Industry Supply Analysis: Deliverable 1

Ferrous Metals Downstream Sector

September 2014
Table of Contents

Executive Summary ............................................................................................................. 3
Research Methodology ........................................................................................................ 4
Overview of the South African Steel Industry .................................................................... 7
  Upstream Steel Industry .................................................................................................... 7
  Primary Steel Imports and Exports .................................................................................. 9
The Downstream Value Adding Steel Industry .................................................................... 9
  Value Added Imports and Exports ................................................................................... 13
  Skills Analysis .................................................................................................................. 14
  Technical Skills Analysis .................................................................................................. 14
  General Skills ................................................................................................................... 15
  South African Steel Industry Supply Structure ............................................................... 15
  Industry Associations ......................................................................................................... 17
  Import Tariffs on Steel Products ...................................................................................... 19
  Competition Commission ................................................................................................. 19
  COSM ............................................................................................................................... 20
  Industry Segmentation ..................................................................................................... 21
Fabricated Structural Steel ................................................................................................. 22
  Roofing and Cladding ....................................................................................................... 25
Wire Products ...................................................................................................................... 27
  Tube and Pipe Products ................................................................................................. 32
  Fasteners .......................................................................................................................... 34
  Alloy Steel Products ....................................................................................................... 37
  Black and Bright Bar ........................................................................................................ 38
  Pressure Vessel Equipment ............................................................................................. 41
  Hot Dip Galvanizing Industry ......................................................................................... 43
Stainless Steel ..................................................................................................................... 47
Foundry Products (Including Valves) ................................................................................ 51
  Valves Market .................................................................................................................. 51
  Rail Sub Segment ............................................................................................................ 52
  Drums and Packaging ..................................................................................................... 53
Strategic Analysis of the South African Value Adding Steel Industry .................................. 55
  Porter’s 5 Forces .............................................................................................................. 55
  Suppliers’ Analysis ........................................................................................................... 55

1
Executive Summary

The steel and engineering sector contributed R335 billion to the South African economy in 2013 and employed on average 291 700 people. 48% of this production is for the local market with a value of around R150 billion. The rest of the products are exported and hence contributes to South Africa’s balance of payments and foreign currency earnings.

This document provides an overview of the downstream steel beneficiation supply industry in South Africa. Information about the downstream industry structure is also provided. From the research it has become clear that although there are a limited number of primary steel products, there are many end-use applications and products. However, the overall value adding downstream steel industry is facing very similar challenges and hence similar interventions could help greatly to improve the entire industry.

The South African value adding steel industry is part of the global steel industry and with relatively decreasing sea borne costs, improved manufacturing capability in Asia and a general over supply of products South African manufacturers have to do all they can to protect local markets and expand into the new growth markets in Africa.

Key value adding downstream sectors include in this analysis include fabricated structural steel, wire products, tube and pipe products, fasteners, speciality alloy steel, pressure vessels, stainless steel products. Other important downstream products not included in this analysis include automotive components, domestic appliance manufacturing, forging, tooling products, rail products and drums and packaging. The reason why some sectors are omitted is discussed in more detail in the report. South Africa (primarily through the dti) has implemented a number of support initiatives that has benefited a large part of the downstream steel industry. The time is now right to explore further competitive steps to boost local production, increase skills development and job creation and ensure expanded export activity.

As a result this document seeks to provide clarity to the end reader as to the current context of the industry, without highlighting key opportunities, challenges, trade analysis or industry boosting initiatives. This will be done in later assignments. The main aim of this document is to describe the downstream value adding steel supply industry in South Africa.

A large portion of this report is based on extensive online and telephonic interviews and hence extensive information is provided on how the industry views its own local capability and outlook. Lastly, this document helps to clarify how steel moves from one supplier to the next through the value chain and to indicate the key application areas for steel in South Africa.

From the research it has become clear that that the South African downstream steel supply industry is under increasing global pressure and that various intervention measures are needed to support and build this cornerstone industry of the South African economy.
Research Methodology

The following report is written based on information attained during a process of comprehensive industry research. The methods used to perform this research are discussed in detail below.

**Figure 1: Research Methodology**

### Secondary Research

Merchantec Capital used extensive secondary research to identify key stakeholders, quantify global markets and provide background to the research. A number of internal databases were also used for additional analysis.

### Primary Research

Merchantec made use of a number of techniques to perform detailed primary research into the steel industry, this allowed important first-hand information about each sub-sector to be gathered.

1. **Selection of sub-sectors**
   Merchantec contacted a number of industry experts as well as key association leaders to determine an appropriate breakdown of the sub-sectors. This was further confirmed in later interviews with industry experts as well as in responses to the supply side questionnaire. Additionally to this secondary research, based on previous research reports as well as SARS tariff codes was performed which confirmed the findings.
The final selection of sub sectors was as follows.

- Fabricated Structural Steel (which includes roofing and cladding, transmission pylons, and renewable energy structures)
- Wire Products (including cable products)
- Tube and Pipe Products
- Fasteners
- Speciality Alloy Steel
- Pressure Vessels
- Stainless Steel
- Automotive Components (not part of this analysis)
- Domestic Appliance Manufacturing (not part of this analysis)
- Forging (including valves) (not part of this analysis)
- Tooling products (not part of this analysis)
- Rail Products (not part of this assignment)
- Drums and Packaging

2. Supply Discussion Guide

Merchantec developed 2 supply side discussion guides. The first was aimed at the industry associations to provide insight into the overall industry, identify the major players and provide insight into the challenges facing each sub sector. The second discussion guide was developed for individual companies in each sub-sector and covered information about the individual company as well as their perception of market conditions. Both questionnaires explored current incentives and the uptake thereof. More than 70 telephonic and face to face interviews were conducted across the associations, primary steel suppliers, large and small downstream manufacturers and industry specialists. The discussion guide was developed to facilitate discussion and not to be completed as a survey.

Since there are more than 3 000 companies represented under the engineering and metals industry the research is not aimed at providing statistical analysis of the industry. The research approach is based on the premise that the associations will be able to provide a holistic overview of each sub-sector while the largest companies in each sub-sector were targeted for company specific views.

3. Expert interviews

The main method of research for the report was in the form of highly detailed expert interviews with a number of highly experienced, senior individuals from each subsector. This included stakeholders at the main industry associations as well as discussions with the largest participants in each sub-sector. These interviews were guided by responses to the questionnaires mentioned above. Throughout the report the findings of “industry experts” will be referenced as it is not appropriate to reveal individual sources in a report of this nature.

4. Workshops

As part of the project Merchantec was requested to facilitate a number of key stakeholder workshops on behalf of the dti. The workshops are being completed as shown below.

Table 1: Workshop Schedule
<table>
<thead>
<tr>
<th>#</th>
<th>Date</th>
<th>Focus Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>29 Nov 13</td>
<td>Industry Associations</td>
</tr>
<tr>
<td>2.</td>
<td>26 Feb 14</td>
<td>Demand Participants</td>
</tr>
<tr>
<td>3.</td>
<td>15 May</td>
<td>State Owned Enterprises</td>
</tr>
<tr>
<td>4.</td>
<td>11 June</td>
<td>Trade Unions</td>
</tr>
<tr>
<td>5.</td>
<td>Still to be conducted</td>
<td>Government Departments</td>
</tr>
<tr>
<td>6.</td>
<td>Still to be conducted</td>
<td>Merchantec Feedback</td>
</tr>
</tbody>
</table>

Information collected during these workshops was continuously fed back into the project for deeper insight.

**Research Output**

The final deliverable will be a series of industry documents with insight into the supply, demand, trade analysis as well as growth opportunity and challenges analysis.

**Limitations and Challenges of the Research**

Various challenges were faced during the research project including relatively low levels of willingness by companies to participate in the research. The main reason given for this by companies “is a loss of trust in governments’ ability to develop incentives and structures to support the industry properly”.

A second very frustrating element has been the companies’ fear of the Competition Commission and a general refusal to discuss market data as a result of this. Although many industries in South Africa are under close supervision Merchantec Capital has not yet before seen such an outright refusal to discuss any quantitative aspects of the industry.

Communication within the industry has been severely curtailed as a result of the various ongoing investigations of the Competition Commission and hence many of the respondents did not have a complete understanding of the overall steel industry in South Africa beyond their own experiences, and were reluctant to comment on the market.

Most of the big steel companies do not focus on a one sub-segment in South Africa, and will do business across the various categories.

The assumption was made that the information provided during the primary research process by the participants was correct, unless it is evidently incorrect.
Overview of the South African Steel Industry

Upstream Steel Industry

Whilst the upstream steel industry analysis is beyond the scope of this report, the following is provided for context. The South African steel industry is very small compared to the global steel industry and in most cases represents less that 0.5% of the global industry. The global steel supply industry has grown faster than the demand for steel products over the last 10 years. It is particularly new capacity in China and India driving the investment. Globally 1 523 million tons of steel was produced in 2013. Global demand has been recovering since the market crash in 2009. Demand for steel products has been increasing in excess of 5% since 2011 and is expected to reach 8.2% in 2014. It is expected that over a billion tons of steel will be produced in China and Oceania alone in 2014. Final products containing steel have increased by 25% since 2009. At present there is over 300 million tons of overcapacity in the primary steel industry resulting in very intensive price competition. All major steel producing nations are looking for export opportunities to absorb over capacity and as a result there is a major focus on beneficiation as much as possible before export.

The steel industry starts with a strong iron ore mining industry. The extraction stage involves the primary stage of mining and producing an ore concentrate. In 2010, the South African iron ore mining industry produced approximately 54.8Mt of iron ore. South Africa is one of the world’s top 5 exporters of iron ore after Australia and Brazil who both have about a third each of the global market. The domestic market’s full demand of approximately 10Mt of iron ore is supplied by the iron ore mining companies and the remaining volumes are beneficiated at a low level before being exported. In 2010, South Africa exported approximately 42 million tons of iron ore and this constitutes about 5 per cent of the world’s iron ore exports. The iron ore mining industry consists of three established players, namely Kumba, Assmang and Evraz Highveld Steel and Vanadium. The largest constraint in expanded iron ore export is a bottleneck in the transportation of additional product via rail (Sishen Rail) and limited capacity at the Richards Bay export terminal.

The South African steel industry consists of 6 steel manufacturers which include ArcelorMittal South Africa (with a staff contingent of 14 500), Evraz Highveld Steel and Vanadium, Scaw Metals, CISCO, Cape Gate Pty Limited, SA Metals, Unica, Agnisteel and Columbus Stainless Pty Limited. ArcelorMittal South Africa (previously Iscor) is the largest steel manufacturer in South Africa with a total of 4 plants with a (combined capacity of 5.7 million tons). ArcelorMittal South Africa is the only steel manufacturing plant using the blast furnace process. Columbus Stainless Pty Limited is South Africa’s only producer of stainless steel flat products. Scaw Metals, CISCO and Cape Gate Pty Limited are using the Electric Arc Furnace (EAF) steelmaking process. The EAF production process uses scrap metals and not iron ore as the primary source of feedstock. South Africa manufactures two distinct types of steel products, carbon steel, which accounts for 97.0% of the industry output, with stainless steel accounting for the remaining 3.0%.
In 2011 South Africa produced 7.7 million tons of crude steel which decreased to 6.9 million tons in 2012 but increased to 7.2 million tons in 2013 in line with global growth. South Africa is ranked nineteenth in terms of global crude steel production and is the largest producer on the African continent, producing more than half of continent’s steel output.

**Table 2: Crude Steel Production in South Africa 2006 - 2013**

<table>
<thead>
<tr>
<th>Year</th>
<th>Million Tons Produced</th>
<th>Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>9.6</td>
<td>2.13</td>
</tr>
<tr>
<td>2007</td>
<td>8.99</td>
<td>-6.4%</td>
</tr>
<tr>
<td>2008</td>
<td>8.15</td>
<td>-9.3%</td>
</tr>
<tr>
<td>2009</td>
<td>7.48</td>
<td>-8.2%</td>
</tr>
<tr>
<td>2010</td>
<td>7.62</td>
<td>1.9%</td>
</tr>
<tr>
<td>2011</td>
<td>7.7</td>
<td>1.0%</td>
</tr>
<tr>
<td>2012</td>
<td>6.94</td>
<td>-9.9%</td>
</tr>
<tr>
<td>2013</td>
<td>7.2</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

Source: World Steel Association

The primary carbon steel products and semi-finished products manufactured in South Africa include flat and long products and also stainless steel products (primarily flat products). The South African primary steel manufacturing industry has been on the decline since 2006 although many of the sub-segments have shown growth after the financial crisis. A key reason for this is increased input costs (such as electricity, transportation and labour) and reduced production capacity as a result of poor maintenance. Cost cutting has been the main aim of the primary steel manufacturing industry globally driven by the financial crisis. The world demand for steel containing products has increased by 25% since the large downswing in demand in 2009. The demand for steel products in Africa is also rising rapidly and is creating new export opportunities for local suppliers. There are big expectations...
for government sponsored infrastructure projects and urgent rollout of these projects will help the local value adding steel sub-sectors.

Primary Steel Imports and Exports

Although not the focus of this report it is interesting to note the primary steel product import and export variations. As will be shown throughout this report, primary exports are slowing down while imports are on the increase. The primary steel industry in South Africa is therefore under severe pressure and according to various steel industry experts there is a high likelihood that at least one of the major mills may go into liquidation. The vast majority of South Africa’s exports are in flat products (across the various metal types) followed by sections and bars.

