

METALS AND ENGINEERING PAPER

**Western Cape Report on:
Metals and Engineering Industries, including ship-building**

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Executive Summary

The study situates the development of the metals and engineering industries in the Western Cape in the context of national developments and national policies. It assesses the recent performance of these industries and the potential for developing competitive capabilities and increasing employment, to realise a ‘re-positioning’. The industries studied are, however, both broad and heterogeneous. They include, at one extreme, basic metals production, which is close to minerals processing, through to ship repair at the other extreme, which verges on service provision. Due largely to time constraints, the industry grouping was defined to exclude automotive and machinery manufacture. However, there are important linkages, especially in the form of these sectors’ demand for metal products.

National and provincial trends

The most obvious feature of the metals and engineering industries nationally, and in the Province, is the continued dominance of upstream basic metals production much of which is exported in unbeneficiated form. These are capital and energy intensive operations, and although increasing output over the past decade, have not added to employment. Instead employment levels have been cut sharply in basic iron & steel. These developments are also contrary to government's policy objective of increasing beneficiation and local value-added, growing downstream and more labour-intensive activities. However, there has been some growth in recent years in metal products, with increases in both value added and employment from 2001

In the Western Cape, the growth of the boat-building industry has been impressive. The manufacture of yachts and other small craft involve complex assembly and components production ranging from textiles (sail-making) and composites working to machining of metal products. This industry has largely underpinned the move from trade deficit to surplus in the Province in transport equipment.

Across industries, there have been striking increases in international trade flows, both imports and exports, as the South African economy has become more integrated into the global economy. This represents a major opportunity to coastal locations, such as the Western Cape, to realise the potential gains from trade through building competitive capabilities in order to access international markets.

Basic metals and structural steel

Basic metals production in the Western Cape is dominated by primary steel production, of both long and flat steel products. The past decade has been characterised by major new investments, notably Saldanha Steel and Duferco, with major government financing. The key question is whether these investments yield any benefits for downstream, steel-using, industries. Initially, steel from Saldanha was all destined for export. Although now being supplied to the local economy, the import parity pricing being practiced means that the competitive conditions for the manufacture of steel in the Province do not translate into competitively priced steel.

Metal fabrication and engineering

The fabrication of metal products is well established in the Western Cape, which has a good base of engineering skills and technical capabilities relative to the country as a whole. The potential advantages from the Province's coastal location have been demonstrated by the development of the tank container industry. The challenges in the Western Cape in developing metal product manufacture are the same as in the country as a whole, namely to build production capabilities through skills, technology, design and delivery, in addition to addressing input costs. Specialisation in product niches has been crucial for better performing firms in the industry, while being able to meet customer requirements points to the importance of quality accreditation, testing and certification.

The Province has good tertiary education institutions and technical colleges but smaller firms, in particular, have had problems in accessing the Seta grants for training. In addition, firms need to invest in upgrading their capital stock if they are to maintain international competitiveness. In particular, firms need to invest in computer numerically controlled machinery.

The tooling industry is a specific area of metals and engineering receiving government attention under the National Tooling Initiative. The tooling industry in South Africa is crucial to the development of other industries (such as the sustainability of the automotive sector) and there is also major potential for value-added and employment creation in tooling itself. Without moulds and dies, industries such as plastics cannot operate, and cannot make the intermediate components required by, for example, the auto sector. The potential demand is particularly due to increased automotive activity and increasing pressure for local content under the evolution of the Motor Industry Development Programme. There is also a large trade deficit in tooling suggesting existing demand. The Western Cape has a relatively significant tooling industry, but to make the medium and long-term investments required to continuously improve capabilities in the industry, and to be able to deliver on large contracts, requires the growth of small firms into medium and large companies. It also requires firms to develop local clusters with shared services, local R&D facilities and appropriate training at tertiary institutions. International benchmarking data reveal that South African firms have low productivity, poor integration of business support systems, higher profit margins and low labour costs. The levels of computer numerically controlled machines and capabilities, and of academically qualified staff are also low in South African firms. These patterns reflect low levels of investment by South African firms, high interest rates and poor educational output.

Foundries

The Western Cape foundry industry comprises a distinctly heterogeneous set of firms supplying a diverse range of markets. The vast majority are small firms, employing less than 50 people. The Western Cape foundry industry is rooted historically in the railways, shipping and construction industries. After contraction and major restructuring, the industry is growing once again, driven especially by the auto sector due to the Motor Industry Development Programme (MIDP). This is reflected in disaggregated trade data which reveal the improved competitiveness of locally made engine components.

Firms are generally increasing turnover as well as employment, and are embarking upon a process of modernisation. Export orientation is variable but those firms that are exporting are significantly export-oriented. The industry is dynamic and technological capabilities clearly exist to be built upon. Furthermore, the industry is represented by a well-functioning body that appears to have engendered a spirit of cooperation and openness among its members.

While there is a particularly dynamic group of firms within the industry, a key challenge is to upgrade the capabilities of other firms, and to attract new entrants. A strong foundry industry is of crucial importance for key industries identified in government's industrial and technology policies, such as the automotive, capital equipment, and aerospace sectors. The relatively sophisticated nature of these international industries means that for South Africa to be an attractive long-term location for production requires local clustering to build a framework to support the on-going development of firms' production capabilities.

This depends crucially on a committed and coordinated approach by industry, government and other stakeholders, including education and research organisations.

Ship-building and ship repair

Due to the Western Cape's historical geo-strategic maritime position, ship building and repair activities have been long-established, expanding and contracting as the growing economies of the region, and as the emerging Western Cape Ports, demanded. Ship-building and ship repair are quite different activities and, while there are many ship-repair companies and much activity, there is only one active sizable ship-building company in the Western Cape. There are opportunities to grow ship-building due to increased demand along the west coast of Africa for small and medium craft such as tugs and harbour vessels. Steel fabrication is the major concern in being competitive in such craft; designs and engines are sourced internationally.

Ship repair has largely relied on the Western Cape's strategic position. But, the captive markets for the Western Cape ship repair industry are not stable and important enough to sustain the industry alone. Foreign markets have to be sought and exploited. The industry needs to address skills training, skills retention, and the flexibility required in an industry where demand varies significantly month to month. In addition, better management of the port infrastructure and expansion of repair facilities is crucial for growth of this labour-intensive activity. The Province needs to be ready to take full advantage of the regional boom in support vessel, workboats and tugs maintenance and repair. It must also reposition itself to ensure it is capable of absorbing the projected world ship repair market growth for the next 10 years, at least.

Boat-building (yacht manufacture)

The Western Cape dominates national boat-building activity. The industry has grown rapidly in the past decade based on a strong export platform. It involves a host of different technologies, materials and processes. In the Province the industry has developed through strong inter-firm linkages and the development of local capabilities over time. Issues of skills and appropriate support measures (for small businesses and to penetrate export markets) are important for sustainable growth of the industry. Maintaining international competitiveness also requires attention to material costs and support for product development and research.

Implications for re-positioning

From the analysis, five main planks to a Provincial strategy are suggested:

- Address ***cost competitiveness*** issues (including steel prices); these are impeding the performance of labour-intensive, relatively basic products.
- Action-oriented plans to ensure that ***policies for skills and training*** are being effectively implemented – are firms using the skills levy, are local institutions providing the appropriate courses etc.

- Monitoring of the various *technology initiatives* and identifying where Provincial and local government facilitation can ensure the potential gains are realised (including the National Tooling Initiative, Advanced Metals Initiative etc.).
- Mechanisms to build inter-firm communication and co-operation, such as *benchmarking* (which we specifically propose for foundries).
- Selection of a small number of *target areas* where government action can facilitate significant expansion, of which ship repair and ship-building are examples.

The core thrust of the research is that to develop industry as a whole the Province should focus on how to effectively play a *co-ordination* and *facilitation* role to ensure the maximum benefit from existing policy initiatives. Gathering and analysing information is a crucial component of such a role. Interventions for the growth and repositioning of industries such as ship-building require concerted work to identify in more detail the market opportunities, and measures required to exploit them.

Black economic empowerment in the metals and engineering industries is not advanced. The key question is what levers can be used, along with support for skills development and the entry and growth of SMMEs. The main levers in metals and engineering relate to procurement and monitoring the implementation of national charters. However, aside from inputs into construction, the government is not a major buyer of the output of the metals and engineering industries in the Province. Targeted initiatives, such as on steel pricing, could be accompanied by concrete empowerment expectations set for industry. However, a dynamic and broad-based industry is perhaps the biggest contributor to black economic empowerment, through employment, skills upgrading, and the growth of SMMEs owned and run by historically disadvantaged persons.

The research findings are drawn together in a matrix of measures at the sector specific, provincial and national levels. Specific discrete areas for action to reposition the industries include:

- *Steel pricing*

The negotiation by national government of a developmental pricing model for steel (to be extended to other basic metals and chemicals also) will mean that downstream activities which are currently uncompetitive (both in relation to imports and exports) will become progressively more competitive depending on the phasing agreed on. If it is similar to the deal already in operation in motor vehicles then it implies an approximately 20% to 30% reduction in steel prices from the import parity levels. Taking advantage of this requires other constraints to firm growth and new firm entry being relaxed. The growth of downstream metal products activities will increase local demand for steel and reduce the amount that Iscor has to export – meaning a win/win outcome. (Essentially this is about the elasticity of demand for steel, which as an input relates to the competitiveness of downstream firms and their ability to respond.) Given the labour-intensity of metal products activities and their relatively low skill requirements it would be appropriate for a task team to examine obstacles to expansion as part of discussions around increased beneficiation of steel from Saldanha (and Duferco).

- ***Bench-marking for foundries***

Foundries are at the heart of manufacturing. They make intermediate inputs for motor vehicle, machinery and aerospace industries amongst others. A strong foundry industry is thus important for the broader based growth of manufacturing. A crucial element of improved performance is continued attention by firms to their competitiveness in terms of design, quality and delivery. Firms can also make huge savings in terms of better management of inventories. Benchmarking is an important tool to foster continued upgrading by firms across different dimensions of the organisation of production. It can also facilitate sharing of information by firms and the development of stronger inter-firm linkages. The auto industry benchmarking initiative has played an important role in developing components manufacture in South Africa. A logical extension is to the foundry industry, especially as some foundries are already members of the auto club. The Western Cape foundries have led the way in co-operating over training programmes, and there is potential for this to be developed into a more organised industry cluster.

- ***Ship repair***

It appears that the Western Cape is missing an opportunity in this area. Dramatic increases in shipping indicate greatly increased demand for repair services. This is an area in which the Province has developed capabilities and there are no insurmountable technology requirements. The biggest obstacle is simply the capacity and organisation of the relevant infrastructure. Improving service will further add to the reputation and set in place a virtuous dynamic.

- ***Ship-building***

While competition among Asian producers is fierce, there is a clear market niche which the Province could exploit in smaller vessels such as tugs and harbour craft, targeted particularly at the west African market including oil and gas. The distance from Asian producers provides an inherent advantage to the Western Cape. The only producer is currently performing well and has potential for expansion. Entrants could be local, but also European firms given the ongoing importance of sourcing design and engines from major multinational companies. An important obstacle is the availability of finance schemes to facilitate the purchase of these craft by other African governments. The development of the industry also clearly fits within Nepad.

- ***Boat-building (Yachts)***

The challenge in the yacht cluster is to build on the success of the cluster. This largely involves generic actions to break bottlenecks and facilitate firm growth. Of additional note is the need to learn from the experience of countries such as New Zealand that created massive industry growth through a co-ordinated boat-building plan. The establishment of the South African Boat-builders Business Council and more recently the Cape Town Boat-building and Technology Initiative are to be welcomed in this regard.

- ***Technology and skills development***

There is a range of Government technology-related initiatives, and these initiatives have already involved interaction at provincial level. The question to be answered by the Province is to what extent are local actions required, such as related to the activities of local institutions (including universities and technikons). The National Tooling Initiative and Advanced Metals Initiative are both of great importance in this regard.

Skills development is similar. The present structure appears to mean that local industry groupings are required to take forward the necessary steps of standards generation, accreditation etc. Where the industries are not well organised there is a leadership vacuum. Poor industry organisation tends to exist where there is a greater proportion of smaller firms and where firms are in less integrated or 'advanced' industries. These are also often industries absorbing unskilled labour and where training will facilitate employment generation. There is therefore a leadership and facilitation role for government. It should be noted that the Seta processes operate at a national level, however, local industry action (as exemplified by foundries) can be a more effective push to move them forward. In addition, the provision of training requires appropriate local institutions and courses.

1. INTRODUCTION

The report covers the metals and engineering industries, defined to include ship-building and repair. This is a very wide range of quite different activities including at one extreme basic metals production, which is close to minerals processing, through to ship repair at the other extreme, which verges on service provision. The report's key objective is to assess industry dynamics in order to identify the potential areas for re-positioning, and possible levers for government intervention. This is a very tall order given the size and breadth of the industries being examined, however, there are several recent reports and studies from which we have been able to draw.¹

After a brief review of national data and trends in section 2, the main different industry groupings on which we focus are analysed in section 3. This analysis includes a review of existing work, as well as firm interviews. The role of different policy levers is analysed as part of the industry analyses, for example, in relation to skills constraints. In section 4, we draw together the main insights and discuss the overall implications for re-positioning in the future.

The industry grouping was defined to exclude automotive and machinery manufacture from the analysis in section 3, although machinery & equipment is included in the review of national data in section 2. This is largely due to the need to ensure the manageability of the study given the time frames.

The sub-sectors analysed can broadly be broken into the production and transformation of metal – basic metals, fabrication of metal products and foundries - and ship building and repair, and yacht manufacture (boat building). The latter clearly relates to the coastal location while in the case of the former, national dynamics are very important with the coastal location being increasingly important as international trade becomes more significant.

It is important to note at the outset that the analysis is not a simple one of certain segments growing and others in decline. Rather, across the different industry groupings one finds dynamic and leading firms. Indeed, it is perhaps a surprise to find very successful and export-oriented foundries making products for the auto sector while there is no auto OEM located in the Western Cape. In yacht manufacture, while the strength of the Rand has meant poor performance by many firms, there are several that due to their orientation and strategy are performing very well. This does not mean that we are reduced to firm-specific stories, but that important emphasis needs to be placed on factors related to the building of firm capabilities. Skills development, and support for the adoption and adaptation of improved technologies are crucial here. These in turn go to the importance of local institutions which are oriented to the needs of firms and their workers. The analysis also suggests the value of firm bench-marking and clustering. The success of some firms suggests important lessons could be learned from greater inter-firm communication.

Finally, there are also issues of input prices which directly impede the growth of downstream firms. These are perhaps most obvious in the challenge of downstream

¹ Of particular use is the recent report: Mahomed (2003) 'An Analysis of the Metals and Engineering Services Subsector of the Manufacturing Sector in the Western Cape Province', CSIR

beneficiation of steel from Saldanha Steel.² The manufacture of high quality steel in the Province currently provides little if any benefit to users of steel due to it being priced at import parity, and sourced as if being delivered from Vanderbijlpark. These issues of pricing are not limited to the Western Cape, but relate to questions of national policy. However, the gains to the Province from addressing the pricing of inputs are large, especially given the potential for export if cost competitive disadvantages are dealt with.

² Also the subject of a recent representation by the Cape Town Regional Chamber of Commerce to the national DTI.

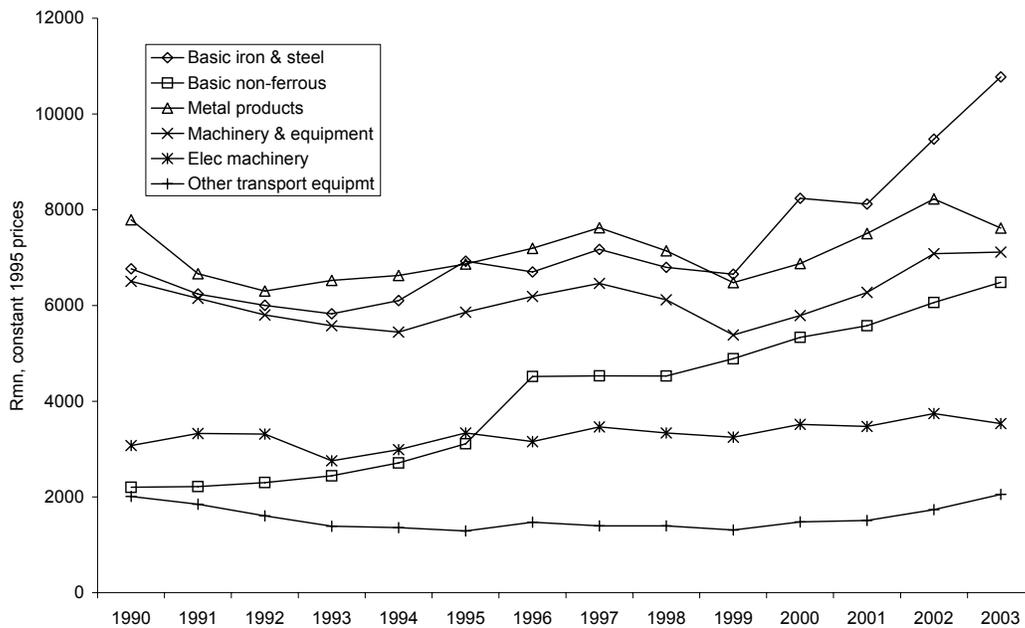
2. OVERVIEW OF RECENT TRENDS

We review the national data on the industrial sectors included in the broad grouping of metals and engineering industries. Unfortunately provincial data are only available for more aggregate groupings. Section 2.1 reviews national data and section 2.2 briefly assesses the provincial data.

2.1 National trends

The most obvious point from the national data is the strong growth and overall size of the basic metals industries – iron & steel and non-ferrous metals (Figure 1). Non-ferrous metals recorded the strongest growth rates of value-added over the past fourteen years, reflecting major investments being undertaken. In the past five years basic iron & steel has had the highest growth in value-added and is the largest single sector by a reasonable margin.

Figure 1. Value-added



Source: Quantec

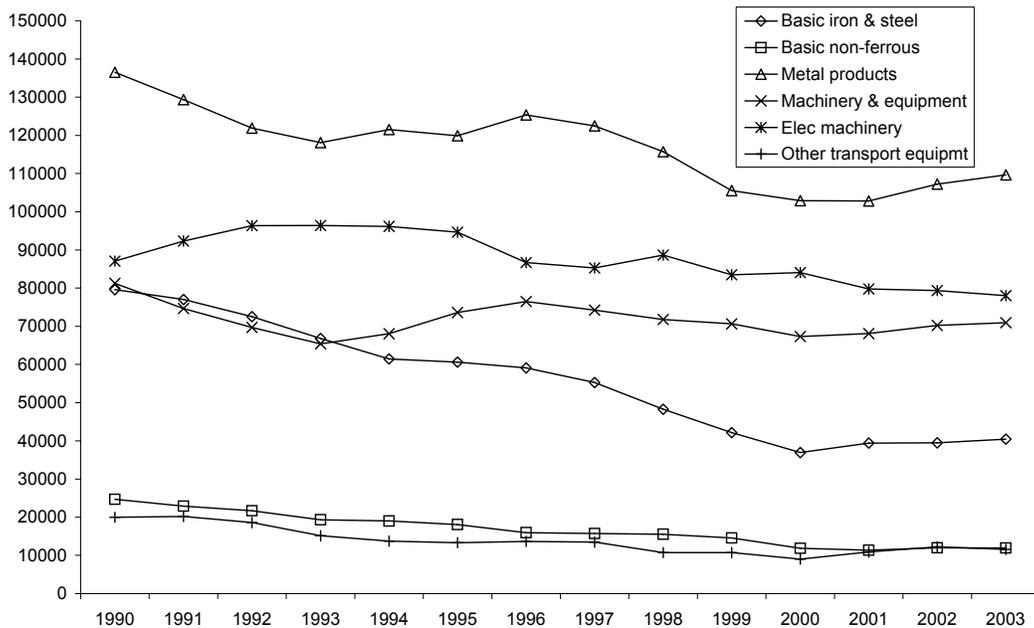
Despite government's strategy of moving towards increasing beneficiation and growth of downstream industries, the reverse has been occurring with South Africa being increasingly a producer of relatively unbeneficiated upstream products, such as basic iron & steel and basic non-ferrous metals.

This has concrete implications at the provincial level. Saldanha is one of the major factors underpinning the growth of iron & steel, while this sector also includes long-steel producers such as CISCO. The increase in value-added also reflects the increasing profitability of the sector, due partly to high prices charged in the local market. In the case of Saldanha, most steel is for export, but the pricing to the local market is a factor impeding local beneficiation. We specifically discuss some of these issues in more depth in section 3.1 below.

Encouragingly, the other industries have recorded improved performance in value-added since 2000, aside from electrical machinery. With the strength of the Rand, growth of the metal products and machinery & equipment sectors faltered in 2003.

