ZIMBABWE ENGINEERING, IRON & STEEL SECTOR STRATEGY

2022 - 2026

ENGINEERING IRON AND STEEL ASSOCIATION OF ZIMBABWE

ZIMBABWE
MINISTRY OF INDUSTRY AND COMMERCE

NATIONAL EMPLOYMENT COUNCIL
FOR THE ENGINEERING & IRON AND STEEL INDUSTRY

VISION

A vibrant, dynamic and competitive sector anchored by smart and strategic value chain linkages that fully embrace adaptive and smart technologies to locally produce world-class value added engineering, iron and steel products and services, thereby generating USD6Billion annually and employing 50,000 people by 2026"

MISSION

To be the preferred provider of high quality and globally competitive value added engineering, iron and steel products and services for the domestic and regional markets through the use of smart, sustainable and locally adapted technologies to create employment for the nation and improve the country's gross domestic product

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AAMTI	AA Mines Training Institute
AAMTI	African Associated Mines Training Institute
ADF	African Development Fund
ADF	African Development Fund
AfDB	African Development Bank
ARIPO	African Regional Intellectual Property Organisation
BF-BOF	Blast Furnace-Basic Oxygen Furnace
BUSE	Bindura University of Science Education
CBUs	Complete Bills Units
CBZ	Commercial Bank of Zimbabwe
CCM	Continuous Casting Machine
CIFOZ	Construction Industry Federation of Zimbabwe
CoM	Chamber of Mines
CUT	Chinhoyi University of Technology
DRI	Direct Reduced Iron
DTI	Delta Training Institute
EAF	Electric Arc Furnace
ECZ	Engineering Council of Zimbabwe
EISAZ	Engineering, Iron and Steel Association of Zimbabwe
EMA	Environmental Management Agency
FML	First Mutual Life
HCCL	Hwange Colliery Company Limited
HIT	Harare Institute of Technology
IDBZ	Infrastructure Development Bank of Zimbabwe
IFC	International Finance Corporation
IMF	International Monetary Fund
IPMZ	Institute of Personnel Management of Zimbabwe
IPPs	Independent Power Producers
ISIC	International Standard Industrial Classification
LCS	Local Content Strategy
MAE	Manicaland Association of Engineers
MIEAZ	Motor Industry Employers Association of Zimbabwe
MoHTESTD	Ministry of Higher and Tertiary Education, Science and Technology Development
MoIC	Ministry of Industry and Commerce
MoWACSME	Ministry of Women Affairs, Community, Small and Medium Enterprises
MSMEs	Micro, Small and Medium Enterprises
MSU	Midlands State University
NAMACO	National Manpower Advisory Council
NDS 1	National Development Strategy 1
NEC	National Employment Council
NRZ	National Railways of Zimbabwe
NSSA	National Social Security Authority
NUST	National University of Science and Technology
OEM	Original Equipment Manufacturers
OM	Old Mutual
POTRAZ	Postal and Telecommunications Regulatory Authority of Zimbabwe
PTC	Postal and Tele Communication's
R&D	Research and Development
RBZ	Reserve Bank of Zimbabwe
SAPP	Southern African Power Pool
SAZ	Standards Association of Zimbabwe
SI	Statutory Instrument
SIRDC	Scientific and Industrial Research and Development Centre

SKDs	Semi Knocked Downs
SMEAZ	Small to Medium Enterprises Association of Zimbabwe
UZ	University of Zimbabwe
WB	World Bank
WIPO	World Intellectual Property Organisation
ZACE	Zimbabwe Association of Consulting Engineers
ZENT	ZESA Enterprises Pvt Ltd
ZESA	Zimbabwe Electricity Supply Authority
ZETDC	Zimbabwe Electricity Transmission and Distribution Company
ZIDA	Zimbabwe Investment and Development Agency
ZIE	Zimbabwe Institution of Engineers
ZIF	Zimbabwe Institution of Foundries
ZIM	Zimbabwe Institute of Management
ZIMDEF	Zimbabwe Manpower Development Fund
ZIMRA	Zimbabwe Revenue Authority
ZINARA	Zimbabwe National Roads Administration
ZNCC	Zimbabwe National Chamber of Commerce
ZNIDP	Zimbabwe National Industrial Development Policy
ZTI	Zesa Training Institute
ZINWA	Zimbabwe National Water Authority
ZIPO	Zimbabwe Intellectual Property Organisation
ZISCO	Zimbabwe Iron and Steel Company
ZPC	Zimbabwe Power Company

Acknowledgements

Firstly, we would like to acknowledge the Engineering, Iron and Steel Association of Zimbabwe for spearheading the development of the much-needed sector strategy, by coordinating private sector participation. Special appreciation also goes to the National Employment Council for the Engineering, Iron And Steel Industry for both financial and technical support.

Also, we would like to extend our sincere gratitude to the Ministry of Industry and Commerce for their unwavering support and policy guidance during the development process of the Strategy. Let me also make special mention of the following key institutions, Confederation of Zimbabwe Industry (CZI), ZimTrade and Zimbabwe Institute for Engineers (ZIE), who provided immense technical support.

Special appreciation also goes to the lead consultant, Engineer Lloyd Nyemba for the exceptional work. Special mention is extended to the following sub-sectors cluster coordinators and team leaders; Blessing V Munatsi, Matthias Ruziwa, Tendai Chris Nyamatore, Patrick Muchovo, Rosemary Risayi, Patricia Chiyangwa, Legend Moyo and Clara Tanyanyiwa, Peter Ward, Patrick Munyaradzi, Ernest Jackson, Nyembesi Kasiya, Chiedza Chigombe and Christopher Mushiwokufa.

Finally, let me thank all key stakeholders who participated during the development of this strategy document, whose list is at the back of the document, as well as all those who will actively participate during the implementation of this strategy to transform The engineering, iron and steel sector.

Foreword by the Private Sector

Bekezela Mangena
EISAZ- President

We, the Engineering and Iron and Steel association of Zimbabwe (EISAZ) are exceedingly excited to be playing our part in support of the government towards achieving a prosperous and empowered upper middle-income society by 2030.

Way back, the Engineering and Iron and Steel sector was a major contributor towards the country's GDP. However, in recent past decades, the sector has been exposed to a myriad of challenges which saw a decline in GDP contribution by the sector coupled with closure of key players in the sector such as ZISCOSTEEL. Some of the challenges that have bedevilled the sector include lack of raw of materials, need for retooling for our aging and obsolete machinery, lack of working capital, lack and unavailability of access to cheap funds and foreign currency, and reduced competitiveness of our products within the region, continent and the world at large. The outbreak of Covid-19 further exacerbated our situation as the nation and industry was forced to respond through a number of interventions which resulted in massive work disruption and job loses i.e., reduced working hours, reduced man power etc.

Exciting to us is that, against this background the government under NDS1 identified the **Engineering, Iron and Steel Industry** as one of the key value chains to steer growth of the economy. To this regard, the Government committed itself to taking deliberate efforts to support the Iron and Steel and General Engineering Industry in order to achieve the following outcomes: -

- Increased availability of locally produced iron and steel products;
- Increased processing of scrap metal;
- Increased export earnings from value-added iron and steel products; and
- Reduced import bill by promoting import substitution in the sector.

The development of our sector strategy and its launch, is a living testimony of the government walking the talk. The first phase towards this development

I am glad that the strategy development process was able to reach out to all our sub-sectors of our value chain which made it easy to develop strategies that are relevant to each of them. Most pleasing also is the fact that these strategies are in sync with strategies adopted by Government for our sector under NDS1. With this synergy between the government and us the private sector, surely vision 2030 is a reality in our hands.

On behalf of the Engineering Iron and Steel Association of Zimbabwe and the industry at large, I would like to extent our most profound gratitude to the National Employment Council for the Engineering and Iron and Steel industry for availing the required financial support and the Ministry of Industry and Commerce for its unwavering support and all key stakeholders whose contributions aided to the successful development of the sector strategy.

To the whole sector, I say we have work cut out before us, and surely our successful implementation of the strategic document together will see the much-needed revival of our industry guaranteeing us improved competitiveness within the region, continent and the global village at large.

Bekezela Mangena
EISAZ- President
April 2022

Ministry of Industry & Commerce

Hon. Dr S Nzenza
Minister of Industry and Commerce

The Ministry is proud to be identified with the development of the Engineering, Iron and Steel Sector Strategy. As Government, we are committed to creating a supportive policy environment to promote investments, increase value addition and beneficiation and address the challenges faced by the sector. This strategy is underpinned by the National Vision 2030, NDS1 (2021-2025), ZNIDP (2019-2023) as well as the local content strategy.

The Engineering Iron and Steel is one of the country's key value chains that are critical for the achievement of the National Development Strategy 1 (2021-2025) and ultimately the Vision 2030. The Engineering, Iron and Steel is one of the identified value chains that are critical to the attainment of moving the Economy up the value chain and structural transformation national priority area.

Over the years, the sector has not been spared by the challenges facing by the manufacturing industry which include shortage of raw materials, foreign currency, high cost of production and power outages. However, despite these challenges, the sector remains the cornerstone of industrial transformation in Zimbabwe.

The Engineering Iron and Steel remains one of the critical value chains that has the capacity to create more decent jobs, generate more revenue, boosting export earnings as well as support other critical sectors of the economy such as the mining and agricultural sectors.

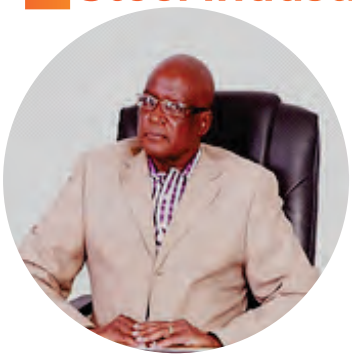
The envisaged strategies will require coordinated efforts from public, private sectors, development partners, communities, academia, investors and workers in order to yield the desired results. Some of the flagship strategies to be implemented during the strategy period include: strengthening of support and sector representation institutions, creation of a dedicated funding facility, to fund attractive value chains in the engineering iron and steel sector, retooling and replacing ageing equipment with new technologies and establishing a stable and sufficient local production capacity for basic iron and steel products.

The Government of Zimbabwe extends sincere gratitude to the Engineering, Iron and Steel Association of Zimbabwe (EISAZ) and the National Employment Council for Engineering, Iron and Steel industry for the technical and financial support in coming up with this strategy.

A special thanks also goes to all the stakeholders who contributed tirelessly in coming up with measures to help revive the Engineering, Iron and Steel Sector as well as developing this key strategy which will undoubtedly enable the successful and accelerated implementation of the NDS1.

Hon. Dr S Nzenza
Minister of Industry and Commerce
April 2022

National Employment Council for Engineering, Iron & Steel Industry Statement



Canaan F.Dube

Chairman – NEC for Engineering, Iron & Steel Industry

First of all, I would like to appreciate the role played by the government of Zimbabwe, particularly the Ministry of Industry and Commerce, the private sector players in the engineering sector represented by the Engineering, Iron and Steel Association of Zimbabwe (EISAZ) and the National Employment Council for the Engineering, Iron and Steel industry. This Strategy was developed in line with the country's Vision of becoming an Empowered and Prosperous Upper Middle-Income Society by 2030. The Strategy was also aligned to the country's Economic blueprint, the National Development Strategy 1, (NDS1) (2021-2025), which articulates the country's fourteen (14) national priorities and the targets to be achieved by 2025.

As espoused in the NDS1, the Engineering, Iron and Steel is one of the key value chains earmarked to positively contribute to the achievement of the 'Moving the Economy up the Value Chain and Structural Transformation' priority area. The Strategy was developed through a thorough consultative process, and as such, the strategies contained in this document indicate the value chain stakeholders' and players` inputs. In this regard, the implementation of this strategy is expected to have maximum stakeholder buy-in.

The sector plays a critical role in the creation of decent jobs, revenue generation, boosting exports and provision of affordable and quality products suitable for both the domestic and international markets. On the domestic market, the EIS sector provides the much-needed support to other key sectors such as agriculture, mining and construction.

The National Employment Council for Engineering Iron and Steel (NEC-EIS) provides a collective bargaining platform whereby the Employers and the Trade Unions negotiate and come up with a collective bargaining agreement on issues relating to wages, salaries and every other condition of service for workers in the industry. The role becomes increasingly important as the EIS industry grows and more decent jobs are created.

The role of the private sector in the country's development agenda and the achievement of the 2030 Agenda and Agenda 2063 cannot be overlooked. The private sector is critical in ensuring inclusive and sustainable growth for all. The EIS value chain as part of the private sector, immensely contribute to Sustainable Development Goals (SDGs) 8, 9, and 12, focusing on decent work and economic growth; industry, innovation and infrastructure; and responsible consumption and production, respectively.

A robust EIS sector is, therefore, crucial to the revival of the Zimbabwean economy as it forms the foundation of a healthy manufacturing sector. Its strong linkages with all other sectors form the backbone of a strong economy and will help reduce over-reliance on imports, promote intra and inter sector activity.

Canaan F.Dube

Chairman – NEC for Engineering, Iron & Steel Industry

Executive Summary

The Ministry of Industry and Commerce mandated the Engineering Iron and Steel Sector of Zimbabwe to develop the road map for the revival of the engineering iron and steel industry of Zimbabwe. The first phase was an evaluation phase to gather key facts about the status of the sector and hence establish the baseline.

A diagnostic study was carried out based on 7 key diagnostic dimensions namely; sources of inputs and supplies; production capacity and technology use; end markets and trade; sustainable production and technology use; value chain governance; value chain finance; and business and socio-economic context. Sector evaluation studies were commissioned for products and markets; macroeconomic and infrastructural environmental analysis; human and technical capacity needs analysis; and firm level diagnostic analysis. The diagnostic studies were meant to establish the precursor upon which the engineering iron and steel sector strategy would be developed. In developing the strategy, a participatory and inclusive approach was used with the following key activities;

- Review of baseline studies from the evaluation phase by EISAZ team
- Selection of attractive subsectors and value chains as an output from the review of the baseline studies based on prescribed selection criteria
- Formation of the sector strategy development and implementation team/ work groups from all the key stakeholders of the engineering iron and steel industry of Zimbabwe
- SWOT Analysis of the selected subsectors and value chain through a participatory and inclusive approach implemented by the work groups
- Preparation of a Strategy Blue Print through consolidation of outputs from preceding activities

The major findings were that the sector in its current state was not competitive and threatened by

- Huge competition from imports (both competitive imports and influx of cheap and inferior products)
- Non-availability of raw materials, and particularly steel and scrap feedstock which was fundamental in supplying downstream operations in the engineering, iron and steel sector of Zimbabwe. This non-availability had a huge bearing on capacity utilization in the sector due to delays in getting the raw materials through the importing process, with delays at the border, coupled with scarcity of foreign currency to pay for the materials. High

- High costs of production also hindered competitiveness due to the use of inefficient and obsolete equipment making the products less competitive against imports on the local market. High utility costs also worsened the situation. Despite the known need for retooling and capitalization to enhance competitiveness, it was very difficult for the sector to access funding due to prohibitive interest rates; tough collateral requirements; and short loan tenures.
- Power outages (load shedding) also threated viability of the sector, with supply being very erratic against the critical need of continuous power for sustainable operation of the energy intensive iron and steel operations.
- Very difficult business operating environment typified by high tax rates; difficult export terms; inconsistent policies; high inflation; corruption, unfair playing field and malpractices from the informal sector; and poor implementation of policies and weak regulation

Despite the current status of the sector, the following subsectors were found to have great potential for import substitution and export;

- Automotive Industry (Motor Vehicles; Body works and Trailers; Parts and Accessories)

- Electrical Engineered Goods and Electronic Goods (Electronic components and boards; electric motors, generators, transformers, distribution and control equipment; electric wires and cables; computers and peripheral equipment; electric lighting equipment; communication equipment; testing and control equipment; batteries and accumulators)

- primary and secondary steel Production (Basic iron and steel; flat rolled products; bars and rods; section steels; wires and related products)

- Foundry and Associated Engineering

- Equipment Manufacturers and Machined Components (Quarrying and Construction Equipment; General purpose machinery; pumps, compressors, taps and valves; medical and dental instruments; cutlery, hand tools and general hardware; beverages, food processing and tobacco processing equipment; lifting and handling equipment; agricultural and horticultural equipment; gears, bearings and driving elements; mill balls and liners)

- Fabricated Metal and Steel Products (Fabricated metal products; tanks, pressure vessels and pipes; Structural metal products)

With the formulation, adoption and implementation of strategies aimed at enhancing the competitiveness of the sector, it is possible to increase the performance of the selected value chains from Annual Sales Revenue of USD1.26Billion in Baseline Year (2021) to USD3Billion (2024) and leap frogging to USD6Billion in 2026 buoyed by the primary and secondary steel production; Electrical Engineered Goods; Agriculture and Forestry Equipment; Fabricated Metal and Steel Products; Mining Equipment and Parts; Automotive; and Foundry and Engineering Subsectors. Similarly, employment levels in the sector is anticipated to increase from current levels of 13100 (baseline 2021) to about 30000 (2024) and leap frogging to 50000 (2026). The leap frogging in 2026 will be attributed to the implementation of interventions such as introduction of new technologies starting to bear fruit around 2025.

In-order to achieve the set targets, the following strategies were envisaged

- Strengthening of Support and Sector Representation Institutions for them to help the sector in advocacy work for protecting the industry, visibility and facilitation for easy access to foreign

materials.

- Establishing a stable and sufficient local production capacity for basic iron and steel products for the down-stream processes and regional markets. This will be supported by access to funding for CAPEX and Working Capital for the new and existing ventures, backed by policy and government support with appropriate incentives through relevant institutions.
- Establish a well-defined, transparent and Local Scrap Value Chain that ensures maximum utilisation of local scrap for the local industry to increase capacity utilisation of subsectors such as primary and secondary steel production and foundries.
- Establishing product value chains with strong business cases to attract funding for retooling and capitalization to enhance competitiveness. The strategic value chains must be all inclusive, with participation of strategic and mutual local, regional and global value chain linkages and clusters. This establishment must consider inclusive participation of local value chain actors, SMEs as well as devolution.
- Creation of a dedicated funding facility, to fund attractive value chains in the engineering iron and steel sector, especially working capital requirements for identified strategic and attractive value chains.
- Creation of a Special Forex Allocation Facility for Strategic Value Chains in the Engineering, Iron and Steel Sector for the importation of critical raw materials.
- Retooling and replacing ageing equipment with new technologies for the downstream engineering, iron and steel value chain actors with viable financial support from relevant institutions. This shall be based on bankable and attractive value chains.
- Human capital development through synergies with training institutions and technology suppliers to enhance competitiveness.
- Innovative synergies amongst IPPs, ZETDC and Sector off takers to ensure reliable and uninterruptible power at sustainable tariffs.

