90 million • Other – R451 million

Backward Linkages to the Capital Goods Sector

Provisional economic assessments of the direct and indirect impacts arising from Eskom and Transnet's investment programmes highlight that apart from the manufacturing sector (machinery and equipment, electrical machinery etc.), the civil engineering and construction; metal products; coal mining; finance and business services; transport equipment (motor vehicle, parts and accessories); basic iron & steel; and fabricated metal products all stand to benefit from the backward linkages that will arise (DPE, 2005). The supply chain supporting the SOEs is vast and the majority of equipment suppliers to the SOEs have a long history of involvement with the respective SOEs. The degree of local participation within the various projects underpinning Eskom and Transnet's capex programmes and ongoing opex as well as key product groupings with the greatest potential for further development will be reviewed below.

Local Participation Potential in Eskom's Projects

The local supply base providing capital goods and service inputs to the power industry is extensive and while the Generation stage accounts for some of the largest and most capital-intensive products as well as the majority of inputs, significant local competencies and overlap of suppliers exist in the Transmission and Distribution stages.

Demand for Generation Inputs

In South Africa most electricity is produced in coal-fired power stations. A power station consists of a number of critical components, sub-systems and support systems. These include a transformer, a transmission and distribution yard, a number of generating units (consisting of a boiler sub-system, turbine sub-system, generator, and a control & instrumentation system), and auxiliary systems (flue gas treatment plant, demineralisation plant, coal plant, draught air system, condensing plant, pumps, etc). The size of the power station and number of generating units is determined by the required output of the plant[5]. Ducting, structural steel, cabling, pipework and civil structures makes up the remainder of the power plant.

A power station is made up of approximately 5 000 different components and inputs and over 10 000 different suppliers may be directly and indirectly involved. Firms providing capital equipment to Eskom range in size and scope and include both local and international companies. To-date, most of the contracts that have been awarded as part of Eskom's capex programme have been to Tier 1 and 2 firms,

[5] A typical 600MW power station will have 6 generation units – 2 pulverising mills per boiler, 6 boilers, 6 turbines, 6 generators, 1 transformer, 6 fans per boiler, 1 control and instrumentation system, etc.

the majority of which are geographically concentrated in Gauteng, particularly Ekurhuleni. Most of the contracts have been focused around the demothballing/return-to-service of the Camden, Grootvlei and Komati power stations. While Eskom will project manage the demothballing projects, with support from various consulting companies and OEMs, the bulk of the refurbishment work will be undertaken by local OEMs, subcontracting work as needed to other local firms. Firms already involved include ABB (switchgear, turbogenerators), Alstom (turbine generators; motors; gas-cleaning systems; generator busbar maintenance), Babcock (boilers), Loesche (milling equipment), MAN Turbo (compressor & turbine maintenance), Siemens (switchgear, fire protection systems), and Bartec (electrical surface heating tapes). Most of the contracts relating to new-build operations have been concentrated around the pebble bed modular reactor (PBMR). Three specialist environmental and engineering consulting firms are currently involved in the pump-storage schemes and Siemens has been awarded the R1.86 billion contract for the design, manufacture, supply, delivery, installation, commissioning and testing of the seven open-cycle gas turbine (OCGT) units destined for the Western Cape. The rest of the contracts for the new-build projects, particularly to Tier 2 and 3 firms, have still to be awarded.

A key objective of the government is to reduce the degree of import leakage arising from the purchase of inputs (goods and services) abroad – estimated at 47.7% in power generation. While some components, by virtue of their specialised, strategic, high-cost, high-value status will always be imported, there are some products where capabilities used to exist that can be revived/or where new opportunities exist further down the value chain which require targeted interventions to realise. Drawing on firm interviews, the largest cost areas in Eskom's new-build and refurbishment capex programme and opportunities for increased local content will be explored below.

Foreign/Local Content

Depending on the design specifications, a new-generation coal-fired power station can cost in the order of R26 billion. The boiler and turbine sub-systems are the largest cost items in the power station, accounting for approximately 72% of total capex (boiler 41%, turbine 31%). Instrumentation and control (I&C), the establishment of the coal supply yard, and the overland conveyor system collectively account for 9% of the costs (3% each), while civil work, technical building equipment, water treatment, and generator transformer account for R2.6 billion (10%). Local content varies across the different systems. In primary equipment, given the sophistication of the equipment and strategic value of the equipment there tends to be a much higher reliance on imported technology and process than in auxiliary equipment. In the case of the generator transformer, 0% local content is achievable, however, 10% can be achieved in the installation and assembly of the high-pressure steam turbine. Local content is ensured through the outsourcing of ancillary equipment such as air-intake systems, the transmission and distribution yard and civil work. In the case of instrumentation and control systems, 10% local content can be achieved. Local content in primary equipment is highest in boilers, where 41% of a new-build contract can be undertaken locally due to an existing (albeit small) base of expertise in the fabrication of select high pressure parts (steam drum, economiser, and some tubing). Between 50 and 80% local content can be achieved in new-build auxiliary equipment such as fans, airheaters, precipitators, gas cleaning equipment, the condenser plant, the coal plant, water treatment plant, and bulk materials handling equipment, particularly the conveyor and storage systems. Overall, local content in new build activities is highest in service-related activities such as construction and structural engineering and provision of "other" inputs (which could include products such as cabling, grating, storage equipment, materials handling equipment, pumps, valves, cladding, etc) and as much as 90% can be undertaken locally. South Africa has five large construction and civil engineering firms with a well established supply chain, which accounts for the high local value added achievable in such activities.