Table 3: Imports of primary steel products (2013)

<table>
<thead>
<tr>
<th></th>
<th>HS Code 7206 – 7302 &amp; 7313 (Source: SA Customs &amp; Excise)</th>
<th>Imports from all countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carbon Steel</td>
<td>Alloy Steel</td>
</tr>
<tr>
<td></td>
<td>Tonnes</td>
<td>R/t</td>
</tr>
<tr>
<td>Intermediate Products</td>
<td>113 812</td>
<td>5 126</td>
</tr>
<tr>
<td>Sections and Bars</td>
<td>166 744</td>
<td>7 298</td>
</tr>
<tr>
<td>Flat Products</td>
<td>661 733</td>
<td>8 817</td>
</tr>
<tr>
<td>Wire</td>
<td>29 918</td>
<td>10 748</td>
</tr>
<tr>
<td>Rails</td>
<td>59 580</td>
<td>12 165</td>
</tr>
<tr>
<td>Grand total</td>
<td>972 207</td>
<td>8 184</td>
</tr>
</tbody>
</table>

Source: SAISI

Table 4: Exports of primary steel products (2013)

<table>
<thead>
<tr>
<th></th>
<th>HS Code 7206 · 7302 &amp; 7313 (Source: SA Customs &amp; Excise)</th>
<th>Exports to all countries</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carbon Steel</td>
<td>Alloy Steel</td>
</tr>
<tr>
<td></td>
<td>Tonnes</td>
<td>R/t</td>
</tr>
<tr>
<td>Intermediate Products</td>
<td>26 198</td>
<td>6 325</td>
</tr>
<tr>
<td>Sections and Bars</td>
<td>452 693</td>
<td>7 504</td>
</tr>
<tr>
<td>Flat Products</td>
<td>983 134</td>
<td>7 042</td>
</tr>
<tr>
<td>Wire</td>
<td>64 074</td>
<td>9 485</td>
</tr>
<tr>
<td>Rails</td>
<td>9 913</td>
<td>18 235</td>
</tr>
<tr>
<td>Grand total</td>
<td>1 526 099</td>
<td>7 269</td>
</tr>
</tbody>
</table>

Source: SAISI

The Downstream Value Adding Steel Industry

The downstream beneficiation segment of the steel industry contributes over R20 billion of the export of raw materials and provides tax revenue to government of R249 per ton (SEIFSA). A further benefit of local steel production is reduced lead times as compared to imported steel which takes anything between 3 and 4 months to reach its destination from the day of order. According to ArcelorMittal South Africa 3.5 jobs are created economy wide for every R1 million expended by the company.
The steel and engineering sector contributed R335 billion to the South African economy in 2013 and employed on average 291,700 people (SEIFSA). 48% of this production is for the local market with a value of around R150 billion. The local industry is experiencing slow to stagnant growth and some sub-sectors are declining locally as a result of ever competitive steel product imports from China and India. The steel industry is very closely correlated to the overall economy but up and down cycles are more severe than in the overall economy. At least R120 billion of the R150 billion internal market was generated through gross fixed capital formation in the form of intermediary products. 60% of gross fixed capital formation in South Africa is done by the private sector (SEIFSA). This is expected to change as Government roll out its infrastructure development plans also known as the 18 Strategic Infrastructure Projects (SIP) which includes a large number of smaller infrastructure projects.

Growth in the downstream beneficiation market in 2013 is estimated to be 2% while employment increased by 1% (SEIFSA). The outlook for 2014 is relatively poor given the poor economic growth to date, intense labour disruptions and ever increasing imports.

In 2012 the South African steel use per capita decreased to 101kg per person from 124kg in 2008. Local steel consumption in 2012 amounted to 5.1 million MT of which the bulk was used in the construction and infrastructure industry.

The steel industry in South Africa is highly monitored by the Competition Commission and as a result the availability of information for many parts of the sector is very hard to find. The industry stopped collating detailed market intelligence in 2009 and therefore it is extremely difficult to obtain accurate market intelligence.
The South African metals and engineering sector is highly dependent on exports as 60% of its products are exported and competes for 56% (R195 billion) of the local market with foreign suppliers – mainly from China. Of these imports R103 billion are for intermediary imports while R91 billion is for finished products. South Africa has a relatively strong competitive advantage in the iron ore mining and export industry, but lacks competitiveness in the downstream value adding segment as a result of relatively high and increasing costs (labour, transport and electricity) and intense global competition. Local manufacturers have very little advantage of the rich iron ore deposits in South Africa as steel is sold at import parity prices. Steel producers are price makers in South Africa while the manufacturing players are price takers.

At the same time some of the leading steel product producing countries are heavily subsidising their manufacturing industry – especially China and India. The results are clear to observe, reduced numbers of local competitors, decreased employment, decreased foreign currency earned, decreased economies of scale and ultimately uncompetitive industries. Typically the level of competition increases as product beneficiation is increased. The current over capacity of steel production is further increasing competition for limited markets.

South African steel exports have decreased by 21% from peak export demand in 2007 while imports have increased by 17% (SEIFSA). This trend is seen throughout the downstream value adding steel segment and urgent intervention is required to stop the decline in local competitiveness. In 2013 there was a market acceleration of both imports (11.4%) and exports (8.2%) in value terms, mainly as a result of the strong decline in the value of the Rand. The volume of imports increased by 1% in 2013 while export volumes decreased by 2%. In the medium term rand devaluation will assist the downstream value adding steel industry, but ultimately being able to compete on the global stage will determine South Africa’s steel manufacturing future. Local manufacturers repeatedly stated that a weak rand only has a short term benefit to the industry as a weak currency is inevitably followed by increases in fuel, imported capital goods and labour resulting in no benefit over the medium to longer term.
The building and construction sector is the largest consumer of steel in South Africa, accounting for approximately 29.1% of the total domestic consumption. South Africa’s manufacturing sector consumed approximately 2.1 million tons of steel in 2013, which accounted for about 52.0% of the total steel shipments made to the domestic market. The mining sector accounted for approximately 4.5% of the total steel shipments to the domestic market. There is real concern on the long term sustainability of the mining industry in South Africa with gold mining having declined over the last 20 years, significant disruptions in the platinum industry and no immediate investment expectations in the coal industry. High-intensity steel consumption sectors, which include packaging and automotive, accounted for approximately 7.9% and 8.0% of the total steel demand, respectively.

In 2011 more than 85% of South Africa’s steel was consumed in industry sectors for which steel’s share of the final product value is usually very low (between 5% and 25%). These industries include building and construction (40% of total demand), the motor vehicle industry (11%), machinery (9%), mining (7%), electrical appliances (4%) and white goods (2%). Less than 15% of steel is consumed in industry sectors for which steel’s share of the final product value is high (greater than 50%). These industries include specialised machinery and packaging, accounting for 9% and 7% respectively of SA’s steel demand. It may come as a surprise to learn that steel only accounts for 3% of the final value of a motor car in SA. Intuitively, it would seem to be significantly higher than that. By far the great bulk of a car’s final cost is in logistics, labour and other materials. This situation has not changed much since 2011 and is expected to continue unless the downstream steel manufacturing industry develops some real competitive advantages. A reduced steel price is therefore not the exclusive answer to South Africa’s steel industry woes as the relative value of steel as part of the final product are relatively low.

Government is a very important user of steel in South Africa; mainly through large construction projects but also through general infrastructure projects. Key internal customers include Eskom, Transnet, PRASA, the municipal water boards, PETROSA and municipalities.

South Africa imports steel on an on-going basis. According to the steel using industry steel can often be landed on site at cheaper rates than if bought locally. There are a number of reasons for this which will be discussed in more detail under the industry challenges segment.

Figure 4: South Africa’s Steel Imports

![South African Primary Steel Imports](source: SAISI)
South African steel imports are rapidly being dominated by imports from Asia – and in particular China and India. These two countries accounted for the majority of steel products imported over the period. Speciality steel and high quality steel is often imported from Europe and the USA. The largest import product groups are small diameter welded pipe, railway material and bolts and nuts. From this list it is clear that these products can easily be made in South Africa and hence there is a competitiveness issue regarding product manufacturing in South Africa. Steel import volumes are increasing at present while local exports are on the decrease.

**Figure 5: South Africa’s Steel Exports**

Most of South Africa’s exports are into Africa (24%) and in particular SADC (17.9%). This is followed by steel exports to Europe. Key users of exported products include the construction, mining and agricultural sectors. Specific products exported include structures, towers, scaffolding, and bridges followed by seamless tubes and pipes and articles of wire and forged products. The South African steel export market is on the decrease. This is partly as a result of global oversupply with limited global demand and hence very fierce price wars, and also as a result of very active targeting of South Africa’s main trading partners in Africa by Indian and Chinese steel suppliers. Exports to Asia has also been on the decrease partly as a result of overcapacity in the region but also as a result of increased investment in newer technology in Asia making South African products less attractive.

There are two main support mechanisms for exporters namely COSM (R62 million paid in 2013) and ArcelorMittal South Africa, which also contributed R200 million in 2013 in further export support through export rebates to the local beneficiation industry including pipes and tubes, forged products and automotive components.

**Value Added Imports and Exports**

The products listed below include the main products of this study. More focus will be provided on import and export developments, but it is important to take note at this stage that imports are rising faster than exports and that the importation of the vast majority of products listed below is damaging to the South African steel industry. Global competitiveness is a prerequisite for a healthy manufacturing industry, but factors outside the control of the industry are causing great harm to the
industry and could result in major company closures and associated job losses. A detailed analysis of the imported versus exported products will be done in a later report as part of this assignment.

**Table 5: Imports and Exports of Articles of Steel**

<table>
<thead>
<tr>
<th>HS heading</th>
<th>PRODUCT</th>
<th>Total Exports</th>
<th>Total Imports</th>
</tr>
</thead>
<tbody>
<tr>
<td>7217</td>
<td>Drawn wire - carbon steel</td>
<td>64 074</td>
<td>29 918</td>
</tr>
<tr>
<td>7223</td>
<td>Drawn wire - stainless steel</td>
<td>2 098</td>
<td>7 348</td>
</tr>
<tr>
<td>7229</td>
<td>Drawn wire - alloy steel</td>
<td>1 909</td>
<td>6 319</td>
</tr>
<tr>
<td>7301</td>
<td>Sheet piling</td>
<td>2 972</td>
<td>667</td>
</tr>
<tr>
<td>7301</td>
<td>Welded angles, shapes &amp; sections</td>
<td>5 460</td>
<td>328</td>
</tr>
<tr>
<td>7302</td>
<td>Railway material</td>
<td>9 913</td>
<td>59 580</td>
</tr>
<tr>
<td>7303</td>
<td>Tubes &amp; pipes - cast iron</td>
<td>5 868</td>
<td>19 687</td>
</tr>
<tr>
<td>7304</td>
<td>Tubes &amp; pipes - seamless</td>
<td>76 081</td>
<td>53 344</td>
</tr>
<tr>
<td>7305</td>
<td>Tubes &amp; pipes - welded large dia.</td>
<td>5 019</td>
<td>17 440</td>
</tr>
<tr>
<td>7306</td>
<td>Tubes &amp; pipes - welded small dia.</td>
<td>5 5701</td>
<td>87 403</td>
</tr>
<tr>
<td>7307</td>
<td>Tubes &amp; pipes - fittings</td>
<td>20 991</td>
<td>51 884</td>
</tr>
<tr>
<td>7308</td>
<td>Structures, towers, scaffolding, bridges etc.</td>
<td>191 884</td>
<td>56 529</td>
</tr>
<tr>
<td>7309</td>
<td>Tanks &amp; containers &gt;300L</td>
<td>7 949</td>
<td>4 101</td>
</tr>
<tr>
<td>7310</td>
<td>Tanks, drums &amp; cans &lt;300L</td>
<td>71 388</td>
<td>8 039</td>
</tr>
<tr>
<td>7311</td>
<td>High pressure containers</td>
<td>3 957</td>
<td>14 806</td>
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<tr>
<td>7312</td>
<td>Wire rope &amp; cables</td>
<td>36 138</td>
<td>30 429</td>
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<td>7313</td>
<td>Drawn wire - barbed wire</td>
<td>8 663</td>
<td>4 388</td>
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<td>7314</td>
<td>Cloth, grill, netting, expanded metal</td>
<td>42 517</td>
<td>8 147</td>
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<td>7315</td>
<td>Chains &amp; parts</td>
<td>4 988</td>
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<td>7316</td>
<td>Anchors &amp; grapnels</td>
<td>428</td>
<td>645</td>
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<td>Nails, tacks &amp; staples</td>
<td>3 513</td>
<td>14 305</td>
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<td>7318</td>
<td>Screws, bolts &amp; nuts</td>
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<td>Needles &amp; pins</td>
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<td>396</td>
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<td>7320</td>
<td>Springs</td>
<td>2 207</td>
<td>9 266</td>
</tr>
<tr>
<td>7322</td>
<td>Air heaters &amp; parts</td>
<td>243</td>
<td>322</td>
</tr>
<tr>
<td>7323</td>
<td>Kitchen &amp; household articles</td>
<td>6 520</td>
<td>22 446</td>
</tr>
<tr>
<td>7324</td>
<td>Sanitary ware</td>
<td>1 611</td>
<td>2 096</td>
</tr>
<tr>
<td>7325</td>
<td>Cast iron products</td>
<td>28 647</td>
<td>38 205</td>
</tr>
<tr>
<td>7326</td>
<td>Articles of wire, forged products &amp; other articles</td>
<td>74 775</td>
<td>47 367</td>
</tr>
</tbody>
</table>

| Total      | 760 018                                    | 664 690       |

Source: SAISI

**Skills Analysis**

The metals and engineering industry is a major employer in South Africa. Although there are specific skills required in companies that manufacture very specific niche products the majority of industry requires the same skillsets. The requirements can broadly be classified into two main categories namely technical and general skills groupings.

**Technical Skills Analysis:**

During the research Merchantec did not once hear that a shortage of trained people in South Africa was creating a major bottle neck to the industry. However, many companies commented that there was a significant gap between institutionally trained employees and actual job experienced...
employees. The level and quality of institutionally trained candidates did meet minimum technical standards, but these individuals mostly were unable to deal with variations on their skills or the ability to rapidly learn associated skills. A common theme during the research was that companies wish to do more on-the-job training, but that they could not afford it. Companies (typically larger companies) who did invest in such training typically found employees stayed longer and were more productive.

Most of the technical training in South Africa is geared to the development of Artisans. A large number of these artisans are developed through FET colleges as well as through State Owned Enterprise skills development programmes. The private sector also contributed to the skills pool either through bursary programmes or through on-the-job training. Specific industries where such training occur include the petrochemicals, mining, steel manufacturing and large construction companies. Specific artisanal skills include boiler making, electricians, pipe fitters, welders and machine operators.

Various companies indicated that they often do not require a trained artisan to do a particular job but that they could make use of “trade-hands” who were not qualified artisans, but did do some technical training such as P1 and P2 training. These resources were typically significantly cheaper than fully fledged artisans.