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CHAPTER 1: APPROACH AND METHODOLOGY

The development of the Engineering, Iron and Steel Sector Strategy commenced with the Evaluation Phase, where the following activities were carried out;

- Macroeconomic and Environmental Analysis
- End Markets, Trade and Competitiveness Analysis
- Human Capital and Technical Capacity Analysis
- Value chain diagnostics analysis

Thorough extensive consultations; presentation workshops and discussions were done to validate studies carried out and provide vital input to the development of the strategy. The following steps were undertaken during the strategy development ;

ACTIVITY	REMARKS
1. Review of Baseline Studies and Other Key Documents	- Review of the following studies - Baseline Diagnostics Study, Macroeconomic and environmental analysis; Markets and Competitiveness Analysis; Human Capital and Technology Needs Analysis
2. Formation of Implementation Team	- Selection of Major sub-sectors/ Clusters based on the Baseline Study and Stakeholder Consultations; and constituting the Clusters with major players - Formation of clusters based on selected sub-sectors to spearhead strategy formulation and implementation; and Selection of Cluster Leaders and Coordinators to lead and coordinate clusters. - Development of strategy formulation instruments.
3. Strategy Formulation Inputs	- Information/Data was collected from Baseline Studies (EIS Value Chain Diagnostics Baseline Study, Macroeconomic and Environmental Analysis Baseline, Market and Competitiveness Analysis Report and Human and Technical Capacity Needs Assessment; and clusters via the developed instruments.
4. Identification of Key Performance Indicators (KPIs) for sub-sectors	- Identification of Key Performance Indicators for each sub-sectors based on the collected data (qualitative and quantitative).
5. Sector Strategy Blue Print	- Strategy Blue Print write up based on input from clusters
6. Launch of Sector Strategy	- Launch of Sector Strategy blue print targeted for the first quarter of 2022

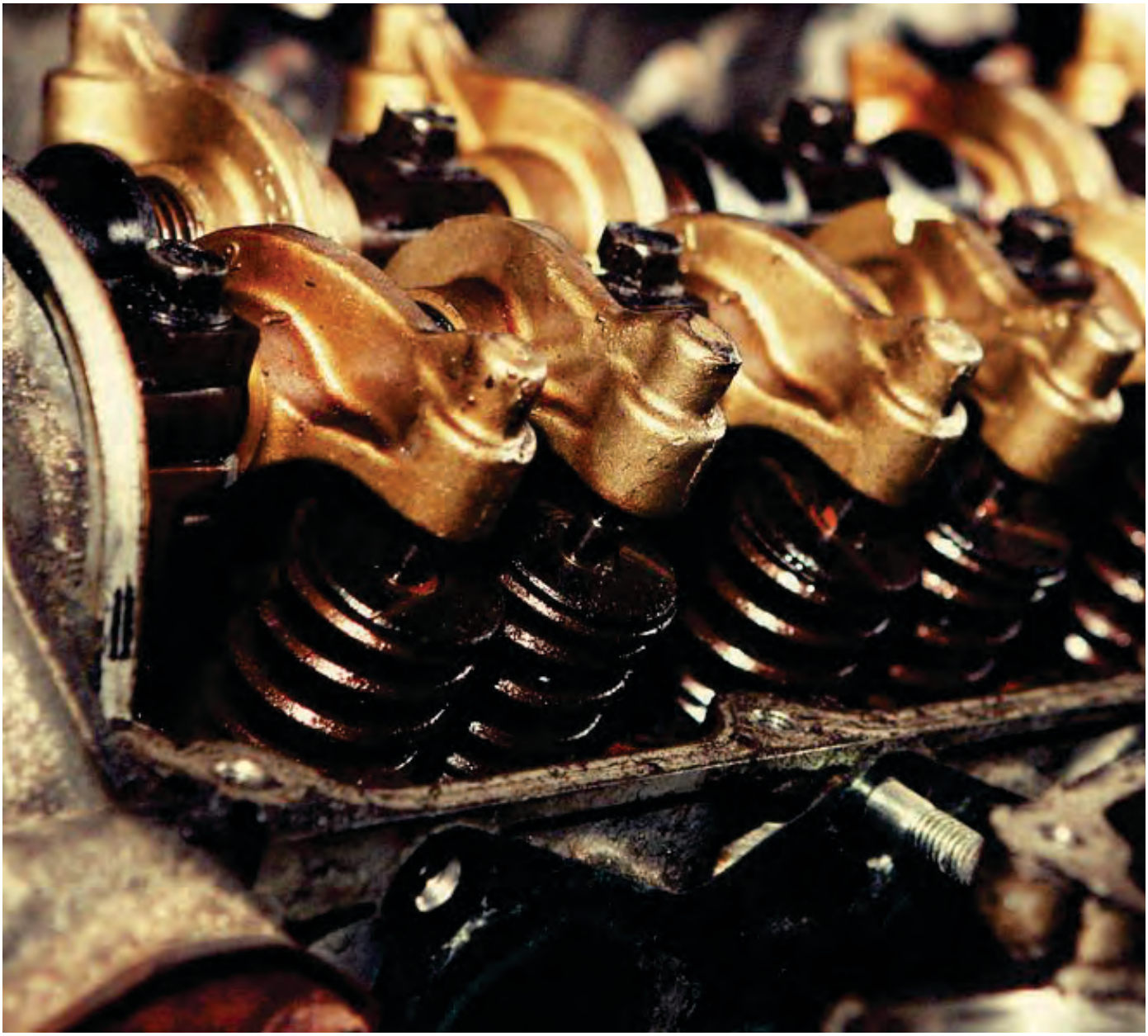
1.2 Formation of Clusters

Inclusive clusters were formed to with full representation of all key stakeholders in the value chain. Sub-clusters were proposed for sub-sectors with too many participants and/or sub-sectors, in-order to manage their activities. Participants to the work cluster were free to choose the most suitable cluster based on the selected sub-sectors.

1.3 Selection of Cluster Coordinators and Cluster Team Leader

The Engineering, Iron and Steel Association of Zimbabwe (EISAZ) was responsible for the facilitation and selection of Cluster Coordinators whilst the Cluster participants selected their Team Leader for the strategy formulation and implementation. The list of Coordinators and Team Leaders for the clusters are presented in the table below;

Major sub-sectors	EISAZ – NEC Coordinator	Team Leader
Automotive Industry	Patrick Muchovo	Patrick Munyaradzi (Deven Engineering)
Electrical Engineered Goods	Tendai Nyamatore	Peter Ward (AMES Engineering)
primary and secondary steel Production	Patricia Chiyangwa	Mr. Mushiwokufa (Steel Brands)
Foundry and Associated Engineering	Rosemary Risai	Fred Frank (Sprint) & Mrs Chigombe (Kubota)
Equipment Manufacturers and Machined Components	Clara Tanyanyiwa	N Kasiya (Jacob Bethel)
Fabricated Metal and Steel Products	Legend Moyo	E Jackson (Pump and Steel Supplies)



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CHAPTER 2 STRUCTURE OF THE ENGINEERING, IRON AND STEEL SECTOR IN ZIMBABWE

The structure of the sector was well articulated in the Diagnostics study of The engineering, iron and steel sector report for Zimbabwe. This section provides a summary of the structure to guide the cluster team to formulate and implement the strategy. The main components of the structure include;

- engineering, iron and steel value chain structure;
- value chain map;
- major sub-sectors and their spatial distribution;
- main support institutions;
- governance, professional and sector representation institutions; and

2.1 Core structure of the value chain

IRON ORE	INPUTS
	Available locally as course and fine ores with grades ranging from 40%Fe (Mwanesi) to about 55%Fe (Ripple Creek). Over 30Billion tonnes of resource from Mwanesi. Investment into exploration and exploitation is required to extract and supply adequate ore for downstream processes
COAL	
	Metallurgical Coal: used for iron making via the BF - BOF Route; also used in smelting processes and foundries. Locally produced, mainly from Hwange. Over 3Billion tonnes of resource. Investment required to increase production capacity to meet projected demand
	Non-coking coal: used for the DRI route for iron and steel making. Locally produced mainly from Hwange. Over 7Billion tonnes of resource. Investment required to increase production capacity to meet projected demand
SCRAP	
	Used mainly in the Electric Arc Furnace; a significant portion also used in the Basic Oxygen Furnace Route of Steel Making. More environment friendly. Local resource has to be quantified
AGGREGATES	
	Lime, Limestone, Calcium Carbide and Magnesite, used mainly as fluxes. Resources are available locally. About 54Mt of limestone ore resource is found at Ripple Creek
ENERGY	
	Important in manufacture of steel to required grades (over 3500). They determine properties like hardness, tesnile strength, ductility and corrosion resistance amongst others. Major alloys include aluminium, manganese, nickel, silicon, titanum, zinc, vanadium, etc. Majority found locally
WATER	
	Required mainly for cooling, processing and domestic use. Although usage is generally high, actual consumption is low
TRANSPORT	
	Iron ore, Steel and its intermediate and final products are heavy and rely on rail as well as good transport infrastructure for its transportation. Road and rail is currently in bad state in Zim and require recapitalisation

MINING & MINERAL PROCESSING — TRANSFORMATIONAL PROCESSES

Drilling, Blasting, Haulage, Crushing, Screening, Concentration, Separation, Agglomeration, Pelletisation, Sintering, etc. The typical low grade ores in Zimbabwe require upgrading via some of the processes mentioned above. Contract mining may enhance efficiency and cost competitiveness. Iron ore mines include - Nyuni in Masvingo (>100Mt: 45-67%Fe resource); Ripple Creek in Kwekwe (54Mt: 54%Fe resource); Mwanesi (33Bt:40-60%Fe resource)

COKE MAKING AND REDUCING AGENT PREPARATION

Production of Coke for the BF - BOF Route via Coke Oven Batteries (By Product Recovery or Non Recovery Types). Useful by-products like Coke Oven Gas, Coal Tar, Benzol, etc for petrochemical refineries and road construction, power production, etc. Alternative use of non-coking coal for DRI/Smelt Reduction Process of iron and steel making. 4 x Coke Ovens at ZISCO (0.87Mtpa) requiring rehabilitation; 0.18Mtpa Coke Ovens at HCCL requiring major overhaul; and 0.9Mtpa from about 4 Chinese Coke Oven Batteries located in Hwange:- Total Cap: 1.95Mtpa

IRON MAKING

Blast Furnace Route using coke to produce pig iron or Alternative Direct Reduced Iron Technology or Smelt Reduction Technologies using non coking coal or natural gas as reducing agent. Security of supply of reducing agent, suitability of technology, investment cost and environmental laws critical in determining the technology route. ZISCO with installed capacity of 1Mtpa (BF No. 4 & BF No. 3) is not operational since 2008. Local DR1 Capacity to produce Sponge Iron at about 36000tonnes per annum

STEEL MAKING

Basic Oxygen Furnace Route (BOF), Electric Arc Furnace Route or Induction Furnace Route. ZISCO BOF not operational due to closure of upstream processes. A handful Chinese Induction Furnaces operational (about 20000tpa) and a few EAF processes (about 20000tpa). Thus local production currently under 0.1Mtpa

STEEL CASTING

Mainly via Ingot, Pig casting and Continuous Casting. Current local installed capacity of about 1Mtpa. Ingot casting now obsolete. Continuous casting the most used method. ZISCO's continuous casters not operational due to closure of upstream processes. Steel Makers CCM - operational

ROLLING MILLS

Rolling Mills installed in about 10 Plants, with ZISCO having the biggest rolling capacity of over 0.8Mtpa. Common Mills are Bar and Rod Mills, Wire, and Billet Mills. ZISCO and Lancashire Mills are down, requiring major overhauls. Other small mills operational, supported by scrap and sponge iron fed steel making processes, producing bars, rods, angles and sections (about 0.1Mtpa). No capacity for plates, sheets and pipes

MOULDING AND CASTING

Use of Cupola, Induction and Electric furnaces for smelting of different types of moulded products in Foundries, from light duty to heavy duty parts. Over 20 Foundries are scattered around Zimbabwe's towns. Metallurgical coke, water and electricity are key inputs

METAL FABRICATION AND FINISHING

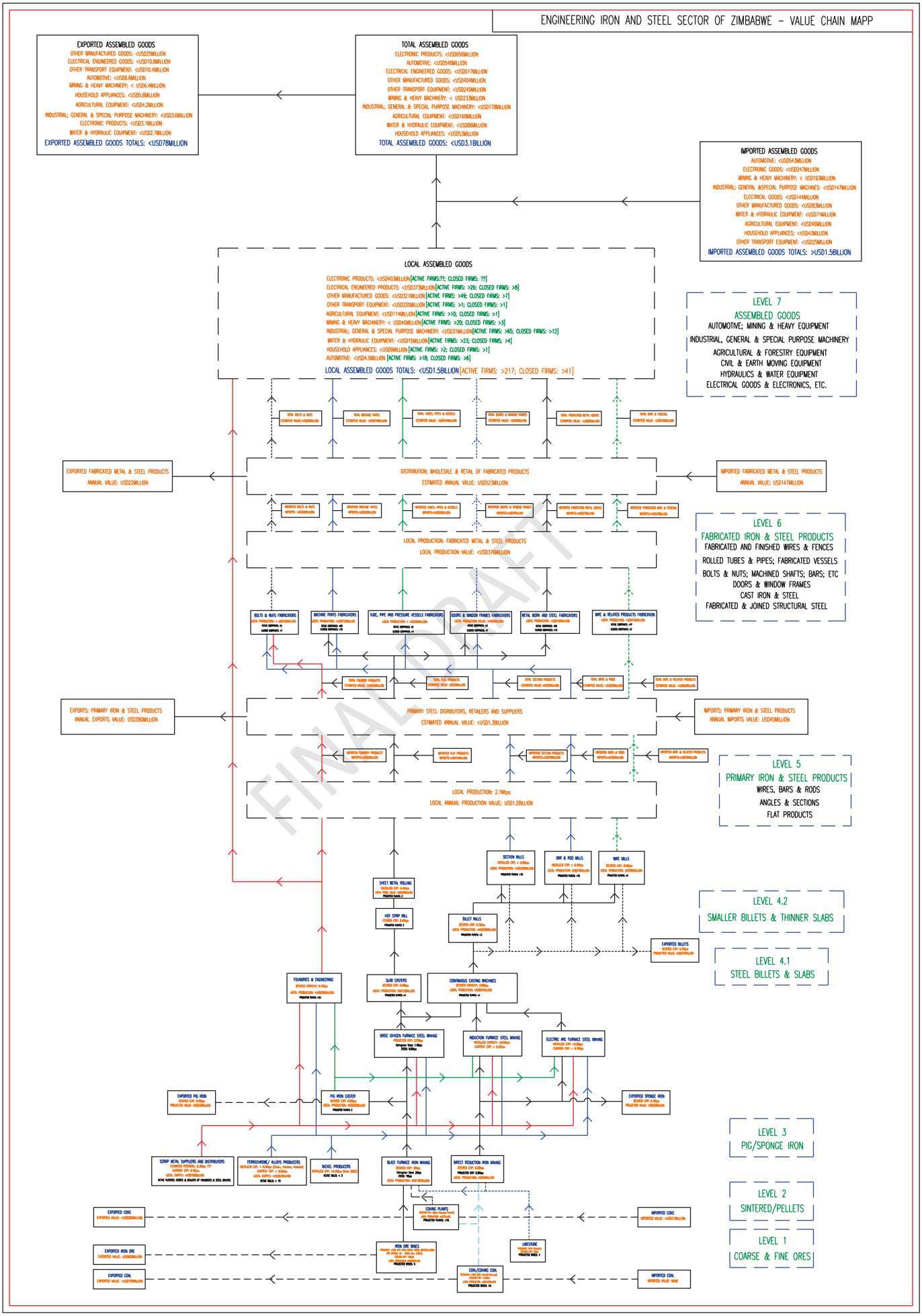
All machining processes in a Machine & Fabrication Shop (Machining, Milling, Drilling, Boring, Cutting, etc.); Welding, Boiler Making, Bending, etc., Heat Treatment, Coating, Plating, Galvanising, etc., Forging, Drawing, etc. Several workshops are dotted around the country

ASSEMBLY PROCESSES, EQUIPMENT INSTALLATIONS AND COMMISSIONING

All setting up, joining, alignment, assembly technologies including automation and robotics, production control systems, electrical components, control and instrumentation, electronics and programming

FINISHED PRODUCTS
Automotive: Modern vehicles contain over 50% advanced high strength steels. Zimbabwe has 3 major vehicle assemblers - WMM1 (Deven), Quest, AVM Africa. Capacity is over 18,000 vehicles per annum. Current utilisation is less than 10%. Demand for new vehicles is over 5,000 per annum; Used imported ones over 60,000 vehicles per year. About USD400Million per year vehicle imports vs USD4.2Million exports per year. At peak USD1.3Billion spent on vehicle imports
Buildings and Infrastructure: About 50% of steel produced is used in buildings and infrastructure, and buildings and infrastructure from steel can last 40 - 100yrs. Lots of opportunities in construction activities in Power Infrastructure, Railway rehabilitation, road construction, Dam Constrcution, Water and Irrigation, etc. High consumption of channels, angles, bars, rods, wires, plates,etc. About USD1.7Billion required annually to rehabilitate infrastructure. Africa Steel, BSI, Steel Warehouse, Houmin, Steel World, Steel Brands, Steel Centre, Steel Warehouse, etc are some of the major players
Mechanical Equipment: Agricultural, industrial machinery, mining machinery and parts, medical equipment, etc. About USD500Million spent per year on mechanical equipment imports vs USD18Million exports. 2.5Million Ha irrigation targeted by 2030. Also opportunities in Farm Mechanisation (shortage of 30,000 tractors) and USD12Billion Mining Road Map, etc. Zimplow, Baines, Warrap are some of the key producing firms
Metal products: Packaging materials, pressure vessels, reservoirs, tanks, structural metal products, containers,etc. sheet metal works, etc. Foundry products like grinding media, pumps and spares; conveyor spares; brake drums, agric spares, etc. Also includes wires, nails, bolts, etc. An average of USD138Million imported vs USD13Million exports per annum
Domestic Appliances: About 75% of domestic appliances are comprised of steel, e.g. kitchen ware, household furniture, etc. Tregers is one of the major producers of domestic appliances as well as Electrosales
Other Transport: These include shipping containers, spacecraft, motor cycles, railway and locomotives, military vehicles, boats and ships, etc. An average of USD28Million imported annually vs exports of about USD11Million. The National Railways of Zimbabwe, Morewear Industries, ZECO, ZISCO, Professional Engineers, etc. used to be the major manufacturers.
Electrical Equipment: Special steel tailor made to produce specific magnetic properties. Electrical steels used extensively through out the energy value chain - power generation (transformers, motors, cables), transmission and distribution (cables, accessories, protective devices, etc) and consumption (electric motors, transformers, lighting, elements, etc). I also covers manufacture of batteries and accummulators, manufacture of wiring and wiring devices, optic fibres, electronic devices, etc.An average of USD147Million imported annually vs USD16Million exports. Key players include CAFCA and Powerspeed
Electronic Equipment: This includes computers, electronic and optical products, communication equipment, consumer electronics, control and instrumentation equipment, optical and photographic equipment, etc
Solar and Semiconductor Devices: A relatively new subsector that is growing significantly and worthy distinguishing. Includes the solar photovoltaics modules, the inverters, the batteries, the charge controllers, the controls, etc.

2.2 Value chain map of the engineering, iron and steel sector of Zimbabwe



2.3 Major sub-sectors in the engineering, iron and steel sector of Zimbabwe

"The engineering, iron and steel sector has over 486 active firms operating in the various sub-sectors."