The picture is quite different in term of employment, reflecting the extreme capital intensity of the upstream sectors. Metal products is the largest in terms of employment, but has recorded long-term declines (Figure 2). In addition, despite the value-added growth, basic iron & steel and non-ferrous metals have both recorded major contractions in employment.

Figure 2. Employment



Source: *Quantec*

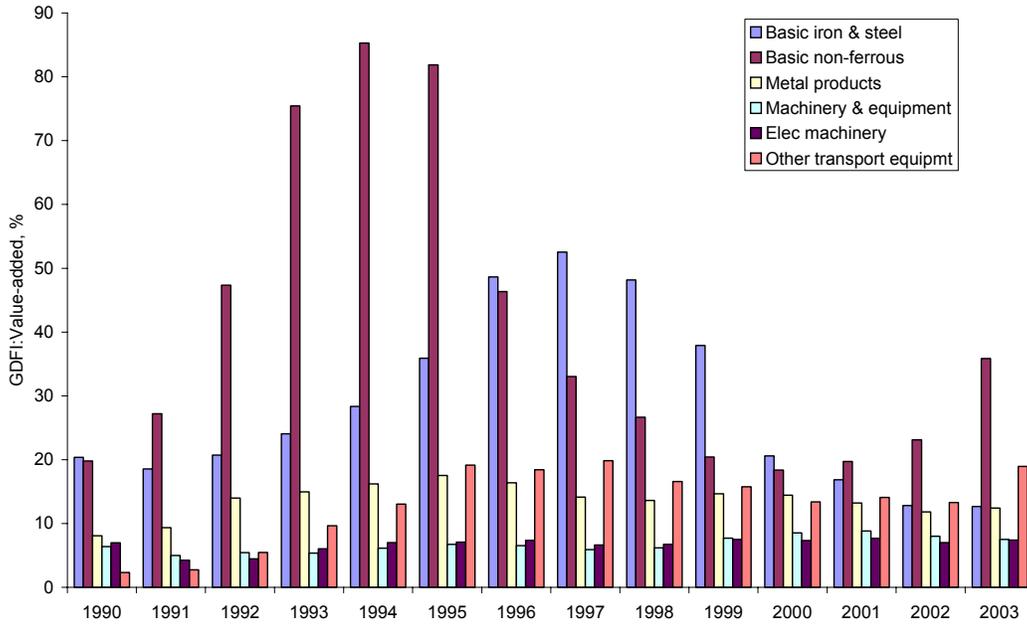
Since 2000, there have been small increases in employment in metal products, as well as in machinery & equipment and other transport equipment. While the basic metals industries are likely to continue to reduce employment alongside increasing value-added, the signs of a turn around in the more labour-intensive sectors indicate that employment creation will accompany increased production. This is also consistent with other research findings, and with firm interviews.³ The key questions are around the impediments to growth of these sectors.

The investment patterns reflect the major projects instituted in the last decade or so, with huge investments in basic iron & steel and in non-ferrous metals in the 1990s (Figure 3). The investment record of the other sectors has remained poor with investment rates staying firmly under 20% of value-added. In machinery & equipment and electrical

³ See, for example, recent survey findings reported in Machaka and Roberts (2004) 'Addressing the apartheid industrial legacy: local economic development and industrial policy in South Africa – the case of Ekurhuleni', paper presented at Wits-Ekurhuleni Symposium on Sustainable Manufacturing 10&11 June 2004, www.wits.ac.za/sebs/csrd. The firm interviews conducted in the Western Cape are discussed in more detail under the specific industries in section 3.

machinery the rates have been even poorer, never even reaching 10% of value-added. It is notable that other transport equipment investment picked up strongly in 2003, when it amounted to 19% of value-added. This sector is very diverse, including boat-building, of relevance to the Western Cape, but also aircraft manufacture and railway equipment.

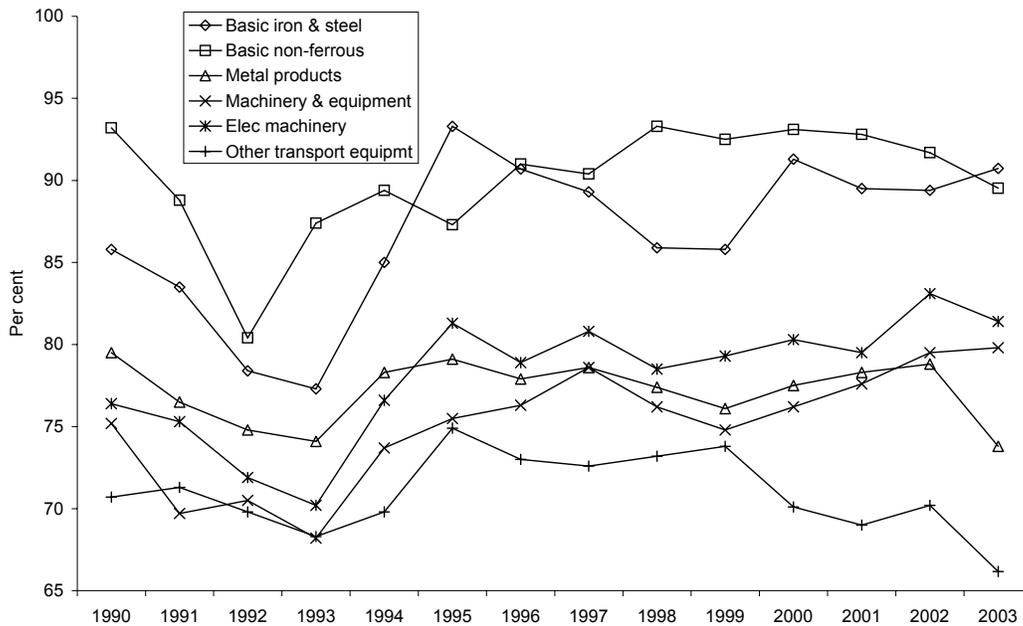
Figure 3. Investment rates, GDFI:Value-added



Source: *Quantec*

Indicators of capacity utilisation are consistent with the divide being drawn between the upstream capital-intensive basic metals sectors and the more labour-intensive downstream sectors. Basic iron & steel and non-ferrous metals have maintained high rates of capacity utilisation as would be expected given their large fixed costs and economies of scale (Figure 4). In these sectors, firms aim to produce at close to full capacity on a continuous basis, and a large proportion of output is exported. When local demand declines, exports increase, as the firms do not reduce output in response to demand weakness.

Figure 4. Capacity utilisation



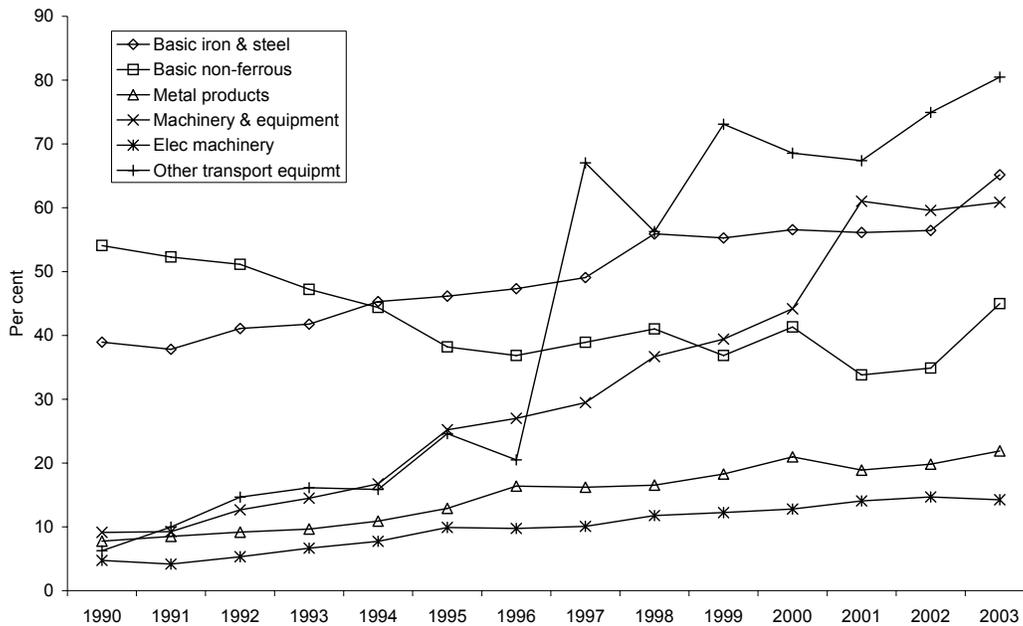
Source: Quantec

There are particularly low levels of capacity utilisation in other transport equipment, suggesting weak demand (and the inability to penetrate export markets). The decline in metal product output and employment in 2003 is also clearly reflected in falling capacity utilisation. This does suggest, however, that existing capacity is not an immediate impediment to growth of employment.

International trade performance

With trade liberalisation, and South Africa's increasing integration into the international economy more broadly, the importance of trade flows relative to output and domestic demand has increased dramatically. On the export side, very large proportions of output in basic metals, machinery and other transport equipment are dependent on international markets (Figure 5). By comparison, the overwhelming driver for the output of metal products and electrical machinery is domestic demand. This may reflect the uncompetitiveness of South African industry in these sectors. It can also be viewed as an opportunity for coastal locations in particular if there are initiatives to improve their cost competitiveness. In metal products we argue that there are such possibilities if the pricing of the inputs of basic metals is addressed.

Figure 5. Export:output ratio

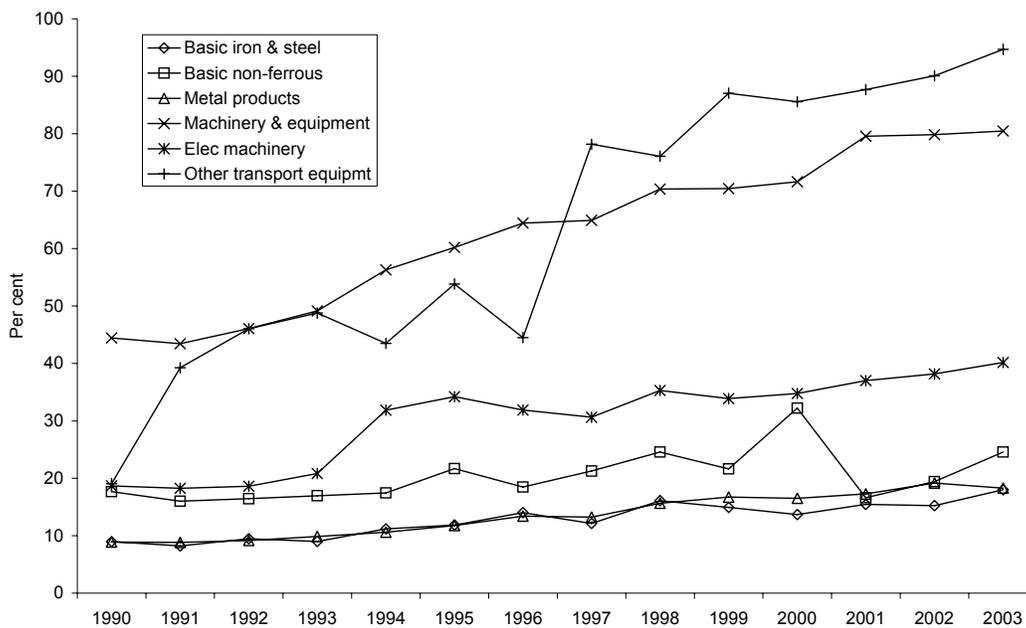


Source: Quantec

The largest increases in exports have occurred in other transport equipment (with a stepwise jump in 1997) and in machinery. Again this suggests that production sites in coastal locations would be favoured, especially where there is a good base of engineering capabilities, and where programmes to address skills development and related issues for international competitiveness are in place.

Very large increases in imports have been observed in other transport equipment and machinery, in which import values are equivalent to 95% and 81% of domestic demand, respectively, in 2003 (Figure 6). These values both reflect a persistent trade deficit in these products. And, at least some of the changes are due to imported products to South Africa being re-exported, presumably to other southern African countries. Electrical machinery also has a large trade deficit, with imports equivalent to 40% of domestic demand in 2003.

Figure 6. Imports:Domestic demand ratio



Source: *Quantec*

By comparison, there is a large trade surplus in non-ferrous metals and basic iron & steel. Metal products have recorded roughly balanced trade. The essential picture is one of comparative advantage (based on local cost competitiveness) in upstream basic metals. These advantages are not being realised in competitive prices of these products to downstream metal products firms, impeding their international competitiveness despite their relative labour intensity. And, in sectors requiring more advanced production capabilities and skills such as machinery & equipment, South Africa has a comparative disadvantage reflected in large trade deficits.

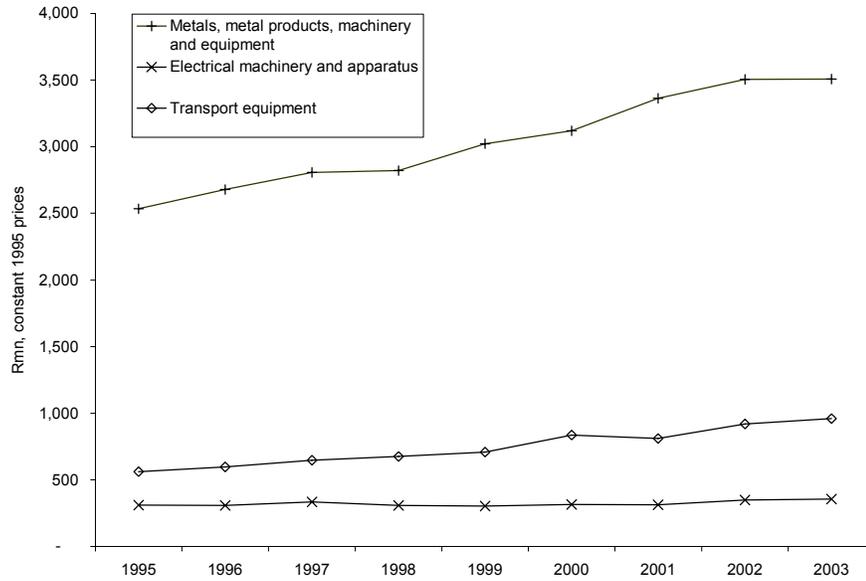
The potential gains from trade represent an opportunity, and also a challenge, to coastal locations in particular. The challenges are to move South Africa from competitiveness in upstream capital-intensive products to more labour-intensive downstream products. This requires addressing the various factors underlying international competitiveness, such as skills, technological capabilities, infrastructure and investment in upgraded capital equipment. However, the success of niches such as boat-building indicates that considerable gains are possible even with the current position in terms of education and skills. Identifying the most significant obstacles to competitiveness may bring short-term as well as longer-term gains.

2.2 Provincial trends

The metals and engineering industries in the Western Cape have performance well relative to national performance. But, the level of aggregation at the provincial level means that the broad metals and machinery grouping includes both the very capital-intensive basic metals sectors and the downstream metal products and machinery sectors. Value-added in metals & machinery and of transport equipment has continued to grow strongly over the period, at average annual rates of 4.1% and 6.9% over the period (Figure 1). The growth of transport equipment in particular has been very good relative to national performance,

and reflects the strong growth of boat-building (yachts) although, as will be reported in section 3, there has also been growth of auto components manufacture.

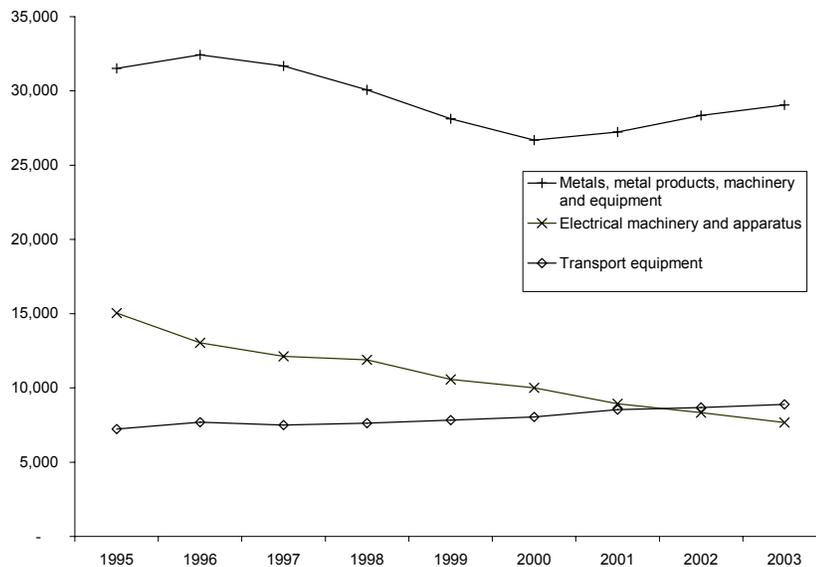
Figure 7. Value-added, Western Cape



Source: Quantec

As with the national pattern, employment growth has been poor with large contractions in metals & machinery and electrical machinery (Figure 8). There has also been a partial recovery in metal products employment in the past three years, as there has been nationally, but improvements in the Western Cape have been more marked. In addition, in the Province there have also been sustained increases in transport employment.

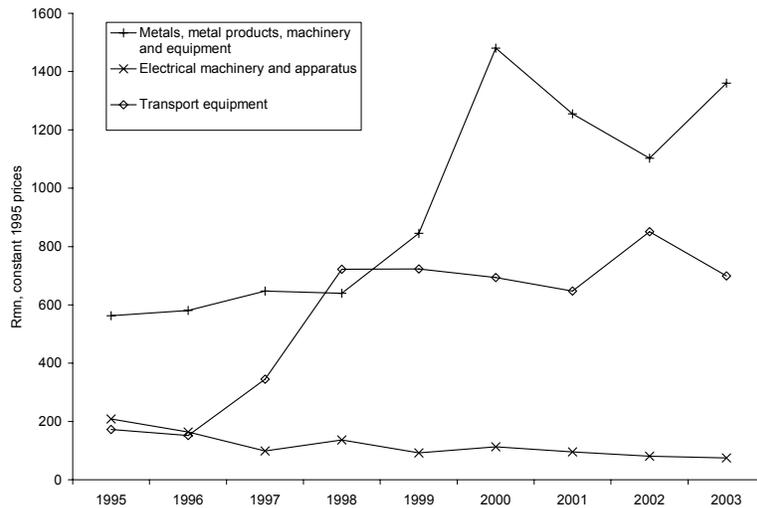
Figure 8. Employment, Western Cape



Source: Quantec

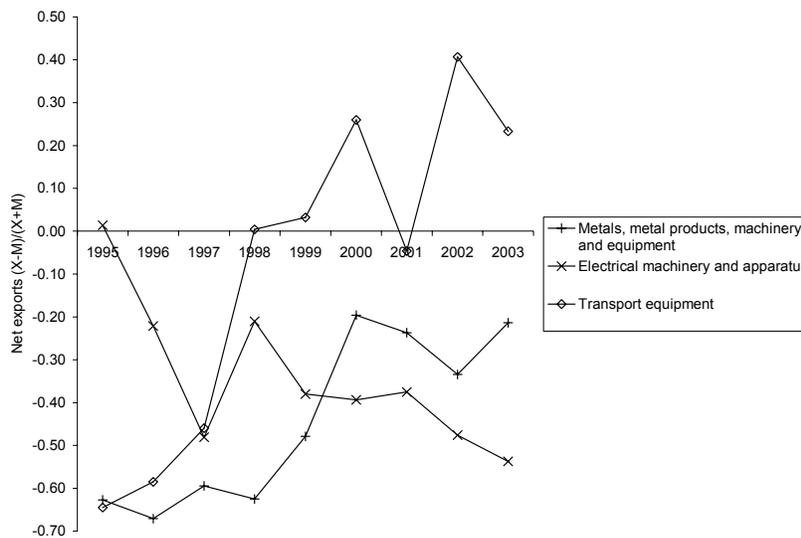
The relatively good performance of the transport equipment sector is reflected in its trade performance, which has seen significantly improved export levels due mainly to yachts (Figure 9) and a change from a trade deficit to a trade surplus in the past eight years (Figure 10). While the metals & machinery sector has also recorded very large increases in exports and a lessening trade deficit (in line with the growth of value-added) the export growth is almost entirely due to the coming onstream of steel production from Saldanha. The improved trade performance due to this very capital-intensive plant has not, therefore, contributed to improved employment levels. This points to significant challenges in achieving greater beneficiation of local steel, and the need to develop production capabilities across the broad range of more labour-intensive downstream metals and engineering activities.

Figure 9. Exports, Western Cape



Source: Quantec

Figure 10. Net export ratio, Western Cape



Source: Quantec

3. INDUSTRY DYNAMICS - FOCUS ON SUB-SECTORS

Trade liberalisation and the increasing international integration of the South African economy means that, in general, coastal locations have become more attractive relative to inland destinations. There are therefore major opportunities for the Western Cape. The realisation of potential opportunities has, however, been very uneven. There is now a relatively high degree of consensus in the economic literature on globalisation and industrial development. The opportunities from globalisation require effective state action. The potential gains from accessing international markets depend on firms being able to compete in terms of a range of non-price variables, such as quality, design and delivery. These also relate to the ability to engage in ongoing product development and ongoing upgrading of skills and capabilities. Indeed, the real development impact is from the interaction of production with the upgrading of capabilities.