Companies often require process workers capable of completing 1 complex task, or working with a highly technical piece of equipment. In such cases they found on-the-job training to be most efficient. Most companies also recognised that they will have equipment unique to their enterprise and hence were willing to investing in further training.

Although a large number of participants were asked about the number of actual artisanal employees required, no-one (including the associations) were able to provide details on the actual supply versus demand of skills in the South African metals and engineering sector. At present South Africa has around 20 000 trained artisans of whom around 12 000 are practicing their trade (SEIFSA). It is however unclear how many more additional artisans are required.

Other technical skills include engineering skills and there are shortages of well qualified engineering professionals across all technical areas in South Africa.

**General Skills**

General skills include business operations, project management, support services (finance, HR admin etc.), business development and logistics. Most of these skills are fairly generic although deep industry insight is required to effectively win new business and keep customers happy. A key concern across the sub-segments was the lack of skilled business development personnel that are able to penetrate difficult markets (such as foreign project companies doing business in South Africa). In general it was noted that not enough was being done across the industry to create awareness with foreign firms on the capability and installed capacity of the South African steel industry.

**South African Steel Industry Supply Structure**

Steel mills deliver a variety of products into the value adding segment including a large variety of strips, painted plate, plate billets, coiled rounds, rods and bars (flats, reinforced bar, rounds angles, blooms, rails, joists, rounds angles, billets and channels). These products are then further manufactured into the products that are delivered into the various end user categories such as the automotive, mining, parastatal customers, construction, petrochemicals, food and beverage and
many other markets. Manufacturers with substantial manufacturing capacity sometimes buy directly from the steel mill. The largest number of manufacturers however purchase from steel merchants.

Steel Merchants typically buy large quantities of steel from the primary steel supplier, or import the same products from abroad. The merchants typically add value by warehousing, steel cutting and bending, welding and painting but are not involved in the manufacturing of large quantities of final products. Steel merchants also typically assist in the transportation of steel products and have their own fleets for doing so. The steel merchant segment of the steel industry is not part of the focus of this report.

The downstream steel industry will typically source their product from the steel merchants, but they also import and also buy directly from the steel manufacturers. Their value add is in the manufacturing of final products ranging from bolts and nuts made from steel rods, storage containers from plate metal or automotive shock absorbers made from tube and pipe metals. Key skill categories in this part of the value chain include speciality welding, fitting and turning and pattern making.

Steel end-users (such as the mining, automotive or parastatal institutions) typically will source their steel products in two ways. The first is for predominantly operational (OPEX expenditure) purposes (such as steel plates for boiler repair in the electricity industry). Such products will be sourced directly from the steel merchant and used by the engineers and technicians of the end-user company. The second type of product is typically capital expenditure (CAPEX) products or finished goods such as gas storage containers for the gas transportation industry. Such products are either procured from the local downstream steel industry or imported from foreign suppliers. The largest value add is typically in the step between the downstream steel industry and end-users of the product. In recent times there have been a significant number of local projects (such as the Medupi power plant and various cement plants) that have been developed by foreign consulting engineering companies and these companies often do not understand the local steel industry capability and will hence import products that can easily be locally manufactured. Much more needs to be done to regulate these companies and their sourcing policies.

The price of the steel product will almost in all cases determine the source of purchase. There are virtually no companies with such advanced intellectual property in the steel industry to control the global market. Many downstream steel manufacturers do hold important patents, but in most cases there are competing local and global products. Most value adding downstream companies compete on the basis of product price and as a result customer loyalty for steel products tends to be very low. Since steel quality is determined by international standards it is very difficult to gain a competitive advantage based on product alone. Companies can generate a competitive advantage by being innovative (making the same product in a new way or making a new product for the same application), providing superior customer service, reduce lead times or providing niche products not mass manufactured in China and India.
Figure 6: South Africa’s Steel Industry Downstream Sector

The products and companies listed in the figure above are not exhaustive but rather serve as examples of the type of companies and products referred to in the analysis.

Industry Associations

The steel industry is extremely complex in nature partly as a result of the long history of steel making in South Africa. Most of the key segments are represented in some way by an industry association, and within the associations one typically finds further focus groups. Since the industry partakes in collective bargaining, the industry is represented by the Steel and Engineering Industries Federation of South Africa (SEIFSA) and the National Employers Association (NEASA) on behalf of employers and negotiates with the National Union of Metal Workers (200 000 members) and Solidarity as key employee representatives.

The industry is further represented by a large number of industry associations spanning a very wide range of steel products and activities. Some of the main players are:

The Steel and Engineering Industries Federation of South Africa (SEIFSA) (which in turn is made up by a large number of smaller associations)

- Association of Electric Cable Manufacturers of SA
- Association of Metal Service Centres of SA
- Cape Engineers and Founders Association (CEFA)
- Constructional Engineering Association (South Africa)
- Electrical Engineering and Allied Industries Association
The industry associations are typically tasked with collecting data on the industry, to facilitate discussion in the industry, to assist with training and to serve as a mouthpiece when lobbying government. The overall effectiveness and impact that associations have had on the industry has
significantly been decreased since the Competition Commission has clamped down on information sharing. This issue will be discussed in greater length a subsequent report focussing on the key challenges in South Africa.

**Import Tariffs on Steel Products**

Tariffs for the steel industry are managed through the International Trade Administration Association of South Africa (ITAC) ([http://www.itac.org.za](http://www.itac.org.za)). The organization is tasked with investigating key manufacturing markets in South Africa and amends trade tariffs based on industry information. The association has three main mechanisms it uses to exert control. These are:

- Customs tariffs
- Trade remedies
- Import and export control

South Africa is bound by its World Trade Organisation commitments and excessive tariff barriers are discouraged. However, South Africa does in general have bound rates that are higher than the current tariffs. Bound rates can be defined as the maximum allowable tariff levels negotiated with the World Trade Organisation (WTO). The large import surge seen over the last 3 years has been detrimental to the local industry and local exports have to be encouraged. It is crucial that tariffs for steel products manufactured locally be increased as a matter of urgency if the industry is going to be saved. Tariff setting is a complex and lengthy process and a separate study for each product line should be considered. The easiest way of doing this would be through the industry associations who have in-depth insight into the individual product groupings and potential for local manufacturing.

Brazil has been widely mentioned as a country that has protected its local steel industry despite being a WTO member. South Africa should at the very least increase tariffs for key locally manufactured goods to the bound rate.

Tariffs will receive further attention in a future report dealing with the specific industry challenges.

**Competition Commission**

Reference must be made to the impact that the Competition Commission has had on the steel downstream value added sub-sectors. Prior to the existence of the Competition Commission companies in this industry shared information freely and some will even say that cartel activity was rife. However, the industry was able to protect itself better by having a co-ordinated response to external threats. Information regarding market share, key customers and market trends was collected and distributed through the industry associations. The Competition Commission has been investigating various companies in the industry and some heavy fines have been handed to companies found to have behaved in contravention of acceptable business practices.

Merchantec supports the need for fair business practices and hence the company does not want the past practices to be re-instated, however there is a real need for companies in the industry to organise better, share information and devise strategies that will benefit the entire local industry. It is proposed that government (through the participation of the dti) also be more involved in industry forums in order to present the views of government and hear about the concerns of industry. The exact nature of such forums needs further exploration. It is essential not to create just “another” meeting forum as the steel industry has a very large number of representing bodies. What is required is a practical forum where information be shared and opportunities identified. This forum should also help private industry learn more about the incentives in place to support manufacturing expansion and export activities.
COSM

The COSM fund is used as an export support mechanism and is funded by the steel mills. For every ton of steel produced the companies contribute R43 to the fund. Companies who export can claim R173 per ton exported from the fund provided they added at least 20% value to the steel product and that the product is exported via ship and not overland. In essence the aim of the fund is to help companies in South Africa export their products to foreign destinations. More than R62 million was paid through the fund in 2013. More details on the exact export products and destinations will be discussed in a future report focussing on imports and exports.
**Industry Segmentation**

The steel industry is complex and hard to sub-segment in clear value adding sectors. Many companies do not make a single product and hence it is hard to classify them into a single value adding sector. However, there are broad product categories that are useful in segmenting the market. Below is a schematic representation of the supply industry in South Africa.

**Figure 7: Downstream Steel Value Added Segments**

![Downstream Steel Value Added Segments](image)

Please note that the products mentioned in the figure above is not an exhaustive list per value adding sub-segment but rather an example of the type of products produced in each sub-segment.

The segmentation depicted above was derived through intense discussions with the steel industry including the primary metal manufacturing part of the value chain. All but one of these segments have their own associations (drums and packaging), and these industry associations were instrumental in providing key industry statistics as well as contacts to member companies.

There are a number of important value adding segments that are not part of this analysis. They include the rebar, foundry products, domestic appliances, automotive components, tooling and rail products sectors. These segments are crucial to the overall industry, but are either products directly from the mill (rebar) or else already benefit from various specific programmes of the dti or IDC.
Fabricated Structural Steel

The fabricated structural steel industry is represented by the South African Institute of Steel Construction (SAISC). The association has over a 100 members and the overall industry employs 111 720 employees of which 72 720 are involved in fabrication and an additional 30 000 are involved in structure erection. In 2013 around 800 000 tons of steel was processed and manufactured by the fabricated structural steel industry while the construction industry as a whole consumes 3 million tons of steel per annum (50% of South Africa’s demand). The association is very active as a mouthpiece for the industry, training artisans, educating SARS officials on steel products and identifying opportunities currently met with imported steel.

Sales in the industry have been decreasing from 2013 to 2014 and at least one major player has closed its doors in 2013 (Cosira – a company that employed 2 000 people). The estimated revenue in 2013 for this industry is between R16 billion to R20 billion and accounts for 0.6% of South Africa’s GDP in 2013.

The market is dominated by two major players namely Genrec and Aveng Manufacturing followed by Tubular Construct, A Leita, B&T Structures, Louwill Engineering, OmniStruct Nkosi (Pty) Ltd, Spiral Engineering cc and Tass Engineering (Pty) Ltd. The top 3 players in the market command around 20% of the market share and indicate a highly competitive and fragmented market. A key reason for this is that most constructions are unique in design and hence require substantial engineering and implementation skill. South Africa could benefit from more standardised projects where economies of scale are created to drive down project cost.

The industry sells a large number of products into the construction industry and includes products such as sections, tubes and plates in a large number of sizes and shapes. This includes sales into the roofing and cladding market, the transmission pylon industry and the recently established renewable energy industry in the country. The South African fabricated structural steel industry is small compared to the global fabricated structural steel industry with local market participants estimating local supply to be less than 0.5% of global supply.

Key challenges facing the market are increased pressure on end-users to reduce costs, disillusionment with the local industry as a result of poor execution at the mills, increased pressure on local steel prices, labour disruptions and strikes, high electricity prices and challenges with warehousing of bulk steel orders. Another frustration for steel fabricators is the large number of project changes typically done in the construction industry on large projects. Manufacturing companies will typically prepare capacity for a particular product only to be told the project design has changed. In essence each new construction project has its own unique design and hence engineering design skills within this industry are of high importance.

At present imports are on the increase with key import countries being China, Saudi Arabia, India, Turkey, Thailand and Spain. Increasingly project ready assignments are also being delivered to South Africa. A key reason for this is desperation of European structural fabricate steel suppliers seeking projects, and also increasing international contractors in the energy and related industries sourcing their steel from foreign destinations. An example is on the Medupi power station where the German produced steel used by Hitachi on the boilers has decreased from R42 000 per ton in 2011 to R24 000 per ton currently.
The impact that these international project companies are having in South Africa is substantial. Much of the steel imported for the mega-projects developed in South Africa is either locally available, or can be manufactured locally if there is sufficient lead time for companies to invest in new capacity. An example of this is the construction of Medupi – a power plant being constructed on behalf of Eskom. A large number of parts needed to be imported and hence Eskom requested a single import code which they got (HS 8406). In excess of 70 000 tons of steel products are used in a power plant the size of Medupi. However, many of the components that were being imported were locally available and hence a significant opportunity has been lost for localisation. Companies (and especially state owned enterprises) have to be far more aggressive in their drive to force their project companies to use locally available products. Other examples of imported products include 6 cement plants sourced from China with over 6 500 tons utilised, 8 000 tons in the petrochemicals industry, 3 920 tons in the transmission pylon market, 6 000 tons in the mining industry and 1 500 tons in the iron ore industry. The number of permanent jobs not created locally exceed 7 650. Price is the only driver for supplier selection and is causing much damage to the local industry and hence there is a massive need to review tariffs for imported steel products.

There is a 15% tariff on structural steel imports which helps to protect the local market to some extent. According to SAISI the bound rate is 25% for key structural steel products.

Local exports are on the increase and approximately 20% of local production is exported (150 000 tons). The industry exports to 66 countries globally and particularly into Africa – and even more particularly West Africa. Key markets include the DRC, Angola and Central Africa. South African companies are gaining momentum on the back of a weak rand making local exports more attractive and competitive. Dealing into Africa can be challenging and selecting the right partners is essential. Logistical constraints (getting product from South Africa to Angla for instance) is a huge challenge and is resulting in frustrated customers and reduced attractiveness of local suppliers. Typical payment terms into Africa would be 40% upfront, 50% on delivery and 10% as retention. South African companies have been able to gain market share into Africa as a result of a number of factors including price competitiveness, relative proximity to African markets, quality of the South African products, the development of business relationships, South Africa’s design capability and lastly the ability of local companies to solve the logistics challenge into Africa.