The ISIC/ZIMRA classification of products guided the allocation of engineering iron and steel companies to the various sub-sectors. However, a lot of interfacing of products make it difficult to classify certain companies producing a mix of products that cut across several classes, e.g. agricultural, mining, automotive and general engineering. The NEC database, a division of EISAZ with over 85% of the country's engineering iron and steel firms, was used in the classification of companies. The several engineering iron and steel sub-sectors are shown in Figure 2.1 below:

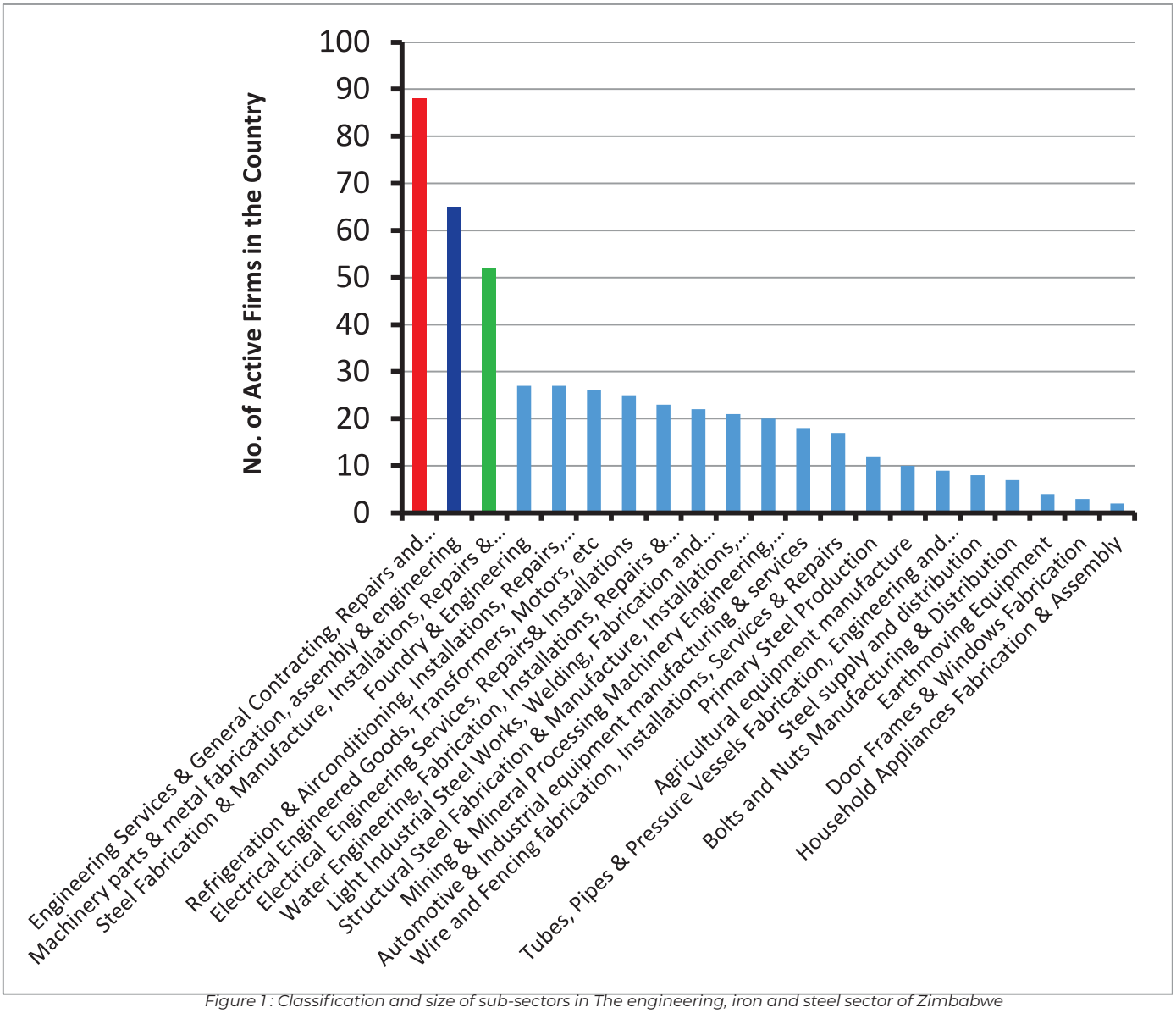


Figure 1 : Classification and size of sub-sectors in The engineering, iron and steel sector of Zimbabwe

The engineering, iron and steel sector has over 486 active firms operating in the various sub-sectors. Based on the number of active firms, the sector is dominated by Engineering services and general contracting, repairs and maintenance sub-sectors with about 88 formally registered companies, followed by machinery parts and metal fabrication, assembly and engineering; steel fabrication and manufacture with 65 and 52 firms, respectively. The foundry and related engineering, refrigeration and air-conditioning, electrical engineered goods and services were also notable sub-sectors with significant number of active firms.

2.3.1 Spatial distribution of firms in the engineering, iron and steel sector

The spatial distribution of firms in the engineering, iron and steel sector are presented in Figure 2.2 below.

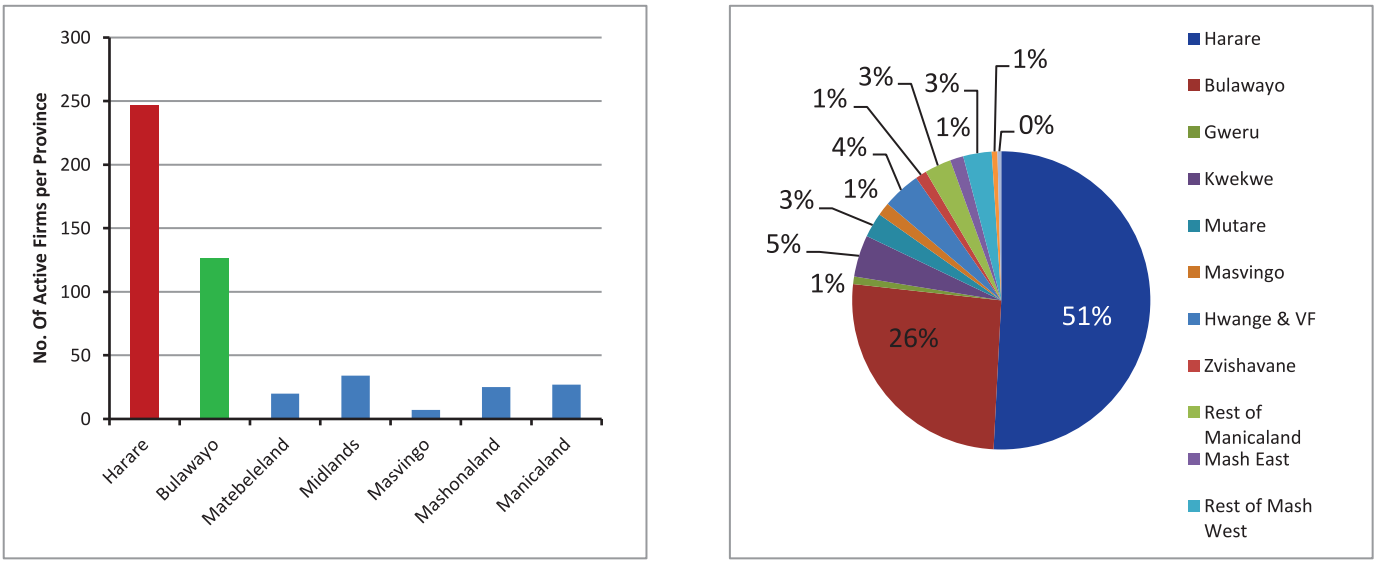


Figure 2.2 : Spatial distribution of firms in The engineering, iron and steel sector of Zimbabwe

As presented in Figure 2.2 above, the majority of active firms were in Harare (51%) and Bulawayo (26%), followed by Kwekwe (5%). Thus in general, the two biggest cities, Harare and Bulawayo constitute about 77% of the engineering, iron and steel sector active firms, with the remaining 23% distributed almost evenly across Midlands, Mashonaland, Manicaland and Matebeleland. The skewed distribution will definitely continue to pile pressure on the big cities as people seeking employment will converge in the two cities and hence causing congestion and overloading of services. It will be crucial to consider opportunities provided by resources in the different regions as well as devolution and decentralisation in order to minimize the skewed distribution.

Despite the fact that Harare generally dominated for the majority of sub-sectors, there are some sub-sectors which are more active in other regions other than Harare. Bulawayo is equally dominant in foundry and related engineering firms; electrical engineering services, repairs and installations; mining and mineral processing equipment engineering, fabrication and assembly; tubes, pipes and pressure vessels and bolts and nuts manufacturing. Manicaland had significantly active firms in engineering services and general contracting (about 15 firms); Midlands had active firms in engineering services, machinery equipment and parts, metal fabrication and foundry (buoyed by primary and fabrication in the vicinity). Matebeleland had some active firms in engineering services and machinery parts and metal fabrication, anchored mainly by the coal value chain in Hwange. Mashonaland had also some notable firms active in engineering services and general contracting, foundry and engineering, electrical engineering services, structural steel fabrication and agricultural equipment engineering and manufacture anchored mainly by agricultural activity. Masvingo was active in secondary steel production.

2.4 Employment levels in Engineering, Iron and Steel sector of Zimbabwe

According to the findings of the diagnostic study, the Engineering, Iron and Steel sector employs about 13,000 people (excluding the informal sector); employment levels are presented in Figure 2.3 below.

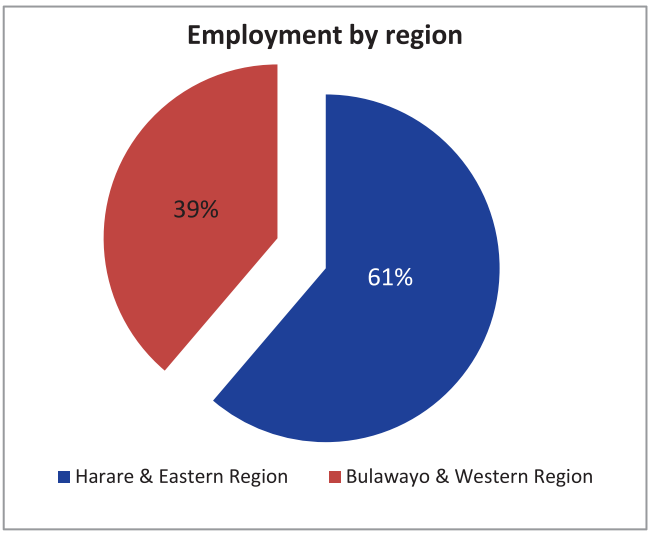


Figure 2.3. : Employment levels by region in the engineering iron and sector of Zimbabwe

As shown in the pie chart above, Harare and the Eastern region constituted 61% of the total sector employment. This is consistent with the higher number of active firms in Harare and the Eastern region as compared to Bulawayo and the Western Region. Employment levels by sub-sectors are shown in Figure 2.4 below.

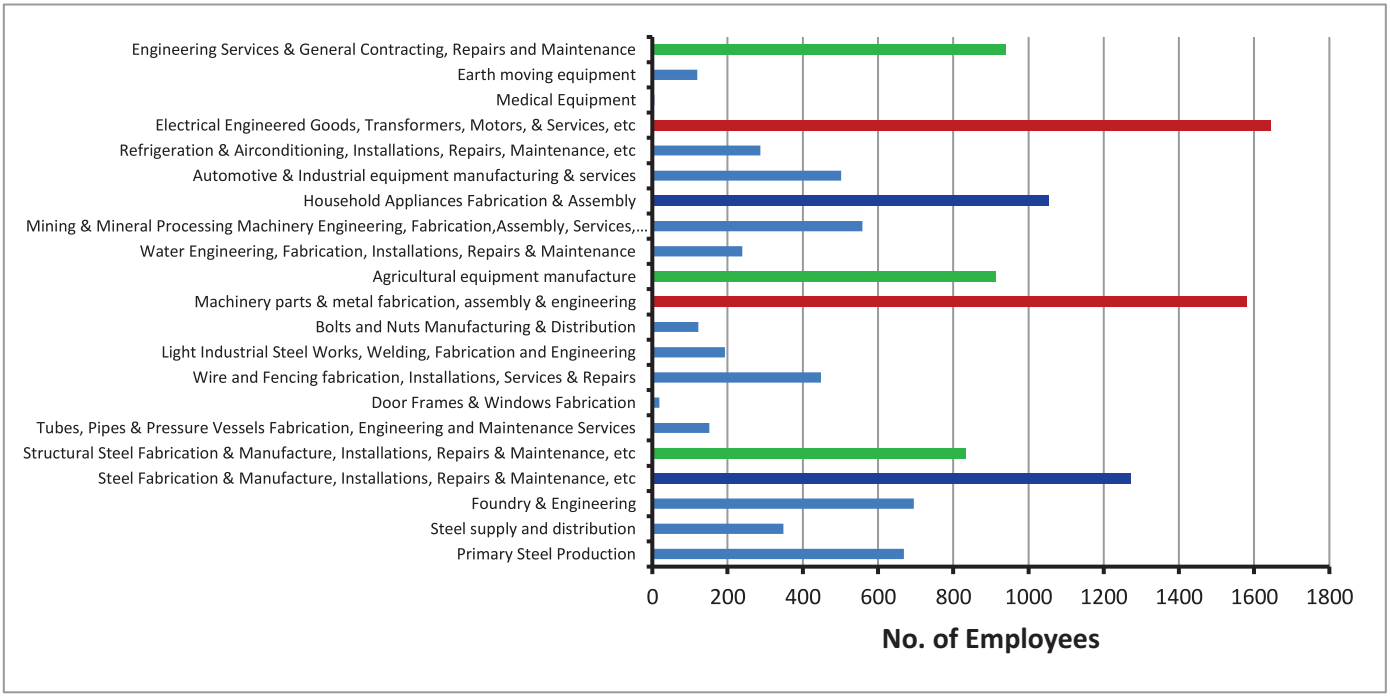


Figure 2.4 : Employment levels by sub-sectors in the engineering iron and sector of Zimbabwe

The sub-sectors with highest employment levels were electrical engineered goods and services and machinery parts and metal fabrication, assembly and engineering; followed by steel fabrication and manufacture and household appliances fabrication and assembly as shown in Figure 2.4 above. It is worth noting that despite having many firms in the engineering services sub-sectors; the high number of firms did not translate to high employment levels. Ironically, electrical engineered goods and machinery, parts and equipment sub-sectors without significant number of firms had highest levels of employment. Thus, the employment potential of each sub-sectors is presented in Figure 2.5 below.

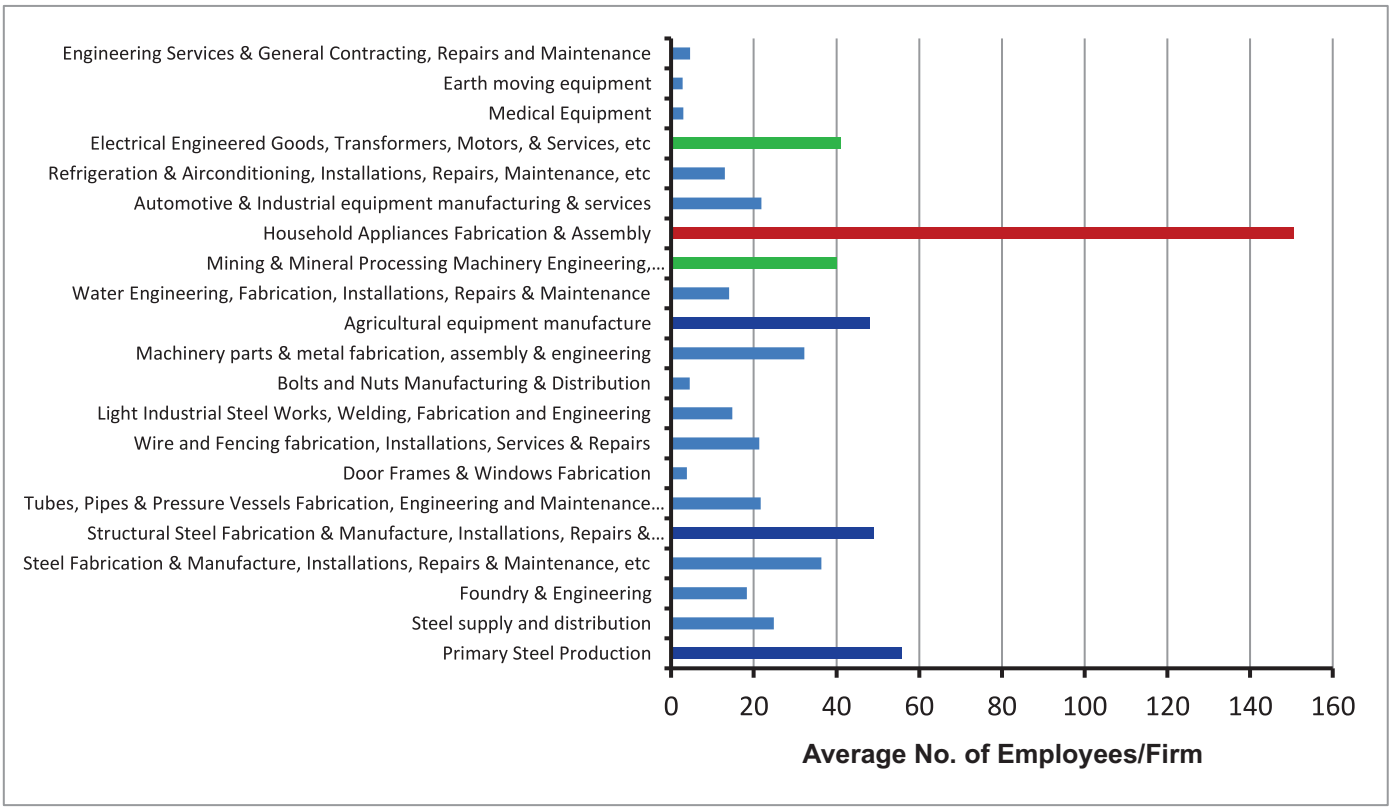


Figure 2.5 : Employment potential of sub-sectors in the engineering iron and sector of Zimbabwe

As presented in the bar chart above, the sub-sectors, in order of high employment potential were as follows;

- Household appliances, followed by;
- primary and secondary steel production;
- Structural Steel Fabrication and Manufacture;
- Agricultural Equipment;
- Electrical Engineered Goods and;
- Mining and Mineral Processing Machinery.

These sub-sectors have a notable number of large scale firms hence growth and expansion of these companies have a significant positive impact to employment creation and fiscal income.

2.5 Main Support Institutions

	KEY RESOURCES & FEATURES	KEY STAKEHOLDERS	GENERAL STATUS
LAND	Funding for purchase, rentals or lease; Title deeds; Land permits, concessions, etc.	Ministry of Lands, Local Municipalities, Private Land Owners.	Mostly owned by municipalities and state, and several idle factory warehouses of closed companies. Land is generally adequate and price can be negotiated.
LAND	Large Space generally required for primary and secondary steel production, foundry, Assembly		
ENERGY & POWER	Electricity (Coal thermal, Hydropower, Solar, Standby Diesel Generators)	ZESA (ZPC, ZETDC, ZENT, Powertel); IPPs, Private Owners Owning Plants for Self Consumption and exporting excess to the Grid via Net Metering	ZESA still dominant supplier through hydro and coal thermal, not much was yet coming from IPPs. Uptake of solar by industry still marginally low; Current power production of about 1000MW (50% utilisation) still low as compared to projected demand. Major challenges were climatic for hydropower and antiquated machinery for thermal power plants and transmission and distribution.
ENERGY & POWER			New capacity of power generation being built, e.g. 600MW Hwange Thermal Expansion. Important to note that primary and secondary steel production is energy intensive and require support of big power plants and transmission infrastructure, e.g. ZISCO requires at least 60MW. Solar power uptake still minimal in the EIS Sector.
ENERGY & POWER	Heating fuels (Coal, Coke, Gas, Biogas, Solar thermal, Heavy Oils, Coal Tar, Oxygen).	HCCL; Zambezi Gas & Coal Mine; Makomo Resources; Contago Mine; BOC Gases; Petrotrade, ZUVA; PUMA, Coke Producers in Hwange (e.g South Mining, Dinson, etc).	All primary and secondary steel production, foundries and smelters require coke or coal for furnaces, or some instances as reducing agent. Coking coal current production capacity is about 2Mtpa; Thermal Coal production at about 5Mt; Capacity must be increased to meet new demand in sync with growing EIS Sector. Projected demand within 15years for coking and thermal coal at 5Mtpa and 20Mtpa respectively. In case coking coal is in scarcity, technologies that use non-coking coal may be adopted. Gas despite having great potential is marginally used. Huge Coal Bed Methane Gas resource in Lupane can revolutionalise the energy supply mix if investment is found.
ENERGY & POWER			Investment in New Oxygen Plants required for new and large scale iron and steel production. Heavy Oils use not significant in heating due to high cost of importing and scarcity of forex.

Continued...

KEY RESOURCES & FEATURES	KEY STAKEHOLDERS	GENERAL STATUS
ENERGY & POWER Fuel Oils for Automobils (Diesel, Petrol, Kerosene, Biofuels).	ZUVA; PUMA; ENGEN; TOTAL; GREEN FUELS; PETROTRADE, etc	Fuels mainly used in transportation of goods, by road and by air. Steel products are very heavy and hence require heavy engines that consume a lot of fuel for transportation. Rail transport is more ideal and air freight not appropriate due to the high cost associated with the weight of steel and volumes. Rail is currently in bad state, and road is currently the major mode of transport which is more expensive.
WATER Dams, Lakes, Weirs, Reservoirs, Water Reticulation Infrastructure, Water Treatment Plants, Waste Water Treatment Plants and Sewerage Works; Pumping Systems.	ZINWA, Local Municipalities, Ministry of Water, Private Suppliers, Owners Boreholes, EMA.	Water is generally required for cooling process and treatment processes. Although high volume of water is used in primary and secondary steel production, little is consumed. Most water treatment plants and waste water plants; pumping and reticulation systems need overhaul and upgrading for reliable supply of
TRANSPORTATION Logistics companies; fuels; roads; railway network and signalling and controls; trucks, locomotives, wagons; repairs, maintenance & servicing	ZINARA; NRZ; Logistical/Freight Companies.	Peak transportation was in 1998 (18Mtpa) vs 2Mtpa (2014). Railway line requires overhaul with over 16% of railway line under speed restrictions. Over 25% of locomotives require replacement; available ones require major overhauls; several wagons also require overhaul and replacement; Signalling, controls and communication equipment require replacement. Roads are in bad shape requiring overhaul. Over USD70Million required for rail rehabilitation. Road currently being used for transportation and generally 60% more expensive. Speed restrictions on rail causing long lead times.
INFORMATION & COMMUNICATION TECHNOLOGY Optical fibres, Base Stations, Communication gadgets, Hardware and Software, etc	PTC,Tel One, Econet, Liquid Telecoms, POTRAZ, Net One, Telecel.	TelecelMain players are PTC, Tel One, Econet. Major cities were generally adequately covered. Minor cities coverage is generally poor. The cost was considered on the higher side compared to regional averagesMinistry.