To date, this has happened by coincidence rather than by design. Government interventions, characterised by support for Saldanha, may have increased exports but have not supported broad-based industrial development and employment generation. In the absence of coherent strategies some firms have responded to the opportunities, while industries such as yacht manufacture have grown strongly on the back of exports. Competitiveness in yacht manufacturing is due to local capabilities arising from the effect of South Africa's highly skewed income distribution on local demand, and the reported use of the purchase and export of yachts by the wealthy to circumvent exchange controls. The natural advantages of the Western Cape as a location for ship-building have not been capitalised upon, however.

In the analysis of each sub-sector, we address issues of cost competitiveness, skills, technological capabilities, main markets, investment, and industry organisation before discussing the role of government and public institutions.

3.1 Basic metals and structural steel

3.1.1 Introduction

The production of basic metals in the Western Cape is dominated by primary steel production. Flat steel is made by Ispat-Iscor⁴ at Saldanha while long steel products (mainly structural steel) are made by CISCO and Cape Gate. In addition, Duferco Steel Processing re-rolls and galvanises flat steel.

3.1.2 Flat steel products

Saldanha Steel was established in the second half of the 1990s using state of the art technology to produce a very high standard of flat steel, including ultra-thin hot-rolled coil. The rationale for the investment was to convert a larger proportion of the high grade iron ore being mined in the Northern Cape and shipped through the Saldanha port. The project was heavily financed by government, through the Industrial Development Corporation. The IDC took a 50% equity stake, with Iscor holding the other 50%.

⁴ On its acquisition by steel multinational LNM Ispat in mid 2004, Iscor's name was changed to Ispat-Iscor. We use this name when discussing recent developments and use Iscor when we are talking about the period prior to mid 2004.

The project was beset by difficulties from the start, running considerably over budget in the construction phase, followed by problems with the Corex technology utilised in the plant. The large losses being made led to ongoing government support through re-capitalisation by the IDC and then the acquisition of 100% ownership by Iscor in 2001. Very soon after the acquisition the main technical problems were resolved and Saldanha Steel began to earn healthy profits for Iscor share-holders and a doubling of capacity was even mooted by Iscor.⁵ This reflects the low input costs of steel manufacture in South Africa. South Africa has cheap energy, abundant high-grade iron ore, and coal. Iscor is in a particularly favourable position due to its access to iron ore at cost of extraction.⁶

The granting of the 37E tax concession by government for the Saldanha investment was made on condition that steel sold to the local market would not be priced at import parity levels. However, Saldanha's production was 100% for export, meaning that the question of pricing to the local market did not arise. Some steel was further processed locally by Duferco Steel Processing, but this was subject to a constraint that it must be exported.

On the acquisition of Saldanha by Iscor in 2001 the Competition Tribunal placed the requirement that Duferco be no longer subject to this constraint, and thus be able to sell into the local market and compete with Iscor's own products. While there is now some local sales, both of product from the Saldanha plant and by Duferco, the pricing of these products is set by Iscor on an import-parity basis in line with price lists for supply from the main flat steel plant at Vanderbijlpark.

Duferco

Duferco processes around 440 thousand tonnes per annum (equivalent to around 40% of Saldanha's total steel production). From steel coil of around 2 to 2.5mm in thickness it produces very thin cold-rolled coil of as thin as 0.2mm through a process of rolling (or cold-reducing) the steel sheet. More than half of Duferco's production of steel coil is then galvanised, through a coating of zinc being applied in a hot-dip galvanising process. This produces steel sheet which can be used in range of applications from roofing to more sophisticated products.

3.1.3 Long steel products

Cape Town Iron and Steel Works (CISCO) is one of South Africa's four large manufacturers of steel bar. This is made from scrap in an electric arc furnace. The main market is the construction industry which uses reinforcing bar. Production easily meets local demand and a large proportion of output is exported.

The production is competitive due to the main costs, being scrap and energy. This is also evidenced by the operation of other firms such as SA Steel Makers which cast steel billets from scrap, all of which are for export. Scrap is obtained at export parity price or lower, while local sales are at import parity price levels. The rationale for the pricing is explained thus: the only alternative available to the scrap merchants is to export hence local firms can obtain scrap at equivalent prices to those earned on exports; local buyers of

⁵ This increase in capacity is apparently now being planned by the new owners of Iscor, LNM-Ispat.

⁶ This provision was included on the unbundling of Kumba from Iscor. Iscor effectively owns 6.25 million tonnes of iron ore for 25 years at cost of extraction plus a 3% management fee payable to Kumba.

steel bar have to import of they do not buy locally, justifying import parity prices. This reasoning obviously only works if local steel firms have market power (either individually or collectively) as there is a large surplus of steel production over local demand.

In addition, it appears that while there have been problems for small buyers of scrap obtaining competitively priced supplies (as, for example, some foundries). Large buyers do not have problems in this regard.

There is a second major producer of long steel products, Cape Gate, which draws out wire rod to produce wire and articles of wire (such as wire mesh and shopping trolleys).

3.1.4 Way forward: the challenges of beneficiation

The challenges of beneficiation are in many regards the challenges of downstream growth of sectors such as metal products, the sector which is the subject of section 3.2 below. Steel is a particularly significant input to metal products and machinery & equipment, in many cases accounting for more than one-third of all materials and services inputs (especially after intermediate steps are taken into account) (Table 1).

Table 1. The proportion of basic iron and steel as direct and indirect inputs into key downstream industries

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

Source: Statistics South Africa, Supply and Use Tables 1998, as presented in Roberts and Zalk (2004)⁷

In this section we discuss specific ways to address the behaviour and orientation of upstream producers to align them with the longer-term interests of provincial economic growth. The focus is on flat steel as this product provides greater opportunities for further working and value addition.

As was identified in earlier analyses,⁸ the key issue is pricing. Import parity pricing is practiced by Iscor and other major producers. The effect of import parity pricing in terms of the price margins is presented, before mechanisms for addressing this, and other related avenues, are assessed.

Import parity pricing

Import parity pricing means charging prices equal to those that a local buyer would have to pay to import the product. This means including the notional costs of shipping, tariffs,

⁷ Roberts and Zalk (2004) 'Addressing market power in a small, isolated, resource-based economy: the case of steel in South Africa', paper presented at CRC 3rd International Conference, Cape Town, 7-9 September 2004.

⁸ See, for example, Wesgro report 'The Saldanha Bay Industrial Development: An Assessment of Future Growth Potential', undated draft.

wharfage and port charges (see Table 2). If there was a trade deficit then to increase purchases would mean importing and hence incurring such charges, however, in the case of steel there is a very large trade surplus reflecting South Africa's competitive and comparative advantage in steel. In such conditions, additional local consumption means exporting less. But, while South Africa has low production costs for steel, certainly below the international average, it has much higher than average local prices for steel, placing steel using industries at an immediate competitive disadvantage.

Indeed, the size of the notional costs added in depends on geographical accident, as the price mark-up is due partly to the distance of the local market from the sources of imports. In flat steel products, the market power of the main producers is such that they maintain their list prices at above the import parity levels and use a price discount which they can adjust on a month-by-month basis to bring the price down just to the level at which it is not worth it for a local buyer actually to import.

Table 2. Import-parity price calculation, July 2002

	<u>HRC, 1.5mm<2.0mm thick</u>
Import price (fob)	\$210 (R2373)
+Shipping cost	\$25 (R282.5)
+5% duty	\$11.75 (R132.78)
+offloading & admin (+1%)	\$2.35 (R26.56)
+transport inland	R100
Import price to customer	<u>R2914.83</u>
Local price	R3 214.91
Nett local price (after discounts of 2.5% and 4.5%)	R2 993.49
Recommended IPP (Import parity price adjustment)	R90.00
Actual price to local customer	R2903.49

Notes: All prices exclude VAT
HRC is hot-rolled coil

Crucially, the steel industry is one in which South Africa has a large excess of domestic supply over domestic demand. This reflects historical decisions and cost advantages such as access to iron ore and coal. A 'free' market would therefore be expected to yield an export-parity price (the price received by the South African steel producer for exported product) rather than an import parity price.

In the case of steel this difference between the local price and the export price (which is the world price less transport and related costs) is a price mark-up of 30% to 40%. In other words, South African metal products manufacturers should be getting significantly cheaper steel inputs which would make them more competitive, able to replace imported products and compete more effectively abroad, and increase employment. The higher prices are also passed onto consumers meaning higher prices for everything from corrugated roofing to metal furniture.

By making local downstream producers uncompetitive this pricing strategy has the dual effect of reducing employment and output downstream, and causing the reliance by upstream producers on steel exports. Conversely, the more rapid the growth of the downstream steel using industries, the less significant will be exports.

This has been recognised by Iscor, who have a system of export rebates. Under this system, a firm which exports steel in beneficiated form can claim a rebate on the original price paid. The rebates vary depending on the product made and the country to which it is exported. The rebate has historically been no more than 5% of the original price, however, increased rebates have been offered in the past year or so as the Rand has strengthened. Moreover, certain industries have negotiated special deals, including motor vehicles and consumer durables.

Initiatives

There are some firms located in Saldanha adding value to primary flat steel, including a firm making palisade fencing and a steel merchant service centre cutting steel sheet into smaller sizes. But, there do not appear to be any specific arrangements to encourage downstream beneficiation in Saldanha, or the Province more widely. Important possibilities include:

- The Department of Trade and Industry is currently negotiating a ‘developmental pricing model’ with Ispat-Iscor. The agreement on such a model was committed to when LNM Ispat took-over control of Iscor. It is not clear what provisions it will contain, or when it will be finalised.
- The pricing issue is one of the main areas to be discussed at the Metals Sector Summit due to take place later this year or in early 2005.
- The coastal location together with being the site of one of South Africa’s steel mills means that the Province stands to gain from more significant export rebates and/or a different pricing deal. One option would be to combine this with targeted growth areas, such as ship-building. The motor vehicle industry achieved a pricing arrangement which is initially benchmarked against ex-factory European prices with adjustments over a three year period to reflect the producer price index and exchange rate changes.
- A proposal to establish a ‘Wirepark’ in Durban aims to have close-to export parity pricing for wire rod supplied to a cluster of firms who will beneficiate for export. A similar model could be adopted for firms beneficiating Saldanha steel but would require a concerted strategy to negotiate such large concessions.

It should be noted that increased local demand for steel is also in the interests of the upstream producer as this means that a smaller proportion of output must be exported (and be subject to volatile international markets).

Summary

The Western Cape provides a very competitive location for the manufacture of basic metals including steel but these capital-intensive activities have been shedding labour even while increasing output. The vast majority of production is currently exported without any value addition beyond galvanising and cold-rolling. The key question from a development perspective is thus how to engage with the major firms to ensure pricing which reflects the low production costs and thereby passes on a competitive advantage to

downstream and more labour-intensive firms. There are important likely developments in this regard, and attention should be paid to developing a provincial strategy of engagement to obtain changes as part of a wider industry strategy.

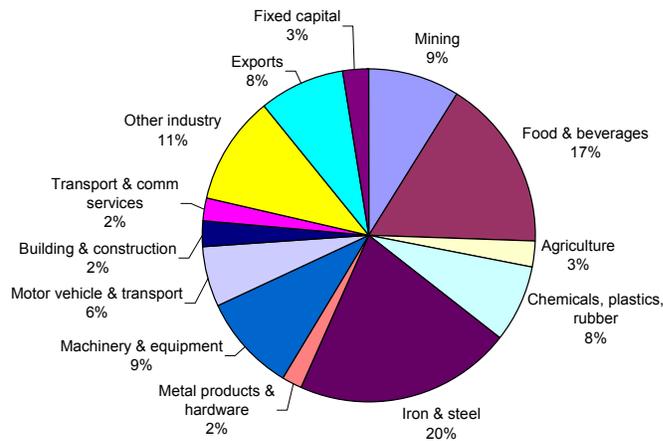
3.2 Metal fabrication and engineering⁹

3.2.1 Introduction

Metals and engineering covers a diverse range of activities. We focus in this section on fabrication, while section 3.3 examines the casting of metal by foundries. Fabricated metal products predominantly form intermediate inputs to other manufacturing industries (Figure 11). The health of this sub-sector is thus intimately tied up with broader industrial development. A competitive metals fabrication sub-sector will support activity in other sub-sectors, while demand for metal producers will depend on overall growth in manufacturing activity in the local economy.

There is a range of government initiatives underway at the national level, including the Advanced Metals Initiative and the National Tooling Initiative. These cut across different activities (and certainly go beyond metal fabrication), and Provincial government action can ensure that they effectively meet the needs of industry in the Western Cape. We briefly summarise the main initiatives in section 3.2.3 in our discussion of the way forward. The analysis in this section (3.2.1) and section 3.2.2 is focused on the relatively labour-intensive sub-sector of metal fabrication. While we do not address machinery and equipment manufacture, the importance of tooling is reviewed briefly in section 3.2.4.

Figure 11. Main markets for fabricated metal products



Source: Statistics South Africa, Supply and Use Tables 1998

⁹ This section draws substantially from Fund for Research into Industrial Development, Growth and Equity (FRIDGE), 'Study to facilitate the formulation of an Integrated Strategy for the Retention and Creation of Employment in the South African Metals and Engineering Sector', October 2003; and Mahomed (2003) 'An Analysis of the Metals and Engineering Services Subsector of the Manufacturing Sector in the Western Cape Province', CSIR

The performance of the metal products sub-sector in South Africa as a whole has been poor, as reflected in Section 2. Value added in 2003 is no higher than it was in 1990, and employment has declined. The challenges in the Western Cape are essentially the same as in the country as a whole, namely to develop competitive production capabilities in a liberalised environment. This means addressing the challenges of skills, organisation of production, technology, design, delivery etc. There are also major issues related to price competitiveness and the pricing of inputs as discussed in section 3.1 above.

The sub-sector in the Western Cape is well established, with specific links into markets for marine equipment, tank containers and food packaging. Recent estimates of close to 50 companies are undoubtedly an undercount.¹⁰ The Western Cape also has a well-developed base of skills and technical capabilities. The challenge is, however, to build on this to create employment across low, medium and high skill categories.

The location provides export opportunities, as has been demonstrated by the tank container industry, and it is also advantageous for firms who need to import specialist grades of metals not made locally. The potential is demonstrated by the presence of a significant number of firms manufacturing for the auto sector despite there not being a major Original Equipment Manufacturer (OEM) located in the Western Cape.

Tank containers¹¹

The tank container industry is a South African and Western Cape success story that it is important to highlight. About 40% of the world's annual demand for tank containers for transporting products such as chemicals, food and beverages are made in South Africa. The major players such as Consani Engineering and Trencor are located in the Western Cape. This industry's success is based on fabrication using local stainless steel to meet a growing international market. The increased trade in chemicals, in particular, has driven the growth in international demand for tank containers, which is projected to continue at around 7.5% per annum.

The South African Tank Containers Association established in 1998 led to co-operation in order to compete internationally. Specifically, local firms worked together with stainless steel producers to source locally and to standardise specifications, and to share experiences. After very rapid growth of the South African industry in the 1990s, recent years has seen the industry facing the challenges of a strong currency and increased international competition.

3.2.2 Competitiveness and performance

Internationally, growing metals industries are characterised by clusters of small, specialised firms. Specialisation enables exploitation of niche capabilities, with strong local linkages supporting the growth of wider industry clusters. The intermediate nature of many products means the ability to design and customise with small production runs can be an advantage depending on the nature and scale of demand.

¹⁰ Mahomed (2003), the larger number of companies is noted in this study, but it is difficult to estimate given the many small firms.

¹¹ See www.satca.co.za

The importance of quality and delivery for firms' competitiveness in recent firm surveys emphasises the importance of building firm capabilities. These include the findings of the recently conducted FRIDGE study on the metals and engineering industries and a survey of manufacturing firms in Ekurhuleni Metro.¹² Rather than competing purely on product price, South African firms had lower design and customisation costs in products for which their main competitors were in Europe and the USA. This again points to the importance of ongoing skills upgrading. For example, in introducing computer aided design and precision-cutting machinery the skills of machine operators need to be improved, although the occupational category has not necessarily changed (and so it would not necessarily be evident in more high skilled employment as opposed to medium skilled).

Obtaining quality accreditation and having access to testing facilities to be able to prove the qualities of a product (its strength, rigidity, resistance to wear and tear) are, however, barriers to small firms and areas where public facilities and support can be of assistance. The CSIR does provide some facilities of this nature. But, they are not necessarily the most appropriate for a strategy oriented to building competitive capabilities

Products dependent on achieving scale economies should also not necessarily be ignored. These would include tank containers and components for the auto sector, as well as metal packaging.

Cost competitiveness

Firm interviews consistently confirmed the competitive disadvantage from the local pricing of steel. Even where firms had developed relatively specialised capabilities, the cost competitiveness effect of steel prices is of major importance. This has been compounded in the past year by the impact of the strengthening currency which had led several firms interviewed to exit export markets and cut back capacity.

While wages in South Africa and in the Western Cape are low compared with countries such as South Korea or Taiwan, low rates of investment mean that productivity (and hence unit labour costs) is also poor.¹³ This is compounded by skills constraints in some areas.

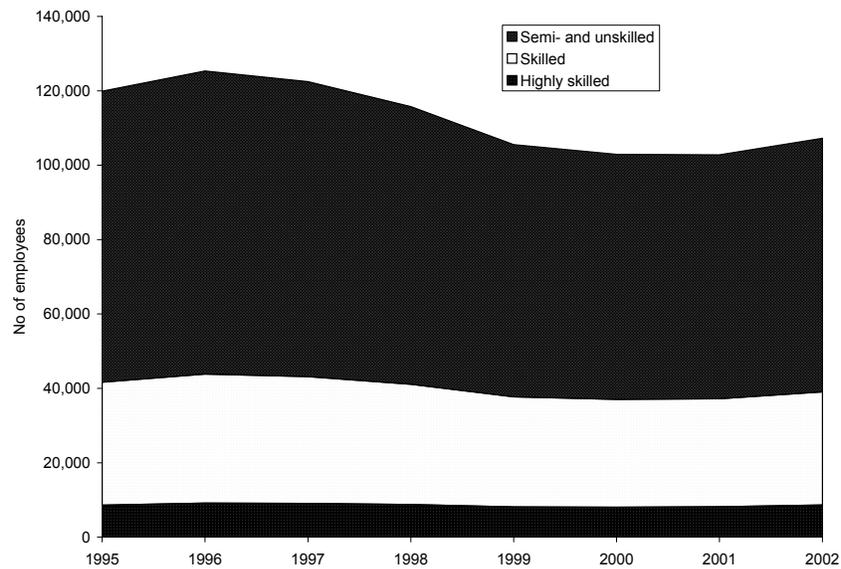
Skills and training

As well as being one of the most labour-intensive sectors of manufacturing, metal products are also intensive in unskilled or semi-skilled labour which accounted for 64% of total employment in 2002. While the decline in employment in the late 1990s mainly affected this category of labour, skilled workers were also retrenched (Figure 12). This suggests that, in the short-run at least, skills constraints are not binding, as retrenched workers with skills and experience are available. However, it is important to distinguish between overall skills levels in the industry and the changing nature of skills demands in particular areas.

¹² The FRIDGE study included a telephonic survey of 720 firms while the Ekurhuleni study had responses from 383 firms of which more than 100 were engaged in production of metal products (see Machaka and Roberts, 2003, 'Manufacturing industry in Ekurhuleni: Analysis of recent performance and findings from firm survey' Briefing Paper 9, www.wits.ac.za/sebs/csrd).

¹³ Mahomed (2003)

Figure 12. Employment in metal products, by skill category



Source: Quantec

The different patterns reported in the surveys between small/medium and large firms, where large firms are more likely to be retrenching, suggest the importance of improving capabilities at the level of clusters of small and medium firms. The finding of increased labour contracting militates against this, however, as firms are unlikely to invest in building skills-levels where their levels of commitment are low. An additional challenge is the apartheid legacy of white people dominating middle and upper management, and the male dominance of the industry overall. Of concern is the FRIDGE finding that the Merseta is not seen as effective by firms' management and that there has thus been a gap between the ending of apprenticeship programmes of many firms and the establishment of new learnerships. In addition, medium and large firms generally were drawing back the skills development levy, while small firms viewed the time and expense required to do so as onerous.

While a lack of a clear Provincial plan for training and skills development specific to the sector was criticised in firm interviews held in the Western Cape, there are good technical colleges and tertiary education institutions in the Province. What is required is the co-ordination of forward-looking industry development plans with future skills requirements.