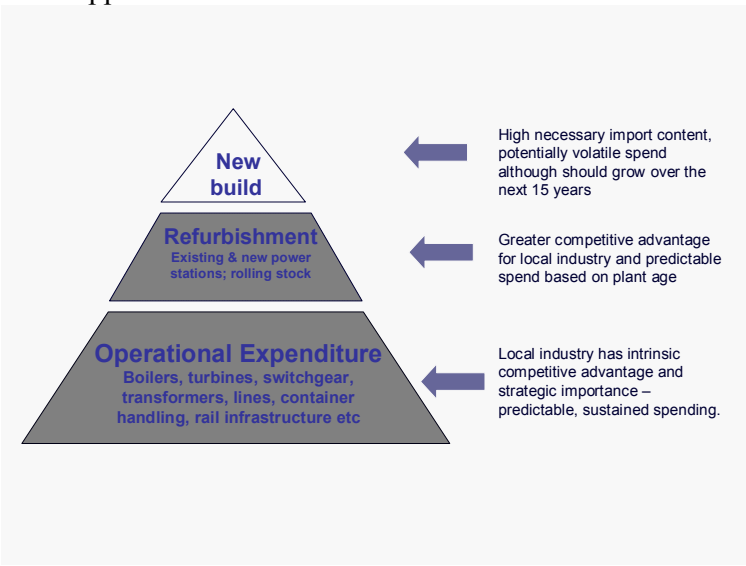
The potential for increasing the participation of local firms in the capex programme is greatest in the refurbishment projects. In the refurbishment and upgrading of existing power stations, the objective is to increase the operational efficiency and cost-effectiveness of various stages in the production process. Existing structures are retained and core components replaced with modern, new alternatives. Cutting-edge technologies are incorporated and new control systems added. The lifespan of equipment is extended by an average of 15 years through the upgrading process. Refurbishment is considerably cheaper (40-60%) than building a new power station. In terms of the capex programme, R12 billion has been allocated to the refurbishment of Camden, Grootvlei and Komati. The largest allocation of spend (60%) is for general improvements relating to the maintenance and optimisation of high-cost equipment. Replacement of redundant equipment (control, instrumentation, switchgear), and improving gas cleaning/environmental performance of the power station accounts for 30% and 10% respectively.

Local content is higher in refurbishment activities than new-build projects and between 65-75% can be achieved in places. While the degree of local content is largely constant in auxiliary and construction/civil work and "other" activities (at 78% and 90%, respectively), a significant reduction in foreign import content is achieved in primary equipment, most notably in generator transformers and turbines (both 40%). In boiler and I&C refurbishment, approximately 65% local content is possible. There is an existing base of OEMs providing services and inputs across whole sections of the power station which has emerged as a result of a perceived industry need for after-market and repair services. While leakage does result from the need to import specific niche replacement components and specialised consulting services, the fact that there is an existing base of skills suggests that there is merit in broadening the current base to gradually reduce this reliance on external resources over the long-term. Discussions with leading OEMs involved in the local power generation sector revealed that local competencies exist *inter alia* in heating tapes, air intake systems for turbines, mill liner replacement, large motors for fans, high pressure valves, medium voltage (MV) switchgear, and low and high voltage cables. Possibilities are strong for the expansion of local capabilities in these areas to improve local content value over the short- to medium-term. Targeted investment is needed in conjunction with interaction with end-users to ensure needs and requirements are met without compromising on quality and delivery requirements.

Local participation is also likely to be much greater in ongoing operational activities. Many OEMs have responded to the decline in demand for manufactured equipment over the years by diversifying activities to include the provision of replacement parts and maintenance functions. Eskom's annual expenditure on operational activities provides an indication of the sources of demand for products and services beyond the 5-year timeframe of the capex programme and opportunities for increasing local participation. In this regard, operational expenditure (opex) in Eskom over the next five years will be greatest in the maintenance activities relating to turbines (R4.9 billion), boilers & mills (R2.8 billion), followed by generator transformer (R600 million), and instrumentation and control (R273 million). The local and foreign content varies across these product groupings with the greatest backward linkages achievable in I&C and boilers (65%). For generator transformers 40% can be undertaken locally, while 45% of turbine maintenance can be done by local firms. In auxiliary equipment, local content potential in opex activities is approximately 75%.