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Continued...

KEY RESOURCES & FEATURES	KEY STAKEHOLDERS	GENERAL STATUS
ACADEMIC & TRAINING INSTITUTIONS Laboratories, Testing Facilities, Lecturers, Students	Universities (UZ; NUST; HIT; CUT; BUSE; MSU); Polytechnics (Mutare; Gweru; Masvingo; Bulawayo; Harare; Kushinga; Kwekwe); Vocational Training Colleges; Industrial Training Institutes (ZESA; Delta, AAMTI, etc); Apprenticeship Programmes (ZISCO; ZESA; etc); Ministry of Education; MoHTESTD	Generally good coverage of academic and training institutes across the country. Laboratories require overhaul and upgrading in line with new technologies. Limited capacity for R & D
RESEARCH & DEVELOPMENT INSTITUTIONS Laboratories, Testing Facilities, Researchers, Technologies, etc	SIRDC, Universities, Company R&D Divisions	Limited technological capacity to do R&D. Lack of specialised laboratories for strategic EIS products and value chains
STANDARDS & QUALITY MANAGEMENT ORGANISATIONS Laboratories, Testing Facilities, Standards, Technologies, Scientists, Engineers	Standards Association of Zimbabwe	Limited coverage country wide
BANKING AND FINANCIAL INSTITUTIONS Banking platforms, Internet Banking; Concessionary Loans, Bank and Government Guarantees, Subsidies, etc	RBZ; Bankers Association of Zimbabwe, IDBZ, CBZ, Stanbic, Ecobank, Stewart Bank, Stanchart, Cabs, NBS, Pension Funds (OM, FML, NSSA, etc)	Currently charaterised by high interest rates and short term loans

Continued...

KEY RESOURCES & FEATURES	KEY STAKEHOLDERS	GENERAL STATUS
INTELLECTUAL PROPERTY ORGANISATIONS ICT Applications and Online Platforms, Researchers, Scientists, Engineers, Evaluators	ZIPO, ARIPO, WIPO, MITS	First National Intellectual Property and Policy Implementation Strategy (2018 - 2022) was launched. Generally Zimbabwe has high IP Potential but very low utilisation, mainly due to lack of awareness of how to apply intellectual property protection

2.6 Governance, professional and institutional representation in the sector

GOVERNANCE, PROFESSIONAL & INSTITUTIONAL REPRESENTATION	MAJOR STAKEHOLDERS	KEY FEATURES
Professional Bodies	Engineering Council of Zimbabwe (ECZ); Zimbabwe Institution of Engineers (ZIE); Zimbabwe Association of Consulting Engineers (ZACE)	Registration of professionals and work in the various field of engineering work and practice. Certification; Permits and Licenses
Industry Associations	Engineering Iron and Steel Association of Zimbabwe (EISAZ); Chamber Of Mines (CoM); Zimbabwe Institute of Foundries(ZIF); Confederation of Zimbabwe Industries (CZI); Motor Industries Employers Association of Zimbabwe (MIEAZ); Coal Producers and Processors Association of Zimbabwe (CPPAZ)	Representation of sub-sectors; advocacy, etc
Energy Regulatory Bodies	Ministry of Energy;Zimbabwe Energy Regulatory Authority (ZERA)	Regulation of energy and power supply, distribution, consumption, tariffs and safety
Human Capital Development	Ministry of Higher Education Science and Technology Development - ZIMCHE, ZIMDEF, Department of Manpower Development	Curriculum Development; Skills development and rationalisation
Water and Environmental Bodies; Health and Safety	Ministry of Environment, Water and Climate; Environmental Management Agency; NSSA	Regulation of the environment and water; permits and licenses governing emission limits, EIAs, etc; Industrial and Occupational Health and Safety
Financial Bodies	Reserve Bank fo Zimbabwe, Ministry of Finance	Regulation of financial institutions; forex allocations; monetary policy, etc
Trade Regulation; Taxes, etc	MoIC, Zimtrade, ZIMRA	Regulation of imports and exports; Permits and Licenses; Tax Administeration; etc

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Continued...

GOVERNANCE, PROFESSIONAL & INSTITUTIONAL REPRESENTATION	MAJOR STAKEHOLDERS	KEY FEATURES
Trade Local Governance	Municipalities and City Councils	Land Permits and Licenses, Rates and Water Tariffs
Quality and Standards	Standard Association of Zimbabwe	Product registration and standardisation

2.7 Major policies governing the engineering, iron and steel sector

The Government of Zimbabwe has responded through several policy initiatives as a spring board for the development of effective sector revival strategies to enhance the performance of the Zimbabwean economy, and having direct implications on the revival of the engineering iron and steel sector.

Some of the notable policies include;

- National Vision which envisages the country becoming an empowered and prosperous upper middle-income society by 2030.
- National Development Strategy 1 [NDS1 2021 – 2025] (which provides a policy framework for the support of local manufacturing companies to enhance their production capacities, taking over from the unfinished business of the TSP);
- Transitional Stabilisation Programme [TSP 2018 – 2020]: (which was meant to lay the foundation for medium to long term economic trajectory and carried forward to the National Development Strategy 1 (NDS1):2021-2025);
- Zimbabwe National Industrial Development Policy (ZNIDP) 2019-2023 (The Policy is guided by the principles of value addition and beneficiation; export-led industrialisation; promotion of sustainable industrial development; gender mainstreaming; and modernisation as well as upgrading of industrial equipment and machinery.
- Local Content Strategy 2019-2023 (promote local value addition and linkages through the utilisation of domestic resources. The critical strategic actions include preferential local procurement, capacitation of local suppliers and capacitating research and development institutions; establishment of plants for the transfer of technological know-how).
- The Zimbabwe National Trade Policy [NTP 2019 – 2023]: (which spells out the vision, objectives and initiatives for enhancement of Zimbabwe's local and international trade);
- National Export Strategy [NES 2019-2023]: (which spells out the strategies for trade facilitation and export development and promotion);
- Comprehensive Agriculture Policy Framework [APF 2012 – 2032] and the Draft Agriculture Policy [DAP 2018 – 2023] (which seek to promote appropriate irrigation and mechanisation as key drivers of productivity growth in the agriculture sector);
- Mining sector policies envisaging a USD12Billion Mining Sector Road Map; and
- Energy Policies (which seek to increase renewable energy generation to 1800MW by 2030).

NTP and NES [2019 – 2023]: Major emphasis is on import-substitution and transformation of local industry to export-orientation, with government support to enhance export development and promotion; diversification of export products and export markets; and market access through negotiations at bilateral, regional and multilateral levels.

The policy also sought to transform Zimbabwe from an exporter of raw and semi-processed products to an exporter of internationally competitive high value products. A general shift from inward-looking policy interventions of protecting domestic industry to approaches which balance the need for protection with regional, international and bilateral trade commitments is envisaged in the policy document.

The iron and steel sector was prioritized for export development and promotion. Strategies outlined for the sector include technical intervention strategies, export marketing training, export packaging training, SME cluster development, standards and certification, building and adoption of export culture, export incentives, and trade fairs and exhibitions.

NDS 1 [2021 – 2025] and TSP [2018 – 2020]: Prioritise the resuscitation of the engineering iron and steel industry through the implementation of the following:

- securing investors in the iron and steel \industry;
- resuscitation of steel foundries and use of
- modern technologies in the sector;
- processing of scrap metals into new steel products;
- strict control of scrap metal exports to ensure adequate throughput to domestic \foundries;
- promotion of manufacturing of steel billets from scrap metal;
- facilitation of increased supply of coal and electricity to the iron and steel industry;
- enhanced coke production for local foundries;
- resuscitation of the machine tools and
- accessories manufacturing subsector;

Industrial support to increase the supply of domestically manufactured automotive goods and services, thereby potentially benefiting the upstream industries that manufacture bolts, batteries, steel sheets, tyres, upholstery, paint, carpet manufacturers; and reducing the import bill;
development of strategy to enhance the local assembly of private vehicles to increase job creation and reduce import bill on new and recycled vehicles and accessories;
effecting of measures that promote consumption of locally manufactured goods like the termination of customs duty deduction on imported buses, compelling of line ministries to purchase vehicles from local assemblers amongst others;
inclusive participation of the engineering iron and steel sector in the provision of intermediate goods and services to support the USD12Billion Mining Sector Growth Strategy/Road Map; and
rehabilitation and expansion of water treatment plants and range boosters, sewerage network and pump stations amongst others (Examples are water sources such as Kunzvi and Musami Dams, Caledonia, Hatcliffe and Warren Control amongst others).

ZNIDP [2019-2023] aims to attain a manufacturing sector annual growth rate of at least two percent per annum; 30 percent contribution to the national gross domestic savings; manufacturing value added growth of 16 percent per year; merchandise export growth rate of 10 percent per year; and increased employment in the manufacturing sector to 20 percent by 2023.

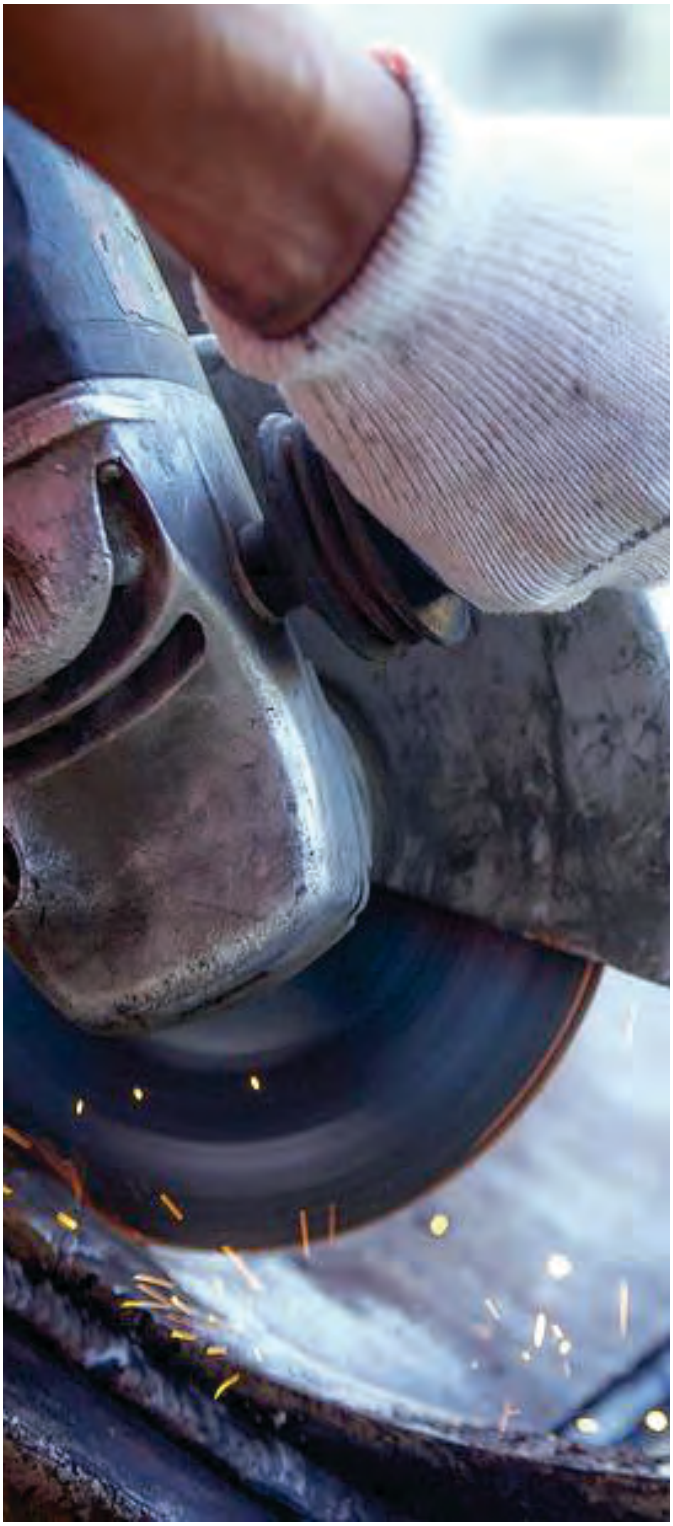
- Attainment of the goals of the Industrial Policy will be achieved through;
- facilitation of financing for industrial development;
- embracing the fourth industrial revolution;
- establishment of industrial clusters;
- pursuing the concept of Specific Economic Zones;
- mainstreaming the devolution agenda into industrialisation;
- fostering industrial competitiveness;
- providing of fiscal incentives for the manufacturing sector; and
- providing industrial skills training.

APF [2012 – 2032] and DAP [2018 – 2023]: These policies are aimed at decentralization of service and repair of farm mechanization equipment; farm structures and post-harvest facilities and technologies; provision of spares, technical back-up and capacity building; as well as rehabilitation, modernization and development of irrigation schemes (over 2.5 million of developed irrigation; 200Ha irrigated per administrative district by 2030).
Engineering iron and steel products envisaged include agricultural tractors (including pedestrian controlled - two-axle tractors, single axle tractors), balers (straw and fodder balers including pick-up balers), combine harvesters (threshers), harvester and threshers, manure spreaders and fertiliser distributors, milking machines, ploughs (e.g. reversible and non-reversible ploughs), root or tuber harvesting machines, seeders, planters and transplanters, soil working equipment, threshing machines and track-laying tractors (crawlers), irrigation pumps, and centre pivots amongst others.

Zimbabwe Motor Industry Development Policy [2016 – 2026]: Policy is aimed at enhancing the resuscitation of the automotive industry against the background of very low capacity utilization of the local industry (<10% across the value chain from assemblers to component manufacturers). It is aimed at increasing the local uptake of local vehicles from local assemblers (increasing capacity utilization to 100%).
Currently, up to 70,000 second hand vehicles are imported per annum against annual consumption of about 4600 for new vehicles. Thus, the policy aims at finding ways of promoting local production (up to 40% local content), import substitution and increasing exports from the current 0% to about 50% by 2026.

Energy policies: The Renewable Energy Policy of Zimbabwe seeks to increase grid-solar energy generation capacity to 1800MW by 2030, giving massive opportunities for the engineering, iron and steel sector in terms of manufacturing and assembling of local solar panels, batteries for solar energy storage, transmission lines, other accessories for solar energy projects and research and development.

The implementation of these policies is expected to revive the engineering iron and steel sector, culminating in the production of one million tonnes of long products, bars and wire rods per annum in the first phase and three million tonnes of flat products, section steel and belts per annum in the second phase (Government of Zimbabwe, 2018). In addition, it is expected that imports of steel products would be reduced by at least US$350 million per annum, while US$1 million worth of exports will be generated together with 3,000 direct jobs and 20,000 indirect jobs in the value chain.



CHAPTER 3 REVIEW OF THE BASELINE STUDIES

The review of the baseline studies mainly focuses on summarizing the seven diagnostic dimensions of the value chain namely the sources of inputs; production capacity and technology use; markets and trade; sustainable production and energy use; value chain governance; value chain finance; and the business and socioeconomic context.

3.1 Sources of inputs and supplies

Generally, about 55% of the inputs were sourced locally whilst 45% were imported. The annual import share of the various components is presented in Figure 3.1 below.

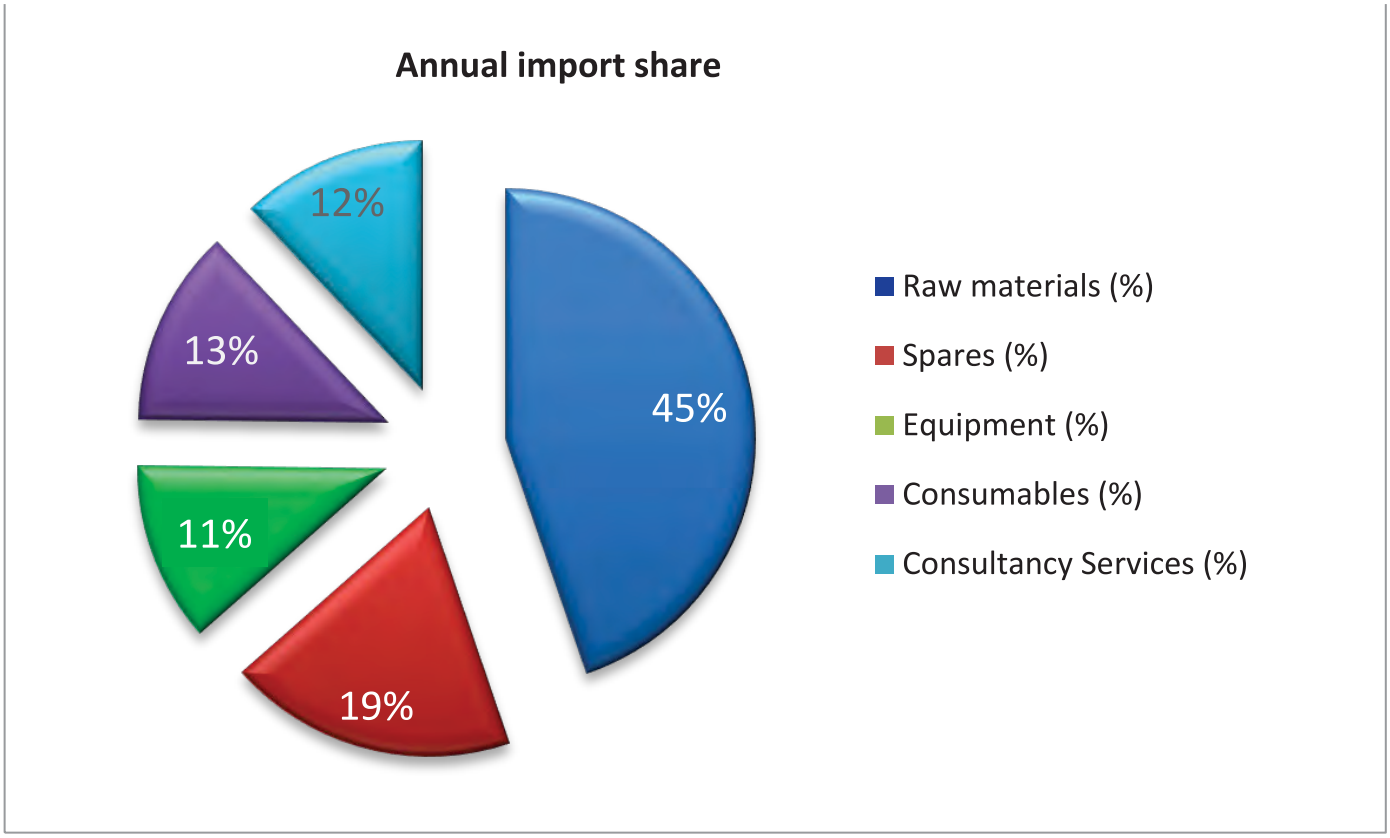


Figure 3.1 : Overall annual imports share

As shown in the pie chart above, the raw materials (45%) and spares (19%) constituted the large share of annual imports. This was a major cause for concern considering the critical nature of raw materials to operations and spares to maintenance. With such a scenario, competitiveness of the sector for exports, as well as against imported finished products becomes inferior. The annual import share by sub-sectors is shown in Figure 3.2 below.