Table 6: Key exporters include of Fabricated Structural Steel

<table>
<thead>
<tr>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANDREW MENTIS (PTY) LTD</td>
</tr>
<tr>
<td>ARMCO SUPERLITE (PTY) LTD</td>
</tr>
<tr>
<td>ATLAS COPCO SECOROC A DIVISION OF ATLAS COPCO SA (PTY) LTD</td>
</tr>
<tr>
<td>AUGUSTA PROFILES (PTY) LTD</td>
</tr>
<tr>
<td>AVENG MANUFACTURING DURASET</td>
</tr>
<tr>
<td>COCHRANE STEEL PRODUCTS (PTY) LTD</td>
</tr>
<tr>
<td>ELBROC MINING PRODUCTS (PTY) LTD</td>
</tr>
<tr>
<td>FABRICATION &amp; LIGHT ENGINEERING CC T/A ACROW ENGINEERS LTD</td>
</tr>
<tr>
<td>GENREC ENGINEERING A Division of Murray &amp; Roberts Limited</td>
</tr>
<tr>
<td>GEO STOTT &amp; COMPANY (PTY) LTD</td>
</tr>
<tr>
<td>HARVEY ROOFING PRODUCTS A DIV OF MACSTEEL SERV. CENTRES</td>
</tr>
<tr>
<td>INNOVATIVE MINING PRODUCTS (PTY) LTD</td>
</tr>
<tr>
<td>MAST PROJECTS CC</td>
</tr>
<tr>
<td>MINE SUPPORT PRODUCTS (PTY) LTD</td>
</tr>
</tbody>
</table>
A key concern at present is the low levels of utilisation with a number of companies saying they were using less than 60% of their current capacity. As a result companies are not investing in new capacity and even new manufacturing technology upgrades have been put on the back burner. Companies would rather increase the number of shifts worked than invest in more production capacity (if demand were to increase). If companies in the fabricated steel industry were to invest in large scale capital projects they would require around 12 months lead time before they would be able to cater for new customers or projects. Most companies in this space have not invested in capital expansion since 2007/8 when the market experienced a boom period.

According to the industry South African manufactures have a competitive advantage in the technology and experience when compared to other African countries, but none when compared to the rest of the world. According to the industry there are in general sufficient skilled employees available and most of the large competitors invest in in-house training and apprenticeships. There is however a significant gap between the skills available and the skills required for complex projects. Many of the senior skilled engineers and artisans have left the industry and although a sufficient number of artisans are being trained they lack the experience to successfully work on complex projects.

The fabricated steel industry caters specifically to the construction industry which in turn is doing most of their work for the mining industry, government infrastructure, and general commercial and residential construction projects. Since the products sold are generic across the companies that manufacture it there is very little loyalty in this industry with price being the most important factor.

According to industry participants there will not be an advantage for steel companies if there was a significant reduction in steel prices. If prices were to decrease there could be a possibility to replace some cement with steel and that could boost the local market size (less than 5% increase). A decreased steel price would however be hugely beneficial to reduce imports and to boost exports. The relative value of steel in the construction industry is low. For instance the value of steel in a petrochemicals facility is less than 5% of the total investment, 15% of a multi-story building and less than 1% in the road industry. A reduced steel price will therefore not have a massive impact on demand.

According to companies in this segment of the market, South Africa is increasingly being viewed as a high cost low productivity manufacturing destination. There is virtually no benefit in local steel production for the manufacturers (despite South Africa’s rich iron ore resources) and operational costs such as labour (that typically makes up around 45% of operational costs) and electricity costs have escalated faster that product prices over the last 5 years in particular. Industry participants also expressed their dissatisfaction with having to purchase electricity from the municipalities as opposed directly from Eskom at Mega-Flex rates.
The industry benefits from COSM export support and one industry participant also mentioned support from the dti to attend international conferences (Export Marketing and Investment Assistance (EMIA)). Another company mentioned training rebates that could be claimed back based on their internal training programmes.

Within the structural steel segment there are various sub-segments such as the roofing and cladding sector, electricity pylon (transmission sector) and the renewable energy industry of which an example is provided below.

Table 7: Key players in key fabricated structural steel sub segments

<table>
<thead>
<tr>
<th>Sub-segment</th>
<th>Company 1</th>
<th>Company 2</th>
<th>Company 3</th>
<th>Company 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transmission Lines</td>
<td>Babcock</td>
<td>IMAB</td>
<td>TLE</td>
<td></td>
</tr>
<tr>
<td>Renewable Energy</td>
<td>Robor</td>
<td>Moncade</td>
<td>DCD</td>
<td></td>
</tr>
<tr>
<td>Roofing and Cladding</td>
<td>Global Roofing Solutions</td>
<td>Clotan Steel</td>
<td>Macroofing</td>
<td>Newcastel Steel</td>
</tr>
</tbody>
</table>

Source: ArcelorMittal South Africa

Roofing and Cladding

The South African roofing market is represented by the Southern African Metal Cladding and Roofing Association with 18 active members. There are more than 80 participants in the South African market of which 20 have more than 80% of the overall market share. The top 6 players have 50% market share. They are Global Roofing Solutions, Macsteel Roofing, Safintra, Trident Roofing, ArcelorMittal Steel Newcastle Works. Other key players in this segment include, Bluescope Steel, BSI Steel, Clotan Steel, Heunis Steel, and Pro Roof Steel Merchants. The industry produces 650 000 tons of product per annum of which at least 30% is imported. The industry supplies 22% of the total steel volume to the construction industry. 60% of the product is sold in the formal market (to construction companies) while 40% is sold to the informal market (DIY building industry).

The coil used to make roofing products is rolled, galvanised and painted by the tree coil producers in South Africa (ArcelorMittal, SAFAL and Duferco). The coil is the formed into form into shape by the roofing companies adding between 15% and 20% value in this process. Capacity utilisation in this industry is particularly low with many companies in this segment indicating capacity utilisation of around 60% being the industry norm. At the same time imports from China and India are on the increase as there are no tariffs in place to protect local manufacturing in this segment. South African manufacturers have some success with exports although the majority is overland and hence do not qualify for COSM support.

Key competitive advantages held in the industry include technical knowhow for complex structures as well as quality products. The industry mentioned cheap imports from China being a large concern but that on average the quality of these products was relatively poor and mostly not compliant to either SABS or the National Building Regulations’ minimal quality requirements. Enforcement is however not done sufficiently. However, the construction industry is under significant pressure and hence construction companies buy these products in order to increase margins or decrease their costs to win projects. Energy and labour cost increases are also currently negatively impacting the profitability of the industry. Imported product is anything from 15%-20% cheaper than locally produced products and hence they remain attractive to both the formal and the informal markets.
Companies in this industry indicated that they have very few long-term export contracts and that most opportunities are project based. Since there is significant underutilisation companies can quickly ramp up additional production capacity. Companies are still investing somewhat in capital equipment, but it is on a small scale and capacity increases can be achieved through the introduction of additional shifts rather than more capital expenditure. A key barrier to new entrants are the cost of a substantial manufacturing facility that is anything between R100 million to R120 million.

No immediate bottlenecks exist in the industry, but the standard manufacturing hurdles were mentioned such as rail transportation capacity shortages, cost of electricity, labour unrest and insufficient protection from imported products.

Incentives used in this industry include limited COSM participation. No other incentives were currently being used and reasons provided include BEE requirements, limited ocean borne export opportunities and the high burden of administration when they do qualify for incentives.
## Wire Products

The wire products industry is represented by the South African Wire Association (SAWA). The association has 45 members and accounts for over 80% of the market share of products in this category. The industry is a meaningful employer with estimated employment numbers of between 5 000 and 6 000 current employees. The industry supplies products into further critical industries such as the construction and agriculture industries and hence has a significant knock on job creation effect.

The estimated sales for this segment in 2013 were between R6 billion and R7 billion and it is expected to decrease by between 5% and 10% in 2014. This accounts for around 0.2% of the country’s overall GDP in 2013.

Raw material (iron ore or waste scrap) is converted into wire rod by the main steel producers (ArcelorMittal, Scaw Metals and Cape Gate) and is then bought by downstream value adding companies that convert the product into a broad range of products including drawn wire that is then further converted into nails, screws, springs, welded mesh and wire rope (cables) to name a few. Alternatively the drawn wire is galvanised and used for agricultural fencing, chain-link, barbed wire, screws and nails.

Despite the wire industry accounting for only 8% of the total steel used in the manufacturing sector in South Africa it brings in 39% of export earnings and is therefore a crucial segment in the overall steel industry.

### Figure 8: Wire product steel utilisation versus export value

<table>
<thead>
<tr>
<th>Wire Rod as % of Total Steel Produced</th>
<th>Wire Rod Value Add as % of Total Value Added Steel Products Exported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wire Rod 8%</td>
<td>Other Primary Steel Products 92%</td>
</tr>
<tr>
<td></td>
<td>Other Primary Steel Products 61%</td>
</tr>
</tbody>
</table>

Key end-users of the wire industry include the construction, security (fencing), agriculture, mining and general industry. All of these end-users are extremely price sensitive and since products are very similar across suppliers, and directed by SABS specifications, loyalty is low.

The industry is facing a number of challenges including: high labour costs, ineffective transportation systems, rapidly increasing electricity costs, distance to markets outside Africa and rand volatility. A key challenge to the industry is the lack of competitive advantage that can be gained from product design. The industry produces uniform products and any company with the required machinery can produce wire products. The barrier to entry for the market is therefore set at the cost of equipment which is around R500 million for a medium sized wire manufacturing plant.

The majority of wire product imports are from China. Some products are increasingly being sourced from India. It is clear that the trend since 2003 has been that imports are fast gaining ground on exports. The relative competitiveness of the industry is therefore on the decrease if compared to our
major wire product competitors in China and India. The vast majority of exports are to the SADC region and further to countries such as Kenya, Zambia, Angola, Nigeria and Uganda.

**Figure 9**: Wire product imports versus exports

![Wire Product Im- and Exports](image-url)

The majority of imports are from Asia (77%) (mostly from China) followed by the European Union.

**Table 8**: Imports of wire & wire products (tons): Country of Origin

<table>
<thead>
<tr>
<th>Regions</th>
<th>2012</th>
<th>2013</th>
<th>2014 (3 months)</th>
<th>2012</th>
<th>2013</th>
<th>2014 (3 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>3 847</td>
<td>3 018</td>
<td>894</td>
<td>2.1%</td>
<td>1.9%</td>
<td>2.5%</td>
</tr>
<tr>
<td>E Europe &amp; FSU</td>
<td>2 338</td>
<td>1 913</td>
<td>603</td>
<td>1.3%</td>
<td>1.2%</td>
<td>1.7%</td>
</tr>
<tr>
<td>EU 27</td>
<td>26 249</td>
<td>25 403</td>
<td>6 017</td>
<td>14.4%</td>
<td>15.6%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Far East</td>
<td>139 703</td>
<td>121 698</td>
<td>25 412</td>
<td>76.7%</td>
<td>74.6%</td>
<td>71.9%</td>
</tr>
<tr>
<td>Islands (Africa)</td>
<td>1</td>
<td>5</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Middle East</td>
<td>2 923</td>
<td>4 379</td>
<td>1 131</td>
<td>1.6%</td>
<td>2.7%</td>
<td>3.2%</td>
</tr>
<tr>
<td>NAFTA</td>
<td>2 856</td>
<td>2 969</td>
<td>848</td>
<td>1.6%</td>
<td>1.8%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Other W Europe</td>
<td>506</td>
<td>1 524</td>
<td>67</td>
<td>0.3%</td>
<td>0.9%</td>
<td>0.2%</td>
</tr>
<tr>
<td>South America</td>
<td>3 677</td>
<td>2 104</td>
<td>313</td>
<td>2.0%</td>
<td>1.3%</td>
<td>0.9%</td>
</tr>
<tr>
<td>Unspecified</td>
<td>73</td>
<td>71</td>
<td>57</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.2%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>182 175</strong></td>
<td><strong>163 079</strong></td>
<td><strong>35 347</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Source: SARS

The majority of exports are into Africa (67%) followed by Europe and North America.

**Table 9**: Exports of wire & wire products (tons)

<table>
<thead>
<tr>
<th>Regions</th>
<th>2012</th>
<th>2013</th>
<th>2014 (3 months)</th>
<th>2012</th>
<th>2013</th>
<th>2014 (3 months)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>149 829</td>
<td>158 722</td>
<td>36 993</td>
<td>67.1%</td>
<td>68.4%</td>
<td>56.0%</td>
</tr>
<tr>
<td>E Europe &amp; FSU</td>
<td>54</td>
<td>141</td>
<td>496</td>
<td>0.0%</td>
<td>0.1%</td>
<td>0.8%</td>
</tr>
<tr>
<td>EU 27</td>
<td>26 676</td>
<td>28 634</td>
<td>9 400</td>
<td>11.9%</td>
<td>12.3%</td>
<td>14.2%</td>
</tr>
<tr>
<td>Far East</td>
<td>14 591</td>
<td>17 061</td>
<td>6 706</td>
<td>6.5%</td>
<td>7.3%</td>
<td>10.2%</td>
</tr>
</tbody>
</table>

Source: SARS
Tariffs in this industry are a huge concern to local manufacturers as many products have no tariff at all, such as general wire products. The industry is extremely competitive and although SAWA co-ordinate and fund the tariff applications they do not collect sensitive market information as this can be construed as anti-competitive behaviour by the Competition Commission. The industry is of the opinion that fair trade is hampered by the various incentives offered to Chinese exporters from their own government and that the local industry has to get more protection from government in the form of increased tariffs. Current tariff applications with ITAC include:

<table>
<thead>
<tr>
<th>Tariff heading</th>
<th>Tariff subheading</th>
<th>Description</th>
<th>Rate of duty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>General</td>
<td>EU</td>
</tr>
<tr>
<td>Current Tariff</td>
<td>7217.3</td>
<td>Wire of iron or non-alloy steel : Plated or coated with other base metals</td>
<td>free</td>
</tr>
<tr>
<td>Applied for</td>
<td></td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Current Tariff</td>
<td>7314.4</td>
<td>Cloth (including endless bands), grill, netting and fencing, of iron or steel wire, expanded metal of iron or steel: - Other cloth, grill, netting and fencing: - - Plated or coated with zinc</td>
<td>5%</td>
</tr>
<tr>
<td>Applied for</td>
<td>7314.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current Tariff</td>
<td>7217.2</td>
<td>Wire of iron or non-alloy steel: -Plated or coated with zinc</td>
<td>free</td>
</tr>
<tr>
<td>Applied for</td>
<td></td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Current Tariff</td>
<td>7313</td>
<td>Barbed wire of iron or steel; twisted hoop or single flat wire, barbed or not, and loosely twisted double wire, of a kind used for fencing, of iron or steel</td>
<td>5%</td>
</tr>
<tr>
<td>Applied for</td>
<td></td>
<td>15%</td>
<td></td>
</tr>
<tr>
<td>Current Tariff</td>
<td>7314.3</td>
<td>Cloth (including endless bands), grill, netting and fencing, of iron or steel wire, expanded metal of iron or steel: - Other cloth, grill, netting and fencing, welded at the intersection:</td>
<td>5%</td>
</tr>
<tr>
<td>Applied for</td>
<td></td>
<td>15%</td>
<td></td>
</tr>
</tbody>
</table>

Source: SAWA

In each case the application has been made for the bound rate.
Within the wire industry the majority of the end-product value is made up of the cost of the steel and hence this industry could benefit greatly by reduced raw material costs. However, as with other industries a uniform steel price reduction will not benefit the value adding segment unless they export more and decrease imports. If all manufacturers bought steel at the same price there would be a positive impact to the end-consumer in South Africa but not necessarily increase demand. However, local manufacturers do not believe that local end-users would increase demand significantly if the cost of primary steel was reduced.