In terms of opportunities, therefore, the capex programme must be seen as the tip of the iceberg – increasing opex and refurbishment expenditures provides a secure platform for industry development (Figure 4).

Figure 4 Opportunities for supplier involvement



In this regard, emphasis needs to be placed on first advancing and developing capacities in ongoing refurbishment and maintenance activities, particularly of strategic and high-value products, which currently have a high import leakage – turbines, generator transformers, boilers and I&C – and which could be reduced by at least 10% in the medium-term. Following this, emphasis needs to be placed on strengthening those product groupings where there is latent/dormant manufacturing capabilities such as in boilers, forced-draught axial flow type fans, and control system assembly and adaptation. Investment is needed in professional and artisan skills, new manufacturing facilities, and testing equipment to make such activities viable and sustainable. Although lead times for establishing such operations locally vary between 2 and 4 years, suppliers are willing to enter into partnership agreements with end-users to work towards fulfilling local requirements at a cost-effective and internationally competitive standard. Investment risk will be minimised if a collaborative and partnership approach is adopted. It is unlikely that manufacturing plants for high performance turbines and generator transformers, which require large economies of scale to sustain activities and proximity to main centres of demand, will ever be successfully localised in South Africa.

Demand for Transmission and Distribution Inputs

Around 80% of Eskom's R15.4 billion capex on distribution will be spent on lines and cables, substations, reticulation, refurbishment and control systems. Basic equipment for a typical substation includes circuit breakers, switching equipment, transformers, lighting arresters and other protective devices, control devices, instrumentation, and other apparatus related to specific functions in the power system. It is projected that as much as 85% of such equipment can be sourced locally. Product groupings that offer the greatest potential for increased local participation over the short-, medium- and long-term include switchgear, circuit breakers, isolators and vacuum interrupters. Opportunities are significant due to the fact that the majority of existing equipment in operation in provincial and municipal networks is outdated, inadequate for the current capacity requirements, or does not meet current SHER (safety, health and environmental risk) compliance requirements. Furthermore, the lack of standardisation across networks has created in problems in sourcing replacement parts and thus integration and commonality across networks is critical.

In terms of opportunities beyond the capex programme, in 2004 Eskom spent R1.5 billion (10.6% of Eskom's total) on transmission opex. Transformers (R349 million), line construction (R225 million), and network primary plant (R115 million) accounted for 47% of the expenditure. Eskom's expenditure on Distribution activities is highest across the utility with R5.8 billion spent on opex in 2004. The largest categories of expenditure were: Electrification and Reticulation (27.45%), Miscellaneous (11%),

Fleet (9.4%), Consulting (6.6%), and IT services (6.3%). Investment in skills as well as stable levels of demand are needed to ensure the long-term development of a base of suppliers in the provision of transmission and distribution capital goods and services.

Local Participation Potential in Transnet's Projects

A core objective of Transnet over the next few years is to radically realign the strategic direction of the organisation with the economic requirements of the country, particularly with regards to decreasing the cost of doing business and increasing the efficiency of exports. Projects underpinning the programme are focused around the expansion and replacement of existing infrastructure and modernising equipment across the SOE's various divisions. The bulk (49%) of Transnet's capex will be directed to improving rail infrastructure and rolling stock, 29% will be spent on expanding and upgrading port infrastructure and 10% on improving port operations through the purchasing of new container handling equipment (10%). Investments will also be made to improve operations in Transwerk (2% of spend), and pipeline upgrades in Petronet (8%).

In addition to improving operational efficiency of operations through capital investment, Transnet is also embarking on a programme of internal restructuring, particularly with regards to the management of its supply chain and procurement process. The parastatal has embarked on a re-engineering programme called *Vulindlela* to focus on cost reductions and efficiency improvement. This entails consolidating Transnet's procurement functions, improving its bargaining power, and establishing more longer-term sustainable relations with its clients. Transnet's estimated annual opex on external activities over the next few years is approximately R5 billion, which will amount to an additional R25 billion flowing through the economy over the next five years. The largest areas of expenditure are energy (diesel, electricity, and petrol), operation commodities (component repairs, rolling stock maintenance, wheels, permanent way rental, etc), and infrastructure, transport and buildings (vehicles, turnouts, permanent way, signalling, etc).

As rail and port projects account for the largest proportion of Transnet's capex, the impact on key product groupings within these two areas of investment will be explored in more detail below.