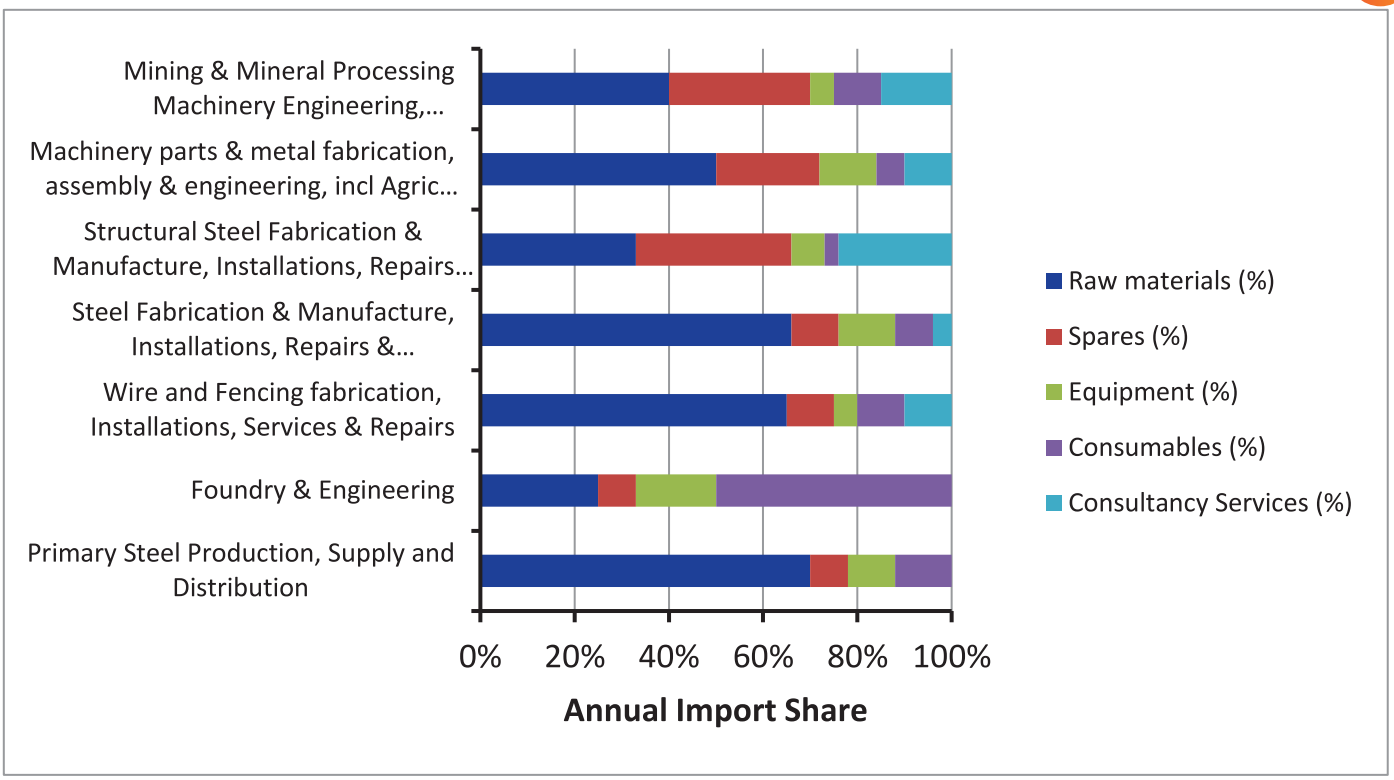


Figure 3.2 : Annual import share of inputs by sub-sectors

In Figure 3.2 above, raw materials and spares constituted the majority of annual imports over the various sub-sectors. This situation threatens the competitiveness of the sector. Import substitution was, therefore, vital to enhance the competitiveness of the sector. The major sources of imports are indicated in Figure 3.3 below.

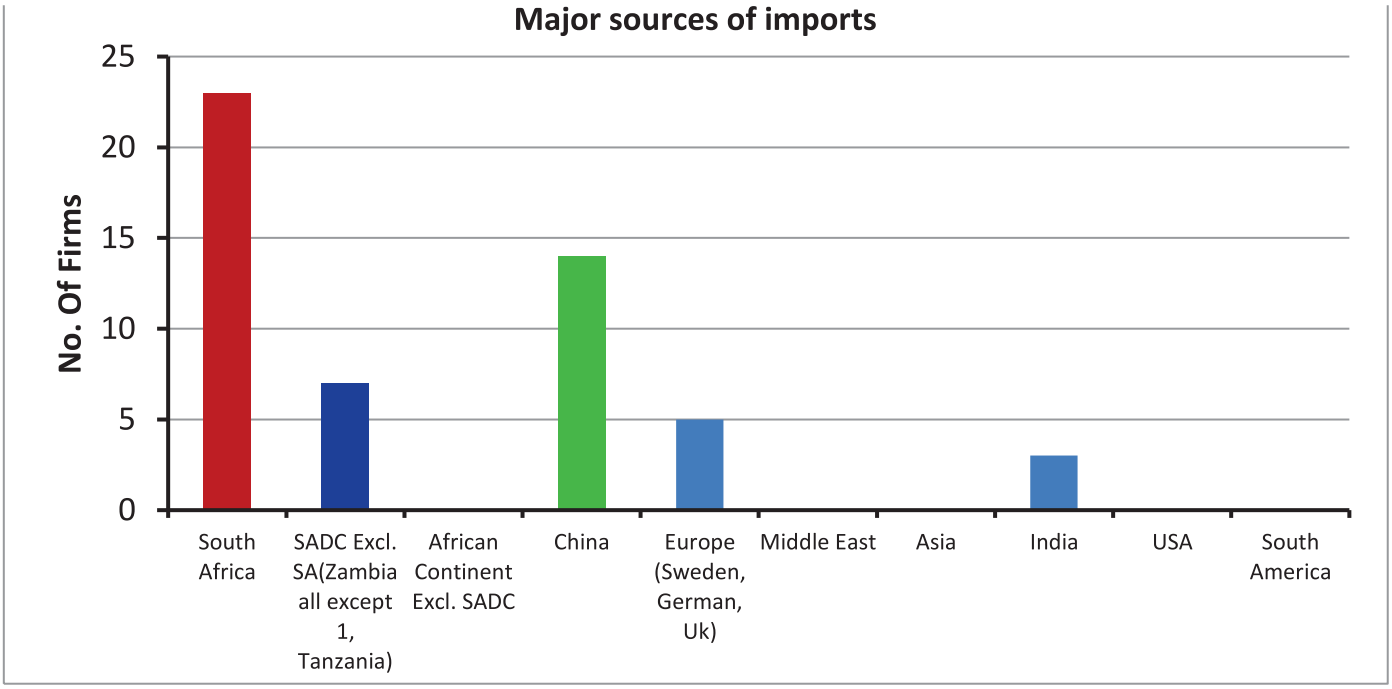


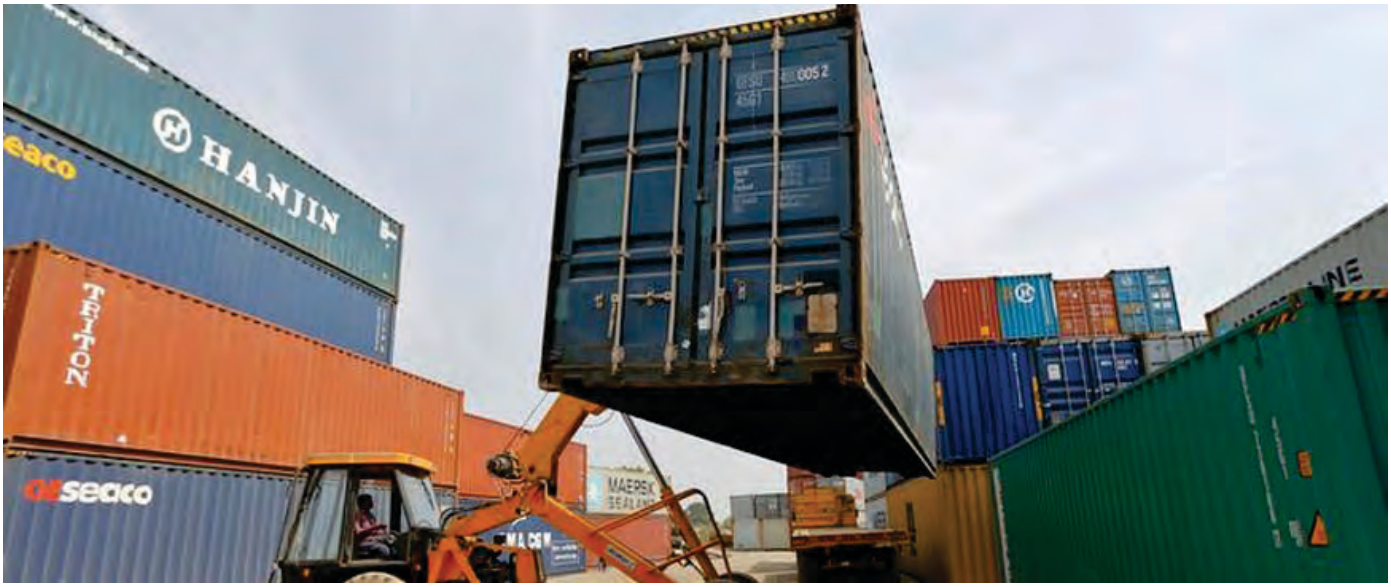
Figure 3.2 : Main sources of imports for The engineering, iron and steel sector

From the graph above, the main sources of imports were South Africa (dominant); followed by China; then SADC (mainly Zambia and Tanzania); then Europe (Sweden, German and UK); and India. South Africa and Zambia as choices for imports was due to their proximity considering the cost of transportation of heavy steel products. China and India's imports are mainly due to existing investment linkages as well as technology supply to the local iron and steel industry. Europe's supply of imports could be attributable to supply of technology.

supply of imports could be attributable to supply of technology. Without developing local capacity for production as well as technology, it will be very difficult to substitute imports considering that the developed countries will always seek to increase their exports of value added products as well as technology to the developing world and maintain that status quo forever. Every SADC country also seeks to improve their export competitiveness, and in the process provide competitive products to our local market. This has already been shown by South Africa's dominance and Zambia and Tanzania showing up on the local market. It is also scaring to note that even the semi-finished/less value added products which the sector used to export were being imported to feed the sector. Therefore investment in production of all kinds of steel to feed the sector was inevitable.

3.1.1 Major reasons for importing inputs

MAJOR REASON FOR IMPORTING INPUTS	REMEDIES
Scarcity and inconsistency of supply of the inputs locally	• Capacitation of existing local primary iron and steel producers and investment in new ones that directly address the needs of the industry; • Effective enforcement of laws prohibiting the exportation of scrap steel. • Establish sustainable global value chain linkages.
Local price of inputs and supplies too high	• Establish ways of eliminating imports, invest in new technologies that are more efficient with reduced unit cost of production.
Inferior quality of local inputs	• Invest in new technologies with government support to avail funding at sustainable rates. • Capacitation of quality enhancement institutions like SAZ, and other Training Institutions to capacitate industry with human capital; product quality and standards; and equipment calibration
inputs not produced locally	• Establish sustainable global linkages with reliable suppliers with competitive prices; invest in new plants/ technologies to enhance local production
Procurement policy issues	• Reduction of duty on imported raw materials inputs



3.1.2 Major reasons for importing inputs

MAJOR STRENGTHS	REMARK
Short lead time to delivery for locally supplied inputs	• Local availability of raw materials presents a huge advantage for local suppliers. If well capacitated, these local products can outcompete imports on lead time and hence effecting import substitution
Transport and shipping costs for importing were too high	• Iron and steel products are very heavy and hence costly to transport. Local production ensures lower cost of transportation and hence enhancing import substitution and local production. Investment in primary and secondary steel production; capacitation of existing players and upgrading the rail transport system will enhance competitiveness
Imported price of inputs and supplies were too high resulting in consumers preferring the cheaper local products	• Assuming similar technologies, the price of inputs manufactured locally will definitely be cheaper than those imported due to factors like high labour cost; transportation and duty. • It is, therefore, important to ensure investment in primary iron steel production facilities and equipment gets competitive funding to guarantee price competitiveness. Other factors of production like energy, water, labour and transport must be at competitive rates to ensure that the local products outcompete the imports.
Procurement policy protecting the local industry by inhibiting importation of locally produced goods	• Policies that protect the local industry as well as capacitate them will enhance the uptake of local products. Policies that limit the export of Scrap for the benefit of local consumers must be enforced
Foreign inputs lack technical and aftersales support resulting in consumers preferring locally produced goods with full back-up	• The local industry must be fully equipped with technical aftersales support and back-up to out-compete imports. This can also be enhanced through synergies of actors within the local value

3.2 Production Volumes, Markets, Supply and Demand

The average annual local production, imports and export levels of The engineering, iron and steel sector for the period 2009 to 2019 is presented in Table 3.1 below.

Table 3.1: Average annual production, export and import levels in The engineering, iron and steel sector of Zimbabwe: 2009 – 2019 (Sources: Zimstat and ITC Trade Map)

Subsector	Av Annual Imports (2009 - 2019) (USD)	Av. Annual Exports (2009 - 2019) (USD)	Est. Local Production Av. 2017 - 2019 (USD)	Total Subsector Annual Gross Value (USD)
Iron Ore	**1,899**	**478,981**	**1,116,085.00**	**1,117,983.73**
Scrap Metal*	-	-	***10,000,000.00***	***10,000,000.00***
Subtotal - Iron Ore and Scrap Metal	**1,899**	**478,981**	**11,116,085**	**11,117,984**
Primary Steel Production	**134,086,890**	**183,477,039**	**292,140,821.00**	**426,227,711.48**
Fabricated metal products	**146,945,305**	**21,850,289**	**375,842,344.00**	**522,787,648.82**
Water Engineering, Pumps and Hydraulic Equipment	71,392,269	2,666,912	14,856,558.11	86,248,827.22
Agric and Forestry equipment	45,686,508	4,195,771	113,901,743.00	159,588,251.29
Industrial, General and Special Purpose Machinery	147,193,996	3,628,890	30,630,713.77	177,824,710.16
Mining, Mineral processing and Heavy Machinery	193,004,672	6,412,812	40,163,804.26	233,168,476.14
Household appliances	43,484,043	5,803,311	9,048,923.86	52,532,966.61
Other manufactured goods	83,160,160	25,321,032	321,295,025.00	404,455,185.07
Automotive Equipment	542,647,025	6,596,226	4,900,000.00	547,547,025.28
Other Transport Equipment	24,935,732	10,399,961	220,046,141.00	244,981,873.45
Electrical Engineered Goods	143,775,741	10,523,721	372,770,000.00	516,545,741.41
Electronic and Related goods	247,229,569	3,087,449	402,544,511.00	649,774,080.40
Assembled goods subtotal	**1,542,509,717**	**78,636,086**	**1,530,157,420**	**3,072,667,137**
Engineering Iron and Steel	**1,823,543,811**	**284,442,395**	**2,198,140,585**	**4,021,684,396**

**Assumption as follows: Local Scrap metal supply at about 100000tpa; No scrap exported or imported. Nevertheless, Zimbabwe Institute of Foundrymen says export of scrap metal is ongoing despite local demand higher than supply.*

As presented in Table 3.1 above, the estimated Gross Annual Value of The engineering, iron and steel sector was about USD3Billion. Local Gross Annual Production was estimated at about USD1.5Billion, whilst the Gross Annual Imports were estimated at about USD1.8Billion. The Gross Annual exports were estimated at USD284Million.

3.2.1 Product Demand

About 53% of firms cited that there was high product demand due to the following main reasons; high quality product/service; product/service price was competitive; brand loyalty; product and service was distributed well; and product was backed by government.

Nevertheless, a significant number raised the challenge of low to no demand for their product on the market, the main reasons being; product/service price was higher than import price; consumers preferring import or substitute goods; competitor product/ service were more advanced; some consumers of product/service were out of business; product/ service was outdated and no longer relevant; and availability of new and improved products. With the abovementioned reasons, it was clear that firms need to invest in new product development, explore new markets and improve on cost competitiveness and quality for products to remain in the game and outwit competitors.

There was significant and uneven competition amongst different players – large scale, small firms and individual and informal players on the local market. Imports also offered fierce competition. Policies in favour of favour local content should be enforced. At the same time, the industry must regulate the operation of individual and informal players to ensure that there is fair competition on the market, as well as eliminating malpractices in procurement.

The high product cost hindered the competitiveness of products against imports. The major factors affecting product price were; cost of raw materials; cost of labour; cost of utilities; competition; cost of processing; and transportation. Therefore, cost competitiveness in production processes as well as sourcing of inputs was vital to ensure viability. It is worth noting that the introduction of new iron and steel plant is expected to have a huge positive impact of the cost of product and competitiveness. Firms have to invest in technologies that are energy efficient, highly mechanized and highly productive to improve cost competitiveness of product and high quality.

3.2.2 Annual sales revenues

The majority of firms assessed earned revenues in the range of USD200,000 to 1Million dollars; followed by those in the range of USD1Million to USD5Million. A considerable number of firms were in the USD 50,000 to 200,000, with a few over USD5Million, representing the large-scale companies. The average annual revenue per firm was USD1.89Million. Thus, at current production levels and an estimated 500 active firms, the estimated annual revenues would be over USD945Million (excluding most small scale and the informal sector).

3.2.3 Comparison of local production with imports

The comparison of imports with local production is presented in Figure 3.4 below. The deep blue bars indicate the significantly higher imports as compared to local production.

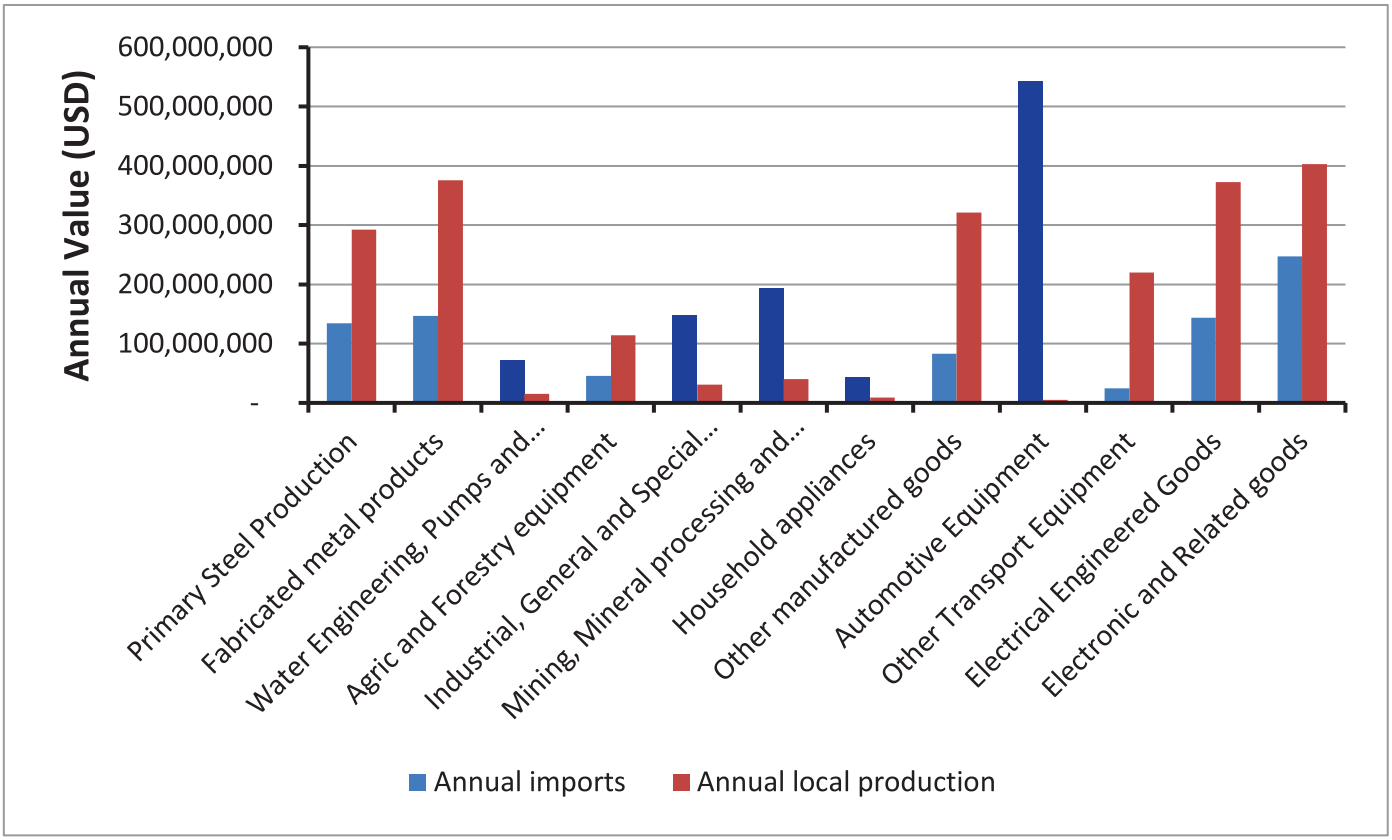


Figure 3.4: Comparisons of imports with local production in the engineering iron and sector of Zimbabwe

As presented in Figure 3.4 above, automotive sub-sectors was predominantly imports (>USD500Million/year) with insignificant local production. Other notable sub-sectors with predominantly larger imports as compared to local production were Mining and Heavy Machinery; Industrial, general and special purpose machinery; Water Engineering and Hydraulic equipment as well as Household Appliances. Generally, there were more imports than local production for assembled and finished goods sub-sectors. Local production was predominant for; Electronic and related goods; Fabricated metal products; Electrical Engineered Goods; primary and secondary steel production; Other manufactured goods; Other Transport equipment; and Agriculture and Forestry equipment. It is therefore important to leverage on the sub-sectors which are strong at local production and strengthen their capacities for growth, whilst at the same time looking at ways of substituting imports for those sub-sectors that heavily rely on imports. Of major concern is the automotive industry with huge imports despite the country having vehicle assembly plants. The overall comparison of annual imports to local production is presented in Figure 3.5 below.