Investment and technology

The result of poor profitability and very low levels of investment are old machinery and firms lagging behind technological standards (although the Western Cape may well be better than the country as a whole in this regard). In the context of the importance of being able to compete in terms of quality and design, this is of very great concern. Firms increasingly require computer-numerically-controlled machinery. This is a substantial outlay, and several firms interviewed had encountered obstacles in financing the purchase of such equipment.

In a vicious cycle, weak demand means that firms have not been running more than one shift, which in turn means that expensive capital stock is under-utilised and margins are

thin. More broadly, the FRIDGE study found cost-minimisation strategies being followed across the industry including widespread labour contracting, and increased outsourcing by larger firms. As already discussed, this is not broadly consistent with a long-term path of building production capabilities.

3.2.3 Way forward

The basis for a vibrant, growing metals fabrication and engineering industry is undoubtedly present but a range of factors from weak demand and the strong currency through to high steel prices have meant poor performance in recent years. The potential is demonstrated by the development of particular industry niches despite this overall picture. The industry is also crucial to the development of manufacturing more broadly.

A dynamic growth path, however, requires concerted action at several levels. Internationally competitive steel pricing has the potential to unlock large numbers of jobs across the sub-sector, including in relatively commodity type products. Firms also need to be able to invest to upgrade capital stock.

At the same time, careful study needs to be made of areas with growth potential, potentially including auto components, aerospace, food packaging equipment and small/medium ships. The first two are priority areas of the Department of Trade and Industry, although auto components in the Western Cape is hampered by the absence of a major OEM as an anchor to attract components firms. The huge potential of medium aircraft with the ongoing rapid growth in air travel expected makes this a key target sector, especially as many of the materials required have to be imported (including the grade of aluminium).

Government initiatives

The Department of Science and Technology's recent *Advanced Manufacturing Technology Strategy* (AMTS) and the Department of Trade and Industry's *Integrated Manufacturing Strategy* (IMS) complement each other. They emphasise the need to develop production capabilities, for firms and public institutions to work together effectively, and for technologies to be the foundation for growth of output and employment. Many of these areas require action at the local level. Building the local industrial base requires getting groups of companies to work together effectively, local testing and training facilities and linkages with tertiary education institutions.

- The *Integrated Manufacturing Strategy* of the Department of Trade and Industry places increased value addition downstream and the strengthening of vertical and horizontal linkages at its centre. Metal products also falls within one of the target industry groupings of the DTI of minerals beneficiation and metals. The strategy identifies a range of broad issues to be taken forward through specific policy measures. These issues include the pricing of inputs and improving skills and technological capabilities. The specific policy measures are still to be developed and so it is important that concrete concerns which relate to the metal products industry in the Western Cape are effectively represented.
- The *Advanced Manufacturing Technology Strategy* of the Department of Science and Technology through the National Council on Innovation also establishes a

framework for government action to support industrial development, specifically as it relates to research, technology and productive capacities. This strategy is also still to be realised in specific programmes. Rather than just focusing on hi-tech niches, it is important that the need to support upgrading of labour-intensive industries such as metal products is taken into account. The need for testing facilities and support for quality approval are two concrete areas.

- A ***National Tooling Initiative*** has been launched by the CSIR's National Product Development Centre. This is being driven initially by the auto industry but has now grown to be much broader. We discuss it in more detail in section 3.2.4 below
- The ***Advanced Metals Initiative*** has also grown out of the AMTS, and is aimed specifically at light metals. A key target area is the application of technologies to aerospace. There are four legs to the initiative: light metals, precious metals, stainless steel, and new metals. In particular, there is a titanium beneficiation initiative under light metals (on which the lead rests with CSIR). This initiative is in partnership with Namakwa Sands and Saldanha Steel, and should have important benefits to the Western Cape.

Much of the actual programmes such as technical centres or innovation centres envisaged under the AMTS have concrete locations as part of growth clusters. This is evident in the Automotive Industry Development Centre which is linked to a supplier park in Rosslyn outside Pretoria and a chair in automotive engineering at the University of Pretoria. In these initiatives champions are needed, from the different stakeholders and particularly government and business.

Implications for the Western Cape

Each of the national initiatives is premised on areas of potential being identified and motivations for support to be provided. The national agencies have primary responsibility for doing this, but the success of the national initiatives relies on industry developments in concrete locations. In addition, the process of identification of potential growth and the design of interventions requires information. There is thus an important role for Provincial government in representing the needs of industry in the Province and in designing provincial interventions which fit into the framework of national initiatives. This is clearly the lesson from the auto industry which successfully combined provincial support such as in establishing a supplier park in Rosslyn, Gauteng, with the overall national policy thrust to incentivise local components manufacture as part of the Motor Industry Development Programme.

3.2.4 The tooling industry¹⁴

Tooling is a crucial element of manufacturing, as without moulds and dies industries such as plastics and foundries cannot operate. In turn these components are inputs into finished products and, in particular, the automotive sector is the main market for tooling globally (accounting for around half of all global tooling demand). The global tooling market is huge, estimated at Euro 30bn in 2003 and has been growing at rates in excess of 4% per

¹⁴ This draws heavily from Mahomed (2003) and Mahomed (2004) 'Data related to the SA Tooling Industry'.

annum. The industry is, however, highly concentrated in the European, Asian and North American countries. In South Africa's favour is the increasing shift in precision engineering to industrialising countries such as Brazil, Argentina, and China linked to the further development of international production networks. South Africa, with an already existing base of engineering skills, is in a position to capitalise but this requires concerted action by government to attract international investment and business. In the past decade, South Africa has lost rather than gained ground.

The tooling industry in South Africa is thus crucial to the development of other industries (such as the sustainability of the automotive sector) and there is also major potential for value-added and employment creation in tooling itself. The potential demand is due to increased automotive activity and increasing pressure for local content under the evolution of the Motor Industry Development Programme. There is also a large trade deficit in tooling suggesting existing demand. To meet this demand requires being able to deliver on time, to demanding specifications that are required by internationally competitive industries. At present the South African tooling industry is failing these tests due to both poor investment in technology and in skills.

The Western Cape has a relatively significant tooling industry consistent with the Province's position in South Africa as a whole as having quite good manufacturing capabilities. There are 83 tooling companies employing about 1500 people in the Province. These are generally small family businesses built around the expertise of the owner-manager. To make the medium and long-term investments required to continuously improve capabilities, and to be able to deliver on large contracts, requires the growth of small firms into medium and large companies. It also requires firms to develop local clusters with shared services, local R&D facilities and appropriate training at tertiary institutions. Benchmarking data reveal that South African firms have low productivity, poor integration of business support systems, higher profit margins and low labour costs. The levels of numerically controlled machines, computer numerically controlled capabilities and of academically qualified staff are also low in South African firms. These patterns reflect low levels of investment by South African firms, high interest rates and poor educational output. The challenge is therefore clearly to upgrade capabilities in terms of machinery and skills to international standards.

The National Tooling Initiative aims to achieve a major re-positioning of the South African tooling industry. There are seven concrete project deliverables:

- To assist the establishment of a Toolmaking Association of South Africa with branches in Western Cape, Gauteng, Eastern Cape and KwaZulu-Natal
- To implement benchmarking using an internationally accepted Aachen benchmarking tool
- To develop a tool making consortium through clustering existing tool rooms
- To develop improvement plans for clusters based on competitiveness criteria
- To identify BEE and small and medium enterprise tool rooms to enter the mainstream of tool making
- To implement a product based benchmarking project
- To train tool designers

The National Tooling Initiative is partly funded by DTI under a sector specific assistance scheme. The National Product Development Centre of the CSIR, the Auto Industry Development Centre and Ngena Mouldnet are responsible for implementation of the plan.

3.3 Foundries

3.3.1 Introduction

The Western Cape foundry industry is rooted historically in the railways, shipping construction industries. In the 1970s and early 1980s the industry was largely driven by the automotive sector, supplying casting components to companies such as Renault and British Leyland that had established a commercial presence in the region. Disinvestment and the subsequent collapse of the automotive industry in the Western Cape resulted in the establishment of smaller foundries and a change in business strategy towards, among other things, greater export orientation. The automotive sector has once again become a significant contributor to the overall output growth in castings in the Western Cape – almost exclusively the result of the successful implementation of the Motor Industry Development Programme (MIDP).

Today, there are 17 foundries operating in the Western Cape, the vast majority of which are small firms, employing less than 50 people. Two firms dominate the foundry industry: Gearings Foundry and Atlantis Foundries. While Gearings was originally founded at the beginning of the 20th century to produce castings for the shipping industry, Atlantis was established by the Apartheid government to produce diesel engines as part of its drive towards self-sufficiency in areas of strategic importance. Both firms now supply casting components to the automotive industry, are foreign-owned, and are heavily export-oriented, either directly or indirectly.

Apart from Gearings and Atlantis, the Western Cape foundry industry is comprised of a distinctly heterogeneous set of firms. Firms supply a range of diverse markets. Patterns of ownership and export orientation are variable, and in some cases the foundry itself does not constitute the core activity of the business. Despite this heterogeneity (or perhaps because of it), the industry is cohesive and inter-firm cooperation is good. There is a spirit of openness and trust among agents, and there are signs that the industry is beginning to reap the economic gains that derive from agglomeration and clustering (itself a process that has evolved largely in the absence of public sector support in the development of appropriate institutional frameworks to facilitate the emergence of an industrial cluster).

The industry is represented by the Western Cape Institute of Foundrymen (WCIF). The WCIF, in turn, falls under the aegis of the South African Institute of Foundrymen (SAIF) and is the only regional association of its kind. The WCIF provides accredited training programmes to foundry employees in all aspects of foundry technology. It is very clear that the training programmes provided by the WCIF have galvanised local industry and have provided an enabling environment for processes of deliberation, knowledge-sharing, and technology transfer between firms.

3.3.2 Competitiveness and performance

The South African foundry industry has undergone a significant amount of restructuring and consolidation over the past 10 to 15 years. The gradual liberalisation of the South African manufacturing sector since the early 1990s, global improvements in casting technology and the quality of castings, and the ability of transnational corporations to source castings from anywhere in the world have all heightened competitive pressures in the domestic foundry industry.

Now that the process of liberalisation is broadly complete, the key challenge is to create an enabling environment in which to enhance the competitiveness of firms by building on their existing capabilities in new ways. Although the Western Cape foundry industry is dynamic with relatively strong intra-industry linkages already in place, it is by no means immune to weaknesses in the following factors adversely affecting the overall competitiveness of the South African foundry industry: technology, skills development and training, access to finance, and the supply of scrap metal. In addition, weak institutional arrangements are preventing the development of a collective strategy necessary to improve the efficiency and competitiveness of the industry as a whole. Each of these issues will be discussed briefly as issues affecting the *South African* foundry industry.¹⁵ Sections 3.3.5, 3.3.6, and 3.3.7 will develop the issues further, with specific reference to information collected during the key informant interviews with firms in the Western Cape, thereby highlighting the differences between the South African foundry industry and the industry in the Western Cape. Section 3.3.4 will provide an overview of firms in the Western Cape in terms of turnover and employment, the type of casting process, and export orientation.

Technology

Improving firms' technological capabilities is fundamental to increasing the competitiveness of the South African foundry industry. Relatively old casting technology and weak institutional arrangements promoting the transfer of knowledge are blunting firms' technological capabilities in an era in which global foundry standards are becoming more and more exacting. Not only do firms need to upgrade their equipment in order to remain competitive but the provision of industry-wide, coordinated research and development and technical support services to firms is an essential component of any initiative that aims to increase competitiveness. The issue of skills development and training (see below) will impact significantly on firms' ability to enhance their technological capabilities.

Skills Development & Training

Skills development and training continue to pose a challenge to the industry. The industry is suffering from both a gradual loss of skills and the virtual absence of formal training, particularly in basic foundry skills, tooling, and rapid design technologies. The skills constraint is particularly severe for smaller firms, which lack the resources to provide on-going training in new techniques and production methods. A number of firms have

¹⁵ This draws on recent research, mainly the Roadmapping exercise completed by the CSIR for the SAIF and a study of the foundry industry in Ekurhuleni recently completed by CSID.

developed their own in-house training programmes in both basic foundry skills and more advanced skills specific to the type of casting process used. A major problem with these independent initiatives, however, is that they are not formally recognised or accredited.

Access to Finance

South African foundries are presently experiencing major difficulties in obtaining finance to purchase machinery and equipment necessary to upgrade their technological capabilities. In the South African context, access to state finance is partly dependent on criteria such as employment creation and progress in initiatives such as Black Economic Empowerment (BEE). In response to an increasingly binding (and partly endogenous) skills constraint, South African foundries are automating (or semi-automating) their production processes, making it difficult for many foundries to obtain finance from state-linked corporations (such as the IDC) based on the criterion of employment creation alone. Furthermore, the South African foundry industry has been particularly poor at implementing BEE initiatives, making access to state finance very difficult indeed.

Supply of Scrap Metal

While the South African industry has a competitive advantage relative to most European countries in terms of energy and labour costs, the industry has struggled to obtain competitively priced, high quality scrap from local scrap suppliers. The international demand for scrap has increased dramatically over the last few years. This has led to an increase in dollar-based scrap prices and a concomitant increase in the share of scrap in the input costs of South African foundries. Moreover, local scrap merchants are charging firms what may be termed the “best export” price they are able to obtain in international markets.

Global markets for aluminium scrap are highly distorted, particularly markets in South and South East Asia. Import duties on aluminium ingots and no barriers whatsoever on the import of scrap in a number of emerging markets are effectively enabling secondary aluminium smelters in these countries to purchase scrap at prices higher than they would otherwise be able to afford in the absence of protection. Local scrap merchants are thus able to export scrap at artificially inflated prices. The “best export” price, therefore, is not equivalent to export parity pricing when one considers the price distortions prevalent in foreign markets. This practice has direct implications for the South African foundry industry and the development of higher value-added activities in certain industries (notably, the automotive sector).

Industry Organisation

There is a general consensus that the South African foundry industry is poorly organised and that the existing institutional structure is hampering the development of a collective strategy necessary to improve the industry’s competitiveness. The industry is represented by the South African Institute of Foundrymen (SAIF) although a number of firms in the industry have more than one affiliation¹⁶. The SAIF is a voluntary, non-profit organisation

¹⁶ Foundries may also belong to the Aluminium Casters Association (ACA), falling under the aegis of the Aluminium Federation of South Africa (AFSA), the National Association of Automotive Component and Allied Manufacturers (NAACAM), the South African Stainless Steel Association, and the Steel and Engineering Federation of South Africa. Affiliation largely depends on the product and casting process used.

with limited financial resources. Only 25% of all firms in the industry – including suppliers – are members. Moreover, SAIF members are involved in a wide range of different activities with little common ground between them beyond certain macro-issues affecting the industry as a whole, such as the supply and pricing of raw materials, access to finance, and the exchange rate. (In the United Kingdom, for example, the Institute of Foundrymen is supported by individual associations representing foundries involved in a specific casting process.)

The Motor Industry Development Programme

The motor vehicle sector is perhaps the best example of a manufacturing industry with a specific government programme designed to support restructuring and improved competitiveness - in the form of the Motor Industry Development Programme introduced by government in 1995. This programme combines an extended tariff liberalisation schedule with an export-import complementation arrangement and incentives to promote a rationalisation of the models being produced, longer production runs, and at the same time greater local manufacture of components.¹⁷

Liberalisation of protection has meant a major restructuring of the sector. Tariff protection on completely built up cars was reduced from over 100% at the beginning of the 1990s to 40% in 2002. Assemblers have rationalised the number of models they have been making and have also progressively moved to exporting the models which are made in South Africa. The aim of this programme was to induce assemblers to focus their operations and to export. It also aimed to develop a more internationally competitive components industry. This has been done through providing incentives to export in the form of matching licenses to import vehicles duty free. A similar programme exists for components.

More specifically, the programme has provided an incentive for the major auto assemblers to invest in developing local components manufacture to ensure local content in their exported vehicles and for the export of components to assembly plants in other countries. Both of these enable assemblers to earn credits for the duty free importation of vehicles. While in the initial years there was a dramatic increase in catalytic converters and seat leather, in recent years there are indications of the development of broader production capabilities. South African production of engines and a whole range of metal and plastic components for motor vehicles has increased. The impetus from the motor vehicle assemblers for local components manufacturers to upgrade their capabilities to meet the demanding standards of the motor vehicle sector has had a major impact on the foundry industry.¹⁸

The evolution of the MIDP programme means that it is estimated that by 2007, 39% more components exports (with 75% local content) will be required than in 2002 for the same

¹⁷ See Barnes, J. R. Kaplinsky and M. Morris (2004) 'Industrial policy in developing economies: developing dynamic comparative advantage in the South African automobile sector', *Competition and Change* (forthcoming); Black, A. (2001) 'Globalization and Restructuring in the South African Automotive Industry' *Journal of International Development*. 13(6), 779-796.

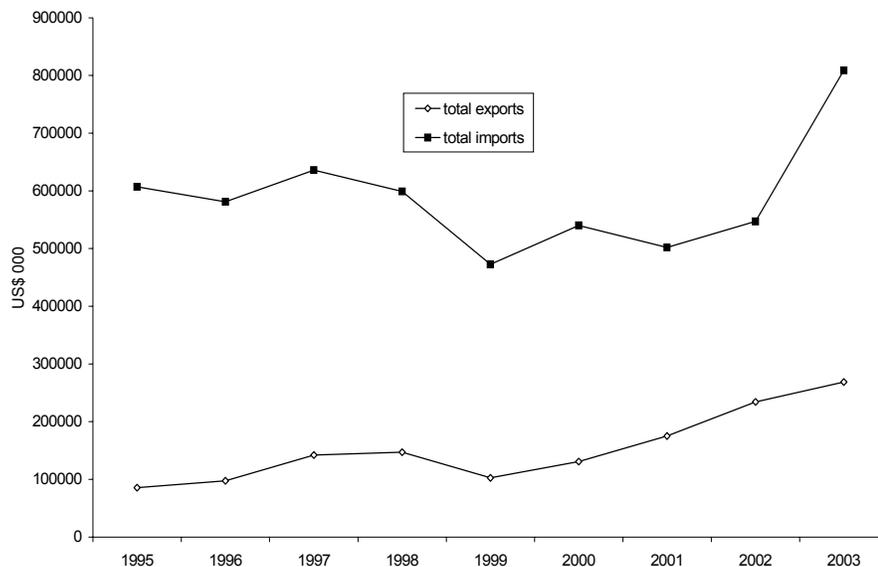
¹⁸ See Phele, T. S. Roberts and I. Steuart (2004) 'Industrial strategy and local economic development: manufacturing policy and technology capabilities in Ekurhuleni', paper presented at DPRU/TIPS Annual Forum, 13-15 October, Cape Town.

level of imports of completely built-up motor vehicles.¹⁹ These dynamics have already meant greatly improved trade performance of cast products for the auto industry (described in section 3.3 below). However, as protection levels continue to be reduced, this stimulus must be translated into an internationally competitive local industry, which relates to the various dimensions of firm and industry capabilities analysed here.

3.3.3 Trade analysis

Data reveals that South Africa is experiencing a trade deficit in almost all of the product groupings under which casting components are classified.²⁰ Although the industry's export orientation has improved – particularly from 1999 onwards – exports as a proportion of total trade have not shown a significant increase because of a concomitant rise in imports (Figure 13).

Figure 13. Total exports and imports of foundry products



Two product groupings have recorded overall trade surpluses since 1995. These are:

- Grinding balls & similar articles for mills, cast of iron & steel other than non-malleable cast iron (HS732591); and
- Hydraulic turbines, water wheels & regulators parts (HS8410).

From 1995 to 2003, these product groupings recorded average positive net export ratios of 0.26 and 0.42 respectively.²¹ Turbojets, turbo-propellers & other gas turbines and engines & motors not elsewhere specified (and parts thereof) were the worst performing categories with average negative net export ratios of 0.95 and 0.78 respectively over the same period.

¹⁹ Mahomed (2004)

²⁰ Note that there are not clear categories for cast products, and so the main product groupings in which products are cast have been selected.

²¹ The net export ratio is measured as a ratio of net exports to imports plus exports, that is: $(X-M)/(X+M)$.

Many product groupings did, however, record significant improvements in the net export ratios. For example, engine components for the automotive sector, pumps, cast articles of iron or steel not elsewhere specified, and cast pipe fittings all improved significantly as a result of increased exports and, in most cases, reduced imports (see Figures 14 and 15). Cast products also appear to be very responsive to the exchange rate changes as the majority recorded improvements in 2001 and 2002.