Demand for Port Inputs

Investment at the ports is focused on improving capacity in order to handle rapidly increasing volumes of traffic and to increase cargo handling efficiency. Infrastructure expansions and improvements are the responsibility of the National Ports Authority (NPA). As much as 40% of the R18.6 billion allocated to the NPA will be spent on upgrading Durban Harbour, followed by expansions and upgrades at Ngqura Harbour. Improvements will also be made at Richards Bay Coal Terminal (RBCT), Saldanha Port, and Cape Town Container Terminal. The South African Ports Operations (SAPO) is responsible for improving the suite of equipment at the ports. Of the R6.3 billion that will be spent on new and replacement equipment, 80% will be spent on acquiring new and refurbishing existing cranes, straddle carriers, and other container-handling equipment.

Product groupings that stand to benefit from changing demand patterns within SAPO and the NPA include technical design and project management services, civil engineering and construction expertise (asphalt surfacing, dredging, earthworks, construction of quays and breakwaters, etc), equipment (instrumentation, electricals, haulage vehicles, bulk materials handling equipment, cranes, pumps etc), and material inputs (pipework, concrete, structural steel, etc). Projects are in various stages of execution and the majority of contracts for construction and civil work have been awarded. Most of the firms already involved are Tier 1 and 2 firms providing a range of OEM or service/consulting functions. There is a considerable degree of partnership/outsourcing and joint ventures between large and small firms involved in the various port activities. There is also a distinct geographical/spatial dimension to

such interactions, with most large firms based in Gauteng (Ekurhuleni) or overseas (Malaysia, Finland, Germany, Belguim), and most smaller partners at the ports. Of the 30 companies already involved in the various port projects, only 10 have head offices located outside of Ekurhuleni, at the coast (Port Elizabeth, Cape Town, East London, etc). Most of these firms are small assembly operations, civil engineering firms, or branches of leading consulting firms. The degree of value added arising through the various partnerships and joint ventures, particularly involving foreign firms and local SMME or BEE firms is questionable and requires further investigation.

Foreign/Local Content

In terms of the split between foreign and local procurement arising from the capex on port infrastructure, approximately 90% will be spent locally on services such as project management and engineering, construction, and material inputs such as cement and steel. The remaining 10% will be spent on sourcing specialised services such as dredging from abroad as well as other inputs unavailable locally.

Foreign content is higher in port equipment (58%) than the infrastructure expansion projects due to the small base of local capabilities in the area of container handling manufacture. While local capabilities around port equipment existed in the late 1970s, curtailment in demand for both new and refurbished equipment over the past two decades has resulted the steady erosion of such expertise. Of the R6.3 billion allocated to SAPO, 70% will be spent on equipment such as straddle carriers, cranes, conveyors, discharge hoppers, rubber tired gantries, tractor haulers, and container handlers, of which 88% will be imported. Straddle carriers and cranes have already been ordered from foreign firms such as Kalmar (Finland) and Liebherr (Ireland) and should be installed by 2008. Local content is ensured through partnerships with local firms, primarily at the ports, and inclusion of local labour in the assembly and erection process.

Despite the export leakage arising from such activities, there is significant latent expertise within the South African heavy engineering and structural steel sector capable of ensuring that any future assembly and manufacture of such equipment can be undertaken locally. One of the first notable contracts awarded as part of SAPO's Durban Harbour upgrade was for three post-Panamax ship-to-shore (STS) container cranes. The contract was valued at R300 million and involved collaborative agreements between local and foreign suppliers in the design, construction, fabrication, and erection of the three cranes. While structural engineering and design capabilities were established and revived during the development process, subsequent tenders for port handling equipment have been awarded to foreign firms with no local involvement around the supply of components and assembly services. Critical development and procurement issues pertaining to cost and quality, the speed of the rollout and the lead times required to develop the requisite skills have largely been responsible for this.

Demand for Rail Inputs

Transnet's capex spend on rail will mainly be focused on replacing and expanding capacity in business areas: infrastructure (rail track and systems), fleet improvement (rolling stock), and in-house capacity for refurbishment, upgrading and maintenance. Transnet plans to spend a total of R31.6 billion on capex expenditure for rail related equipment and infrastructure as well R2.5 billion on expanding maintenance and repair capacity at Transwerk. With regard to the former, infrastructure will comprise 20% of the spend (R6.3 billion), while R4.5 billion will be spent on rail equipment and components. Approximately R4.9 billion will be spent on the acquisition of new locomotives, R9.7 billion (31%) on refurbishing the existing fleet, and R1.6 billion (5%) on the repair and manufacture of wagons.