Table 10: Wire industry leaders

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cape Gate</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Consolidated Wire Industries (CWI)</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Allens Meshco</td>
<td>Cape Town</td>
</tr>
<tr>
<td>Barnes</td>
<td>Mpumalanga</td>
</tr>
<tr>
<td>Wire Supplies</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Hendok</td>
<td>Durban</td>
</tr>
<tr>
<td>Scaw Metals</td>
<td>Gauteng</td>
</tr>
</tbody>
</table>

These 7 companies account for around 75% of all products sold in this value added segment. The next 5 largest companies account for an additional 20% (including Rod to Wire, Natstan Wire, Calco Engineering, Isis Dies and Fournel) with the remaining 5% being shared by around 20 smaller companies. This value adding sub-segment of the market is slightly different in structure as compared to most of the other value adding segments in that two of the major manufacturers are owned by steel producers and hence have an integrated value chain and an opportunity to expand profits through beneficiation. These are Consolidated Wire Industries (CWI) who is co-owned by ArcelorMittal South Africa and Scaw Metals and Cape Gate who is also a steel manufacturer (mainly from scrap steel).

According to the industry it is currently under enormous pressure from importers and hence companies are reluctant to invest heavily in capital equipment and general upgrades. Most companies completed their last major upgrades in 2007/8. Since current utilisation is low (some companies estimate utilisation to be around 50%), companies are not looking to upgrade capital equipment in the near future. Industry participants also said that they would much rather initiate a second shift before investing in new equipment.

The segment also does not benefit greatly from general incentives provided by government. None of the companies interviewed indicated that they were at present claiming general manufacturing incentives from government. Some of the companies do benefit from ArcelorMittal South Africa’s export incentive scheme as well as the from the COSM programme.

There are a number of factors influencing the overall competitiveness of the industry including a lack of economies of scale, the long distance to our traditional markets, and a change in how end-users make orders. In the past companies were willing to place large orders and to store unneeded stock as required. However, new management practices and increased competition has enabled companies to implement lean manufacturing and just in time systems where smaller orders are placed more frequently. The relative distance between Europe and Asia is also of such a nature that
companies in Europe rather order from Asia as a result of decreased transportation costs and improved product quality.

According to industry participants, expanded export support would indeed help the industry but protecting the local market is at present the main focus as companies are increasingly struggling to maintain their local market share.
The South African Tube and Pipe sector is represented by Association for Tube and Pipe Manufacturers (ASTPM) and The Steel Tube Export Association of South Africa (STEASA) that is an export council. ASTPM was established in 1983 and currently represents 11 members. STEASA with its 7 members is exclusively tasked with export promotion, and receives funding from the dti. The members of STEASA include: ArcelorMittal, Tubular Products Division, Barnes Tubing, Bosal Afrika (Pty) Ltd, Hall Longmore (Pty) Ltd, Macsteel Tube & Pipe, Pro Roof Steel Merchants, Robor Tube and Africa Pipe Industries (API).

There are approximately 20 active tube and pipe manufacturers in South Africa of which Robor, Macsteel, Trident Tubular, Barnes and Group 5 Pipe are the largest players. The industry employs around 7 000 direct employees and enable another 13 000 jobs in downstream applications.

About 380,000 tons of welded carbon steel pipe was produced in 2013, of which 100,000 tons was exported. According to statistics provided by the ASTPM the subsector accounted for estimated domestic sales of R7.5 billion in 2013 with a further R2.44 billion in the export market.

Pipes and tubes are in essence the same product but used for different applications. A pipe is used for the transportation of liquids or gasses and hence corrosion resistance and durability is of the highest importance. Tubes are used to support items and are used in a large number of applications within the construction and furniture industries. The major difference is in the quality of steel used which depends on the end-use application. The product is created in two ways. Seamless pipes are manufactured at the steel mill (ArcelorMittal) during the steel creation process (i.e. while the steel is hot and hence has no seam). Most pipes and tubes are manufactured from sheet metal cut and bent in the right size and then welded (either a straight line or else a spiralling weld for additional strength). The size and diameter of the pipe can therefore easily be determined and there are very little product differentiation options.

Pipe and tube products have a large number of potential applications that include water conveyance, within the mining industry (for the conveyance of water, compressed air and slurries), petrochemical industry, oil & gas industry, building & construction, power generation, automotive - exhausts, shock absorbers, furniture and leisure, shop fittings, prams and toys, irrigation and scaffolding. These tubes and pipes can either be round or rectangular in shape. It is interesting to note that the average car contains around 150kg of tube.

The challenges facing this segment of the industry are very similar to the challenges facing other sub-segments. Purchasing electricity from the municipality instead of Eskom, inefficient and costly rail transportation, rapidly rising labour costs without the associated productivity increases, unchecked imports — especially from China, uneven playing field as a result of Chinese government incentives, the negative impact the Competition Commission has had on communication and trust within the industry, relatively small local markets and the distance to substantial markets.

Investment into new pipe and tube capacity has been relatively stagnant over the last 4 years in the tube and pipe sub-segment and average utilisation rates are between 60% and 70% of current capacity. Companies in the segment indicated they would rather set up additional shifts before investing in new capacity. However, some of the companies interviewed indicated that they were nearly working at 100% capacity as a result of orders from the automotive industry. Having strong demand sectors are crucial for the entire steel industry.
Within the pipe industry there are pressure on steel manufacturers as replacement products such as PVC piping for water distribution is becoming increasingly popular with water utilities in South Africa. South Africa also does not have single water standards and hence pipe suppliers need to cater for a relatively large number of technical specifications. Currently, initiatives to set a single standard across municipalities are under way and will help greatly with decreasing the technical complexity of the industry.

The welded tube and pipe industry exported just under 50 000 tons of product valued at R 745 million to 59 countries across the globe in 2013 (ASTPM). No product was exported to China in this period. Products exported include both tube and pipe products. Tube products can easily be exported especially those of a smaller diameter or where other products are used to fill up the empty space.

Table 10: Pipe and tube exports

<table>
<thead>
<tr>
<th>ARMCO SUPERLITE (PTY) LTD</th>
<th>BOSAL AFRIKA (PTY) LTD</th>
<th>KLAMFLEX PIPE COUPLINGS (PTY) LTD</th>
<th>LORBRAND (PTY) LTD</th>
<th>MACSTEEL TUBE &amp; PIPE (PTY) LTD</th>
<th>RINGROLLERS A DIVISION OF DCD-DORBYL</th>
<th>ROBOR TUBE (PTY) LTD</th>
<th>XPANDA SECURITY (PTY) LTD</th>
</tr>
</thead>
</table>

Source: SAISI

At the same time South Africa imported just under 90 000 tons of tube and pipe products valued at R 1.53 billion from 56 countries across the globe (ASTPM). The vast majority of the imported products originate from China and India. Imported products include flat rolled product, tubes, pipes, hollow profiles, seamless pipes, welded pipes and tubes.

Seamless pipes are manufactured and exported by ArcelorMittal. No seamless stainless steel pipes are manufactured in South Africa.

The steel pipe and tube manufacturers exporting via ship do benefit from COSM. The industry also benefits from the dti and IDC support mechanisms for such as rebates on capital investment. However, the majority of the industry has not invested significantly in new capacity over the last 5 years and general utilisation rates are between 60% and 70% at present.
Fasteners

The Fasteners industry in South Africa is represented by the South African Fasteners Manufacturers' Association (SAFMA) a sub-division of SEIFSA. The association represents 16 members in South Africa with a combined employee force of around 1 260 in 2013 – only slightly down from 2009 when the workforce stood at 1 267 employees. In 2009 the association represented 22 companies but companies such as Nedschroef, Fascor, LS Pressings have since disinvested from South Africa or closed their operations.

2013 industry sales amounted to R450 million and is expected to decrease to R400 million in 2014. The South African fasteners industry accounts for less than 1% of the global industry. A key challenge in the steel industry in general but in the fasteners industry in particular is the lack of competitive advantage in product design. Since the product is a standard product that can be manufactured anywhere in the world it makes it particularly difficult to compete on anything other than price. As a result customers are extremely price sensitive and there is virtually no loyalty in this value adding sub-segment.

Key products in this category include sets, bolts, nuts, nails, tacks and staples. The majority of these products are made from steel wire products and then forged into the right size and shape. Bolts for example are produced by using a series of dies to create a straight product with the right shape head. This process uses cold forging technology for smaller mass produced items and hot forge technology for larger diameters, particularly where volumes are lower. Cold rolling technology is then used to add a thread to the shaft of the bolt.

The fastener industry in South Africa is not a major downstream user of raw steel quantities. The industry accounted for roughly 22 000 tons of steel in 2013. This represents 1.25% of total steel consumed in South Africa in 2013. However, it is a very important value adding segment and has been described as the value adding segment that holds it all together.

Key local manufacturers in this segment include CBC Fasteners, Transvaal pressed Nuts and Rivets, SA Bolt, Automatic Mass Production, Bolt Corporation and Telscrew. Local manufacturers and importers include ProTech and Impala Bolt. There is also one pure importer, National Socket Screws which was established in 1968 and obtains the bulk of their products from China. Supply of product is relatively evenly split between local suppliers and importers, but is starting to tilt in the favour of importers.

Local capacity utilisation is low at present sitting at roughly 60%. The majority of manufacturers have not invested in a large scale in capital equipment since 2008, and none of the suppliers interviewed had immediate plans for further expansion. Key end-user segments include the mining industry, the automotive markets, construction, road barriers, energy industry (power stations), agriculture and general hardware. The gold mining industry was for many years one of the largest end-user segments in South Africa, but the industry has been on the decline the last 20 years. Platinum mining investment has made up some of the lost gold mining demand, but the recent AMCU strike has had a significantly negative impact on demand. A key concern in the industry is that manufacturing volumes have declined to a point where these manufacturers no longer have the critical mass to sustain their businesses and hence further consolidation of the industry can be expected unless additional export opportunities are created or imports curbed. Mechanisation has been on the increase and certain activities (such as packaging) are increasingly being done through an automated workforce.
The majority of imported products come from China. According to the industry, 22% of South Africa’s fastener industry was uncompetitive compared to China in 2009. This has increased to 55% currently. A part of the reason is that Chinese manufacturers have had negative production inflation as a result of moving their factories to lower labour cost destinations and by mechanising parts of the production process (such as packaging). Exports from South Africa have decreased to Europe but have remained stable to African countries. South African suppliers are increasingly focussing on supplying products into Africa as the key export market. However, the industry is in agreement that general competitiveness is on the decrease mainly as a result of above inflation pressures on labour, electricity and transportation costs. The industry is also of the opinion that South Africa’s labour force is not as productive of those of developed countries or Chinese manufacturers and hence adds additional cost pressure to the manufacturing cycle.

### Table 11: Fastener product imports (2013)

<table>
<thead>
<tr>
<th>Product</th>
<th>Value R’000</th>
<th>Volume, Tons</th>
<th>Origin</th>
<th>Tons</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sets</td>
<td>47 900</td>
<td>4 400</td>
<td>China</td>
<td>3 499</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td>49 690</td>
<td>3 729</td>
<td>China</td>
<td>1 785</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other far East</td>
<td>1 894</td>
<td>51%</td>
</tr>
<tr>
<td>Bolts</td>
<td>36 917</td>
<td>2 194</td>
<td>China</td>
<td>1 053</td>
<td>48%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other Far East</td>
<td>1 119</td>
<td>51%</td>
</tr>
<tr>
<td>Nuts</td>
<td>1 537 887</td>
<td>47 148</td>
<td>China</td>
<td>33 026</td>
<td>57%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Other Far East</td>
<td>8 801</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Europe</td>
<td>14 488</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>USA</td>
<td>1 156</td>
<td>2%</td>
</tr>
<tr>
<td>Other</td>
<td>1 672 394</td>
<td>57 471</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: SAFMA

Tariffs for the fasteners industry vary greatly. The industry has been successful with the application of an anti-dumping duty set on nuts and bolts in 2000. This has partly been skirted by exporters by changing the country of origin and by mislabelling products (for example fully threaded bolts are classified as screws). Screws were partially protected in 2011 but 4 main Chinese suppliers were excluded and these companies increased their market share and hence more locally manufactured product market share has been lost. The general duty on nuts and bolts as well as screws was increased from 10% to 20% in March 2014. The impact of this is yet to be fully understood. Local manufacturers applied for the bound rate of 30% yet the International Trade Administration Commission (ITAC) decided not to implement the bound rate. The process took 16 months to complete and local importers have imported large amounts of stock in anticipation of the increase.

However, the industry is positive about government’s proposed infrastructure projects and in particular the opportunities presented by the rail investments by Transnet and PRASA. The industry feels strongly that local products should be used for the government projects and is lobbying government to purchase local or even designate key products.

Within the fasteners industry few companies currently make use of the dti incentives for manufacturing. The only incentives that were mentioned were COSM and ArcelorMittal promotional rebates including rebates to support product sales to the solar industry in South Africa driven by the Department of Energy’s roll out of the renewable energy programme. African overland exports are
however excluded from these incentives and hence a large part of the exported product does not qualify for incentive support.
Alloy Steel Products

Steel can vary greatly in its composition as a result of other metals that can be added to the steel to give it particular qualities. Common alloys include steel mixed with manganese (the most common one), nickel, chromium, molybdenum, vanadium, silicon, and boron. Less common alloyants include aluminium, cobalt, copper, cerium, niobium, titanium, tungsten, tin, zinc, lead, and zirconium.