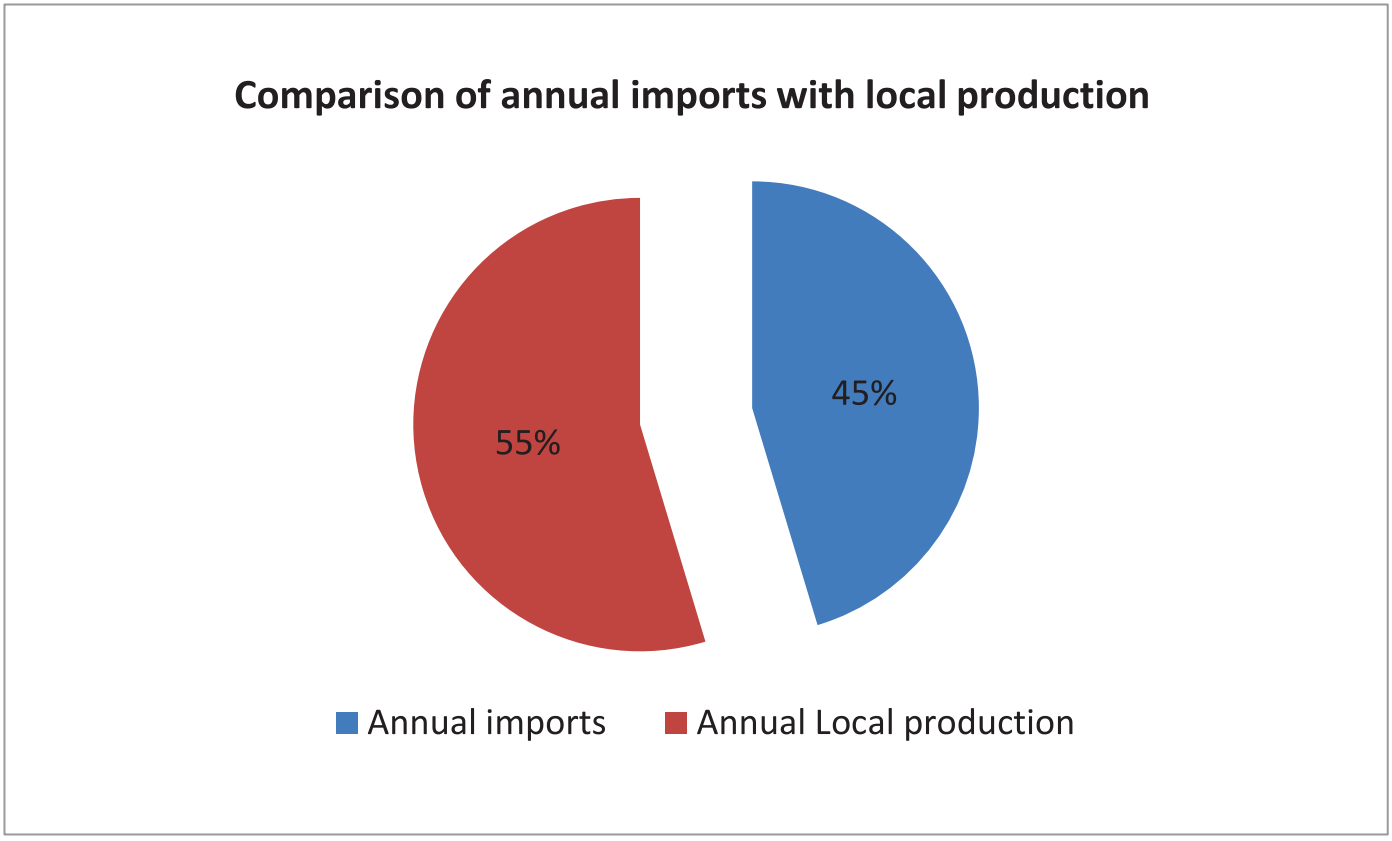
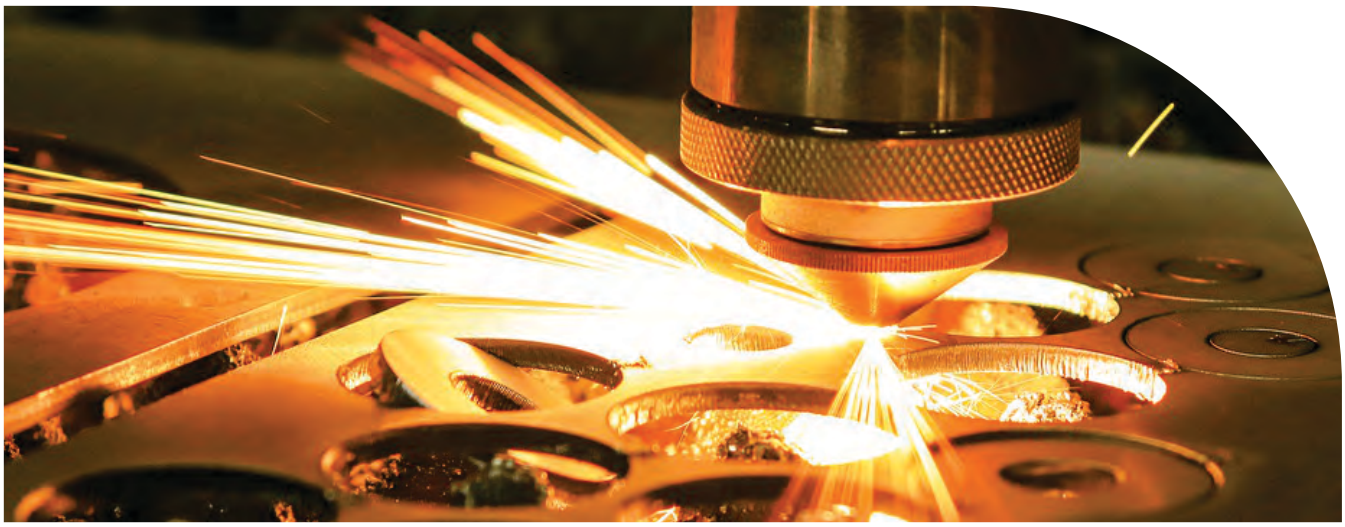


Figure 3.5: Overall comparisons of imports to local production in the engineering iron and sector of Zimbabwe

As shown in the pie chart above; imports were a significant component of gross consumption in the engineering, iron and steel sector, constituting about 45% of consumption.

3.2.4 Imports versus exports and export competitiveness

The comparison of annual imports with exports for the period 2009 to 2019 is presented in Figure 3.6



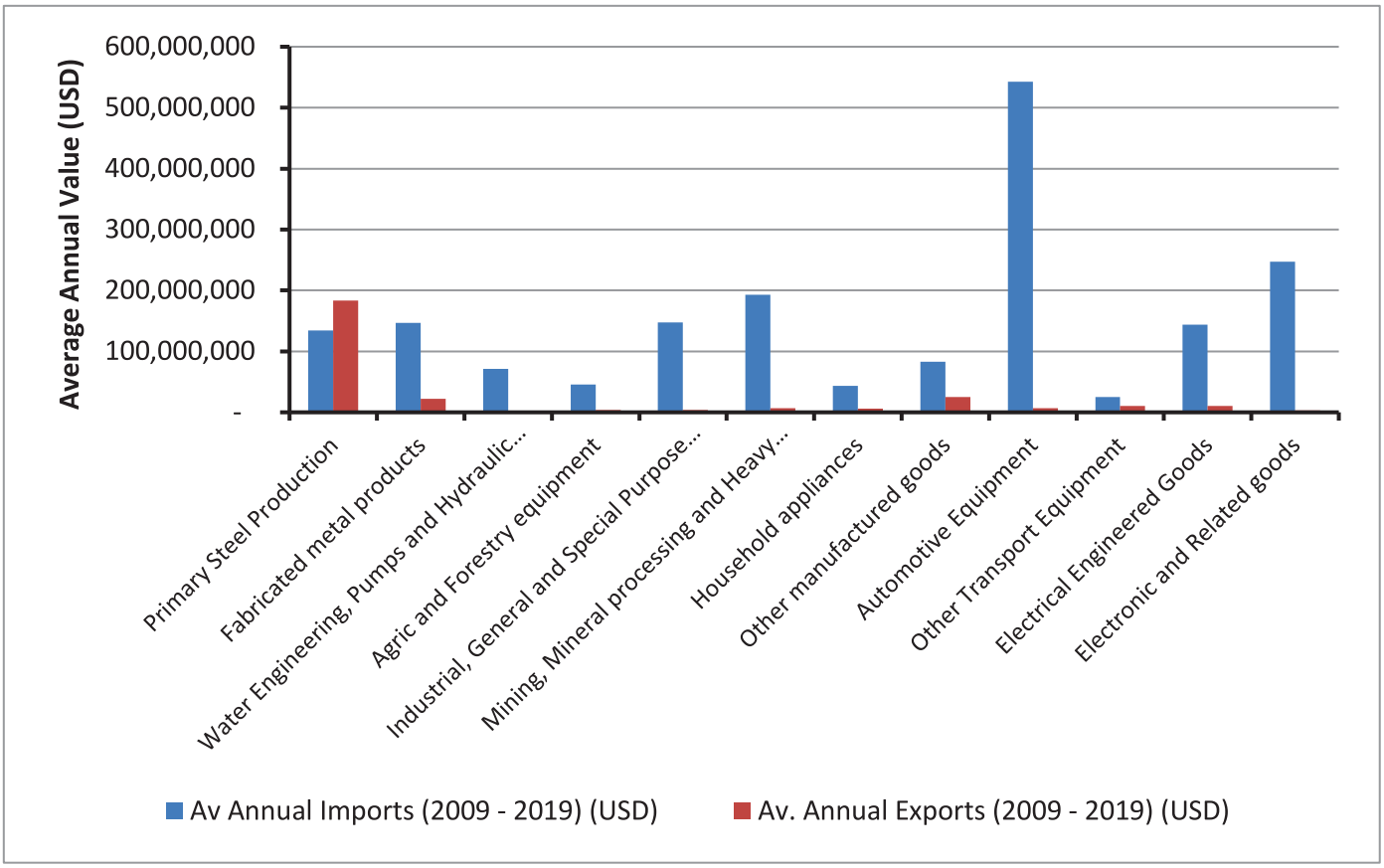


Figure 3.6: Comparison of imports to exports in the engineering iron and sector of Zimbabwe

As presented in Figure 3.6 above, exports were generally insignificant as compared to imports except for primary and secondary steel production.

As a major cause for concern, about 72% of the surveyed firms exported no product. Only 20% of the firms exported less than 25% of what they produced with a paltry 8% exporting between 25 and 50% of what they produced. Thus, the export competitiveness of the sector was very low. Incentives and policies that promote exports should be established and put in place to increase the share of the exports and hence volumes of production and capacity utilization. The major export destinations were SADC excluding SA (mainly Zambia). Very little exports went to China, Europe (UK) and USA.

A lot of effort is needed to improve export competitiveness. The following initiatives can enhance competitiveness

- Participate in global and regional value chain linkages aimed at serving large projects in areas like mining and construction, energy and water that consume a lot of iron and steel.
- Invest in competitive technologies to improve product competitiveness
- Incentivise firms that are involved in exports

3.2.5 Sub-sectors size by gross value

The gross value by sub-sectors is presented in Figure 3.7 below.

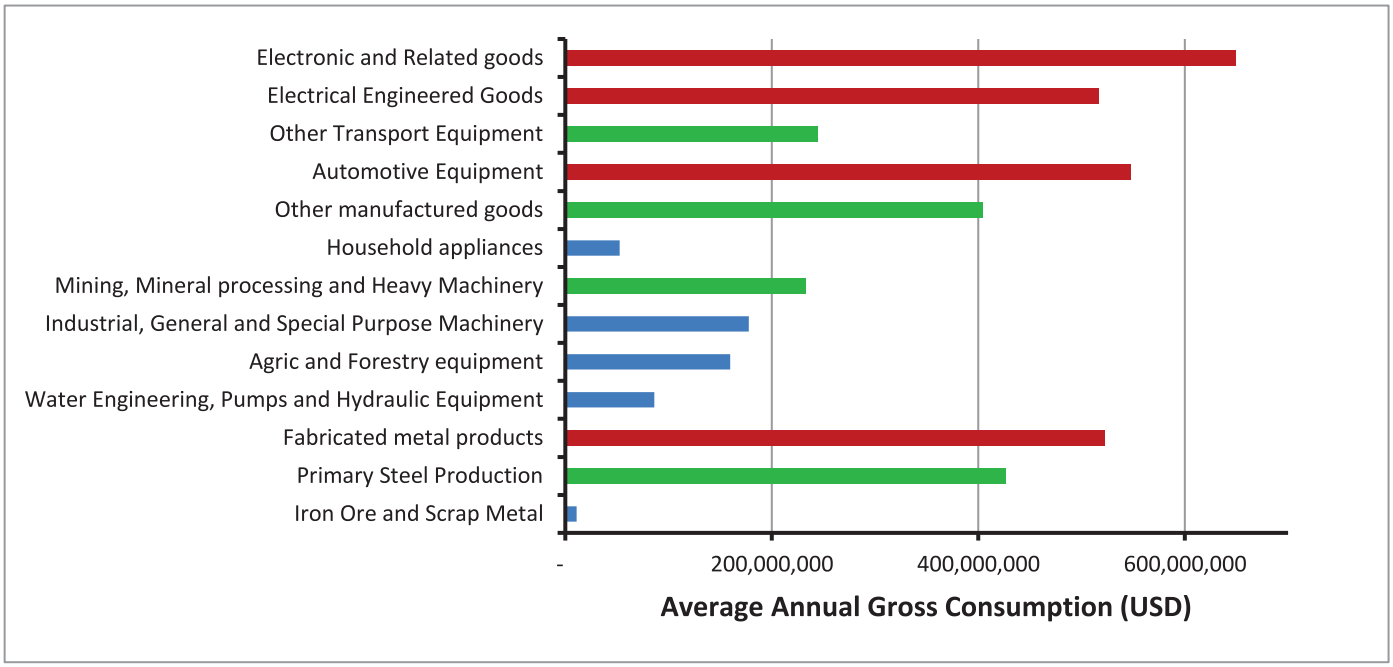


Figure 3.7: Average annual gross value by sub-sectors in the engineering iron and sector of Zimbabwe

The top 4 dominant sub-sectors ranked by gross value were; Electronic and related goods; Automotive industry; Fabricated metal products; and Electrical Engineered Goods. It is worth noting though that both electronic and related goods and automotive industry were dominated by imports despite the huge consumption. Opportunities for local beneficiation have to be identified and implemented. The other notable sub-sectors following behind the top 4 were; primary and secondary steel production; Other manufactured goods; Other transport equipment; and Mining, mineral processing & heavy machinery and parts. Interestingly, primary and secondary steel production was notable despite the fact that the major local supplier (ZISCO) was closed for the whole period of the assessment. It shows that new players were settling in to augment imports to feed the downstream players.

MAJOR PRODUCTS	PRODUCT GROSS AVERAGE ANNUAL VALUE (USDMILLION)	sub-sectors
Motor Vehicles	484	Automotive
Motor Vehicle Parts and Accessories	42	
Bodies, Coachworks and Trailers	16	
Subtotal	**542**	
Basic Iron and Steel	184	Primary Iron and Steel Production
Flat rolled products	71	
Bars and Rods	23	
Section Steels	19	
Wires and related products	16	
Subtotal	**313**	
Mining, Quarrying and Construction Equipment	155	Equipment and Parts Manufacturing
Manufacture of general purpose machinery	74	
Manufacture of pumps, compressors, taps and valves	54	
Manufacture of medical and dental instruments	53	
Manufacture of cutlery, handtools and general hardware	31	
Manufacture of food processing, beverage and tobacco processing equipment	25	
Manufacture of lifting and handling equipment	23	
Manufacture of Agricultural and Horticultural Equipment	22	
Gears, Bearings and Driving Elements	24	
Subtotal	**461**	
Electronic Components and Boards	101	Electronic and Electrical Engineered Goods
Electric Motors, Generators, Transformers, Distribution and Control Equipment	79	
Computers and Peripheral Equipment	62	
Communication Equipment	30	
Testing and Control Equipment	30	
Electric Wires and Cables	17	
Electrical Equipment	17	
Manufacture of electric lighting equipment	12	
Batteries and Accummulators	13	
Subtotals	**361**	
Fabricated Metal Products	72	Fabricated Metal and Steel Products
Structural Metal Products	27	
Subtotal	**99**	
GRAND TOTAL	**1776**	**EIS Import Substitution PotentiaL**

3.3 Production capacity and technology use

3.3.1 Capacity Utilisation

Although there are a handful of companies with high capacity utilization, the majority of actors in the sector had low capacity utilization typified by one day shift and 5 day working week. The major reasons for the low capacity utilization being drawbacks from the current economic environment; effects of Covid-19; pandemic power and water shortages; lack of raw materials; competition from imports; antiquated machinery and breakdowns; low local demand and high cost of doing business.

However, there were some notable cases of companies that operated a 3 day shift and high capacity utilisation of over 75%. This was attributable to high local demand; availability of raw materials; availability of working capital; state of the art machinery; growing export market; and support from government. The capacity utilization is summarized in Table 3.2 below.

Table 3.2: Capacity utilization summary

SHIFT DESCRIPTION	% OF FIRMS	REMARKS
1 Shift Day	76%	The proportion of firms utilising 1 shift should decline to less than 50%
2 Shift Day	14%	Sign of low capacity utilisation. the proportion should increase to at least 25% of the firms. This enhances the bankability of the sector
3 Shift Day	10%	Sign of low capacity utilisation, should increase to at least 25% of the firms. This enhances the bankability of the sector
WORKING WEEK DESCRIPTION	**% OF FIRMS**	**REMARKS**
5 day Week	88%	The proportion should decrease to 55%
6 day Week	8%	Sign of low capacity utilisation, should increase to 30% to enhance sector bankability
7 day Week	4%	Sign of low capacity utilisation should increase to 15% to enhance sector bankability
1 SHIFT DAY;5DAY WEEK CAPACITY UTILISATION	**% OF FIRMS**	**REMARKS**
>75%	25%	Reasonable capacity utilisation due to; high local demand; availability of raw materials; availability of working capital; state of the art machinery; growing export market; and support from government 50 -
<75%	55%	

1 SHIFT DAY;5DAY WEEK CAPACITY UTILISATION	% OF FIRMS	REMARKS
25% - <50%	6%	Low utilisation due to; drawbacks from the current economic context; power and water shortages; lack of raw materials; competition from imports; antiquated machinery and breakdowns; low local demand; and high cost of doing business
<25%	14%	

The sector is aiming to achieve the following employment and sales revenues generated from increasing the capacity utilization of local firms;

- Increase in capacity utilization of the predominant 1 shift day/5 day working week from estimated 50% to 80% and improve to 6 day working week. This is expected to increase the annual sales revenues from about USD1.26Billion to about USD3Billion by 2024. In tandem, increase employment levels in the sector from about 13,000 to about 28,000 by 2024.
- Increase in capacity utilization from 1 shift day/6 day week to 2 shift day/6 day week at 80% capacity utilization by 2026 translating into at least USD6Billion Annual Sales Revenue. In tandem, increase employment levels to about 50,000 by 2026.