Major product groupings in the capital goods sector that stand to benefit from the increased demand for products and services related to rail infrastructure upgrades include signalling systems, rails, sleepers, turnouts, turnout blowers, rail fasteners, ballast, pantographs, wayside interfaces, central control

components, switch machines, hot box detectors, ATCS systems as well as consulting services. Significant local capabilities exist in the project management and design of rail expansion programmes, provision of components and labour to undertake them. In terms of investment in fleet upgrade and expansion programmes, the product grouping that stands to benefit the most from changing demand patterns is locomotives. The locomotive is the largest, most capital-intensive, and complex product grouping in rail equipment.

Foreign/Local Content

The railway-equipment manufacturing, operating and services industry in South Africa employs about 40 000 people and generates annual exports exceeding R1 billion. The industry comprises a range of large, medium and small firms providing a range of products and services of varying complexity and sophistication. Estimates suggest that approximately 100 local companies are involved in the industry. Import content varies across the different rail-related projects. In terms of rail infrastructure and equipment, approximately 40% of the capex will leak outside the country through the purchase of components such as rails and electronic systems. Local content is high in the execution and design of the upgrades. To-date, the largest contract awarded in this area has been to R&H Railway Consultants to the value of R1 billion. The project involves the design and construction supervision of the deviation of the Spoornet main line at Assmang's Beeshoek iron-ore mine near Posmansburg, alterations to the existing private siding, as well as the design of roadworks, drainage, subways and overhead electrification and signalling layout. As much as 80% of the contract can be done locally as there is an existing base of firms with competencies in construction, management and maintenance of rail infrastructure, signalling, perway components, and raw material inputs in South Africa. Moreover, as labour can comprise as much as 60% of rail expansion activities, un-skilled and semi-skilled employment opportunities in the vicinity of the projects are high.

Spoornet's locomotive and wagon fleet is around 26 years old and is fast approaching its 30-year lifespan. The ageing fleet results in increased operating costs, reduces reliability and leads to poor overall performance of the transport network. Much of the investment in locomotives will be directed towards upgrades for general freight locomotives and the acquisition of new locomotives for the heavy haul and high-density lines. This will have a 25% and 75% increase in tractive effort for the heavy and high density lines respectively, giving Spoornet the leverage to run longer and more reliable trains.

A new-generation locomotive costs between R35 and R50 million depending on the required specifications. The current order is for 110 new electric AC/DC locomotives for the Coal line. The contract is valued at R1 billion and was awarded to the MARS partnership[6] with a significant contribution by the Union Carriage and Wheel (UCW) Partnership. The former will contribute to the design, development and supply of Toshiba electronic propulsion equipment, the UCW partnership will be responsible for the overall mechanical design, system integration, fabrication and assembly of the locomotives.

In terms of the main cost areas in a new locomotive, the bulk of expenditure is on electricals (50%), followed by mechanical (30%), and service (10%) requirements. It takes between 18-24 months from the time of commissioning to the delivery of a finished locomotive. Despite the level of investment planned for fleet renewal, a significant leakage of expenditure will occur through the importation of sophisticated equipment, technology, skills and services, particularly on the new locomotives. Estimates are that 50% of such goods and services will be imported. There is significant potential to reduce the degree of import leakage in new build locomotives from 50% to 30-20% in the next 5 to 6 years given

[6] MARS is a partnership between Mitsui and Co. Limited, Sibambene Trade and Services Holdings (Pty) Limited and African Sky Innovative Solutions (Pty) Limited. Mitsui has a 59% share in the company and the BEE partners own the remaining 41%. The main subcontractors are Union Carriage and Wagon Partnership, made up of Duduza Rail and Union Carriage and Wagons, and Toshiba, a major Japanese locomotive manufacturer. Approximately, 43 companies will be involved in this project with BEE ranging from 5% to 100%.

the base of existing capabilities and the information/technical sharing that will occur as a result of the collaboration between Toshiba propulsionengineers and specialists and local locomotive manufacturers Developing and sustaining these capabilities requires a minimum annual demand of about 50 new locomotives. This demand can be made possible if infrastructure demands in the country are coordinated in the medium- to long-term. Opportunities created through Nepad will also offer new markets for local firm involvement.

Capabilities also exist in local capital goods sector around the upgrading and refurbishment of locomotives and key components, particularly within Transwerk, and as much as 75% can be undertaken locally. These capabilities could be enhanced if certain products (mainly obsolete parts) currently imported are manufactured locally. Stable demand and investment in testing and manufacturing equipment will be critical to such a process. Strategic items with potential for future local manufacturing include brake valves and traction motors. With regard to the latter, all new traction motors are imported but most of them are refurbished locally. Traction motors for the older fleet in South Africa are obsolete and have to be redesigned by OEMs. While products such as toilet systems, stoves and windows can also potentially be manufactured locally in the future, much closer collaboration and interaction between Spoornet and the supply chain is needed to not only identify new business opportunities, but to also resolve critical product-related challenges facing the industry (quality, delivery and volume, etc), which acts as a deterrent to procuring locally.