Figure 14. Trade balance in engine components and cast pipes fittings

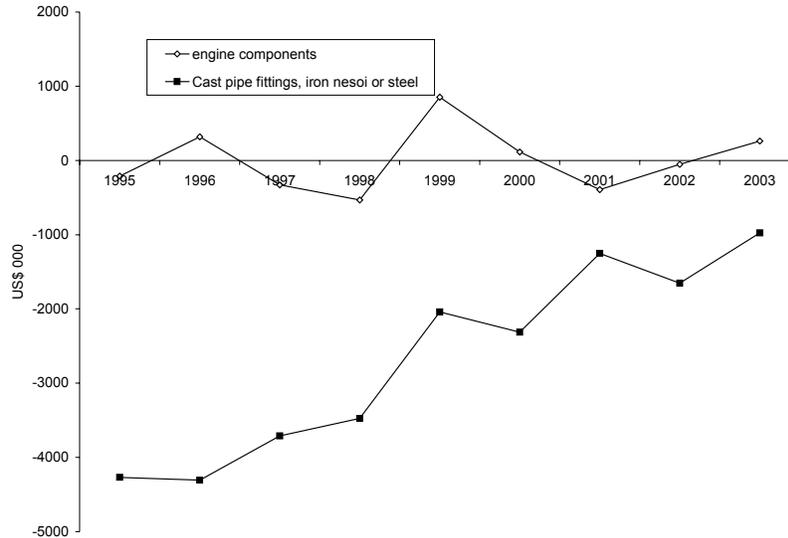
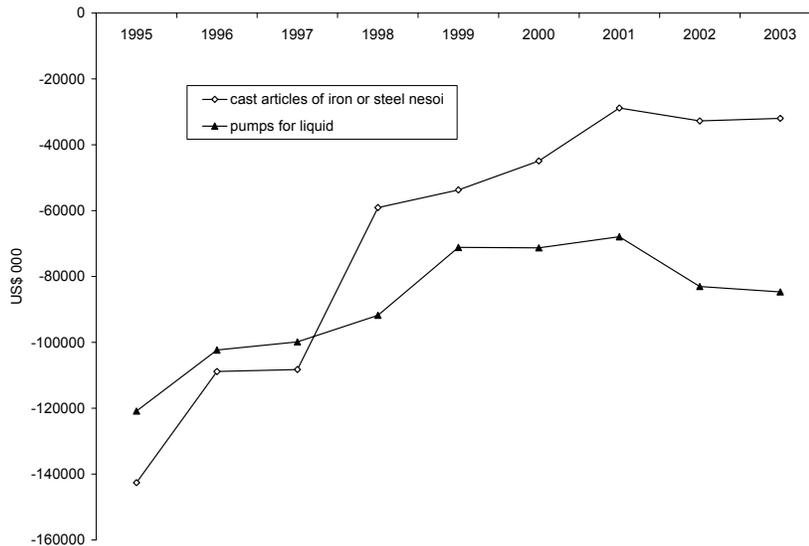


Figure 15. Trade balance in pumps for liquid and cast articles of iron and steel



In 2003, engine parts accounted for the largest proportional share of exports with 41%, followed by spark-ignition reciprocating or rotary internal combustion piston engines (30%) and pumps for liquids, liquid elevators (and parts thereof) (21%). The results indicate potential for increased export orientation in these categories despite recorded trade deficits in the three product groupings in 2003.

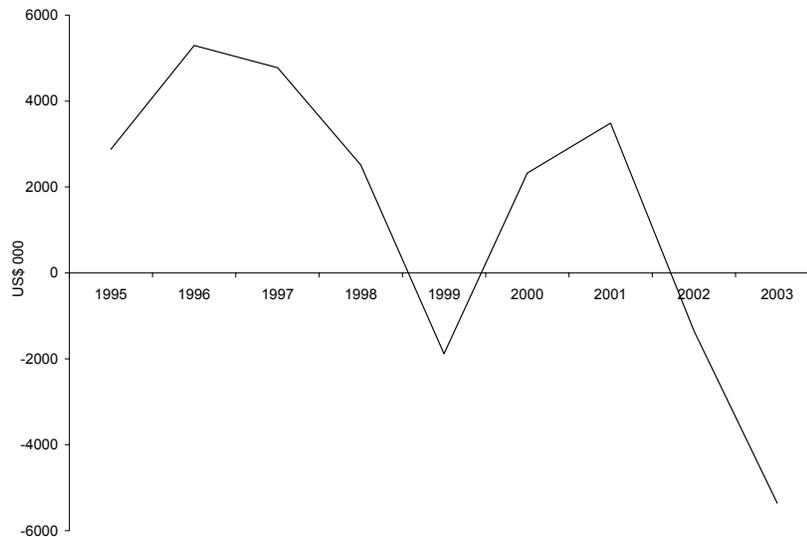
In the same year, turbojets, turbo-propellers & other gas turbines accounted for the largest proportional share of imports with 38%, followed by pumps for liquids, liquid elevators (and parts thereof) (18%), and engine parts (18%). Exports and imports of all categories have been characterised by significant fluctuations over the period of analysis and, hence, it is difficult to tell which categories or groupings have consistently performed better over the entire period.

The very strong export growth of spark-ignition reciprocating or rotary internal combustion piston engines, and cast articles of iron & steel not elsewhere specified, led to these sectors recording a trade surplus in 2003. While engine parts has recorded strong export growth over the period of analysis, the category still reflected a trade deficit in 2003. Nevertheless, overall trade increased by more than 39% in this category from 2002 while the trade deficit itself decreased by just over 2% over the same period.

Comparing 1995 figures with those from 2003, the trade deficit in engine parts has decreased by more than 77%. Exports have increased by over 340% while imports of components in this category have decreased marginally by approximately 15%. It is evident that the export growth in automotive components, which include parts of engine and pistons, is clearly associated with the implementation of the Motor Industry Development Programme, discussed above.

In addition, the data reveal that grinding balls & similar articles has moved from a trade surplus to a trade deficit over the period (see Figure 16). This movement can be explained by the sluggish performance of the mining industry globally, as well as an increase in the competitiveness of similar products produced in India and China. In the South African case, it is evident that foundries producing specialised castings are able to penetrate export markets and remain competitive.

Figure 16. Trade balance in grinding balls & similar articles for mills



3.3.4 Overview of the Western Cape Foundry Industry

Approximately 8% of all foundries in South Africa are located in the Western Cape. The vast majority of these firms (approximately 75%) are small-sized, employing less than 50 people. In total, the industry employs approximately 1330 employees.²² Despite its relatively small size, the industry is dynamic. Turnover growth is positive²³, employment has increased steadily since 2000/2001, and a number of firms have made substantial investments in casting equipment and machinery in recent years.

There are dynamic firms across types of casting process.²⁴ Moreover, dynamism does not appear to be related to firm size, foreign ownership or market supplied. Export orientation is not uniform across firms: firms are either negligible exporters (less than 5% of turnover) or are wholly export oriented (in excess of 90% of turnover). This is in stark contrast to firms in Gauteng where there is a stronger orientation towards domestic markets (that is, where direct exports typically do not account for more than 5% of turnover). While transport costs are significantly lower for firms in the Western Cape, export orientation is largely a function of firm strategy and the ability of firms to identify and exploit niche markets.

Finally, firms in the Western Cape supply castings to a range of diverse markets. In terms of output, the automotive and mining sectors predominate. However, the industry also manufactures castings for the general engineering, electrical machinery, machinery and equipment, medical equipment, ICT, defence, and ship building industries. Consequently, firms using a specific casting process do not necessarily compete with each other directly, particularly in light of the trend towards specialisation in a particular product or product range.

3.3.5 Technological capabilities

The vast majority of firms interviewed have introduced technologically improved castings to the market and/or made improvements to the casting process since 2000/2001. Improvements are both incremental (continuous but small-scale improvements to existing product lines and production processes) and radical (substantial shifts in product lines, the development of entirely new goods, or major changes to the production process). Radical improvements tend to be made on the production process rather than the product itself.

²² This is based on information from the South African Institute of Foundrymen on employment in only the foundry operations of firms. If employment in foundries as a whole in the Western Cape is measured, then employment is estimated to be around 4500.

²³ Four of the six respondents in the key informant interviews reported turnover growth in excess of 25%.

²⁴ There are three common production techniques or processes in casting: sand casting, die casting and investment casting. Sand casting is used to make large components. It is a relatively flexible process: sand casting can be mechanised for rapid production and the moulding sand can be reconditioned after casting. Sand castings generally have a rough finish sometimes with surface impurities and variations. Investment casting is used for the production of complex close tolerance components in a wide range of alloys. Investment casting is a multi-stage process in which sequencing and control assume critical importance. Unlike sand and investment casting, die casting uses a permanent mould. In die casting, the metal is injected into the mould under high pressure. This results in a uniform component, generally good surface finish and good dimensional accuracy. Die casting moulds (or dies) tend to be expensive. The casting processes described above are by no means the only ones but they are the most commonly used. Apart from technical considerations, the choice of process is based on available capital, the quality of labour, and the quality of the working environment.

Firms have also made ergonomic improvements to the working environment, in line with international experience, which appear to have boosted productivity.

Generally, firms do not have a formal research and development (R&D) process. Improvements are largely due to in-house development based on interaction with customers and input suppliers. In addition, major shifts in export orientation by some firms demanded the modification of products and/or process for the export market. As far as testing and certification is concerned, firms tend to have their own in-house facilities for limited (if not the full range of) testing and certification requirements.

In conclusion, there exist clear technological capabilities within the Western Cape foundry industry that can be built upon. While it is true that some firms have well-established links with foreign organisations (for example, Casting Technology International²⁵) or are using a patented production technique under licence from abroad, other firms without such licencing agreements or formal foreign affiliation appear to be equally technologically dynamic and just as proactive in developing their technological capabilities.

3.3.6 Investment

The average age of existing casting machinery and equipment is more than ten years. Nevertheless, a number of firms have made substantial investment in equipment (including ancillary equipment) and machinery since 2000/2001. Key motivations for investment include the need to improve efficiency, product quality, and export competitiveness. Although some firms have embarked on a process of modernisation, this has not come at the expense of labour. Firms acquiring new technology and upgrading their equipment and machinery are generally increasing turnover growth as well as employment growth. Upgrading capital stock, therefore, seems to induce relatively strong dynamic effects with respect to employment growth. However, in line with evidence collected from firms in Gauteng, significant barriers to investment exist for smaller firms, particularly stand-alone foundries that are not part of a larger company.

3.3.7 Skills Development and Training

The average level of employees' education (up to operator level) is between grades 10 and 12. Respondents in the key informant interviews noted that existing levels of education do not impact adversely on productivity but rather present practical challenges to providing on-the-job training. Other challenges, particularly for export-oriented firms, include the lack of awareness of the importance of on-time delivery amongst shop-floor employees as well as the need to ensure quality consistency in the production process. Also, despite the training programmes offered by the WCIF, there is an increasingly limited pool of skilled labour from which to draw. This suggests the need to collaborate closely with technikons and universities to ensure a steady flow of graduates into the foundry industry, through, for example, internship programmes.

A number of firms have developed their own in-house training programmes in addition to the training programmes provided by the WCIF, which focus more on the technical aspects of casting (see below). In-house training programmes are either formal or informal

²⁵ Formed in 1996, Casting Technology International (CTI), a UK-based organisation, provides support, consultancy, and R&D services in both ferrous and non-ferrous casting technology for casting producers and users worldwide.

induction-type arrangements and are intended to equip employees with the very basic skills in his area of work. The time it takes to acquire basic skills (assuming the average level of formal education) depends on the type of casting process: longer in the case of investment casting, shorter in the case of sand casting.

Firms in the Western Cape do not appear to experience any major difficulties in claiming back the skills development levy although the process is more laborious for smaller firms that do not have a dedicated human resources division to perform this task.

The Western Cape Institute of Foundrymen

As noted, the WCIF-run training programme has galvanised local industry and has provided an enabling environment for knowledge transfer and information sharing between firms. The WCIF training programme consists of nine modules covering all aspects of foundry technology including quality control, productivity and production planning, and supervisory management. Each module consists of various chapters and is presented by experienced managers from within the industry itself. The WCIF training programme is MERSETA accredited and could provide a useful model for a national skills development and training programme in foundry technology.

3.3.8 Conclusions and way forward

The Western Cape foundry industry comprises a distinctly heterogeneous set of firms supplying a diverse range of markets. Firms are generally increasing turnover as well as employment, and are embarking upon a process of modernisation. Export orientation is variable but those firms that are exporting are significantly export-oriented. The industry is dynamic and technological capabilities clearly exist to be built upon. Furthermore, the industry is represented by a well-functioning body that appears to have engendered a spirit of cooperation and openness among its members.

While there are indications of a particularly dynamic group of firms within the industry that are recording high rates of turnover growth and are increasing employment, a key challenge is to maintain the growth of these firms, to upgrade the capabilities of other firms, and to attract new entrants. A strong foundry industry is of crucial importance for key industries identified in government's industrial and technology policies, such as the automotive, capital equipment, and aerospace sectors. The relatively sophisticated nature of these international industries means that for South Africa to be an attractive long-term location for production requires local linkages and a framework to support the on-going development of firms' production capabilities.

There are already strong linkages between firms in the Western Cape, particularly in the area of skills development and training. Nevertheless, a framework to deepen linkages and broaden capabilities is needed to ensure the industry's continued competitiveness. This depends crucially on a committed and coordinated approach by industry, government and other stakeholders, including education and research organisations.

3.4 Ship-building and ship repair

Due to the Western Cape's historical geo-strategic maritime position, ship building and repair activities have had a substantial foothold on the landscape for a long time – principally in Cape Town - expanding and contracting as the growing economies of the region, and indeed as the emerging Western Cape Ports, demanded.

Although building ships and repairing them may seem to be similar, they are in fact very distinct. The two vary in business dynamics, competitiveness with regards to inputs, skill issues, technical capabilities, main markets and competition. It is thus found that, while there are many ship-repair companies and relatively speaking, much activity, there is only one active ship building company in the Western Cape.

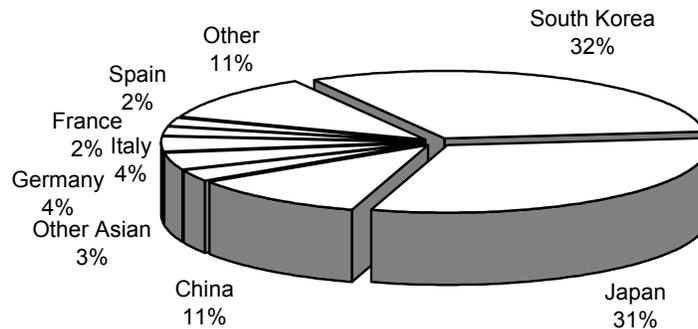
3.4.1 Ship Building

We first examine international trends before assessing the state of ship-building in South Africa and the performance of the main ship-building firm in the Western Cape. This provides the basis for a suggested way forward for the industry.

International Trends

The international ship building industry is vast and fast evolving. In recent times, shipbuilding has changed from a "heavy industry" to become a capital and technology intensive activity. While Japanese, South Korean, Chinese and Western European yards dominate the merchant shipbuilding market, Eastern European and Vietnamese yards are increasingly active, in particular in low and medium complex ships.²⁶

Figure 17. 2004 World Shipbuilding Market Share



World shipbuilding figures are hitting record heights. According to current statistics, the world shipyards delivered 1034 newbuildings worldwide, with a total of 36 million Gross Tons and 21.7 million Compensated Gross Tons (CGT), thus exceeding the previous record set in the 1970s.²⁷

²⁶ Vietnam has commenced its state planned shipbuilding and ship repair industry consolidation (much as China has been doing) and is steadily building competitive capacity. Polish yards have proceeded with relatively quick 'enterprization', establishing strong links to domestic and international suppliers (this is not true for Russian and Ukrainian yards, however).

²⁷ Clarkson Research Inc. 2004

Much of the growth comes from Asia, increasing its already dominant position with a 77% share of the world industry. The leader is South Korea with 32% of world production, followed by Japan with 31%. South Korea's shipbuilding industry completed 229 vessels in 2003, with 6.9 million CGT, a little ahead of Japan, whose yards produced 325 *newbuildings* with 6.8 million CGT.

The duel between these two leaders could soon become a three-way contest, as China's market share has grown rapidly 11.1% with 142 *newbuildings* at 2.4 million CGT in 2003. This is followed a long way behind by the Europeans: Germany (4.1% CGT market share), Italy (3.7%), France (2.3%) and Spain (1.8%).

Special interest sectors in some countries are able to build specifically for their own purposes at greatly subsidized pricing. An example is Spanish yards, which can be awarded 150 trawlers for its fishing fleet at one time by the E.U., using its relatively price-insensitive shipyards.

National Trends

Ship building in South Africa has diminished considerably over decades and is currently limited to one-off projects. Building of new commercial ships in South African has, contrary to ship repair, faced a substantial decline during the recent years, with only small crafts and some harbour tugs and workboats being built.

Nevertheless, the upturn in demand for *newbuildings*, due to a variety of reasons such as the West African oil boom, the expanding usage of regional and local port facilities, coupled with the inherent advantage of the Western Cape with attractive international logistics, world-class standards and the extensive communication and transportation infrastructure of Cape Town. In particular, there is growth potential in the following areas:

- Local & international fishing fleets;
- National & international (specifically African) port vessels (tugs, barges, workboats, patrol boats);
- National/Provincial law enforcement such as the Department of Environment, and Tourism (D.E.A.T.) fisheries patrols boats, Harbour Police, Customs, etc.;
- Scientific commercial (e.g. Optical Fibre cable laying ships)
- Scientific research (e.g. in the South Ocean, proximity of Antarctica, etc.)
- International offshore oil/gas supply & support vessels.

Dormac in Durban has been in discussions with two European Ship Builders, one Dutch and the other Danish, regarding the construction of general cargo ships at the Port of Durban. The Dutch company *Breko* Shipbuilders centres on constructing hulls of up to 150m with final assembling of the new ship being completed in the Netherlands, whilst the Danish company is looking at the building and completion of ships in Durban²⁸.

In Cape Town, Farocean Marine has managed to keep and consolidate its existing varied activity while re-positioning itself in order to expand the building of local (fishing),

²⁸ 'The South African Ship Repair Industry', Wesgro 2002.

provincial (tugs & workboats) and national patrol vessels with government contracts (e.g. D.E.A.T. tender award). It is logical for the South African shipbuilding industry to embrace the growing requirements of fisheries, Port Authorities and national and international offshore oil / gas exploration. The industry has the capabilities to meet these needs, and the advantage of geographical proximity. But, there is a need to continue to improve to meet world-class quality; improving on-time delivery and offering the market internationally competitive prices. This is especially the case if the industry is to compete in, for example, the West African markets.

Company Profile - Farocean Marine (Pty) Ltd.

Farocean Marine is South Africa's leading, most established and best equipped, privately owned shipyard and the Western Cape's sole active shipbuilding shipyard. It produces a diverse range of sea going vessels up to 150 feet, such as Work Boats, Tugs, Patrol Boats, Barges, Fishing Boats, Motor and Sailing Yachts. Its wide range of national and international clients includes Portnet South Africa, foreign port authorities, the fishing industry, offshore/oil industry and the luxury yacht market.

History

Farocean Marine is a continuation of 26 years of shipbuilding expertise. From Cenmarine (a sister company) to Central Installation Works (Pty) Ltd (formed in 1979, concentrating in aluminium and steel boat construction) it developed into a multi-faceted shipbuilding company, developing solid commercial business links internationally and building prestigious and diverse vessels. Farocean Marine was created in 1989. In 1996, the two original founders of Cenmarine were joined by a third partner, as executive chairman and major shareholder.

In the last 10 years the shipbuilder grew from 50 employees to more than 250. 70 vessels have been built, repaired or refitted since 1990. The gradual acquisition of state-of-the-art equipment²⁹ and the enlargement of workshop facilities have enabled Farocean Marine to vastly increase capabilities in meeting international standards of shipbuilding. The company is self-financed. Farocean is currently working at 85% capacity, with the completion of the first of three inshore fishery and environmental inspection vessels for the D.E.A.T. The company believes it has the capacity to double its output in the next 3 to 5 years.

The developmental key *drivers* have been:

- Renowned workmanship;³⁰
- A growing reputation for timely delivery;
- A competitive pricing strategy;
- A full use of a *judicious* working relationship with the biggest (and most successful) privately-owned shipyard in the world (Damen-Holland) for 14 years;³¹

²⁹ Most notably a computerised plasma type cutting machine able to cut plates of up to 25mm thick and 12m long with accuracy measurement of less than .5mm as well as a Swiss made 'Eckold' metal framing machine used to dome and shape plates into compound curves.

³⁰ Farocean has achieved ISO 9001:2000 certification in February this year (2004).

³¹ Farocean Marine previously held from Damen-Holland sole agency for South Africa and was licensed to build world-renowned Damen-designed vessels in South Africa. We understand that the sole agency and

- The company's timely *alignment* with national BEE imperatives,³² and
- The increasing finds of offshore oil and gas, along the west coast of Africa, creating a boom in demand for supply/support vessels as well as tugs, workboats and patrol boats due to increased port activity in nations adjacent to exploration and production areas.