The following is a range of improved properties in alloy steels (as compared to carbon steels): strength, hardness, toughness, wear resistance, corrosion resistance, hardenability, and hot hardness. To achieve some of these improved properties the metal may require heat treating.

Some of these find uses in exotic and highly-demanding applications, such as in the turbine blades of jet engines and in nuclear reactors. As a result of the ferromagnetic properties of iron, some steel alloys find important applications where their responses to magnetism are very important, including in electric motors and in transformers.

Two types of alloy steels are widely used in South Africa namely speciality steel and engineering steel. Arcelor Mittal produces a wide range of alloy steels in South Africa including spring steel, forge rounds and semis (blooms, billets, ingots and semi’s). The speciality steels are then bought by speciality steel merchants who will sell smaller quantities to engineering firms, MRO companies and speciality steel machining companies. Key speciality steel merchants include:

**Table 12: Key Alloy Steel Merchants**

<table>
<thead>
<tr>
<th>Merchant</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macsteel Speciality</td>
<td>All over South Africa</td>
</tr>
<tr>
<td>Trident Speciality (Aveng)</td>
<td>All over South Africa</td>
</tr>
<tr>
<td>Odyssey Steel</td>
<td>Johannesburg</td>
</tr>
<tr>
<td>Ambrose</td>
<td>Johannesburg</td>
</tr>
</tbody>
</table>

Source: ArcellorMittal

In South Africa speciality steel (EN24) is commonly used in the automotive industry, energy industry (Petroleum companies and Eskom), in the paper and pulp industry in products such as boilers, super heaters and pressure vessels. This type of steel can be welded although speciality skills are required to work with this type of metal. Speciality steel products typically gets used in the automotive industry, industrial applications of high wear and tear, the tooling industry and applications of high heat environments.

Approximately 80 000 tons of speciality steel is used in South Africa per annum. The two major products include 709M40 (used for applications such as axels shafts, crankshafts, connecting rods, gears, high tensile bolts and studs, propeller shafts joints, rifle barrels and breech mechanisms for small arms parts, induction hardened trackpins) and 817M40 (automobile main shafts, axle shafts, connecting rod bolts, synchronising cones, push rods, studs, differential shafts, motorcycle kick starter ratchets, pinion sleeves, mandrel bars for tube manufacturing, gun barrels, breech mechanism parts, high duty engine connecting rods, high temperature bolts in oil refining and steam installations, various parts of machine tools such as spindle gears, compensating washers, power transmission gears, slide racks, and slide cams). The value add for speciality steel is very high.

Engineering steel (EN19) contains more carbon and cannot be welded easily. This type of steel is stronger than normal steel and is used in environments where durability is of the highest importance such as in turbines, compressors, gearboxes, pumps, fans, impellers and turbine blades. Companies
able to work with this type of steel include companies such as Elca Engineering (specialising in the servicing of turning equipment), GE, Alstom, TGS (specialising in turbine maintenance) and ABB.

Black and Bright Bar
Black bar is steel that has been heat treated in a hot rolling process that still has a black crust on the outside. It is this crust that gives it the name black bar. Black bar generally lacks preciseness in terms of its size, dimensions, shape and flatness. It is normally used in areas where accurate dimensions or specifications are not critical. It is not considered as suitable for the manufacture of high precision parts.

Bright bar is an improved form of steel, it has been ground down from black bar or cold rolled and lacks the black crust that is found on black bar. Bright bar is produced to much closer tolerances in terms of dimension, hardness and flatness than black bar, its applications are far more precise in nature and it is used extensively in the manufacture of precision components.

There are a number of different methods to produce bright bar from black bar some of these are highlighted below.

1. **Cold Drawing:**
   The black layer is descaled, pulled through tungsten carbide die, straightened and cut to length.

2. **Turning and Polishing:**
   Removal of the black layer using revolving cutting tools, the bars are then rotated through rolls to straighten and polish before cutting to size.

3. **Grinding:**
   The surface layer is ground off with a grinding wheel before cutting to size.

4. **Cold Rolling:**
   Surface layer is removed and is passed through a series of rolling stands to achieve very precise dimensional tolerances

These processes generally lead to very accurate dimensions and tolerances which makes the steel suitable for precise applications.

In South Africa the leading buyer of bright bar is the automotive industry where it is used in axles, and crank shafts, springs and other mechanical components. Other major users include manufacturing companies that require specialised and highly precision components. Examples of companies that are major buyers of bright bar are SP Metal Forgings and Supreme Spring who both specialise in the manufacture of specialised components for the automobile industry. Major manufacturers of bright bar such as Macsteel sell large volumes of their product through merchants such as Aveng and Ambro. These merchants will then resell the product to individual companies in end user industries.
The following list shows the various uses of black and bright bar products and the industries that use them;

**Black bar**
- Engineering components
- Forging industries
- Foundation bolt
- Shafting applications
- Machined Components
- Daily Equipment
- Surgical & Medical Parts
- Hinges & Handles
- Forging industries
- Grill fencing
- Electrical & machinery industries
- General engineering and fabrication jobs
- Grating industries
- Component manufacturing
- Crank shafts
- Automobile axle beams
- Connecting rods
- Moderately stressed parts of motor vehicles
- Engineering components
- Stressed pins, studs, keys

**Bright bar**
- Machined Components
- Pump Shafts
- Valves
- Fasteners
- Machine Tools
- Daily Equipment
- Surgical & Medical Parts
- Thread Bars
- Studs & Bolts
- Hinges & Handles
- Engineering component
- Forging industries
- Grill fencing
- Foundation bolt
- Shafting applications
- General engineering & fabrication jobs
- Grating industries
- Electrical & machinery industries
- Cement plants
- Pharmaceutical industry
- Chemical plants
- Sugar mills
- Construction
- Railways
- Automotive
- Crank shafts
- Automobile axle beam
- Moderately stressed parts of motor vehicles
- Automobile axle beam
- Moderately stressed parts of motor vehicles

Both products are used in similar industries the key difference being that bright bar is used for more specialised applications within the industries where precision and accuracy in terms of strength, dimension, flatness, weight etc. are more crucial. Black bar can be used in more general use applications and an advantage of black bar is that it is easier to weld.

The speciality steel industry has indicated that there is generally a strong relationship with ArcelorMittal in terms of the supply of black bar to merchants and primary manufactures of bright bar. Up to 90% of black bar is procured from ArcelorMittal with the other 10% is procured from merchants and from the other steel producers such as Scraw Metals. When the rand is stronger a larger portion is procured from merchants as they can offer better prices than ArcelorMittal.
Pressure Vessel Equipment

The pressure vessel equipment industry is represented by the Pressure Equipment Manufacturing Association (PEMA) that is an employers association and forms part of SEIFSA. The association has 19 members of whom 12 are equipment manufacturers. The total pressure vessel industry in South Africa has around 30 active companies and employ around 1 000 people. No statistics on the volume of steel used or the value of the industry is kept at present.

Pressure equipment should be viewed as a system rather than just one product. Pressure equipment is defined in the OHSAct regulation as steam generator, pressure vessel, piping, pressure accessory and safety accessory, transportable gas container and fire extinguisher and includes but is not limited to an accumulator, a hot water geyser and hyperbaric chambers. The main steel content by weight and value is in plate (up to 70mm in thickness), forgings (such as flanges and fittings), pipe and tubing. Approximately 75% of the products in this grouping are manufactured from carbon steel while the remaining 25% is made from stainless steel. The pressure vessel industry mostly requires steel of a very high quality that is often not manufactured locally and as a result around 80% of carbon steel and 30% of stainless steel products are imported from Asia, Europe and USA.

According to the industry the largest challenges facing the industry are the lack of industrial investment, uncertainty on government’s infrastructure requirements, and rising input costs (labour, electricity and transportation). The industry also identified skills shortages as a major concern. Companies in the industry indicated that there are many trained artisans and technical staff available, but that these individuals did not have the right skills when employed. This results in significant on the job training in order to make the resources productive. It was also mentioned that some of the companies in the industry prefer to make use of labour brokers to import skilled artisans from locations such as Thailand who were significantly more productive than local labour at a comparative rate.

Key end-user industries include the mining industry (especially gold, platinum and copper), paper and pulp industry, the petrochemicals industry, the electricity industry, food and beverage and the water industry. It should be noted that the products used in pressure environments can also be used for non-pressure environments (such as the water treatment industry).

Table 13: Major manufacturers in this industry include

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
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<tbody>
<tr>
<td>Steinmuller</td>
<td>Gauteng</td>
</tr>
<tr>
<td>GEA</td>
<td>Gauteng</td>
</tr>
<tr>
<td>SPX DB Thermal</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Hydra Arc</td>
<td>Mpumalanga</td>
</tr>
<tr>
<td>John Thompson</td>
<td>Cape Town</td>
</tr>
<tr>
<td>Turnmill</td>
<td>Gauteng</td>
</tr>
<tr>
<td>ND Engineering</td>
<td>Durban</td>
</tr>
<tr>
<td>Elgin Engineering</td>
<td>Durban</td>
</tr>
<tr>
<td>Gascon</td>
<td>Cape Town</td>
</tr>
<tr>
<td>CS Fabricators (previously VBV Holdings)</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Styria Engineering</td>
<td>Gauteng</td>
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</tbody>
</table>

Source: PEMA
No statistics on imports are available for this industry since many of the components used in the pressure system are imported as a “project”. For instance a company would import brewery equipment, of which a large portion of the product would include pressure vessel equipment. According to PEMA it is estimated that between half and two-thirds of all pressure vessel equipment used in South Africa is imported. The key reason for imports was that these products can be imported cost competitively as a result of the support mechanisms used by export countries (especially China and India) and production systems using economies of scale (Europe and USA). South African companies tend to manufacture a large number of products making it relatively more complex and expensive than just focusing on a small number of products but producing at large volumes. A key reason for this is that the South African market requires a large number of relatively similar products but each with its own design.

According to PEMA around 50% of locally manufactured equipment is exported to countries in Africa including Zambia, DRC, Tanzania, Namibia and increasingly to countries in West Africa. South Africa still has a competitive advantage in the manufacturing of pressure equipment for the mining industry. A smaller but potentially important market for the future is the oil and gas market where pressure equipment is also exported. Overland transport inefficiencies (such as border control red tape) and costs do however limit the volume of goods exported. Since the majority of steel used for pressure vessel equipment is imported few companies benefit from support from COSM or Arcelor Mittal’s support mechanisms.

Companies in this segment indicated that they use government incentives wherever feasible but that excessive red tape makes using incentives relatively unattractive. Specific support mechanisms mentioned by industry include the EMIA Scheme, Research and Development support (from DST and the dti) and general manufacturing incentives (such as 12L, Critical Infrastructure Programme (CIP), Capital Projects Feasibility Programme (CPFPP) and Employment Creation Fund (ECF)).

At present there are only a limited number of tariffs in the pressure vessel environment. GEA (with the support of PEMA) recently applied for a tariff increase on heat exchangers and ITAC implemented a 15% tariff. Within this environment there is also designation for valves but this has been a relatively recent development and the local industry has not yet benefitted much.

According to the industry the local industry is increasingly less competitive as a result of underinvestment in new modern manufacturing capacity, increasing operational costs and an inability of local suppliers to collaborate on large orders as a result of Competition Commission restraints. These large orders will then typically be placed with large international manufacturers.

The industry expressed its hopes for future projects in the mining, petrochemical and energy industries. Mining investment in particular has been slow over the last 3 years, Medupi is coming to an end and there remains uncertainty on the development of Project Mthombo by PetroSA and the development of the nuclear industry. More clarity and certainty on government’s infrastructure roll out will benefit this industry greatly.
Hot Dip Galvanizing Industry

The Southern African hot dip galvanizing industry is represented by the Hot Dip Galvanizers Association of Southern Africa (HDGSA) representing more than 90% of the estimated total 34 local hot dip galvanizing companies in Southern African region. The industry employs approximately 4,200 employees. The association’s objectives include technical marketing, technical support to hot dip galvanizing members, training and education all in terms of the application of the process for corrosion control of carbon steel structures.

Hot dip galvanizing is downstream of the final fabrication process of carbon steel components with the primary objective of providing a viable, sustainable long term maintenance free corrosion control system. The hot dip galvanizing industry is wholly dependent on the carbon steel industry as it represents the final step in the manufacturing process. Without steel no galvanizing can take place.

Hot dip galvanized coatings are produced by a metallurgical reaction between iron and or steel and molten zinc at a temperature of 450°C. A series of hard abrasion resistant iron/zinc alloys are formed and these are over coated with relatively pure zinc as the product is withdrawn from the galvanizing kettle. The various layers all play a significant role in the provision of corrosion protection, both in terms of a barrier and cathodic protection. For the coating to form, the steel surface is required to be totally free from all contaminants such as mill scale, rust, grease and oil.

As the name implies, the hot dip galvanizing process entails dipping or immersion into a series of cleaning and pre-treatment chemicals prior to immersion in the molten zinc. The advantage of this method is that all product surfaces are wetted uniformly, including areas which would be inaccessible for cleaning and coating by other methods.

Prior to the closure of Zincor (2011), South Africa produced the major portion of its zinc requirements. Current practice is that all zinc requirements are imported, partially from Namibia, but the majority from other international producers. South Africa consumes approximately 100,000 tons of zinc annually. Estimates of zinc usage are reflected in the following pie chart.

Figure 11: Total Zinc Usage in South Africa

![Total Zinc Usage All Products](chart)

Source: HDGSA
The majority of hot dip galvanizing companies are located in the Gauteng (75%) region followed by the Western Cape (10%), Kwazulu Natal (10%) with the remaining companies located in Port Elizabeth, George and East London. The market is relatively concentrated with around 50% of the market share allocated to the top 5 companies in this segment. Larger galvanizers typically have 14 meter molten zinc kettles, while medium size operations typically have 7 to 9 meter kettles with centrifuge (fasteners) operators using 4m kettles. There is virtually no product differentiation in this industry with quality of the hot dip galvanizing, as well as customer service, being the only differentiating qualities. Pricing is very competitive and tends to become the differentiator for many companies.