INDUSTRY ANALYSIS: SWOT ANALYSIS

A Strengths-Weakness-Opportunities-Threats (SWOT) analysis was undertaken of the capital goods industry supporting the SOEs to assess firm dynamics, supplier capabilities, challenges and constraints facing firms, and the role of the SOEs in driving the growth process. Findings are drawn from face-to-face and telephonic interviews with suppliers, interaction with SOE personnel, and various discussion documents.

Opportunities and Strengths

The R160.8 billion capital expenditure planned by Transnet and Eskom over the next five years is projected to contribute around 1.5 per cent annually (based on 2004 figures) to GDP and contribute significantly to employment creation, particularly in the construction sector. Other sectors, notably manufacturing, metal products, and transport, stand to benefit from the backward linkages arising from increased demand for components, replacement parts, original equipment manufactures, and specialist design, management and consulting services. Given the scale and size of the planned SOE expenditure – the largest ever planned by the public sector in South Africa – and the fact that it comes after years of insignificant and low investment, it is critical that it is effectively leveraged to achieve both ASGI-SA's goals and the dti's Economic Cluster objectives in terms of industrial growth, increased exports, employment creation, skills development, and equality in the workplace.

South African firms have a history of providing inputs to power, rail and port operations and many niche capabilities exist that provide a base upon which to develop a focused supplier development strategy – power plant equipment design, manufacture and refurbishment, particularly of boilers, fans, precipitators, circuit breakers conveyors, materials handling, emissions control, etc; power plant construction – civil and structural steel work; rail infrastructure design, construction management, and procurement and refurbishment of rolling stock, perway equipment, and turkey systems; and, management & technical knowledge related to engineering, design, management and construction of port infrastructure and upgrading. The availability of IDC support, moreover, for targeted investment in identified product groupings is an opportunity which can be used to revive specific segments of industry.

Collaboration with the SOEs, however, will be needed in order to identify groupings most suited for such investment and development.

One of the distinctive features of the supply industry supporting the SOEs is that they are "survivors" and have managed the fluctuations in demand through diversification, pursuit of export markets and lateral migration. Many see the capex programme as an opportunity to revive latent capabilities, revive the apprentice scheme, and pursue new product lines and are willing to absorb, learn and adapt foreign technologies to facilitate import substitution, enter into partnerships (particularly with BEE and SMME firms) to broaden economies of scale and facilitate skills development. Many firms are investing in improved production methods, expanding operations in order to position themselves more competitively to secure both local projects as well as future projects elsewhere in the sub-continent. Discussions with suppliers already involved in the capex programme, moreover, reveals that much greater local content is achievable locally than what is expected or projected by technical experts within the SOEs, both in the short- and long-term.

Despite these strengths and opportunities, there are a number of weaknesses and threats at the broad industry level, as well as between suppliers and end-user, which may mitigate against the effective leveraging of the SOEs' capex and opex in short-, medium- and long-term.

Weaknesses and Threats

One constraint to expanding niche capabilities in the capital goods and services sector pertains to the nature and size of the local market and its ability to support the economies of scale needed to facilitate import replacement. High-tech, large-scale, capital-intensive equipment such as turbines and power generators require large economies of scale and accessibility to main markets in order to be economically viable. The distance to and from major markets is viewed by suppliers of large, capital-intensive equipment as a major a disincentive to relocation of strategic manufacturing operations to South Africa. Moreover, the main manufacturing 'hub' is situated inland in Gauteng, far from the coast and ports, which has major implications in terms of meeting international 'just-in-time' delivery requirements. Dependence on road transport rather than rail is also viewed as a major disincentive given the size of the individual parts comprising such products (a turbine rotor can weigh up to 60t).

At the same time, there are challenges within the broader business environment which are impacting on the ability of local firms to capture new opportunities and capitalise on their collective strengths. In particular, fiscal and foreign exchange regulations, which inhibit international and regional flow of capital, tariff barrier differences across imported components and assembled equipment, access to working capital, certification and testing facilities, import parity pricing (IPP) on critical inputs such as steel and scrap metal pricing, and skills shortages. With regard to skills, low levels of capital investment by the Government and SOEs over the past two decades as well as broad industry restructuring has resulted in a loss of critical skills and downsizing of manufacturing capabilities in key product groupings – notably cranes/container handing equipment, boilers, and rolling stock. Loss of specialist expertise through emigration, retirement, and retrenchment and lack of interest by prospective graduates in careers related to rail, energy and port activities has also impacted on the availability of skills. At the high end of the scale, specialised engineering and design capabilities are needed in disciplines such as transformer design, turbine, combustion, mechanical and electrical engineering. It takes 3-5 years to advance the skills of a graduate engineer to a position of being able to operate successfully on a plant. There is much greater demand, however, across the industry for semi-skilled artisans and skilled technicians, specifically welders, machinists, boilermakers, fitters, turners, and electricians. Such skills are critical to the long-term viability of a local supplier industry. The average age of an artisan is 45 years in South Africa and it takes 3-4 years to develop an artisan in basic skills. Training has to be supplemented with on-the-job training. The current dependence on labour brokers to meet fluctuating skills requirements is viewed by suppliers as an unsustainable source of long-term

skills development. It is argued that surety of demand will enable firms to project skills requirements better and develop longer-term training programmes.