The developmental key *constraints* have been:

- The unrealistically high price of steel;
- The strong Rand places the selling price of fishing fleet vessels at risk of European and Asian competition;³³
- The quasi-absence of government support and the development of country-to-country financing arrangements with countries of the West African coast who are in need of and/or are normally habituated to such international financial mechanisms.³⁴

Cost Competitiveness

In the case of Farocean, labour consists of 15% of total inputs, steel (Lloyd 43A grades) and aluminium are 6% (bought at import parity prices), transport and logistics costs are insignificant, with the balance being engines and equipment, and design. 53% of total inputs are directly imported and consist mainly of motorisation, the engines and related mechanical parts.

Non-Price Competitiveness

To stay competitive, the company must ceaselessly maintain and improve quality to meet and keep world-class standards of manufacture and design³⁵. Throughout the range of products, there are no obstacles in competing on quality or design, as expertise is in-house and appropriate machinery and quality design are imported from Europe. Local marketing efforts are performed 'in-house'; international marketing is obtained through a network of appointed overseas agents; and most design is sourced from within the European Union.

Employment, Skills, Technical Capabilities

The company employs on a permanent basis about 260 people including artisans and unskilled staff. Wages range from R12 to R60 per hour, according to skill and seniority.

license expired and was not renewed, due to Damen-Holland having sought to buy out liquidated local shipyards to start its own operations. This is not corroborated.

³² The executive chairman and his spouse own 50% shares of Farocean Marine (Pty) Ltd., through a shareholding in the company held by the Koena Trust, a black empowerment group. The company states that it 'subscribes to and pursues in earnest the training and integration into technical and management positions of previously disadvantaged persons in shipbuilding and repair'.

³³ This is true for other commercial vessels and for luxury yachts, within the local and export market from competition from other world builders;

³⁴ Protocol finance schemes have been established and successfully utilised for decades by West European (and other) industrial countries in an effort to provide developing countries necessary financing capabilities while boosting their own industrial exports. For African nations, these represent compelling (if not decisive) commercial considerations, when considering heavy capital expenditure, such as acquiring ships and port infrastructure.

³⁵ U.K./Holland standards for fishing fleets and Germany/Holland for Harbour fleets.

New ‘on-the-job training’ recruits stay two to five years to be trained but invariably get ‘poached’ overseas³⁶. Since the former apprenticeship programmes were scrapped no current formal or government-sponsored training is used and Farocean does not make use of the skills development levy. Nevertheless, in-house training is a necessity and new trainees have to be recruited and trained on a continuous basis. Engineers are not employed as all design plans are bought from reputable international design firms. Administration staff is limited to one secretary, one technical manager, a managing director and an executive chairman.

Machinery and technology is readily available overseas. Developing capacity to design and build machinery within South Africa would require prohibitive investment in capital expenditure and is deemed not realistic.

Farocean Marine is sustainable and growing and can employ more than 350 persons at peak times. It has positioned itself to benefit from expanding local and international business in a number of complementary ways. The opportunities in the offshore oil/gas supply & support ships and harbour tug sector are perceived as potential niche markets, and are being investigated.

Way Forward

Tug building in Cape Town (specifically to service the west African growing market) has been advanced as a possible avenue for expansion. The rationale is as follows. While tug motorisation must be fully imported (constituting about 50% of total input), the hull can arguably be *completely* built in Cape Town.³⁷ Moreover, the geographical distance to the potential market for West African Ports gives a competitive advantage over the ‘cheaper’ tugs from Asia.

By far the greatest impediment to export expansion (for example, to other African nations) is believed to be the lack of protocol financing systems. The establishment of comprehensive agreements between South Africa and other African states to facilitate inter-country protocol financing mechanisms to enable export growth is perceived to be crucial in addressing the sustainability of the industry, specifically in exploiting the potentially captive market developing on the west coast of Africa.

3.4.2 Ship Repair³⁸

The Province of the Western Cape possesses three ports of importance: Saldanha, handling 75% of the Province’s cargo, mainly exporting bulk iron ore; Cape Town, handling petroleum products, deciduous fruit, fish and mechanical/electrical appliances and general cargo³⁹, and Mossel bay, a smaller port handling PetroSA (ex-Soekor/Mossgas) oil exploration maritime activities and supporting a fishing industry.

³⁶ The company is systematically strained by ‘skill flight’ to overseas shipyards and has had to put in place and maintain its own in-house training solution. Skilled workers move mainly to Auckland, New Zealand and various destinations in Australia, where South African boilermakers and welders are highly praised and where they can easily treble their South African salaries.

³⁷ Most probably - but not necessarily - designed in Holland. Hull building up to 80 meters in length is already done successfully.

³⁸ Much of the information is drawn from Wesgro (2002) *The South African Ship Repair Industry*.

³⁹ Cape Town’s container terminal is one of Africa’s largest.

Ship repair concentrates in and around the Port of Cape Town. This ‘hub’ is strategically located in geographical proximity of oil, gas and diamond exploration & production fields on the west coast of Africa, and at its southern tip, splits the ‘South Ocean’ between the Atlantic and Indian oceans, providing a port of call to any and all ships, whether laying and maintaining the African telecommunications optic cable, re-hauling national international fishing fleets, repairing military supply and support ships, welcoming tourist passenger ships or providing emergency repair and maritime salvage operations.

In 2001-2002, the industry directly contributed around R500 million to the national economy. It is a labour intensive activity, providing between 1700 to 2000 direct jobs nationally. This number includes both permanent and contract workers, but excludes staff employed by subcontractors and supply firms including the employees of smaller marine engineering firms – and Portnet personnel.

Excluding marine engineer companies and equipment supplier employment, the Cape Town shipbuilding and repair industry employs around 1000 people. This does not consider the very substantial trickle down or multiplier effects with respect to additional businesses and hence SMME employment sustained by a multitude of ancillary activities, further described below.

Table 3. Ship Repair Facilities in the Port of Cape Town

Port of Cape Town: Repair Facilities	Length (m)	Width (m) (Entrance top)	Depth (m) (Entrance sill)	Lifting capacity (Tonnes)
<i>Sturrock</i> Dock	365.0	45.1	13.7	
Robinson Dock	45.1	20.7	7.9	
Syncrolift	61	15.0	-	1 750

The first dry-dock in South Africa dates back to the Port of Cape Town in 1882. Today, the hub hosts internationally competitive facilities with its two dry-docks, the *Sturrock* and the Robinson, a shiplift facility and a dedicated repair quay.⁴⁰ These facilities are summarised in Table 3, above.

Ship repair activity - in terms of number of vessels repaired - has dropped from 521 in 1998 to 423 in 2000. This can be ascribed to the increased number of large oilrigs and ocean going vessels visiting the Port. These vessels take up a larger portion of the ship repair capacity due to their size and the duration of their stay in the repair facilities in the port.⁴¹

As discussed, the ship repair industry’s contribution to the economy is not only limited to the physical repair work done by ship repairers and the direct employment created and profits generated by these firms. Purchases from ship suppliers, equipment and material, and revenues accruing to the port authority for the accommodation of ships and provision of infrastructure must also be taken into consideration. Other than these obvious contributions, a variety of subsidiary tasks are also performed. The ship repair industry includes marine engineering and the supply of marine equipment. Other firms employed in the repair work would be those concerning the hydraulics, electronics, painting and

⁴⁰ *Sturrock* Dock is the largest dry-dock in the southern hemisphere.

⁴¹ Dry-docking repairs can take up to one month; quay mooring/wet docking can be up to 5 or 6 months.

cleaning, repair of propellers and refrigeration equipment, as well as maintenance of fire fighting equipment, electrical works, ships architecture and design and salvage. Equipment suppliers include firms providing and installing navigation, communication and safety equipment, and cargo handling gear.

Furthermore, it is known that ship crews (from visiting oilrigs, cargos, fishing fleets, etc.) spend an average of 10% of their wages away from home. It can be shown that crews visiting the Cape for extended periods for repairs contribute substantially to the local economy.

Ship repairs and shipping services are paid for in US dollars. The strengthening of the Rand has caused a substantial revenue growth per job performed but a lack of competitive pricing has resulted in a loss of turnover in some areas, specifically those involving foreign vessels/fleets whose owners are price-sensitive and whose fleet or ship is mobile.

Estimates of the value of the Western Cape ship repair industry to the national economy range from R 1,218mn in 1999 (Wesgro, 2002) to R1,825mn (Table 4).

Table 4. Contribution of the SA ship repair industry to the economy (2000)⁴²

	R million	as %
Crew Spending	29	1.6%
Port Revenue	36	2.0%
Repairers Revenue	450	24.7%
Purchases from ship suppliers	560	30.7%
Subcontracted repair work	750	41.1%
Total	1825	100.0%

Technology

The ship repair industry is - in terms of general repairs and maintenance of ships - not an industry known for significant technological innovation or development. Nevertheless here are two interesting innovations:

- Dormac, in Durban, introduced a unique cofferdam system of repairing ships without having to enter a dry- or floating dock. Ships can also be repaired without being off-loaded.
- Ultra High-pressure (UHP) water cleaning is another innovation and can replace sand blasting in some instances (sand blasting contributes to significant pollution⁴³).

Markets

Cape Town's repair facilities have gained prominence as the preferred repair centre for various offshore vessels in the West African oilfields since the 1960's. Some of the largest oil / gas reserves are off the coast of Angola and Equatorial Guinea. This is complemented by increased exploration off the Namibian and South African seaboard.

⁴² Source: Smith, A. 'The Economic Value of the Port of Cape Town for the Western Cape', Stellenbosch, 1999 (figures updated and include Cape Town, Saldhana and Mossel Bay. Cited in Wesgro: *The South African Ship Repair Industry*, January 2002.

⁴³ The down side is that UHP water cleaning is capital intensive.

Cape Town is now increasingly regarded as the best repair centre for the offshore oil industry in Africa; the Ports of Abidjan (Cote d'Ivoire) and Douala (Cameroon) being its natural rivals. Offshore diamond exploration and related vessels use Cape Town maintenance, repairs and refurbishment facilities because of practical geographical proximity⁴⁴, as the ships' owners are not price sensitive.

Foreign fishing fleets using the Port of Cape Town as their logistics base currently utilise the Robinson Dock and the Syncrolift facilities to their fullest capacity. These craft spend on average R1 million per ship per call on repairs, maintenance and refurbishment. Due to capacity constraints in the port, the overflow of these vessels is sent to East London. This is not a good alternative to Cape Town, and the lack of capacity to accommodate these vessels may result in a loss of revenue for the country as a whole.⁴⁵ Vessel operators are able to make use of airports for crew changes and there are enough cold storage facilities in the vicinity of the Port to allow vessels to store and tranship their cargoes while being repaired. Tourism is also regarded as a major attraction for many vessel operators.

South African fishing fleets have shown a significant decrease in the last years. One of the most important factors is a decline in quotas for main operators. This influences their revenue and hence their ability to maintain a large fleet.

Lack of Space

The Western Cape loses an average R14 million annually for vessels turned away due to a lack of quay and repair space. It is not only dry-docking facilities which lack capacity: the demand for quay space for wet repairs is also a matter of concern.⁴⁶ A new *shiplift* facility in the Elliot Basin has been tabled within the Port Authority Port Development Framework. Once completed the facility is envisaged to at least double the existing ship repair capacity of the port.

Port Operation

The Cape Town port authority operates on a first-come-first-serve basis and does not necessarily optimise the utilisation of dry-docks. It often happens that small fishing vessels, utilising only a part of the dock when it could have been fully utilised by a larger ship, occupy the Sturrock Dock.

The main concerns of the industry are summed up as follows:

- The ship repairers' ability to meet the global requirements for increasing advanced-quality repair work, performed on time;
- The development of a reliable ship repair labour base - in terms of skill -and the ability to retain skilled employees poses a real challenge;
- A significant barrier to increased foreign earnings will the lack of capacity to accommodate the forecasted growth of 2.3% per annum in the worldwide demand for ship repair. This challenge poses significant investment opportunities. It is thus crucial to attract investment for future expansion;

⁴⁴ Geographical proximity means two to four days' sailing from production fields to Cape Town harbour.

⁴⁵ These ships may in fact 'skip' elsewhere altogether (Singapore, South America, etc.)

⁴⁶ A reefer vessel, carrying fresh cargo, and being repaired, will be in a dry dock for about one month but will require further five months' wet repairs on a repair quay.

- Infra-structural decay of existing facilities and the lack of certain parallel port facilities such as amenities, shops, communications have been cited as a serious concern;
- The pricing of dry-docking and Port services are thought to be excessive in relation to services provided and compared to other major Ports outside South Africa.

International trends

The global demand for ship repair is driven by a number of general factors other than the port-specific forces behind the different market segments described in the above section. The first of these factors is the ageing of international fleet. Secondly, increased number of ships calling at a given port will also influence the use of that port's ship repair facilities. Lastly and most importantly is the cyclical nature of freight markets.

The world shipping market is currently in the middle of the cycle past the breakeven point on the upturn. This means that ship owners and operators will start to receive better rates, have better margins and therefore spend more money on the repair and maintenance of their craft. In times of economic downturn, operators will tend to lay-up some of their excess capacity and scrap the oldest vessels. This affects ship repairers businesses.

Fleet growth over the medium to long term is expected to accelerate, supported by stronger Asian economic growth, and rapidly expanding container and cruise fleets. Aggregate ship repair costs are expected to reflect ageing problems associated with vessels over the age of 15 years. It is important to note that over 46% of the current world fleet is 15 years old or older.

The most significant impact on forward demand will be attributable to the large-scale container fleet expansion programmes. Underlying repair demand from the fully cellular container market is expected to rise by 24.3% from 1999 to 2005 and by a further 43% from 2005 – 2010. The two largest sectors, tankers and dry/bulk combination carriers are expected to show an increase of about 18% to 2010 in contrast to a 24% decline from the general cargo fleet.

National Trends

The South African southern coastline and in particular the Port of Cape Town are situated in a geo-strategic node which not only cannot be sheltered from the international shipping arena, but also experiences the ups and downs of the world ship repair industry powerfully and with immediacy. The projected intensification of the industry will affect local businesses and service providers. To surf the world growth 'wave' three major challenges have to be addressed:

- Labour

The ship repair industry is largely labour intensive and is therefore greatly influenced by labour legislation and trends, such as the basic conditions of employment and skills development policies. The input cost of labour is one of the most important factors influencing the competitiveness of any country's ship repair facilities. The pricing, conditions, skills and expertise levels of labour are in direct competition with world-class

ports⁴⁷. The local price of labour greatly influences the competitiveness of South African ship repair.⁴⁸ The fact is that South African labour is generally higher priced than in Eastern Europe and the Far East where the major competing ship repair yards are situated.⁴⁹ This negative trend is compounded with generally poorer labour productivity indices. This poses a seemingly intractable problem for the coming years, and will challenge both Government and the industry to seek new solutions.

- Capital Investment

Investment is required in expanded infrastructure to relax the current constraints (notwithstanding the potential for more efficient use of the existing facilities). In addition, expansion would also require investment in capital equipment by firms.

- Reputation

A world-class ship repair reputation is gained, maintained and improved upon through a great amount of dedication to quality ship repair work, providing fast turnaround times at very competitive prices (for example, Singapore in the 1990s). A reputation is built over a considerable period of time and is not merely a once off marketing exercise. A reputation can be tarnished overnight by factors outside our control (world market forces) or with the ambit of the local industry (poor labour productivity, unstable labour relations and strikes, fall in expertise, etc.).⁵⁰ Special care must be taken to maintain and grow Cape Town's world-class ship repair industry.

Profiling companies

From key informant interviews it was confirmed that a panoply of ship repair services are provided by many small, specialised, sub-contracting operations and by a small number of larger companies offering comprehensive round-the-clock services. The services offered can generally be categorised as follows:

- Shiprating: outfitting cabins involving joinery, marine woodwork, etc.;
- Steel work: boiler making and welding;⁵¹
- Piping: steel and copper;
- Electrical work;
- Rewinding motors and generators;
- Heavy machine shop and mechanical engineering;
- Engine fitting;
- Rigging: hoisting - crane/chain block lifting;

⁴⁷ Such as the port of Singapore.

⁴⁸ The price of labour is the price rendered to a client, usually in US Dollars, and must necessarily include the total labour cost to company.

⁴⁹ On occasion, foreign artisans have been brought on-board foreign ships calling at South African ports, disguised as crew to do repair work illegally. This has an obvious detrimental effect on the local repair companies.

⁵⁰ One case in point is that of emerging small businesses competing for a share of the growing market in ship repair. These smaller companies may not possess the necessary skills or infrastructure to adhere to tight time and quality constraints placed on them by international ship owners. This can have a detrimental effect on the hub's ship repair reputation

⁵¹ X ray testing of welds, general analysis and chemistry tests are performed locally

- Salvage & Diving⁵² generally include pollution abatement, propeller polishing, sealing of stern tubes, pumping, underwater blanking of apertures and hull damage repair work,⁵³
- Dry-dock marine services;⁵⁴ and
- Offshore services.⁵⁵

While there are many smaller companies performing any of the above tasks, few are large enough to tackle a full range repair and maintenance services to sea going vessels.⁵⁶ They compete for a variety of national and international clients including Portnet South Africa, foreign port authorities and/or governmental agencies, the fishing industry, the offshore oil/gas exploration and production industry and the diamond industry.

History

Most small companies have been around for less than 15 years. One of the large firms is 105 years old and the other is a subsidiary of well-established South African industrial giant Dorbyl. Both have always been situated in the heart of Cape Town harbour doing ship repair work and have maintained world-class capabilities in the industry.⁵⁷ It must be stressed that the ship repair industry is - relatively speaking - a technically moderately simple activity, as it does not require hi-technology inputs or complex engineering expertise.⁵⁸

The Western Cape's ship repair experience and expertise has been drawn from decades (if not centuries) of operations and give the industry an advantage.

Key drivers:

- A world-class workmanship;
- The ever increasing finds of offshore oil and gas along the west coast of Africa, creating a boom in the oil industry support vessel sector accompanied by accrued Port activity from nations adjacent to the finds, needing tugs, workboats and patrol boats, supply & support vessels;

⁵² Atlatech Divers & Salvors cc. is the most established diving & salvage company in the province and holds accreditation certificates from the principal classification societies.

⁵³ Diving services include cleaning ships underwater, polishing propellers, changing cathodic protection, blanking-off sea valves and stern seals, surveying, inspecting and diving as part of salvaging vessels run aground, sunken, damaged, and preventing oil pollution at sea, on beaches and in harbours.

⁵⁴ Dry-dock marine services include attending to vessels to clean, high-pressure wash, abrasive blast and paint, pumping of cargoes, slops and sludge, cleaning of tanks (cargo and fuel) for gas free, hot work, inspection, using a range of modern equipment such as vacuum blasting, ultra high (2400 bar) pressure water blasting, conventional blasting, airless spray, etc.

⁵⁵ Offshore services can be rendered at (international or other national) assigned refit ports with in port 'riding crews', as well as riding oil tankers, barges and rigs between ports to clean and de-muck cargo tanks, strip out accommodation, clean tanks, undertake painting works, etc.

⁵⁶ Globe Engineering Works, the largest ship repair company in the Western Cape and DCD Dorbyl, the second largest ship repair company, both having a painting and dry-docking marine services subsidiary (which they share equally), also within the Port of Cape Town. Both are privately owned.

⁵⁷ Globe Engineering had operations in Walvis Bay's Namport, which it could not sustain after the Port reverted to the Namibian Government (this was allegedly due to skill base depletion).

⁵⁸ Ship repair has hardly changed over the decades and centuries and by and large utilises technical know-how that has been around for decades and is freely available internationally.

- The ever-increasing number of international and national fleets needing repair work;⁵⁹ and
- For the price-insensitive international clientele rounding the Cape and requiring emergency or convenient repair work, Cape Town is the best destination.

Key constraints:

- Logistical inconsistencies leading to unduly fluctuating turnaround times;
- A stronger rand places the price of repair services for the price-sensitive but geographically bound international market in hard competition from west African Port of Douala (Cameroon) and Abidjan (Côte d’Ivoire);
- The constant threat of the Ports of Lobito (Angola) and Walvis Bay (Namibia); and
- When ships need *major* repair⁶⁰ but are *fully mobile*, their owners will choose to sail to China, Singapore, Korea or Vietnam where major repair costs are much lower⁶¹.

Cost Competitiveness

Through key informant’ interviews it was established that labour consists of roughly 60% of total inputs and steel is 10% to 15%, generally bought at prevailing Iscor prices. Transport and logistics costs are insignificant (2 to 3% of total inputs), the remaining inputs being consumables (e.g. oils, greases, etc.)⁶².

Non-Price Competitiveness

To stay competitive, the larger companies must ceaselessly maintain and improve quality to stay at world-class standards. There are no obstacles in competing with quality or design, as expertise is obtainable ‘in-house’ and appropriate machinery is available locally. Local marketing is in-house and international marketing is gained through marketing offices and/or appointed agents in London (being the centre of the shipping business), Aberdeen, etc. No architectural and engineering design work is required, as approved plans of the ships must be supplied by their owners.