In-order to achieve the set targets, the following activities must be done;

- Stimulate local demand by creating local policies that promotes the use of local content. The major markets stimulating demand include farmers with the increase in agricultural activity; large mining firms; large government projects (dam construction, electricity and power, road construction/rehabilitation, urban expansion projects, etc.); NGO and developmental institutions projects (renewable energy – solar, electric vehicles and e-mobility, etc.); and expansion projects by large and small scale domestic firms. Implementing a clear import substitution policy for major products/sub-sectors, with incentives for companies/firms that contribute significantly to import substitution (Automobile, Electrical and Electronic Engineered Goods, Primary Iron and Steel; Fabricated Metal Products, etc.)
- Investment into new and adequate primary and secondary steel production; and capacitation of existing primary and secondary steel producers to enhance their competitiveness
- Availing of funding at favourable terms; and improving access to funding. Enhancing the quality of competitiveness of firms through capacity building and technical support by institutions such as SAZ.
- Reduce transport cost through rehabilitation of the rail transport
- Investment in new product development and capacitation of R&D and technical support institutions to abate the threat of product substitution.
- Fostering and strengthening of synergies and collaborations between the R&D, capacity building and technical support institutions with the firms.

3.3.2 Technology competitiveness

The major technologies used in the engineering, iron and steel sector according to responding firms are presented in Table 3.3 below.

Table 3.3: Major technologies used in the engineering, iron and steel sector of Zimbabwe

SUB-SECTORS	MAJOR TECHNOLOGIES	REMARK
Primary iron and steel production	Old by- product recovery coke plant; non recovery coke plant; old Blast Furnace; Direct Reduction Iron Rotary Kilns; Basic Oxygen Furnace; old induction furnace; electric arc furnace; basic oxygen furnace; continuous casting; old cogging mills; old billet mills; old bar rod mills; old section mills	Current technology generally old, heavily manual, low productivity; low energy efficiency and high levels of emissions. Benchmarking technologies against technologies used by the major sector competitors like South Africa, China, India, Europe and SIRDC is important.
Foundry and engineering	Moulding; pattern making; cupola furnaces; EAF; induction furnace; rotary furnace; reverberatory furnace; crucibles; gravity die casting; sand casting; centrifugal; tilt pouring; high and low pressure casting; heat treatment; machining; etc.	Current technology generally old, heavily manual, low productivity; low energy efficiency and high levels of emissions. Benchmarking technologies against technologies used by the major sector competitors like South Africa, China, India, Europe and SIRDC is important.
Fabricated metal products Assembled goods	Automated and semi-automated assembly lines; sub arc welding; laser cutting; machine shop and fabrication shop machines like drills, lathe; milling; rolling; bending; cutting; winding; etc.	Automation; CNC; CAM, etc. are new trends focusing on high productivity; precision engineering; flexible manufacturing; rapid prototyping; energy efficiency; low emissions; etc. Benchmarking technologies against technologies used by the major sector competitors like South Africa, China, India, Europe and SIRDC is

Although the general perception was that the majority of existing technologies were fairly competent as compared to low, medium and high income African countries, the same felt that their technologies were inferior to global firms, which are the major sources of competition. In-order to achieve import substitution, upgrading of technology at every level of the value chain is crucial to ensure competitiveness at local, regional and international markets. To ensure competitiveness of the sector as a whole; any new investment in technology must be approved after meeting set minimum competitiveness thresholds to safeguard the viability of the sector and protect it from technology dumping. Any existing and new technologies must be benchmarked against competitor technologies (main competitors being South Africa, China, India, Europe and other SADC countries. Research and Development Institutions like SIRDC and Standard Bodies like SAZ should establish the minimum standards/thresholds of relevant technologies for each sub-sectors value chain to assist the sub-sectors players and investors in upgrading technologies to enhance bankability and competitiveness.

3.3.3 Synergies and multiplier effect

Synergies exists in the engineering, iron and steel sector with the main subcontracted operations presented in the Table 3.4 below.

Table 3.4: Subcontracted operations in the engineering, iron and steel sector of Zimbabwe

SUB-SECTORS	SUBCONTRACTED OPERATION
Foundry and engineering	Smelting
Fabricated metal products and structural	Bending, cutting, foundry casting, forklifts, scaffolding
Assembled goods –industrial, general purpose, special purpose, mining and heavy machinery	Chrome plating, electroplating, epoxy coating, galvanizing, sand blasting, construction
Automotive industry	Foundry casting, refrigeration, cutting and bending, fitting and turning

The main reasons for subcontracting were; inadequate machinery; inadequate technology; lack of human capital; partnerships and cheaper and more efficient operations/technologies from subcontracted firm. About 57% of firms did subcontract operations, with 43% not subcontracting. About 21% of the firms fully subcontracted, whilst 36% partially did so. This shows that there is a lot of interdependence on the operating firms and hence the closure of one firm severely affects the operations of the other firms. On the other hand, the opening, growth and expansion of one firm has high probability of triggering business activity for other operators. Thus, optimizing of capital investments is possible, considering the already existing synergies. The existing synergies also enhances the establishment of bankable value chain clusters based on attractive value chains.

3.3.4 Human capital needs

The major technical and professional skills; main sources of certified professionals; capacity and suitability of local academic and training institutions to meet technical requirements; and existence of research and development were investigated and analysed. The inventory of the major skills required for the sector is presented in Table 3.5 below.

Table 3.5: Major skills required in the engineering, iron and steel sector of Zimbabwe

sub-sectors	TECHNICIANS/ARTISANS	ENGINEERS	OTHERS
Primary and secondary iron and steel production	Metallurgist, electricians, mechanical artisans; welders; boiler makers; instruments technicians; brick layers and builders; pattern makers; riggers; draftspersons; laboratory, chemical and process	Metallurgist; chemical and process; mechanical & mechatronics; civil and water; electrical; electronics; environmental; energy	OHS technicians and health professionals, lawyers, finance and accounting, business & marketing; investment experts
Foundry and engineering	Metallurgist, electricians, mechanical artisans; welders; moulders; pattern makers; draftspersons; laboratory, chemical and process	Metallurgist; chemical and process; mechanical & mechatronics; electrical; environmental;	OHS technicians and health professionals; instruments technicians; energy; civil; finance, business & marketing

Continued...

SUB-SECTORS	TECHNICIANS/ARTISANS	ENGINEERS	OTHERS
Fabricated metal products and structural	Electricians, mechanical artisans; welders; boiler makers; instruments technicians; riggers; draftspersons	Mechanical & mechatronics; civil; structural; architectural; electrical; electronics; environmental; energy	Metallurgist; OHS technicians and health professionals; electrical; electronics; environmental; finance, business & marketing
Assembled goods	Metallurgist, electricians, mechanical artisans; welders; boiler makers; instruments technicians; draftspersons;	Mechanical & mechatronics; electrical; electronics; environmental; energy	OHS technicians and health professionals; environmental; civil and water; process; metallurgist; laboratory; finance, business & marketing; legal
Electrical Engineered goods and Electronics	Metallurgist, electricians, mechanical artisans; welders; instruments technicians; moulders; pattern makers; riggers; draftspersons;	Electrical; electronics; metallurgist; mechatronics	Mechanical; OHS technicians and health professionals; environmental; energy; civil; chemical and process; finance, business & marketing
Engineering services and consultancy	Metallurgist, electricians, mechanical artisans; welders; boiler makers; instruments technicians; brick layers and builders; pattern makers; riggers;	Metallurgist; chemical and process; mechanical & mechatronics; civil and water; electrical; electronics; environmental; energy; architectural; automation	OHS technicians and health professionals; human resources; finance; business & marketing; economists; legal

According to the baseline study conducted, the engineering, iron and steel sector was a heavy consumer of artisans and technicians (71%) as compared to engineers (29%). The majority of firms (50%) employed up to a total of 5 engineers and artisans/technicians (combined). About 23% of firms employed over 20 engineers and technicians combined, whilst 15% employed over 50 engineers and technicians combined. Indicatively; the sector employed on average about 20 engineers and technicians (combined) per firm [6 engineers and 14 technicians]. These statistics show that the engineering, iron and steel sector has the potential to employee a significant number of engineers and technicians if it grew.

Generally, all sub-sectors require the services of professional engineers and technicians. Experts were significantly required for the primary and secondary steel production and fabricated metal products and notable for the assembled goods sub-sectors. Professional consultants were used significantly in the assembled goods sub-sectors and to some notable extent in fabricated metal products and structural steel sub-sectors. The demand for professional skills showed that advanced training and continuous professional development was crucial to the development, growth and competitiveness of the sector. The improved use of appropriate expertise and professional consultants could also enhance the competitiveness of the sector. Capacity building strategies for experts, ("neuro-surgeons of the sector") in strategic value chains of the engineering, iron and steel sector of Zimbabwe could be vital to enhance competitiveness of the sector. Active participation of professional bodies like the Engineering Council of Zimbabwe and Zimbabwe Institution of Engineers in the capacity building processes collaborating with research and development and training institutions like SIRDC, Universities and colleges could enhance competitiveness of the sector.

Gweru, Mutare and Masvingo dominate as the major sources of technicians are generally considered as the heart of the technical skills. Also significant are the Universities (University of Zimbabwe, National University of Science and Technology, Harare Institute of Technology, Chinhoyi University of Technology and to some extent Bindura University of Science Education and Midlands State University). Apprenticeship programmes; vocational training and industrial training institutions also contributed significantly to the provision of skills for the industry.

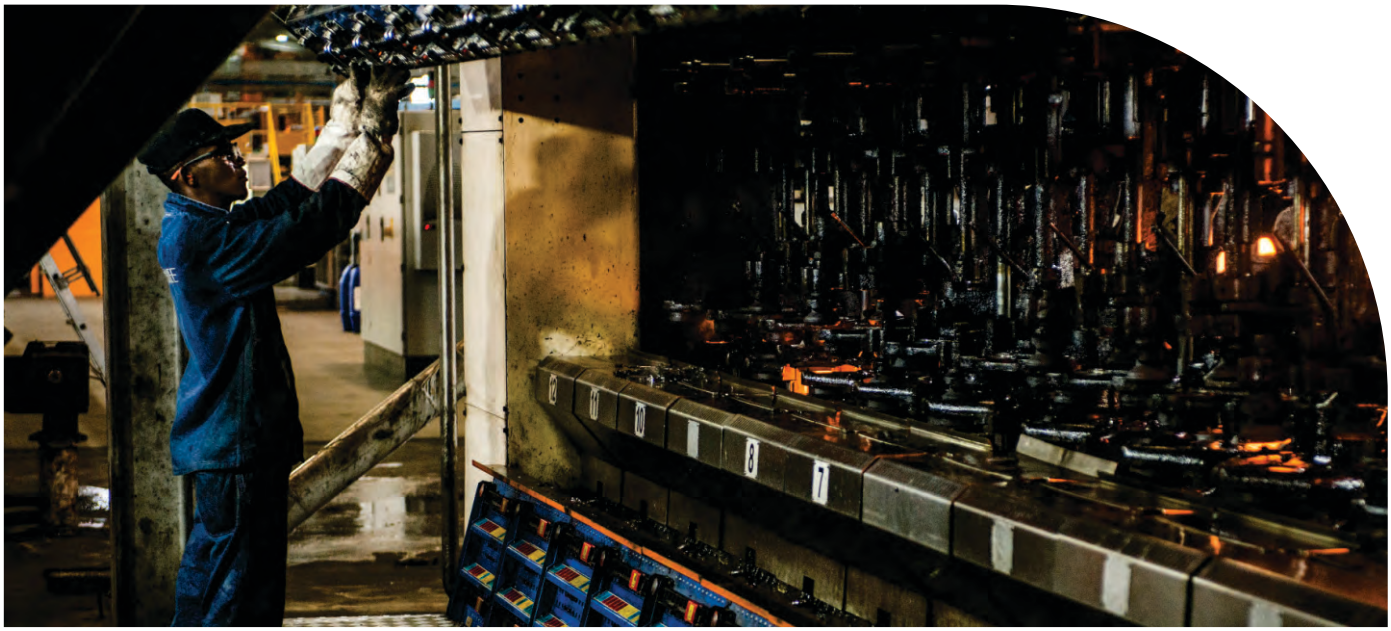
Significant training and certification also came from the general African continent, South Africa, China and India. Generally certification and training for the sector has come from all over the world. This could be attributable to the presence and influence of Zimbabwean diaspora community all over the world. Thus strong collaborations with various institutions across the world can enhance the competitiveness of the sector through strong and holistic global value chain linkages incorporating human capital development and technology transfer and pollination.

Training Capacity: The sector was generally happy with the capacity of polytechnics (91%) to train the skills they wanted. The majority of firms (76%) were also satisfied with the capacity of the universities to train the skills they wanted. However, a significant number of firms (24%) felt that the capacity of universities to train their skills was not adequate. It is therefore, vital for the universities to have strong links with the sector to fully understand the needs and hence align their curricular accordingly.

A majority of the firms (74 and 78%) also felt that the professional and industrial training bodies had adequate capacity to train the skills they needed. However, a significant number of firms felt that the capacity was not adequate. Strong collaborations and aligning or restructuring of some of the professional and industrial bodies to suit the needs of the industry will improve the capacities and suitability of the training institutions to meet industry requirements.

3.3.5 Relevance of national research and development institutions

Although the majority of the actors in the sector felt that the national research and development institutions were relevant to address the needs of the sector, collaboration between these institutions and the sector was non-existent. Ways to foster strong collaboration need to be identified and implemented to enhance the competitiveness of the sector.



3.4 Sustainable production and energy use

3.4.1 Major sources of energy for the engineering, iron and steel sector and their uses

The major sources of energy are presented in Table 3.6 below.

Table 3.6: Major uses of energy in the engineering, iron and steel sector of Zimbabwe

SUB-SECTORS	ELECTRICITY	COAL	GASES	DIESEL	SOLAR
primary and secondary steel production	Driving all electric powered machinery; Lighting; controls, etc.	Reducing agent; Heating of furnaces; mills; etc.	Reducing agent; Heating of furnaces; mills; etc.	Stand-by Generators; Heavy Mobile Plant	Grid Tie and Hybrid Power Generation Systems
Foundry and Engineering	Driving all electric powered machinery; Lighting; controls, etc.	Heating of melting furnaces	Gas Welding & Cutting	Stand-By Generators	Grid Tie and Hybrid Power Generation Systems
Fabricated metal products	Driving all electric powered machinery; Lighting; controls, etc.	Negligible	Gas Welding & Cutting	Stand-By Generators	Grid Tie and Hybrid Power Generation Systems
Assembled goods	Driving all electric powered machinery; Lighting; controls, etc.	Negligible	Gas Welding & Cutting	Stand-By Generators	Grid Tie and Hybrid Power Generation Systems
Engineering services & consultancy	Powering machines; lighting; etc.	Negligible	Gas Welding & Cutting	Stand-By Generators	Hybrid and Back Up Power Generation Systems
Distribution	Powering machines; lighting; etc	Negligible	Negligible	Stand-By Generators	Grid Tie, Hybrid and Back Up Power Generation Systems

It is worth noting that the lower levels of the engineering, iron and steel value chain are energy intensive and heavy consumers of electricity (e.g. ZISCO alone could have a peak demand of 60 MVA or greater; Smelting furnace can consumes far greater than 1 MVA each). The nature of the operations are such that power outages have disastrous effects not only to operations but even to equipment, damaging features like refractories and linings and costly processes to repair or remove solidified material in ladles, mixers or furnaces. For example, a prolonged power outage at one operation resulted in the solidification of molten metal in hot metal mixers (> 1500tonnes) with restoration cost of over USD1Million to normal operation. Therefore uninterrupted power is critical for the engineering, iron and steel sector.

Electricity is the major source of energy for operations used by almost all operations and sub-sectors. Gas, diesel and coal usage were also notable. Nevertheless, solar uptake was still very low in the sector. Incentives may have to be availed to promote the use of the abundant solar energy in the sector. Although coal usage was not high in terms of the number of firms, the few firms who used it in the lower levels of the value chain consumed it in large volumes (e.g. ZISCO at peak consumed about 1 Million tonnes per annum of coking coal) and hence it became very critical to the sector. Alternative sources of energy like coal bed methane should also be explored since they have potential to increase

choice of energy mix for the sector and enhance the drive towards smarter production in line with global trends and increasingly stringent environmental laws. Diesel usage is mainly considered as a result of electrical power outages.

The main challenges with energy sources were as follows;
Electricity – Availability and cost. There are serious power outages in the country and the cost (around USD0.12/kWh and high MD charges were perceived as too high).

Non-availability of power/electricity is a major threat both to competitiveness and viability of the sector, since the major operations can not tolerate interruptions of electricity supply. The high cost of electricity pushes up the prices of products, and hence threatening price competitiveness both on the domestic and export markets. Dedicated power is required for the value chain players to ensure uninterrupted electricity supply. Renewable energy could be considered in the energy supply mix to ensure reduction in green-house gas emissions as well as improving the reliability of supply. The capacity of the main supplier of electricity (ZETDC), should also be strengthened to ensure improved power supply. Collaborations between Independent Power Producers, ZETDC and the players in the engineering, iron and steel sector should be encouraged and incentivized to ensure reliable and cost competitive electrical energy supply to the sector. Also considering the energy intensive nature of the low level actors in the sector as well as the high cost of electricity; demand side management and energy efficiency becomes vital to ensure viability of the sector. This will be achieved through;

- promoting energy efficiency by vetting of new technologies in the sector which should pass a certain minimum threshold of energy efficiency;
- heavy penalties for inefficiency;
- incentivizing energy efficiency and energy management programs in the sector.

Coal Availability, cost and quality. Coking coal price, availability and quality were the major issues.

Majority of firms (50%) had challenges with the quality of coal, with a significant number having challenges with availability as well as cost. Coal is mainly used in primary and secondary iron and steel production as both a reducing agent and a heating fuel for the furnaces. Metallurgical/coking coal is required for the production of coke used in the Blast Furnace route of steel making as well as for melting in foundries. Poor quality coal and coke significantly reduces production efficiencies and productivity of operations like the blast furnaces and the melting furnaces in steel production and foundries, respectively as well as producing high levels of emissions and waste against environmental limits. Thus, quality significantly threatens the viability of the sector together with availability and cost challenges.

The challenges could be solved through;

- Strong collaboration and backward integration initiatives through relevant value chain clusters backed by funding models and sustainable offtaker agreements to ensure that the coal miners have adequate capacity to produce high quality coal in right quantities at optimal cost;
- consideration of non-coal technologies and technologies that use less coal than conventional ones, amongst others.

3.4.2 Water usage in the engineering, iron and steel sector

The main uses of water in the engineering, iron and steel sector are presented in Table 3.7

Table 3.7: Major uses of water in the engineering, iron and steel sector of Zimbabwe

sub-sectors	COOLING	PROCESS	WASHING, CLEANING AND ENVIRONMENTAL	OTHER
primary and secondary steel production	Cooling of blast furnaces; coke by product plants; furnaces; etc.	Heat treatment	Dust suppression systems; environmental cleaning	Domestic consumption; lawns, etc.
Foundry and Engineering	Cooling of furnaces	Heat treatment	Dust suppression systems; environmental cleaning	Domestic consumption; lawns, etc.
Fabricated metal products	Cooling of heavy machinery	Heat treatment	Environmental cleaning	Domestic consumption; lawns, etc.
Assembled goods	Cooling of heavy machinery	Heat treatment	Environmental cleaning	Domestic consumption; lawns, etc.
Engineering services & consultancy	Negligible	Negligible	Negligible	Domestic consumption;
Distribution	Negligible	Negligible	Negligible	Domestic consumption;

Generally, the use of water decreases from upstream processes which are heavy users of water to downstream operations which use significantly less in comparison. In lower levels of the value chain, water is mainly used for cooling processes, heat treatment systems and dust suppression systems. The quality of the water must also be checked considering the devastating effects of hard and corrosive water to main processes like cooling plants and reticulation systems. Although water usage is high, water consumption is negligible since most of the water is used in closed loop cycles with consumption mainly limited to blow downs and evaporative losses. There is a modern drive towards more water resource efficient technologies like dry quenching in coke making as well as recycling. In one major operation, water shortage lead to catastrophic shutdown of the entire operation causing millions of dollar loss. Uninterrupted water supplies is therefore, a prerequisite for the viability of the sector.