Perhaps the biggest challenge and threat to the future vibrancy and expansion of the supplier industry relates to the interface between the end-users (SOEs) and suppliers. Poor communication of information pertaining local market opportunities and projects between SOEs and suppliers undermines the potential that could be achieved from the capex programme. Forums are regularly held between suppliers and main stakeholders regarding the progress of the project roll-out and to address industry-wide issues. However, suppliers question the effectiveness of such an approach and feel that many of the issues they raise are not being treated with the brevity they require and that there is a general lack of awareness of the scope of industry capabilities and requirements. Firms argue that to be more effective, supplier forums need to be preceded by one-on-one interactions between SOE procurement and technical experts with suppliers to formulate a more accurate picture of supplier capabilities, end-user expectations, technical requirements, and partnership possibilities. Subsequent meetings should include government personnel. Supplier workshops should be used as a medium to communicate resolutions from meetings and to advance constructively with leveraging procurement plans. The situation is aggravated by the poor level of information sharing between other government departments and industry sectors, particularly regarding scheduling of projects, demand synergies, and time-frames required to develop new skills and build new equipment. This has implications for the achievement of SOE mandates and the fulfilment of ASGISA goals.

An important factor influencing dynamics within the capital goods sector is the actual procurement process. The procurement relationship governs the terms on which vertical linkages occur between firms for the sourcing of goods and services in the supply chain. As the principle end-users, Eskom and Transnet effectively 'govern' the supply chain. The procurement decision-making process is either centralised or decentralised to the level of individual operations depending on the nature of the end-user. In both instances there appears to be a drive to reduce the number of vendors, increase the level of outsourcing, and drive down costs. The increased emphasis on cost reduction and maximising efficiencies within the SOEs in recent years has significantly altered the nature of the procurement process. Contracts for new build operations are usually organised into packages and outsourced to OEMs following a lengthy tender process. The criteria and weighting procedure in the tendering process has changed over the years. While factors such as cost, competitiveness, and customer influence traditionally played a key role in the awarding of key contracts, increasingly additional factors such as quality, performance guarantees, existing/potential order books, OEM and in-house engineering capability, and technical alternatives, local content and BEE participation are playing greater roles. "Total cost of ownership" is also becoming the key criterion used to select suppliers. This involves not only the initial capital costs but also maintenance and operating costs of the equipment. Within the ASGISA framework, tenders with Eskom are weighted according to their local content dimension (20% – including BEE, Black-Women-Owned business, skills development), and technical and cost criteria (80%).

Suppliers involved in the SOE supply chain maintain that while they are willing to adapt to these changing demand requirements and enter into long-term partnerships with end-users, they require surety of business and longer-term contract agreements in order to do so. Currently, the short duration of contracts and tendering process and poor communication of expectations at supplier workshops prevents the full potential of the local supply base from being realised.

The changing environment, particularly with regard to procurement and supply chain management within the SOEs, is also having major repercussions through the supply chain, The pressure of roll-out and the need to procure off-shore to source cutting-edge technologies unavailable locally (either because the industry has died or because the local market demand is insufficient to sustain such activities) is having a major impact on the potential for the local supplier base to evolve and expand. Many suppliers

(both large and small) are unaware of end-user expectations regarding the procurement process and requirements and feel threatened by the increasing emphasis on cost and the lack of cognisance of the time-frames required/needed to rebuild lost/latent local capabilities. Local firms no longer believe that an installed base and brand history is sufficient to secure tenders.

Many OEM and component suppliers involved in the capex programme maintain that the term "local content" is too broadly interpreted by end-users and believe that there is not enough emphasis on procuring "locally manufactured" goods. Firms interviewed argue that end-users use the term "local content" interchangeably to refer either to the extent to which a product is "locally manufactured" or the proportion of equity ownership of a firm. Suppliers assert that while certain high-tech products (such as turbines and generators) will always be imported for strategic and risk-averting reasons, there are some products where much higher local content can be achieved than projected or believed possible by end-users. Suppliers feel that there is no added benefit to being able to offer higher local manufacturing/fabrication/repair content if the weighting criteria are fixed at a particular percentage. At the same time, many of the larger suppliers have acquired equity partners and facilitated ownership changes over the past few years and have the requisite BEE status to compete for tenders on a local ownership basis. However, the entry of foreign suppliers who establish partnerships with local firms to secure the local ownership requirements is viewed as a major threat to established businesses and sends a confusing message to the capital goods sector with regard to growing the industry through increased "local content". Intervention is needed regarding the interpretation and definition of "local content" and should perhaps include a local value-added dimension as a weighting criterion.