Employment, Skills, Technical Capabilities

Small companies will tend to be ‘one man operations’ and employ up to five persons to suit their specificity. The bigger companies’ employee base is roughly composed of 50% artisans,⁶³ 25% unskilled staff,⁶⁴ 20% salaried/administrative personnel and 5%

⁵⁹ From 10 years of age a vessel is line to necessitate major maintenance/repair work.

⁶⁰ Including engine/motorisation repair and steel sub-structural work.

⁶¹ Even without the ‘Strong Rand’ syndrome being taken into account, South African Rand or U.S. Dollar ship repair prices remain much higher than Asian prices, due to high South African labour and steel costs.

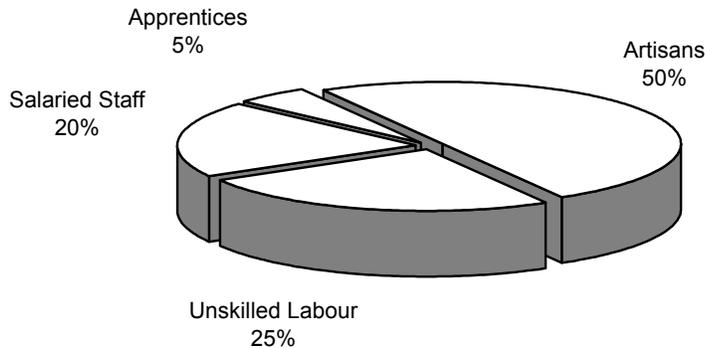
⁶² Most consumable materials are sourced locally;

⁶³ Boilermakers, certified welders, riggers, electricians, etc.

⁶⁴ Including cleaners, clerks, tank keepers and security personnel

apprentices or learnerships.⁶⁵ There is a growing trend to use of labour brokers, allegedly due to inflexible labour regulations.⁶⁶

Figure 18. Western Cape Ship repair labour profile



Wages within principal companies range from R13.78 per hour for unskilled to a highest of R43.53 per hour, according to skill and seniority. An artisan's starting salary will be R36.62/hr. Smaller companies tend to pay a premium for labour, due to a considerable amount of skilled employee poaching among themselves and the necessity to retain trained key personnel. The bigger companies will tend to contribute to the skills development levy. There is no need for engineers 'in-house' in any repair firm, as all internationally approved plans of vessels must be supplied by the owner of the vessel prior to repair. HIV/AIDS does not affect the employee base and hardly any cases are reported or made known.⁶⁷ The impact is not known and not monitored.

When it comes to investment decisions, the companies are all self-financed and their main areas of investment are necessarily linked to keeping abreast with international standards of good practice and technological know-how.⁶⁸ Machinery and technology are widely available within South Africa.⁶⁹

Summary

The captive markets for the Western Cape ship repair industry are not stable and important enough to sustain the industry's existence, alone. Foreign markets have to be sought and exploited. The smaller ship-repair companies are by definition dependant on a few larger

⁶⁵ Globe Engineering has currently 266 permanent staff including 140 artisans, 50 unskilled labour, 50 salaried personnel and 12 apprentices on Merseta apprenticeships (Fitting & Turning and coded electrical rewinding) for which the company gets a payback from Seta, once the apprentice has reached a specific milestone.

⁶⁶ 8 years ago Globe had 560 employees, 50 % of this are now non-permanent staff recruited by labour brokers.

⁶⁷ This is attributed to the level of social education of the employees.

⁶⁸ As there is very little in the way of technological advances as such, except maybe in technologies involving electronics, which are negligible.

⁶⁹ When machinery or technology is not available locally, the simplest, fastest and most reliable product or service import source will be Europe.

companies, which are - to a great degree - dependent on world ship repair demands⁷⁰. Nevertheless, as these smaller companies support and complement the services of a few well-established businesses, and *all* are mutually benefiting from a combined geographical advantage, being in the Cape, their existence is – at least in theory - not at risk. Strengthening sustainability through fluctuating economic situations necessitates that innovative and practical ideas be implemented satisfactorily.

Although skills training problems are not deemed insurmountable, the industry is strained by substantial skill flight to overseas shipyards. Apprenticeships and learnerships are allegedly often inadequately provided and some companies find no alternative but to establish ‘in-house’ skill training schemes permanently, adding to operational costs. Ship repair is traditional employer sector of note. To maintain and grow present employment levels, labour considerations must be prioritised, to keep abreast with global contexts.⁷¹ It is advanced that this sub-sector has the potential to at least double its workforce within the next five years, provided there is an appropriate policy framework concerning skills training, skills retention, and the flexibility required in an industry where demand varies significantly month to month.

The industry must remain positively poised to take full advantage of the regional boom in support vessel, workboats & tugs maintenance & repair. It must also reposition itself to ensure it is capable of absorbing the projected world ship repair market growth for the next 10 years, at least. Failure to achieve these two objectives can draw away business to other countries, irretrievably.⁷²

Notwithstanding the fact that the single most positive factor going for the Western Cape ship repair industry will always remain its geo-strategic position, the above challenges can be met through maintaining impeccable track records of expertise and workmanship, constantly striving to improve turnaround times⁷³ and making genuine efforts (by Portnet) to (re)align Port service provision⁷⁴ to international norms and pricing structures.

Last but not least, aggressive private sector and governmental ‘selling’ is important.

⁷⁰ Smaller companies - more often than not - may not possess the right combination of capital strength, expertise experience and adaptability to withstand the volatility of fast evolving international ship-repair markets.

⁷¹ According to Globe Engineering MD Mr. Brian Bain, from 1998 to 2004, turnover has been more or less the same in US Dollar terms. In that period labour costs have increased 140%, steel 140% and NPA (National Port Authority) Dry Docking fees 140%. Furthermore, 25 years ago, South African ship repair was 20% cheaper than Singapore; Singapore is now 20% cheaper. Cape Town used to be much cheaper than Abidjan (Côte d’Ivoire) for repairs, today both are at par.

⁷² It has been suggested earlier that ship repair competition from Asia, on a scale and rapidity and adaptability unheard of last century, will be putting increasingly intense pressure on the South African industry.

⁷³ Ocean going vessels adhere to committed charter dates and therefore any delays in the maintenance of vessels cost the owners exorbitant penalties (e.g. as much \$ 30 000 per day).

⁷⁴ Dry-docking & Port management fees are allegedly too high against poor or rudimentary services being offered (cranes not functioning, no amenities, etc.); poor port/dry dock management is impeding on optimum usage of facilities therefore contributes to decreasing turnaround times substantially.

3.5 Boat building (Yacht manufacture)

Boat building in the Cape peninsula is well established and enjoys a solid reputation. It has experienced strong growth in recent years due to the combination of location, world-class expertise and, in the recent past, a weak local currency.⁷⁵ At least 90% of boat production is destined for export, principally to the United States, the Caribbean, and the European Union. Export demand is tapering off, as the industry is currently challenged with export difficulties due to a very strong rand.

3.5.1 International Trends

There are many countries building cruising, racing, sailing and motor luxury yachts and pleasure boats. World trends are steered mainly by consumers in the U.S. and the EU. Demand trends are complex and based on numerous factors as diverse as growth of the luxury market, the international sports arena, world economic downturns and upswings affecting the international mobility of capital investment and financing, and the fast-tracking of employment friendly tourism strategies boosting charter companies.⁷⁶

Boat building trends are set mostly by the availability of technical and managerial expertise, appropriate materials, plant and machinery and a proficient workforce. World production is distinguished between 'traditional' boat building and modern one-off projects, using high-end technology and new synthetic materials and novel techniques.⁷⁷ Salient features of producing countries pertinent to the South African context are summarised below.⁷⁸

Australia: Australia is a world leader in design and production of high quality fibreglass, composite and aluminium motor, sailing and light commercial boats. The recreational boat manufacturing industry is both viable and dynamic. Whilst the economic downturn in the early 1990s saw many boat building businesses close down, the companies that operated efficiently and produced first-rate product survived and prospered. Even after freight, insurance and marketing costs are taken into account, Australian recreational boats are very price-competitive internationally.⁷⁹ The Australian boat-building workforce is highly skilled, innovative and efficient. The main export sectors are aluminium dinghies, sports boats and motor cruisers, sailing boats (race and cruising), aquatic sports equipment (canoes and kayaks), and marine equipment.

⁷⁵ 120% growth from 1994 to 2001 according to 'Boat building Industry in the Western Cape Province of South Africa', February 2001; Wesgro Background Report 'Sector Fact Sheet: Boatbuilding', Wesgro, 2001.

⁷⁶ A detailed analysis on 'The Potential Market For Luxury Yachts: trends and forecasts' by Nautica Editrice S.r.l. Via Tevere, 44 - 00198 Roma (Italy); <http://www.nautica.it/superyacht/505/mercato/eng.htm>.

⁷⁷ There are numerous market studies: 'The World Market for Yachts and Other Vessels for Pleasure or Sports Including Rowing Boats and Canoes: A 2004 Global Trade Perspective', 'The World Market for Inflatable Vessels, Inflatable Rowing Boats and Inflatable Canoes: A 2004 Global Trade Perspective', 'The World Market for Sailboat excluding Inflatable Sailboats: A 2004 Global Trade Perspective' Source: Icon Group International, Inc. Boat Building and Repair Industry, Published by Global Industry Analysts May. 1, 2002

⁷⁸ 'The 2003-2008 World Outlook for Boat Building and Repairing' Market Research Report, ICON Group International, November 2002, Product Code: R307-2488

⁷⁹ 'Australia Internet Report: Online Sport - Yachting/Boating Industry' Market Research Report, Hitwise, July 2002 ref: R411-0135

Canada: Canada, being the main boat building industry partner of the United States (see below), is the source of about 60% of U.S. imports (about US\$1billion). It is the home of the world's largest 'Personal Water Craft' (or PWC) manufacturer.⁸⁰ Many American firms have purchased Canadian boat building concerns in the past 10 years.

France: The French are renowned for their innovative and highly technologically advanced naval design capabilities.⁸¹ They are also world leaders in mass-market production of sailing and motor yacht for the budget-oriented boating market.⁸²

Italy: The country traditionally holds one of the best reputations for quality yacht design and luxury construction.⁸³

New Zealand: Relatively recently New Zealand put in place a model programme, similar to a partnership, between Government and the co-ordinated boat building industry. This resulted in massive industry growth, supporting more than 500 companies with over 5000 permanent jobs.⁸⁴ The outlook for New Zealand boat builders is good and the number of people employed in this occupation is expected to remain stable or increase moderately over the next two to three years. In 2003, the marine industry exported \$525 million worth of boats and equipment and New Zealand's marine industry is expected to double in size by 2015.⁸⁵

New Zealand now exports a diverse range of marine vessels and equipment and several overseas boat builders are now contracting New Zealand shipyards to build their boats. New Zealand is also the world's fifth largest *super yacht* builder. Other expanding areas include the production of racing yachts and marine hardware, and the repair and maintenance of luxury vessels. However, the demand for boat builders specialising in wooden boats is expected to remain stable over the next years. Technology has affected the work of boat builders at the design and building stages. Computer-aided design (CAD) software is used to design the boats, allowing a greater amount of accuracy in this area. Materials that boat builders use, such as high tech resins and fibreglass reinforced composite materials are forever changing and increasing accuracy is essential to keep low building costs and retain high international standards. Approximately 60% of the boat building industry is located in the Auckland region, although large boat building facilities are also located in Hamilton, Tauranga and Whangarei.

United Kingdom: In the United Kingdom there are an estimated 185 boat builders, 2 manufacturers of base engines for marine applications, and 10 companies which modify bought-in base engines for marine use.⁸⁶ The overall annual UK production amounts to

⁸⁰ PWCs or 'small water-pump-propelled crafts' including 'Jet-skis' represent the main trend in the U.S. recreational marine product market.

⁸¹ Specifically in the sailboat racing field

⁸² 'The Pleasure Boat Market in France - July 2002' International Market Research Ref: 1682

⁸³ Recreational and Pleasure Boats Market in Italy - September 2003 *International Market Research Ref: 2266*

⁸⁴ Establishing the Boating Industries Association and launching an expansive export drive in 1990. Source: *The Boatbuilding Industry in the Western Cape Province of South Africa*, Wesgro Background Report, Feb 2001.

⁸⁵ *Statistics New Zealand*. Statistics on boat builders include data on surfboard makers

⁸⁶ The British Department of Trade and Industry, Jun 22, 2004; *UK Internet Report: Online Sport - Yachting/Boating Industry* Market Research Report, Hitwise, July 2002 Ref: R411-0520; 'UK Internet Report: Online Watersports Industry' Market Research Report, Hitwise, July 2002 Ref: R411-0531

£490 million and the total number of people employed in the companies concerned is 5,600. The UK is one of the "big four" countries including France, Germany and Italy which account for two thirds of European industry retail spending and 63% of the revenue. The UK is the largest European producer of inboard / stern drive motor boats over 12m.⁸⁷ The UK's current recreational boat park consists of approximately 1,500,000 craft, of which 15% are motor yachts, 45% are sail cruisers with motors, and 40% comprise dinghies and similar small craft.

The United States of America: By far the biggest producer and consumer of boats in the world, the USA had total boat and watercraft sales of 1,276,800 units in 2003.⁸⁸ Craft produced range from jet boats, inboard and outboard motor boats, canoes, sailboats, dories, skiffs, and kayaks.⁸⁹ Although overall US boat building demand and retail expenditure has been stagnant or declining over the past years, it hovers around \$19 billion and the industry employs 60,000 nationwide.⁹⁰ The number of boat building businesses exceeds 3000⁹¹. Even though about 32% of U.S. Dollar sales are attributed to four major producers, the industry is considered to be relatively unconcentrated. The largest 50 companies only control 61%. Industry consolidation is an ongoing factor as in the general economy, where industry leaders buy smaller firms to increase market breadth (downstream integration) and smaller 'niche' companies are merging to accomplish the same goal.

3.5.2 National Trends

The bulk of the South African boat building industry is in the Western Cape Province and Cape Town's contribution to the national boat building industry has increased from 65% in 1993 to 75% in 2000 (Figure 19).⁹² This industry is principally involved in meeting export demand.

⁸⁷ E.U. environmentally-friendly changes to rules governing the design and manufacture of a wide variety of new recreational craft, including sail cruisers, motor cruisers, motor boats and narrow boats come into force on 30 June and will affect all European manufacturers, to a greater or lesser extent, specifically barriers to entry in community member states.

⁸⁸ U.S. National Marine Manufacturers Association (NMMA), in their 2003 statistical abstract

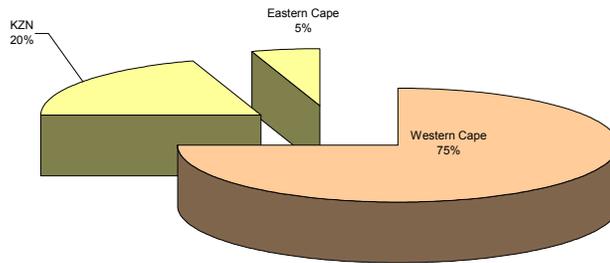
⁸⁹ The rigid inflatable boat (RIB) segment of the U.S. recreational boating industry is in its infancy when compared to that of the E.U.

⁹⁰ It is estimated in Rhode Island and Florida – big boating states - that US\$ 40,000 'worth of' boat provides one permanent job.

⁹¹ *'The U.S. Boat Building and Repairing Industry: National Trends and Characteristics'*. An initial Report of the Center for Competitive Analysis. July 2000.

⁹² *The Pleasure Boat Industry in South Africa - October 2002* International Market Research Ref: 1681. Reasons advanced are (in order of importance) that key suppliers to the industry are based in Cape Town; that Cape Town possesses a strong maritime tradition and culture; that skilled labour is available and that industry leaders are present within the Province, generally within reach of the Cape Town Municipality and harbour.

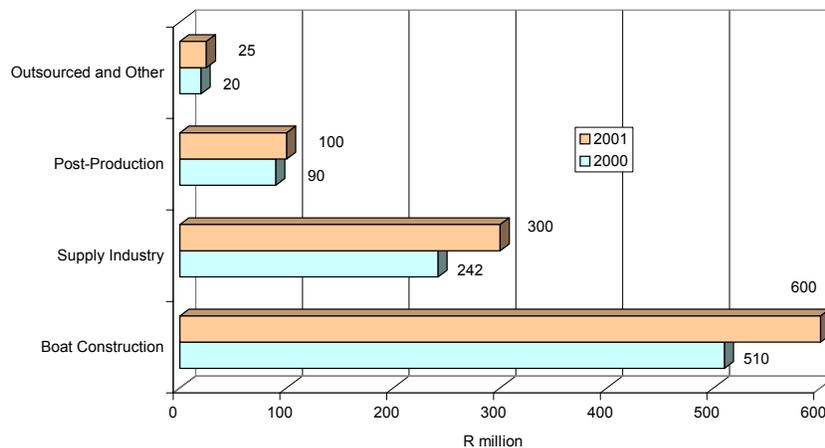
Figure 19. Boat Building - Contribution to the Economy in 2000



Source: Wesgro 2001.

Luxury, cruising and/or racing boat building involves a host of technologies, products and skills all related to the core of boat construction. The main sub-sectors can be identified as: the *supply* industry, *post-production* industries, and *outsourcing* activities. The importance of corollary activities to actual boat construction work is demonstrated in Figure 20, below. Companies in these three sub-sectors vary widely in business dynamics. Some firms specialise on one product for one boat builder (e.g. stainless steel railing), some for many firms outside boat building (e.g. furniture, sports clothing, custom clearing, etc.), some integrate many products for one boat builder (e.g. mast makers designing and manufacturing complex rigging for one racing sailboat, sail and canvas makers, special chandlery, etc.) and some for many firms. Thus the sub-sectors create linkages between boat building and other industries.

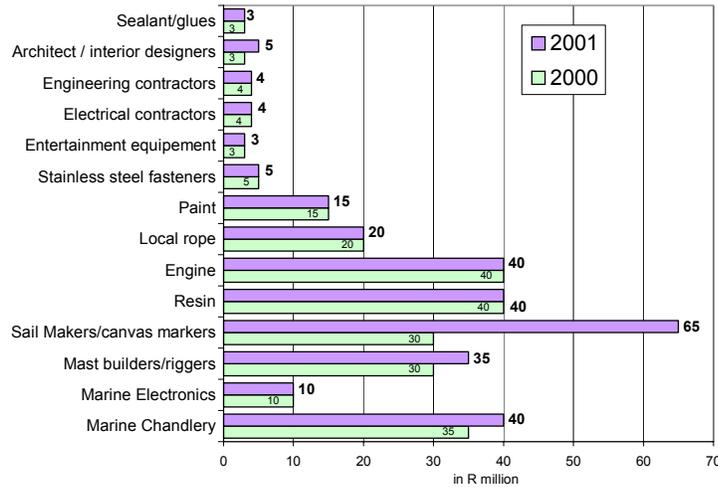
Figure 20. Sub-Sector Contributions



Source: For 2000 - Boatbuilding Industry in the Western Cape Province of South Africa, Wesgro, Feb. 2001; for 2001 - Boat building Sector Fact Sheet, SABBC & Wesgro Survey, 2001
 Note: Rm 862 (2000) to Rm 1,025 (2001) = +19%

Between 2000 and 2001, only three supply industries contributed to the annual increase: naval architecture & interior design, sail making & canvas markers, and mast builders & riggers (Figure 21). The fact that no other supply industry is developing warrants further study.

Figure 21. Values of Supply Industries



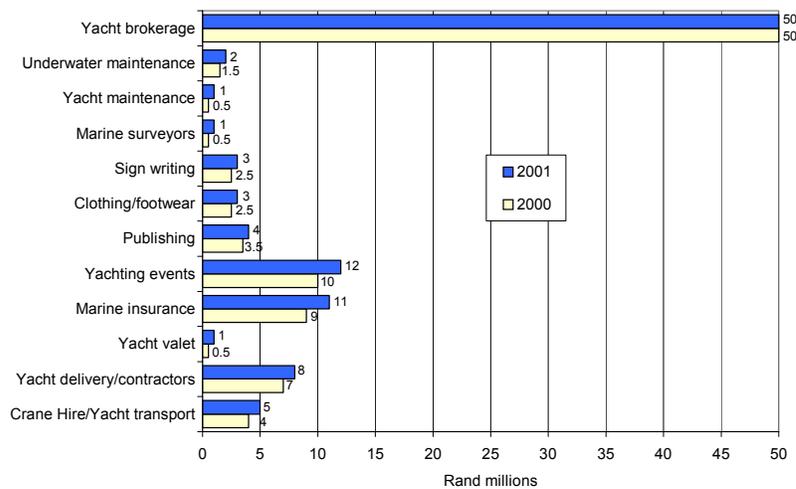
Source: For 2000 - Boatbuilding Industry in the Western Cape Province of South Africa, Wesgro, Feb.

2001; for 2001 - Boat building Sector Fact Sheet, SABBC & Wesgro Survey, 2001

Note: Total in 2000: Rm 242, Total in 2001: Rm 289 = 20% increase

All post-production industries values were on the increase, except Yacht Brokerage, which stayed at R50 million (Figure 22).