Paint tends to be seen as the major competitor to hot dip galvanized carbon steel. However, when corrosion control, longevity and life cycle analysis is applied, the process has an exceptional performance history.

At present the major available capacity is situated within Gauteng with an over capacity of hot dip galvanizers particularly along the coastal regions. A medium sized (7 to 9m kettles) hot dip galvanizing plant entails a plant and equipment investment of between R35-R45 million excluding land and buildings. Part of any new investment, close attention will be required to air emissions and waste management.

**Table 14:** Major manufacturers in this industry include

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Location</th>
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<tbody>
<tr>
<td>Robor Galvanizers</td>
<td>Gauteng</td>
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<tr>
<td>Transvaal Galvanisers</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Armco Galvanizers</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Cape Galvanising</td>
<td>Cape Town</td>
</tr>
<tr>
<td>Phoenix Galvanizing</td>
<td>Durban</td>
</tr>
<tr>
<td>Silverton Engineering (Galvadip Galvanizing)</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Lianru Galvanizers</td>
<td>Gauteng</td>
</tr>
<tr>
<td>Voight &amp; Willecke</td>
<td>Kwazulu Natal</td>
</tr>
<tr>
<td>Advanced Galvanising</td>
<td>Western Cape</td>
</tr>
<tr>
<td>Galvanizing Techniques</td>
<td>Eastern Cape</td>
</tr>
</tbody>
</table>

Source: HDGSA

In total over 600 000 tonnes of carbon steel is hot dip galvanized annually using approximately 35 500 tonnes of zinc, or approximately 35% of the South African imported zinc requirement.

Globally 12 million tonnes of zinc is produced per annum meaning South Africa uses only 0.83% of global supply.
Typical products that are hot dip galvanised include continuous products such as cladding and roof sheet (produced by ArcelorMittal and Duferco), wire products, heavy structural steel components, road furniture (road barriers, road signs and related steel products) pipes and tubes, heat exchangers and finned tube condensers. Capacity use has reduced in the last 2 years by between 12% and 15%. Zinc is the major cost driver making up 45% to 55% of the final product value.

The hot dip galvanizing industry is facing a number of challenges including rising operational costs, changing air and waste management requirements, decreasing local demand and increasing imported steel that could be produced and hot dip galvanized locally. Electricity has always been a key component in the hot dip galvanizing industry, but in recent years the rapid increase in
electricity prices have forced galvanizers to convert their plants to using gas typically supplied by Sasol.

Hot dip galvanized carbon steel products have been increasingly imported from China, India and other international locations with product quality varying from good to poor, sometimes requiring local intervention.

A hot dip galvanizing kettle containing molten zinc at a constant temperature of 450°C is maintained irrespective whether steel is available for processing or not. A heating cost is incurred and it is therefore essential to maximise plant capacity to ensure sustainability and job creation within the various locations. The variable cost of the heat source (gas or electricity) is due to the absorption and subsequent dissipation of heat by the actual products being dipped as well as heat losses from the furnace walls and the molten zinc surface.

In general, the majority of the industries’ labour requirements consists of relatively unskilled people, but with on-the-job training these people can progress to a level of semiskilled operators. From this semiskilled labour sourced, and with further on the job training, operators move to a higher level of responsibility. Areas where specialist skills are required are in controlling the zinc kettle and pre-treatment chemical control.

The hot dip galvanizing industry does not have the benefit of any specific government incentive programmes. Capital investment within the industry has been limited over the last 12 to 15 years with only limited investing in new capacity and environmental and waste management controls. Hot dip galvanized steel products are exported from South Africa, but the galvanizers do not benefit from incentive schemes such as COSM directly.

There are a number of projects that could benefit the hot dip galvanizing industry in South Africa. These include increased infrastructure spending and mining development projects demand from countries such as Mozambique, Zambia, Tanzania, Kenya, DRC and Angola. Another opportunity is within the energy industry and specifically in power transmission structures. In the past many of these structures were imported as part of larger projects. The steel industry has successfully lobbied very hard to change such practices. Lastly the industry is at present benefiting from the DoE’s renewable energy programme as a result of solar power farms where hot dip galvanized steel is used as support structures. Here again this market segment has also had substantial finished steel imports impacting on plant capacity utilisation.
Stainless Steel

The stainless steel industry is represented by the Southern Africa Stainless Steel Development Association (SASSDA). The association was formed in 1964 and represents around 415 companies with 35 000 employees.

Figure 14: SASSDA member distribution

More than 50% of members are located in Gauteng, followed by about 20% in the Western Cape, 17% in Kwazulu Natal and 9% in the Eastern Cape. The association plays an active part in promoting South African stainless steel, lobbying industry interests to government and facilitating training that will benefit the stainless steel industry in the country. The artisan training programme funded by the dti is called the Manufacturing Initiative Programme and is being developed for four artisanship’s (boiler making & manufacturing, welding & coded welding, foundry and precision machining). The first intake is in 2015.

South Africa has one stainless steel producer in Columbus Stainless that was founded in 1966 and is located in Middelburg (Mpumalanga). It is the only producer of primary stainless steel flat products in South Africa. 76% of the company is owned by Spanish stainless steel giant Acerinox, S.A. while the IDC holds 24%. In 2013 Columbus produced 420 507 tons of stainless steel. Of this 130 455 tons were absorbed into the local market (31%) while 290 052 tons were exported. The total apparent consumption of stainless steel in South Africa in 2013 was 209 000 (meaning 78 545 tons of stainless steel were imported in 2013). Although the stainless steel market is only 3% of the size of the Ferro steel market the relative value per kg is 5 times that of carbon steel.

There are a large number of stainless steel end products. SASSDA has a record of 1 600 products of stainless steel produced in South Africa (but there even more) ranging from kitchen appliances to exhaust systems (catalytic convertors), tube and pipes, pressure equipment and storage tanks – to name but a few. South African stainless steel producers manufacture a large number of products broadly classified as food and beverage containers, kitchenware, architectural steel, automotive components and general piping.

In 2013 South Africa exported 290 052 tons of flat stainless steel product while it imported 29 635 tons. Local manufacturers said that they imported products as a result of two factors namely the grade and availability of the local product and secondly the willingness of international suppliers to engage in long term contracts with local manufacturers, a practice that local steel suppliers are not
willing to do. Companies who sign longer term contracts (typically 18 months or longer) need to quote firm prices which is very difficult if you cannot engage in long term price certainty. However, some foreign suppliers are willing to engage in longer term fixed prices and this enables the local manufacturer to plan with more certainty.

The local market is facing increasing imports. As with other steel products China has been investing heavily in stainless steel production and manufacturing capacity. In 2005 China produced 13% of the world’s stainless steel, and this number has grown to 50% in 2013. Other stainless steel producing countries that export to South Africa include Taiwan and Finland (who produce a very high quality niche stainless steel product).

**Figure 15: Apparent Stainless Steel Consumption in South Africa (tons) (2011-2013)**

The global stainless steel industry has been growing at a compound annual growth rate of 5.57% between 1980 and 2012, nearly double the growth experienced by other metals groups such as copper (2.56%), Aluminium (3.52%) and carbon steel (2.61%). Part of the reason for this is that stainless steel is often viewed as an aspirational metal and as global income levels have increased so has the need for more stainless steel products as well.

Imported finished products are dominated by tableware (around 60%), tube and pipe fittings (around 25%) with the rest being fasteners, sinks and expanded metal. Imports have grown strongly since 2009 with volume imports growing from 9 097 tons in 2009 to 16 667 tons in 2013 with 2012 imports reaching 17 637 tons. However, the industry is convinced that more imported products are entering South Africa with it being mislabelled or through the general HS Project codes for large projects – such as the Medupi and Kusile power stations.

A key concern in the industry is that many of the imported products do not comply with the same quality standards as the local products and SABS has not designed sufficient tests for the stainless steel industry in South Africa. According to the industry the quality of stainless steel entering South Africa is not always aligned to what is claimed on the label, and South African testing agencies do not have the capacity to test these products.
The majority of stainless steel finished goods are not protected by import tariffs. General tariffs for stainless steel goods vary from 5% to 15%. The bound rate for most stainless steel products is 30%.

Current utilisation of manufacturing capacity is very low with some companies utilising only around 40% of their capacity. The industry has not invested heavily in new capital goods and companies will most likely have to consolidate through mergers or acquisitions in order to optimise capacity.

According to industry participants the skills required in the stainless steel industry are under pressure as many of the older engineers and artisans have either moved to new industries or migrated to other countries. The new artisans that are being trained do help the industry, but there is no substitute for experience. According to the industry there is a mismatch between the artisan needs of the industry and what the training institutions are providing. Some companies are therefore investing in artisan development in order to develop the right skills.

The industry is further concerned by the lack of tariff protection for local markets and that the bound rates for stainless steel products are not being utilised to level the playing field from foreign suppliers that have an unfair competitive advantage through incentives and support mechanisms. Government efforts to support the industry are widely welcomed and designation for key products is one of the ways to support local manufacturing.

The stainless steel industry cannot claim from COSM for exports and it has been suggested that a similar scheme be put in place for the stainless steel industry. The current administrators of COSM have expressed their willingness to administer such a fund. Columbus Stainless does offer local manufacturers incentivised stainless steel prices per project, but it is at the discretion of the company and hence difficult for manufacturers to plan around. The stainless steel industry does benefit from the Automotive Industry APDP support programme under the dti. Merchantec did not find any companies making use of general manufacturing incentives during the primary research process.

The value of most stainless steel products is in the steel itself with the majority of product stainless steel value ranging from 50% to 70% of the final product value. As a result any local changes in the stainless steel price could have a large impact on the overall competitiveness of the local manufacturer. Stainless steel prices are linked to global prices and are typically dollar denominated. South Africa could potentially create a manufacturing advantage as the country is rich in chromium, nickel, iron ore and manganese – all the input elements in stainless steel. Columbus Stainless do not want to commit to a developmental internal stainless steel price, but companies in the industry have indicated that the company is very accommodating towards the local manufacturing industry and provides discounted pricing on a case by case basis. Columbus is also viewed as accommodating to develop new stainless steel grades for companies with specific requirements. However, economies of scale limitations do prevent the steel producer from being able to accommodate all requests.

Key challenges facing this segment of the steel industry include general manufacturing challenges such as rapidly increasing electricity prices, inability of urban manufacturers to purchase electricity directly from Eskom at Megaflex rates, transportation ineffectiveness, low productivity, excessive red tape for general business and increasing labour costs.

South Africa has a world class stainless steel industry with a large number of export products. This includes tank containers, exhaust systems, airflow products and general stainless steel products. According to the industry South Africa maintains a competitive advantage through quick turnaround times, excellent project management skills, logistics support and honouring product guarantees.
Industry interviews confirmed that the local market will continue to grow at a rate equal to overall economic growth and that the stainless steel industry does not expect significant growth from the local market. The real opportunity is in the export market and in particular into rapidly expanding African markets.

**Figure 16:** Local apparent stainless steel consumption

The stainless steel industry mainly focuses on Southern and West Africa for export growth, and finds that it is increasingly difficult to compete for markets on the East coast of Africa as a result of the proximity to Asia. Key export markets include Zambia, DRC, Mozambique and Namibia. Specific opportunities for the stainless steel industry include the rail industry (coal wagons), the automotive industry, and the oil and gas sector (especially in the newly discovered regions of Mozambique, Namibia, Tanzania, Uganda and Kenya).
Foundry Products (Including Valves)

Foundry products are formed when steel (mostly scrap metal) is poured into a mould and there are a very large number of products created in this way. The Foundry industry is not part of the formal focus of this assignment but information on the valves industry is included for interest sake.

Valves Market
There are approximately 24 local manufacturers with an additional 60 importers and resellers in the South African valves market. The manufacturing industry supports 1600 jobs which could be doubled if demand for locally produced valves were to increase. At present manufacturing companies are utilising between 70% to 75% of capacity despite the designation of valves in the South African market. 2013 market revenues were around R1.45 billion in locally manufactured goods and an additional R2.7 billion in imported products. According to industry sources the local market accounts for 1.5% to 2% of the global market.

Valves are manufactured from iron and steel in castings or forging form and stainless steel in bar and plate form. The products are then machined into the right shape and size.

Valves have been designated since March 2014. Government has set the local content floor at 70% for all state owned enterprises and functions for valve products. However, this is yet to have a large impact on local manufacturing. There is a general industry feeling that end-users stocked up on valves before the designation was implemented and that it could take between 12 and 18 months to have a real positive impact on local manufacturing.

Exports have been decreasing since 2008 with key export markets being into Africa and Europe. A key competitive advantage in the local industry is the relatively rapid response time companies have compared to international manufacturers and this is in part helping to drive demand for South African produced valves. Most export products are niche products but are done on a small basis only.

The industry is facing a number of challenges including access to affordable capital (compared to foreign competitors), cost of raw material and a perception in the local market that imported products are of a better quality than locally manufactured goods.

Key customer groupings in South Africa include the mining industry (the largest local client group) state owned enterprises (such as Eskom and Transnet), municipalities and water boards. The two largest players in the valves market are Aveng DFC and Cobra. Additional players include Actuator Technical Services, Ainsworth Engineering, Atval, Enserve, Flowserve, Gunric Valves, Invicible Valves, Inthuba Valves and Industrial Supplies, Paltech, Premier Valves, Republic Transmissions, RGR and Rotork. The industry is not currently looking to make any significant capital investments. However, the demand for products is expected to increase and hence the industry anticipates a double shift system within 12 months and 3 shifts within the next 4 years. The last significant investment in capacity within the industry was done by Aveng DFC in 2010.

Interesting to note has been the recent investment of around R100 million by AVK into Premier Valves as a result of the designation requirements set out by government. AVK will introduce new best in class manufacturing processes and technology and also set up a new line of resilient seal valves that will target export opportunities.
Price remains the largest differentiator in this market with some imported products costing up to 60% less than locally manufactured goods. There are a variety of reasons for this, including large scale industrial incentives (especially in China and India) and the ability to manufacture with economies of scale.