Beyond relooking the definition of "local content", a shift is also needed regarding the timeframe for reviving and growing the capital goods sector. Too much emphasis is currently placed on the five-year capex programme than on capitalising on the opportunities for supplier development around refurbishment and on-going operational activities. The urgency of roll-out together with the need to install cutting-edge technologies and employ high-tech specialists (unavailable locally) will account for the significant leakage of expenditure abroad during the capex programme. However, much greater local content can be achieved in the refurbishment (only 3 power stations are being refurbished as part of the capex programme, but many of the other power stations will be approaching their mid-life in the next 5-10 years and will require extensive overhauling and replacement of parts), after-market services and maintenance market. Interventions need to be put in place to ensure that local firms secure such future opportunities even if the capex contract goes to a foreign OEM.

In order to reassure end-users, who require cost-competitive, high-quality, reliable goods and services, a benchmarking process of local firm capabilities will also be necessary. In this way, not only will suppliers be able to identify their weaknesses and develop strategies to gradually improve their competitiveness (both locally and eventually in the export market), but end-users will be able to grade requirements according to importance and value and be better positioned to decide whether to go local or international.

CONCLUSION

From the above analysis it is evident that although there is significant potential within the capital goods sector to realise many of the goals of AGSI-SA and the dti Economic Cluster over the short-, medium- to long-term, particularly in terms of stimulating new firm development, reviving latent capabilities, broadening equity representation, and facilitating skills development, the sector faces a number of critical challenges and bottlenecks to realising these benefits. The importance of local demand in furthering production capabilities and enhancing the export potential of firms engaged in the capital goods sector cannot be underemphasised. In addition, deepening and broadening existing and reviving latent/lost capabilities also requires skills development, access to competitively priced raw material

inputs, logistics and testing and certification facilities. Such measures require direct government intervention as they will not necessarily arise from market forces (CSID, 2004).

While domestic market demand, historically from the mining industry and more recently from the SOEs, is an important source of sales for many suppliers engaged in the capital goods and service sector, conditions have worsened for the industry over the past decade due to weak economic growth, low levels of investment, increased levels of import penetration, and the absence of a clearly articulated and implemented government and parastatal procurement policy favouring domestic manufacturing. With regard to the latter, various forms of legislation have been introduced in South Africa since 1995 to guide and reform the procurement process at the national level and stimulate the emergence of a more representative supplier base in terms of HDSA/BEE and SMME criteria (such as the Preferential Procurement Framework Act (2000), and the Public Finance Management Act). However, lack of appreciation and understanding of the nature of the demand-supply relationship, the extent of local capabilities, and the challenges and constraints experienced between and by different participants engaged in the capital goods sector suppliers has mitigated against the establishment of a long-term supplier development strategy.

In terms of the way forward, therefore, key policy and strategy interventions geared to boosting the capital goods sector and leveraging the SOE procurement process should be focused around the following areas. First, emphasis needs to be placed on co-ordinating government agencies and parastatals. Action plans for the capital goods sector's development should be linked with the dti's Economic Cluster and ASGISA goals and communication, commitment and clearly defined roles of all stakeholders in leveraging SOE procurement and sustaining the demand dynamic beyond the 5-year capex needs to be put in place. The speed of project rollout should not be done at the expense of industry/supplier development. Second, much greater industry sector co-operation is needed. This requires identification of main projects and collaboration of SOEs with suppliers to identify local content capabilities and bottlenecks. Third, in order to effectively capitalise on local supplier strengths and overcome constraints in terms of quality and performance, an industry-wide benchmarking exercise is needed. The benchmarking process should encompass all suppliers, not only those who provide inputs to the SOEs. Fourth, skills development and training requires prioritisation. Specific skills and capacity constraints need to be jointly identified between firms and the SOEs and programmes put in place to address them in the short-term. Existing training centres need to be maximised, and learnerships established. Fifth, the existing SOE procurement process requires re-evaluation. Emphasis needs to be placed on 'constructive' procurement aimed at local sourcing via long-term contracts and broadening maintenance and refurbishment capabilities of existing firms. More effective communication of SOE expectations and long-term requirements needs to be transmitted to suppliers and a culture of partnership and collaboration fostered in order to aid local supplier development. Last, firm capabilities need to be improved/addressed in order to gradually reduce reliance on exported capital goods and components. In particular, the pricing of raw materials (steel and scrap metal), logistic challenges, access to working capital, and recognising the time-scales needed to develop new products and processes.

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