Figure 22. Value of post production industries



Source: For 2000 - Boatbuilding Industry in the Western Cape Province of South Africa, Wesgro, Feb.

2001; for 2001 - Boat building Sector Fact Sheet, SABBC & Wesgro Survey, 2001

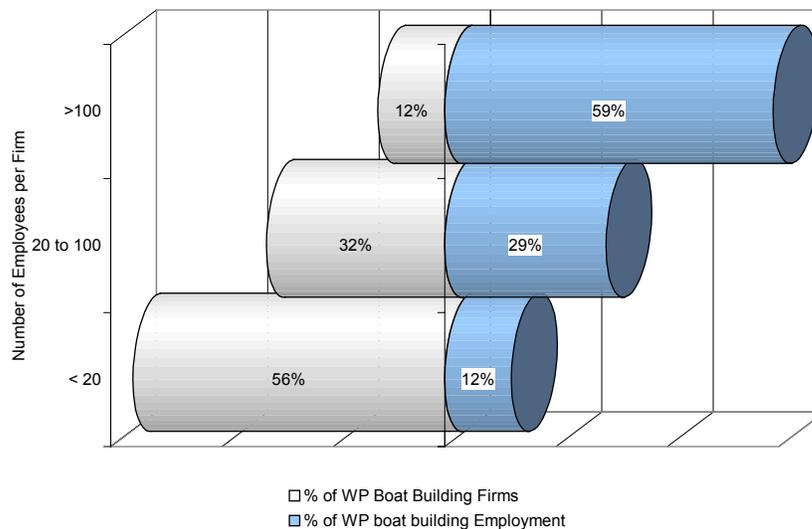
Note: total in 2000: R91.5mn, total in 2001: R101mn = 10% increase.

Employment

The Western Cape boasts 70% of national boat-building employment, 75% of all boat-building firms, 85% of all supply and post production activity, 85% of total industry value generated and 90% of all supply and post-production employment. There are about 55 boat construction companies in the Western Cape, with 38 in the Cape Town Unicity⁹³ and approximately 140 supply, post-production and outsourcing companies. They employ 1800 people directly in boat building and an additional 1400 in the supply, post-production and outsourcing process.

Notwithstanding the numerous small firms, most employment is concentrated in a few large firms. The top three companies employ up to 250 people each, which account for 70% of boat building turnover and a large proportion of employment (Figure 23).⁹⁴ A greater proportion of employment, however, is accounted for by medium-sized firms in post-production activities (Figure 24).

Figure 23. Western Cape Boat Building Employment Distribution & Firm size

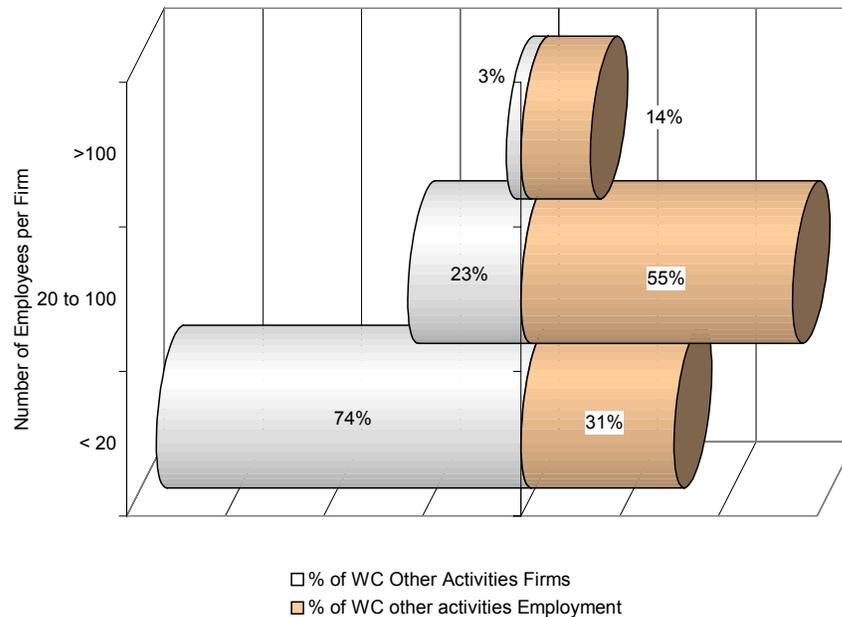


Source: *South African Boat Building 2003 Export-driven growth and award-winning craftsmanship*, Draft Sept. 2003 SABBC

⁹³ 'South African Boat Building 2003 Export-driven growth and award-winning craftsmanship', Draft, Wesgro, Sept 2003

⁹⁴ They are Robertson & Caine, Voyager Yachts and Southern Wind Shipyards, the former two producing high-end cruising catamarans for the charter industry and the latter superior luxury cruising yachts.

Figure 24. Western Cape supply & post production: employment distribution and firm size



Source: South African Boat Building 2003 Export-driven growth and award-winning craftsmanship, Draft Sept. 2003 SABBC

Employment is divided almost equally between management (32%), skilled labour (36%) and unskilled labour (32%).

Exports

90% of finished goods are exported against 35% of material inputs being imported. Export destinations vary whether the products are sailboats (British Virgin Islands, U.S., Brazil, E.U.), motorboats (some E.U., Southern Africa), Inflatable craft (Western countries), rowing craft (U.S., E.U., Southern Africa). The Caribbean is a big destination for charter yachts made in Cape Town.

Foreign importers of South African boats choose South Africa over other boat building countries primarily for the quality-for-price ratio of construction and dependability. But, this is now at risk due to the strength of the currency. The big three manufacturers depend solely on American/Caribbean charter companies who, as the currency stays strong, run the risk of moving large contracts to more price competitive countries. The main challenges for a medium to long term industry-wide strategy are in improving the quality and reputation of local productions while substantially bringing the cost of manufacture down, even with the disadvantageous Rand/Dollar exchange rates.⁹⁵

⁹⁵ As New Zealand have done very successfully; the New Zealand industry's employment growth is something to be admired, as compared to the UK.

Aiding firms penetrate export markets is one of the main areas of support to firms. However, problems have been experienced by some exporters with the DTI's Export Marketing and Investment Assistance scheme (EMIA). Trade and Industry South Africa (part of the DTI) does assist exporters at South African diplomatic missions. Wesgro supports exporters in securing export credit guarantees and low interest loans from the Industrial Development Corporation (IDC).

3.5.3 Way Forward

The Boat-building industry is a South African success story which has been realised without co-ordinated action. Issues of skills, and appropriate support measures to overcome obstacles for small businesses and in penetrating export markets, are important in a sustainable development path for the industry and long-term employment generation. To maintain and develop the South African industry from its current base, requires pluralistic vision and innovative action plans concentrating on:

- Reducing the price of local and imported materials and components, including possibly through a duty-free import for export programme.
- Reducing labour costs and improving quality through a proper training and skills development strategy for the industry.
- Support for product development, and related research.
- Direct government assistance for high value exports, as fitting with the priorities of the DTI's Integrated Manufacturing Strategy, including export finance.
- Co-ordinating the separate actors of the industry around a common goal.

4. CONCLUSIONS AND IMPLICATIONS FOR REPOSITIONING

Conclusions and possible ways forward have already been identified for each of the sub-groupings analysed above. In this section we briefly review these findings and comment on black economic empowerment as it applies to the metals and engineering industries. We then highlight selected areas of opportunity in more detail. The way forward for each grouping is drawn together in a matrix form in the final section 4.3.

4.1 Summary, and a broad approach to industrial regeneration, growth and repositioning

Overall, the broad metals and engineering industries have been performing poorly in the Province as also nationally. There is little the Province can do regarding the macroeconomic impacts on industrial performance, such as the strength (and volatility) of the currency. The far-reaching restructuring brought about by policy reforms in the past ten years means that now is a crucial time to plan for expansion – both regeneration of some of the more traditional industries and new growth. The liberalisation of the economy meant the pressure of adapting to increased international competition, and a tightening of macroeconomic policies including high real interest rates. This period is over. The tariff reductions are essentially complete, and Government is expanding capital spending, while real interest rates are expected to gradually decline.

The Province has clear advantages in the context of South Africa's integration into the international economy related largely to geography – in simple terms coastal locations are in a better position to take advantage of opportunities from international trade, technology and production networks. The Western Cape also has a relatively good skills base compared to the country as a whole. This has been reflected in the better performance of the metals and engineering industries in the Province. In particular the Province's performance in transport equipment reflects the growth of boat-building. The metals and machinery groupings has also performed well in terms of value-added. This partly reflects the capital-intensive growth of steel production at Saldanha, but employment trends have turned up in the past three years, and our analysis indicates the potential for sustained growth of downstream metal products and machinery activity in the Province, of which the foundry industry is a crucial component.

The ways in which international integration impacts on the provincial economy, and the impacts on different groups such as low skilled and high skilled workers and different economic sectors, depends to an important extent on actions by government. Broad-based manufacturing growth depends on the patterns of competitiveness in the Provincial economy. Competitiveness in the context of being able to deliver on design, quality and delivery dimensions requires vibrant firm clusters and effective local institutions. In the absence of an appropriate framework the Province will continue with exports of unbeneficiated metals and in niches such as yachts, with relatively limited returns to the wider economy.

The broad approach here is in line with the thrust of government's industrial, trade, technology and skills policies. The challenge is to ensure effective implementation. This relates to building/developing effective local institutions and to information gathering, analysis and dissemination. Together this will mean that Provincial government is able to play a crucial co-ordinating role – building linkages between different programmes,

ensuring coherence and consistency, and identifying and removing bottlenecks. This is also very important if government attention is to be directed to less high profile sectors and industries, which may have much greater potential to absorb low skilled labour and thereby contribute to poverty alleviation. By comparison, an investment marketing approach will inherently be drawn to higher profile sectors. We are not arguing that these be ignored or downplayed, but instead place greater emphasis on co-ordination and ongoing assessment to ensure consistency of programmes with Provincial government's priorities.

Our analysis indicates examples which demonstrate the broader potential for industrial growth. Aside from the obvious case of yachts, the development of the foundry industry in the Western Cape is striking. The growth has been partly catalysed by the dynamism of the auto sector, despite the absence of a major OEM in the Province. In addition, the growth has been built on the development of inter-firm co-operation including specifically on training. This contrasts with the failure of the industry at the national level to develop a coherent training strategy, something which it is currently working on using the Western Cape's experience. The foundry industry is also significant as it produces important intermediate inputs to a wide range of other manufacturing sectors, including machinery and equipment. It is not particularly labour-intensive, but neither is it especially capital-intensive. Rather, investment in up-to-date capital equipment goes hand-in-hand with being able to deliver on product specifications and, as evidenced in the Western Cape, significant employment growth.

Our analysis, however, also indicates that there is great diversity within sub-groupings and that firm-level considerations are very important. By this we mean the range of factors which relate to building firm production capabilities, including the organisation of production, firm strategy, access to finance (especially of small firms) etc. Benchmarking is one tool by which these factors can be addressed. It demonstrates to firms what can be achieved, and motivates to learn from best practice among their peers. We recommend its broader adoption and the foundry industry is a possible one to explore as firms are aware of its impact in the auto sector and are already engaged in inter-firm communication.

From our analysis, five main planks in an approach by the Province are suggested:

- Address **cost competitiveness** issues (including steel prices); these are impeding the performance of labour-intensive, relatively basic products.
- Action-oriented plans to ensure that **policies for skills and training** are being effectively implemented – are firms using the skills levy, are local institutions providing the appropriate courses etc.
- Monitoring of the various **technology initiatives** and identifying where Provincial and local government facilitation can ensure the potential gains are realised (including the National Tooling Initiative, Advanced Metals Initiative etc.).
- Mechanisms to build inter-firm communication and co-operation, such as **benchmarking** (which we specifically proposed for foundries).
- Selection of a small number of **target areas** where government action can facilitate significant expansion, of which ship repair and ship-building are examples.

A note on Black Economic Empowerment

Black economic empowerment has not been addressed in the above analysis, and yet it is clearly a crucial element on which Government is expected to deliver. The main levers to promote black economic empowerment directly are where government has ownership rights (as in mining) and/or where government and parastatal's procurement is important for an industry. A third area is where charters are being negotiated with targets such in financial services and information and communication technology. These are generally national initiatives. At the provincial level it is important that they be monitored on the ground, for example, in terms of steps taken by banking in providing access to banking services.

In the case of metals and engineering industries, a dynamic and broad-based industry is perhaps the biggest contributor to black economic empowerment, through employment, skills upgrading, and the growth of small and medium enterprises owned and run by historically disadvantaged persons. Ensuring the skills development framework is effective is a crucial component here.

Where specific initiatives for improving firms' capabilities and building strong local clusters are adopted, black economic empowerment is an important dimension. There are various mechanisms to achieve this, including specific support for the entry and growth of new firms and/or through conditions attached to firm support such as the provision of finance.

The procurement by the Provincial government is one more direct lever. However, government is not a major buyer of the output of the metals and engineering industries. Possible exceptions are in structural steel and ship-building. In ship-building local port authorities are important customers, and the major producer is a black empowered firm already. In structural steel, the purchases have effect as part of construction expenditure. Empowerment criteria could be developed here, to the extent that they are not already in place.

4.2 Possible initiatives and interventions

- ***Steel pricing***

The negotiation by national government of a developmental pricing model for steel (to be extended to other basic metals and chemicals also) will mean that downstream activities which are currently uncompetitive (both in relation to imports and exports) will become progressively more competitive depending on the phasing agreed on. If it is similar to the deal already in operation in motor vehicles then it implies an approximately 20% to 30% reduction in steel prices from the import parity levels. Taking advantage of this requires other constraints to firm growth and new firm entry being relaxed. The growth of downstream metal products activities will increase local demand for steel and reduce the amount that Iscor has to export – meaning a win/win outcome. (Essentially this is about the elasticity of demand for steel, which as an input relates to the competitiveness of downstream firms and their ability to respond.) Given the labour-intensity of metal products activities and their relatively low skill requirements it would be appropriate for a task team to examine obstacles to expansion

as part of discussions around increased beneficiation of steel from Saldanha (and Duferco).

- ***Bench-marking for foundries***

Foundries are at the heart of manufacturing. They make intermediate inputs for motor vehicle, machinery and aerospace industries amongst others. A strong foundry industry is thus important for the broader based growth of manufacturing. A crucial element of improved performance is continued attention by firms to their competitiveness in terms of design, quality and delivery. Firms can also make huge savings in terms of better management of inventories. Benchmarking is an important tool to foster continued upgrading by firms across different dimensions of the organisation of production. It can also facilitate sharing of information by firms and the development of stronger inter-firm linkages. The auto industry benchmarking initiative has played an important role in developing components manufacture in South Africa. A logical extension is to the foundry industry, especially as some foundries are already members of the auto club. The Western Cape foundries have led the way in co-operating over training programmes, and there is potential for this to be developed into a more organised industry cluster.

- ***Ship repair***

It appears that the Western Cape is missing an opportunity in this area. Dramatic increases in shipping indicate greatly increased demand for repair services. This is an area in which the Province has developed capabilities and there are no insurmountable technology requirements. The biggest obstacle is simply the capacity and organisation of the relevant infrastructure. Improving service will further add to the reputation and set in place a virtuous dynamic.

- ***Ship-building***

While competition among Asian producers is fierce, there is a clear market niche which the Province could exploit in smaller vessels such as tugs and harbour craft, targeted particularly at the west African market including oil and gas. The distance from Asian producers provides an inherent advantage to the Western Cape. The only producer is currently performing well and has potential for expansion. Entrants could be local, but also European firms given the ongoing importance of sourcing design and engines from major multinational companies. An important obstacle is the availability of finance schemes to facilitate the purchase of these craft by other African governments. The development of the industry also clearly fits within Nepad.

- ***Boat-building (Yachts)***

The challenge in the yacht cluster is to build on the success of the cluster. This largely involves generic actions to break bottlenecks and facilitate firm growth. Of additional note is the need to learn from the experience of countries such as New Zealand that created massive industry growth through a co-ordinated boat-building plan. The establishment of the South African Boat-builders Business Council and more recently the Cape Town Boat-building and Technology Initiative are to be welcomed in this regard.

- ***Technology and skills development***

There is a range of Government technology-related initiatives, and these initiatives have already involved interaction at provincial level. The question to be answered by the Province is to what extent are local actions required, such as related to the activities of local institutions (including universities and technikons). The National Tooling Initiative and Advanced Metals Initiative are both of great importance in this regard.

Skills development is similar. The present structure appears to mean that local industry groupings are required to take forward the necessary steps of standards generation, accreditation etc. Where the industries are not well organised there is a leadership vacuum. Poor industry organisation tends to exist where there is a greater proportion of smaller firms and where firms are in less integrated or 'advanced' industries. These are also often industries absorbing unskilled labour and where training will facilitate employment generation. There is therefore a leadership and facilitation role for government. It should be noted that the Seta processes operate at a national level, however, local industry action (as exemplified by foundries) can be a more effective push to move them forward. In addition, the provision of training requires appropriate local institutions and courses.

These areas are clearly not exhaustive, and the broad area of machinery & equipment was not assessed. Possible additional plans could involve targeting aerospace where the success of auto related firms in the Province indicates the existence of conditions for such a sector. This would mean close engagement with the Advanced Metals Initiative, aerospace firms, and study of the Brazilian experience which South Africa is seeking to replicate at a smaller scale.

To restate the core thrust of our research - to develop industry as a whole the Province should focus on how to effectively play a ***co-ordination*** and ***facilitation*** role to ensure the maximum benefit from existing policy initiatives. Gathering and analysing information is a crucial component of such a role. Interventions for the growth and repositioning of industries such as ship-building require concerted work to identify in more detail the market opportunities, and measures required to exploit them.

4.3 Way forward for industry sub-sectors – matrix

	Sector specific	Cross-cutting national	Cross-cutting provincial
Basic metals	Support expansion, infrastructure Local beneficiation Steel pricing deal: - national - provincial pricing deal for secondary exporters	Steel pricing deal to move close to export parity pricing Effective admin of Seta's skills development framework (esp for smaller firms) - Appropriate modules - Local training providers using modules - Alignment of tertiary education institutions DTI incentives marketed and utilised: - firm expansion - exporting - clustering Market province's strengths to be DTI priority areas; identify DTI priority areas in Province	Benefit from coastal location: - export markets - international techno & learning; - integrate into international production chains Improve regular collection and analyse of info: - industry action - strategic choices by govt Marketing province to create identity in metals & eng Support local clusters, with learning & upgrading through benchmarking: - co-ordinate with local implementation of national techno initiatives
Metal fabrication	Build clusters in areas of opportunity: - auto & components - aerospace - tooling - tank containers - ships etc Upgrading firm capabilities Skills development Inv in new machinery Ensure effective use of govt strategies	AMTS: technical centres and innovation networks → establish sites in Province (provide matching funding to leverage)	Identify export markets and facilitate firm exports Financing protocols to ensure exports by WC firms on equal footing
Foundries	Improve capabilities through benchmarking Techno services R&D Sector clustering (incentives, competitiveness fund)	AMTS: - Adv Metals Initiative (incl foundries) Tooling initiative: support local cluster, and link local institutions BEE: conditions linked to state support; support for new firms Tertiary education/research institutions working with industry	Infrastructure development plan, especially in development of port Effective utilisation of infr by Portnet Link with tertiary institutions on R&D Monitor use of Seta provision of funding
Ship-building and ship repair	Major export opportunities: - protocol financing mechanism for W. Africa - mkt penetration – oil & gas New firms and expansion of existing firms Attraction of FDI Metal-working Design Production costs: - steel, labour, infrastructure Effective management of ports – Portnet Improved service offerings Marketing of province	AMTS: - Adv Metals Initiative (incl foundries) Tooling initiative: support local cluster, and link local institutions BEE: conditions linked to state support; support for new firms Tertiary education/research institutions working with industry	Infrastructure development plan, especially in development of port Effective utilisation of infr by Portnet Link with tertiary institutions on R&D Monitor use of Seta provision of funding
Boat-building (yachts)	Sector clustering (incentives, competitiveness fund) Co-ordination of skills, investment support, R&D support Broaden base, increase employment Techno services Supporting bus services	IDC lending to local firms to expand capacity Infrastructure development – by Portnet, Spoornet	Link training & education with types of skills required by industry Interface with tertiary institutions providing appropriate training Costs of labour: public transport, skills development

Appendix. Companies interviewed

Ajax Manufacturing
Akura Manufacturing
Allcast Foundry
Andrag Machinery
Castco
CISCO
Dorbyl Shipyards
Duferco
Farocean
FMC Engineering
Gearings Foundry
Globe Ship Repair yard
John Thompson Boilers
Orca Baths
Petrel
Pro-edge Tools
Smit Terminals
Stainless Yachting Supplies
Wesgro
Western Cape Institute of Foundrymen