Specific incentives used in the valves market include Export Marketing and Investment Assistance (EMIA), Manufacturing Competitiveness Enhancement Programme (MCEP) and the Technology Localisation Incentive Unit (TLIU) driven through the CSIR.

**Rail Sub Segment**

The Railroad Association of South Africa (RASA) represents the interest of 34 companies in South Africa including manufacturers, OEM’s, Transnet, PRASA and a number of logistics companies. The association’s members employ in excess of 100 000 employees, but only a limited number of these are involved in steel product manufacturing.

The South African rail market is dominated by state owned companies Transnet and PRASA. Rail infrastructure is maintained by the state.

There are a number of rail product suppliers active in South Africa. They include SWASAP, DCD, Clyde and Supreme Steel. Key OEM’s involved in the manufacturing of locomotives include GE, Bombadier, Alstom and Actom. Component suppliers include Surtees, Semotrack and Landings. The rail segment can be segmented into two areas namely primary rail material (manufactured at the steel mill) and value adding segment of locomotive and carriage building, rail fasteners and related products. A significant amount of steel used in the rail industry comes from the foundry industry and is therefore also not part of this analysis (such as wheels, axels and rails). The focus will therefore be on investment in future rolling stock as planned by Transnet and PRASA.

Transnet has over the years contributed greatly to the technical capability of the country through training and large workshops. Over the last 40 years the South African train industry has been steadily decreasing in efficiency to a point where major manufacturers do not even consider rail as a potential solution for their transportation needs. Government has recognised the rail industry as a major pillar of weakness and is investing in new rail infrastructure, replacing old locomotives and investment in carriages. Transnet is therefore in the process of replacing 1 000 locomotives worth R52 billion in conjunction with GE, Bombadier, China North and China South. The localisation requirements for these locomotives are 54% which will lead to significant opportunities for local companies.

PRASA announced a R51 billion contract with Gibela Rail Transportation, a consortium between Alstom (61%), New Africa Rail (9%) and Ubumbano Rail (30%) to manufacture 600 commuter trains (3 600 coaches) over the next ten years. As part of the PRASA contract, Gibela would build a R1-billion manufacturing site in Dunnottar, 10 km north of Nigel, to produce the 580 trains. The 600 000 m² manufacturing facility is also designed to house an engineering centre and training facility. The project is expected to create more than 33 000 direct and indirect jobs over ten years, achieving local content of more than 65% on the rolling stock. Gibela would train an estimated 19 000 people, including artisans, technicians and train drivers, over the life of the project. The Gibela deal formed part of PRASA’s bigger rolling stock programme, which aimed to procure 7 224 new coaches at the projected cost of R123-billion over 20 years.
Transnet has been given a mandate to invest R200 billion to expand rail infrastructure and modernise the freight fleet. In accordance with its strategy, the company has committed itself to raling more than 350.3 million tons of cargo a year by 2018 / 2019, the financial year when the Millennium Development Strategy (MDS) will reach its maturity.

A key challenge faced in this industry is that for many years the rail industry did not invest much into new capacity and now two very large orders have come in during the same period. As a result companies in the industry need to be aligned better in order to benefit from the localisation requirements. Another challenge is that the 5 locomotive OEM’s all have their own product specs and when dealing with South African manufacturers often require exclusive access to their manufacturing capability.

South Africa is not a major rail product exporter at present, but companies such as Lennings, Grinrod and VAE have exported in recent years. However, according to RASA there are significant opportunities going forward across the locomotive and carriage manufacturing in components such as traction motors, compressors, braking systems and related products. Local manufacturers have indicated they are very interested in export opportunities, but that a sufficiently large local market is essential for continued exports. According to the industry, China manufactures over a 1 000 locomotives per annum (what South Africa plan to do over 10 years) and hence it is difficult to compete against such economies of scale. However, our proximity to other African countries is a huge advantage to South African manufacturers.

**Drums and Packaging**

There is no industry association for the drums and packaging market, but various associations do cover some of their interests including the South African Institute of Welding, International Steel Fabricators of South Africa (ISF) and South African Iron and Steel Institute (SAISI).

Approximately 2 million drums are manufactured in South Africa per annum (210 litre drums) and are widely used for the transportation of hazardous and non-hazardous goods such as food and beverage and petrochemical products. Key end-users of the products include companies such as AECI, Chevron, Engen, Shell, Sasol, Total, Improchem, Senmin, AGIP, BP and fruit concentrate exporters. A metal drum weighs around 20kg per drum and hence the total steel used is around 40 000 tonnes per annum.

Demand in 2013 is estimated at around 2 million drums with a market value of around R360 million.

This industry has not been impacted heavily by new drum imports, as the transportation costs of empty drums make it prohibitive to do so. There is a relatively small market for second hand drums in South Africa, but most drums sold are new ones.

Other competing materials include plastic, paper and glass. However, steel drums have a very specific application and the durability and option to use a drum multiple times makes it an attractive products.
The market for steel drum products are dominated by Greif (43% market share), Rheem (43%), Peninsula Drums (10%) and Khuneni Drums (4%).

The export opportunities for drums are relatively limited in its empty form based on the cost of transportation and hence few drums are exported. The steel for drums is typically sourced directly from the steel mills. Drums are manufactured by cutting and bending metal sheets. The bended product is then welded to form a tube. The tube is then sealed with top and bottom sections and painted. Special coatings are often required for speciality products such as aggressive chemicals and food products.

It is normally not cost effective to export drums as their form makes them impractical to export due to the wasted empty space. As a result companies will buy drums from the major drum producers and will then package their goods in these drums. When they export they are able to claim support fees from COSM.

Table 16: Key drum exporters

<table>
<thead>
<tr>
<th>AFRIPURE FRUIT JUICES</th>
<th>ASSOCIATED FRUIT PROCESSORS (PTY) LTD</th>
<th>CERES FRUIT PROCESSORS LTD</th>
<th>DIVFOOD A DIVISION OF NAMPAK METAL PACKAGING LTD</th>
<th>ELGIN FRUIT JUICES (PTY) LTD</th>
<th>LANGEBERG &amp; ASHTON FOODS (PTY) LTD</th>
<th>LUBRIZOL SOUTH AFRICA (PTY) LTD</th>
<th>MERISOL RSA (PTY) LTD</th>
<th>NCP CHLORCHEM (PTY) LTD</th>
<th>NEPTUNE PLASTICS (PTY) LTD</th>
<th>ORANJERIVIER KONSENTRAAT PRODUSENTE</th>
<th>SA CALCIUM CARBIDE (PTY) LTD</th>
<th>SASOL SOLVENTS (PTY) LTD</th>
<th>SUMMERPRIDE FOODS LTD</th>
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Source: SAISI
Strategic Analysis of the South African Value Adding Steel Industry

After extensive industry interviews Merchantec has come to the realisation that although there are subtle differences between the various sub-sectors there is significant overlap between the realities they face. As a result Merchantec has completed a number of strategic tools to help profile the industry. In the case where a particular sub-segment does not conform to the strategic outlook mention will be made.

The following strategic tools refer specifically to the downstream value adding segments that do not benefit from specific government initiatives. Segments that are benefiting include the rail industry, the valves industry (through designation), automotive industry (through the APDP programme), domestic appliances (through general manufacturing incentives), the tooling industry (through governments tooling initiative) and the steel drum industry (benefiting from the relative distance to market and hence no competition).

The value adding subsectors that are included in the analysis below id the fabricated structural steel segment, wire products, tube and pipe products, fasteners and the stainless steel industry.

Porter’s 5 Forces
Porter’s 5 forces were developed to help senior managers see the most important aspects of a business and provide top level commentary of the current state of affairs in the industry.

Within the downstream steel value adding industry the following is relevant:

Suppliers’ Analysis:

Level of Influence: High

The South African downstream steel industry is supplied in two ways 1) from local mills or 2) from imported primary steel products. A key aspect of the local steel industry is steel pricing. South African companies purchase steel at export parity prices (i.e. what it would have cost them if they imported the steel). The steel mills are therefore price setters and can command any price as long as it is comparative to or less than that of imported steel product. This is despite South Africa’s rich iron ore resources. Steel costs make up anything from 5% to 80% of final product cost for most steel products. Products where the steel costs more than 50% of the final product cost could benefit greatly from a reduced steel price. This in turn could give local exporters a significant boost and could help to protect the local market against imported steel products.

Various industry participants complained about local steel lead times and grades available and said that imports are increasingly attractive based on this. Lower quality steel is a problem to the industry as it results in a reduced conversion ratio making the input costs higher. Although not formally part of this project’s analysis various industry participants mentioned the ongoing exportation of scrap steel that should be used in the local steel industry. Although government has put measures in place to try and optimise this market it has not yet resulted in more optimal scrap steel exports.

Customer Analysis:

Level of Influence: High

Customers buying steel products are spoilt for choice. The level of competition increases proportionally as steel product complexity increases as well. Although there are differences in the
quality between different suppliers it often is negligible and does not allow for individual companies to differentiate themselves. As a result the only major thing that separates companies is price. Customer loyalty is typically low, although end-users do value strong industry relationships and flexibility. However, price is by far the overarching criteria when end-users select their suppliers.

**Competitive Rivalry:**
**Level of Influence: High**

Competitive rivalry in South Africa is on the increase, not from local suppliers but from imported product. As a result there is a period of consolidation in the steel industry with few new local manufacturers entering the market, and in fact some companies leaving the market as a result of insolvency. Many foreign manufacturers seem to have a competitive edge over South African suppliers. These factors will be explored in a subsequent report analysing the market challenges in more detail.

**New Market Entrants:**
**Level of Influence: Low**

The high cost of setting up a steel manufacturing facility in South Africa is a prohibitive factor currently protecting local suppliers. However, it is very easy to import steel products and increasingly importers have a larger market share of the local market. It is therefore not new market entrants that pose a risk to local manufacturers but rather the increasing number of companies importing finished goods. It is estimated that a company that wants to start a wiring company will have to invest nearly R500 million before they will be able to manufacture meaningfully in the South African environment. Further market entry barriers include relative unavailability of experienced staff as well as excessive health and safety requirements. It is not uncommon for contractors to spend up to 65 days going through safety inductions for large infrastructure or maintenance projects with government customers. New companies seldom have sufficient working capital to support such a long period and hence it is established large players that often win contracts.

**Substitute Products:**
**Level of Influence: Medium**

Although the need for steel will never be completely replaced by substitute products there are some products that are increasingly reducing the demand for steel products. They include aluminium in the automotive industry and food and beverage markets, concrete in the construction industry and PVC piping in the water supply industry. In the construction industry there is also a global trend to use stainless steel for many of the high rise building as well as bridges and other infrastructure in an attempt to reduce maintenance costs. The technological sophistication and relative decreasing cost of these competing materials are having some impact, but it is more on an individual company basis rather than across the entire industry.

**Industry SWOT Analysis**

A SWOT analysis is typically used to provide a summarised view of a particular market. The SWOT analysis below highlights the key strengths, weaknesses, opportunities and threats currently impacting the South African downstream steel value adding segment.

The SWOT analysis below provides a top level overview of the current value adding steel industry in South Africa:
Strengths
• Project management and design skills
• Product quality
• Ethical business (South African steel producers are known to keep their word)
• Quick turnaround times
• Logistics into Africa

Opportunities
• Export markets in Africa – especially infrastructure related
• The South African SIP programme
• Technological advances present an opportunity to keep ahead of the Chinese and other low labour cost competitors who have the resources to produce anything at a low margin, high volume, and low tech level
• Local procurement should be incentivised for use in major industries – steel for automotive industry (APDP) and building and construction,
  • This should be highlighted and included in future industrial policy development

Weaknesses
• The lack/shortage of skills is a weakness which is compounded by those who are qualified being inadequately skilled, and an absence or lack of apprenticeships
• The unit labour cost in South Africa is higher than that of China and India
• South Africa has a less productive labour force compared to China and India where they work an extra 60 days per annum
• South Africa’s relatively older average age of furnaces is a potential technological disadvantage/weakness as older furnaces may be less efficient than newer ones
• 40 foundries have been shut - took years to establish and will be difficult to re-establish
• There is a disparity in education, where the majority of Chinese middle management are tertiary educated engineers, compared to South Africa where only ~25% have tertiary education

Opportunities
• There is the increasing threat of cheaper imports
  • This is created by an unlevel playing field compared to Chinese and other Asian countries
  • However, higher imports keep local steel prices honest
• There is also the threat of the introduction of Non-financial tariff barriers – (e.g. new CE mark for steel products exported to Europe has set the quality standards very high)
  • This may deter future investment and label current production output to be below required quality standards, however this may also present an opportunity to gain a competitive advantage
Conclusions

The steel industry is the foundation of a healthy manufacturing industry. It is therefore in the interest of labour, employers and government to ensure a strong and sustainable value adding steel industry. The downstream steel industry can clearly be segmented into two categories. The first is the part that benefits from government programmes of investment, localisation, tariff import protection and designation. Key downstream segments that fall into this category include the automotive, rail, foundry (valves), tooling and appliances industries that are all benefiting through some form of support through government programmes. The second category is the manufacturing segment that does not benefit greatly from any support initiatives and is increasingly being threatened by cheaper imports. The sub-segments that are included in this category include the fabricated structural steel, wire products, tube and pipe segment, fasteners and stainless steel industries. The South African steel industry is highly dependent on exports for survival and hence local competitiveness is required to ensure sustainability.

Urgent support and protection is needed by these industries if South Africa wants to retain its manufacturing capacity and keep the more than 150 000 employees represented by these industries employed. The largest threat to the industry is the growing imports of products that are manufactured locally from China in particular but also countries such as India, Saudi Arabia, Turkey, Thailand and Spain. Further investigation into how these countries subsidise and incentivise exports is needed.

The South African steel manufacturing industry has been declining in competitiveness over the last three decades and intervention is required in order to maintain the viability of this industry. Key next steps include the understanding of the demand and purchasing behaviour of major steel end-users, understanding the industry challenges in more detail, understanding the trade patterns and forecasts across the value adding sub-sectors and lastly a coherent strategy to assist local manufacturing, reduce imports and expand exports of beneficiated steel products. These issues will be addressed in subsequent reports.