Main sources of water

The local municipality and company own boreholes are the major sources of water. The contribution of Private dealers is also notable to a smaller extent. Considering the importance of water to the sector, key stakeholders like local municipalities should be engaged to jointly develop a reliable and uninterruptible water supply system for critical operations in most attractive value chains and the sector as a whole. Borehole water optimization must also be considered for firms that operate in certain physical clusters or in the vicinity of each other. This could be done with the involvement of water engineering and borehole service providers.

Main challenges with water

The major challenge with water is mainly availability. This is mainly attributed to the limited capacity of local municipalities to deliver water to the main actors of the sector due to several reasons that include;

- antiquated pumping equipment;
- old and heavily corroded reticulation systems;
- malfunctioning and old water treatment facilities.

On the other hand, water availability from boreholes is limited due to climatic related and other factors, and at the same time deliveries from private dealers is prohibitively costly. A significant number noted that the cost and quality of water threatens the viability of their operations. Water availability, cost and quality can be addressed through;

- Collaborative approach between sector players, ZINWA and local municipalities in developing dedicated reliable water supply systems for attractive value chain clusters in the sector backed by sustainable funding packages and tariff models;
- regulation of new water use and consumption technologies to ensure that the facilities pass a specified minimum efficiency threshold;
- incentivise programmes for efficient water use in the sector and penalization of inefficiency amongst others.

3.5 Value chain governance and sector representation

The main industry related associations and bodies mentioned by firms are presented in Table 3.8 below.

Table 3.8: Main industry related associations and bodies mentioned by firms in the engineering, iron and steel sector of Zimbabwe

BUSINESS NETWORK/ ASSOCIATIONS	PROFESSIONAL BODIES	GOVERNMENT SUPPORT/REGULATORY INSTITUTIONS
Engineering Iron and Steel Association of Zimbabwe (EISAZ)	Zimbabwe Institution of Engineers (ZIE)	National Manpower Advisory Council (NAMACO) Ministry of Industry and Commerce (MoIC)
Construction Industry Federation of Zimbabwe (CIFOZ)	Zimbabwe Institute of Management (ZIM)	National Social Security Authority (NSSA)
Small to Medium Enterprises Association of Zimbabwe (SMEAZ)	Institute of Personnel Management of Zimbabwe (IPMZ)	Apprenticeship Board
Zimbabwe National Chamber of Commerce (ZNCC)	Manicaland Association of Engineers (MAE)	Zimbabwe Manpower Development Fund (Zimdef) Chamber of Mines (CoM) Ministry of Industry
Zimbabwe Institute of Foundries (ZIF)		Environmental Management Agency (EMA)
Motor Industry Employers Association of Zimbabwe (MIEAZ)		Standards Association of Zimbabwe SAZ

Sectorial representation: A significant number of firms (47%) did not belong to a business network or industrial body.

Professional bodies: About 65% did not belong to any professional body.

Industrial Cluster: Around 77% did not belong to any industrial cluster. Of the few clusters that existed in The engineering, iron and steel association of Zimbabwe, the majority ones were Designated Economic Zones, contractual agreements and informal agreements.

The main reasons for not joining were as follows;

- Failure to meet the requirements
- Lack of information and awareness
- Absence of body locally
- Not interested because of poor quality of service
- Financial limitation for subscription

For those who were members, the main reasons for joining were;

- Networking and exchanging of ideas
- Lobbying and advocacy
- Support for human resources and labour related issues
- Business and commerce advice

Government support: Majority of firms 76% have not received any support from the government. The impact of government support is huge since those who did receive government support indeed saw their capacity utilization increase.

Generally, it was noted that governance in the sector was weak, disjointed and with limited number of synergies. A more synergistic approach to production and doing business, supported by government, professional bodies and business associations can improve the competitiveness of the sector. Professional bodies and business associations have to be relevant and value adding to firms and there has to be strong collaboration for sector development. Thus, professional bodies and industry/business associations have to be strengthened to enhance their capacities and relevance to the sector. Market/business oriented clusters, which are private sector led and supported by government, need to be established to drive sector growth and development.

3.6 Value chain finance

Key value chain finance aspects analysed were;

- annual financial requirements;
- sources of funding;
- interest rates;
- repayment period;
- ease of access to funding and major constraints; amongst others.

3.6.1 Annual financial requirements

As expected, financial requirements varied with scale of operations. The majority of firms required between USD100,000 and USD500,000 annually. The larger scale firms required between USD1 Million and USD5 Million per annum, whilst the micro-scale and small scale required (less than USD25,000) and (between USD25,000 and USD100,000) per annum, respectively. Financial institutions can thus, structure appropriate packages for different categories of firms and sub-sectors depending on the bankability of value chains. Funding can be structured based on attractive value chains based on the prescribed selection criteria.

3.6.2 Major uses of funding in the engineering, iron and steel sector

The survey indicated that majority of funds were allocated to equipment, followed by plant and construction, then innovation, research and development and land. This shows that the firms are keen on retooling to enhance capacity and competitiveness. Furthermore, the investment in land and plant and construction signifies sector growth and expansion. A significant number of firms (42%) had projects that they felt were bankable and hence requiring funding to take off (a sign of good sector attractiveness). The majority of firms required between USD25,000.00 to USD500,000.00 to fund their bankable projects. A few large scale ones required over USD5Million.

3.6.3 Major sources of funding in The engineering, iron and steel sector

The majority of firms were funded from within the companies. Notable funding also came from banks and shareholders, with little coming from government financial support. Banks should be incentivised to fund the sector through the presentation of bankable value chains with minimal risks. Formation of industrial clusters around bankable product value chains with guaranteed markets would minimize risks and hence reduce the exposure of funding institutions.

3.6.4 Access to bank funding

Although 43% of the firms indicated that they had sufficient financial resources for self-financing; a majority (57%) required loan funding for their businesses. This funding was mainly required for Working Capital as well as CAPEX or for both. Thus, the observed limited funding from the banks, posed a major obstacle to the operations of the sector. Limited working capital meant that capacity utilization remain constrained; and limited funding for CAPEX implies limitation to technology competitiveness and hence failure to compete with imports of better quality at competitive prices.

The main hindrances to accessing funding by ranking were;

- unfavourably high interest rates and terms (majority of firms citing interest rates of over 20% per annum) and lack of long term loans (majority of loans were short term, i.e. <=2years); collateral requirements were too high;
- application procedures too complicated;
- line of business not supported; size of business not supported; amongst others.

3.7 Business and Socio-Economic Context

Tax rates and administration: Although the majority 59% saw registration with tax authorities being easy, 41% felt that it was difficult to register with the tax administration. It is therefore, worthwhile to find ways of easing tax registration and administration to reduce the number of informal players and incentivise formalization, a case dominant with micro and small enterprises.

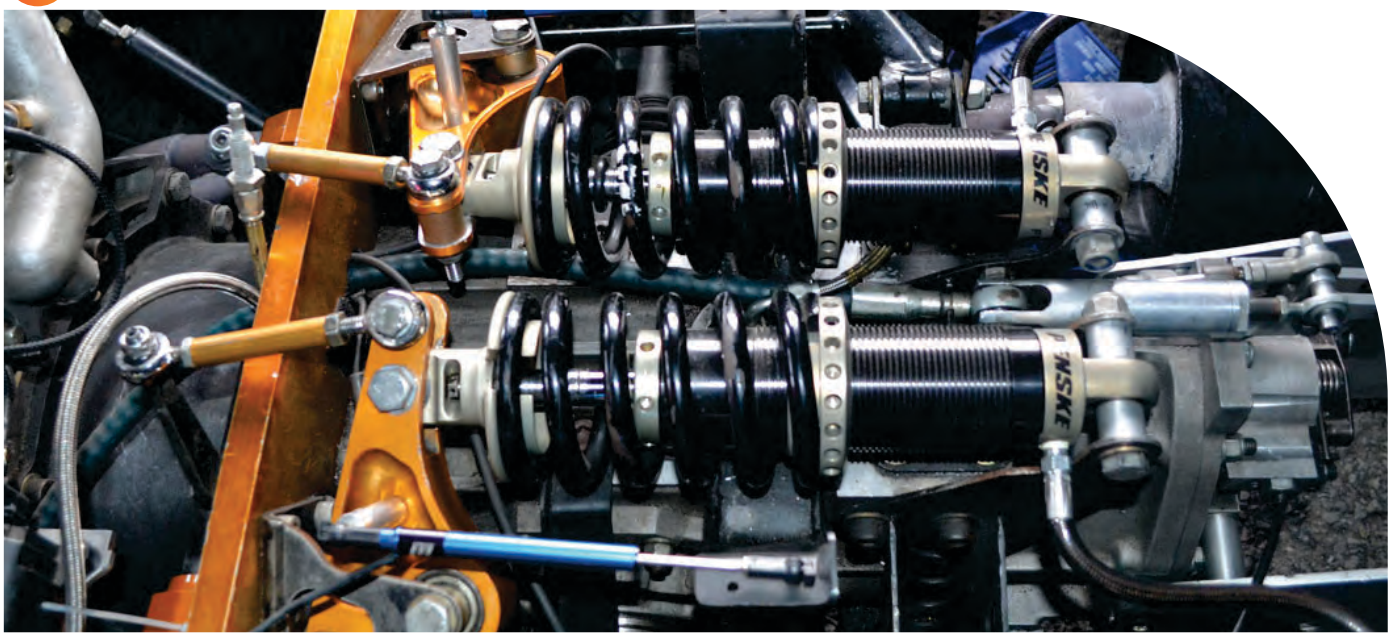
Customs and trade regulations: About 51% of firms viewed customs and trade regulations as an obstacle to business operations. Of major concern was the notable 21% of firms which saw customs and trade regulations as a major or severe obstacle to business operations. This was attributed to the fact that some firms require significant imports in their production activities, and any challenges with customs have great impact to their smooth operations. Import substitution is therefore, anticipated to positively reduce the negative impact of customs and trade regulations. A number of firms indicated that it was difficult to obtain an export license.

Practices of competitors in the informal sector and corruption: The mal-practices of the informal sector was viewed by a marginal majority to be an obstacle to the business operations, with 30% viewing it as a major or severe obstacle to operations. Initiatives to formalize the informal sector as well as harmonization of their business activities with those of well-established formal players wherever possible should improve the business operating environment.

Of major concern also was corruption which was perceived by 53% of firms as a major if not severe obstacle to their business operations. To fight corruption, there is need for strong governance structures in the engineering, iron and steel sector to monitor and curb mal-practices with the support of government .

Political landscape, crime, theft and disorder: From the survey, political landscape was perceived by 60% of firms as an obstacle to business operations. Although the majority of firms viewed crime, theft and disorder as a minor obstacle to business operations, it is worrying that 26% of firms were seriously affected by crime, theft and disorder.

Labour regulations and health related issues: Labour regulations, health issues and uneducated workforce were not major issues for firms in the engineering, iron and steel sector of Zimbabwe.



CHAPTER 4 SELECTION OF ATTRACTIVE SUB-SECTORS AND VALUE CHAINS

The selection was based on high impact sub-sectors from the Baseline Study as well as input from the key stakeholder engagements in the sector.

4.1 Selection Criteria

The criteria presented in Table 4.1 were used in selecting the most attractive sub-sectors. This exercise was vital since it formed the basis upon which strategic clusters are formed. The selected sub-sectors became the pivot upon which the sector development is hinged.

Table 4.1: Selection criteria for the most attractive sub-sectors

SUB-SECTORS CHARACTERISTIC	CRITERIA FOR ASSESSMENT	SUB-SECTORS TO CONSIDER (BASED ON DIAGNOSTIC STUDY)
sub-sectors Attractiveness	Historical production growth rate Size of domestic demand Labour intensity	basic iron and steel products; electrical engineered goods; automotive industry; electronic products; fabricated metal products; agricultural products; mining, quarrying and construction machinery; water pumping machinery; general purpose machinery
Self Sufficiency	Import/Domestic demand Growth in imports versus growth in market	automotive industry; electronic and related products; electrical engineered goods; fabricated metal products; primary and secondary steel products; Agricultural equipment
Export Competitiveness	Share of Zimbabwean products and services in global exports Growth of Zimbabwean exports versus growth in global exports	primary iron and steel products; air and space craft machinery; jewellery; automotive; household appliances; mining, quarrying and construction machinery; electrical engineered goods;

The selection criteria for the most attractive product value chains are presented in Table 4.2 below.

Table 4.2: Selection criteria for the most attractive product value chains

CRITERIA	KEY ATTRIBUTES
1. Market demand and growth potential	- Evidence of strong effective demand for products being produced. - Suppliers have ready market for products but are unable to meet demand. - Unmet demand from government, quasi-government and multi national projects, etc.
2. Potential Increase in Income and Wealth	- Potential for increased revenues at all levels of value chain. - Projected increases in sales, profits or returns to labour.
3. Opportunities for linkages	- Potential forward/backward linkages between large and small enterprises. - Large enterprises overlooking MSMEs as a source of supply or unable to organise them to meet their demands.
4. Potential for employment generation	- Potential for enterprise to create new employment as value chain develops/expands.
5. Number of MSMEs	- Number of MSMEs operating in the value chain.
6. Value added potential	-Potential of MSMEs to add value to the supply chain and get higher earnings.
7. Potential for increase in productivity	- Potential for technologies/management systems to increase productivity and earnings of enterprise in the value chain.
8. Government/Donor Interest/Existing support	- Government interest in value chain can lead to favourable linkages with government services and favourable policies - Existing programs that can provide synergies and complementary linkages within actors
9. Competitiveness	- Competitiveness of the value chain on the world market and/or of the MSMEs in the value chain.

4.2 Selected sub-sectors

Based on the selection criteria and inclusive participation of cluster members, the attractive sub-sectors are presented in the Table 4.3 below.

Table 4.3: Selected sub-sectors

MAJOR sub-sectors	NOTABLE PLAYERS	NOTABLE PRODUCTS AND VALUE
Automotive Industry	Buses and trucks, light vehicles, coach works, upholstery, repairs, services and maintenance, electric vehicles	Motor vehicles; body works and trailers; parts and accessories **[USD542Million/year]**
Electrical engineered goods and electronic goods	Cable manufacturers, electric motors and transformers, solar and batteries, power producers, power transmission and distribution services, electrical services, repairs and maintenance; electronics and controls engineering; refrigeration and air conditioning	Electronic components and boards; electric motors, generators, transformers, distribution and control equipment; electric wires and cables; computers and peripheral equipment; electric lighting equipment; communication equipment; testing and control equipment; batteries and accumulators **[USD361Million/year]**

Continued...

MAJOR sub-sectors	NOTABLE PLAYERS	NOTABLE PRODUCTS AND VALUE
primary and secondary steel production	Integrated iron and steel works, steel suppliers and distributors, rolling mills, producers of wires, coal producers, NRZ, ferrochrome smelters, etc.	Basic iron and steel; flat rolled products; bars and rods; section steels; wires and related products **[USD313Million/year]**
Foundry and Associated Engineering	Foundries, heavy engineering involving heavy casts	Quarrying and Construction Equipment; General purpose machinery; pumps, compressors, taps and valves; medical and dental instruments; cutlery, hand tools and general hardware; beverages, food processing and tobacco processing equipment; lifting and handling equipment; agricultural and horticultural equipment; gears, bearings and driving elements; mill balls and liners **[USD461Million/year]**
Equipment manufacturers and machined components	Agricultural, water and irrigation equipment, mining equipment, industrial equipment, earth moving equipment, engineering workshops and jobbing; engineering services and repairs and maintenance	
Fabricated metal and steel products	Structural steel engineering, tubes, pipes and pressure vessels; sheet metal work; rigging; etc.	Fabricated metal products; tanks, pressure vessels and pipes; Structural metal products **[USD99Million/year]**

CHAPTER 5: SWOT ANALYSIS OF THE SELECTED SUB-SECTORS

The formed clusters conducted SWOT analysis for the selected value chains and the results are summarized in this section.

5.1 Primary and secondary steel production

5.1.1 Major challenges, threats and weaknesses

MAJOR CHALLENGES, WEAKNESSES & THREATS	REMEDIAL ACTION
Scarcity of raw materials due to limited local supply of basic iron and steel products. Supply base used to be addressed by ZISCO and Lancashire Steel. This has resulted in over reliance on importation of raw materials and finished product from China and South Africa and hence threatening to kill the production sector	• Promote the establishment, expansion and resuscitation of basic and primary and secondary iron and steel production in the country to minimize importation. The current limited local availability of iron and steel products is the major obstacle to sector competitiveness. Incentives for investors in this sub-sectors through various initiatives are recommended • Review of duties and SIs for critical raw materials to improve sector competitiveness • In the interim, allocation of adequate foreign currency for the procurement of critical raw materials for the sector • Review and enforcement of duties and SIs that eliminates importation and dumping of inferior iron and steel products in Zimbabwe; and • Discourage the importation of finished engineering iron and steel products which the local sector has adequate capacity to produce. The sector should therefore, draw up a clear inventory of products and services that they have adequate capacity to produce locally and in a competitive manner.
Difficulties in importing critical raw materials due to high duty rates; delays at the border; and scarcity of foreign currency to pay for imports	
Influx of low priced inferior products imported especially from China into the local market causing unfair competition	

Continued...

MAJOR CHALLENGES, WEAKNESSES & THREATS	REMEDIAL ACTION
Dwindling supply of scrap metal whilst a lot is being exported to South Africa resulting in low capacity utilization and high cost of raw materials	• Establishing the collective scrap needs of the sub-sectors with the help of representative institutions like ZIF and EISAZ to help enforce the banning of strategic scrap exports • Lobbying and advocacy for government support in regulating the exportation of scrap ahead of the needs of the sub-sectors • Explore Innovations and restructuring around the scrap collection, value addition and recycling, transportation and distribution and auctioning to ensure improved availability, reliability and reduced cost. • Investment in new primary and secondary steel production plants and expanding the existing ones, enhanced by incentives from government
Limited product range due to limited technology and capacity of existing technology paving way for imports gaining huge market share on the local market Obsolete equipment which is labour and energy intensive resulting in low quality and expensive product versus imported products. There is failure to attract funding to recapitalize with advanced technologies	• Increase technical capacity of the sub-sectors through availing of funding for capitalization and retooling, starting with attractive and bankable value chains. • Creating a competent skills resource base through training and capacity building initiatives based on strong collaborations amongst training institutions; academia, industry and technology suppliers; supported by funding institutions like Zimdef
Limited research and development resulting in high dependence on imports resulting in low value addition of local raw materials	• Strong collaboration amongst research and development; industry and technology/Original Equipment Manufacturers and Consumers (Large
Erratic Power Supply resulting in unsustainable operations and huge losses for the energy intensive primary and secondary steel production	• Incentivise IPPs to collaborate with ZETDC and the energy intensive consumers in the sub-sectors for special Power Purchase Agreements to ensure highly reliable, uninterruptible and quality power for business operations at viable tariffs. • Financial packages at competitive rates to support power production to the strategic value chains
High utility costs and low availability (e.g. water) and tax rates for local authorities pushing up cost of product.	• Fostering of collaboration/ synergies between councils and water supply institutions with industry to ensure reliable, affordable, quality and sustainable supply of water to heavy water consumers of the
Government's failure to implement policy and policy inconsistencies	• Sector representation bodies to aid the government in policy implementation

5.1.2 Major strengths and opportunities

MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON OPPORTUNITIES AND STRENGTHS
Abundant iron ore resource with reasonable grade, coking coal and other critical raw materials for iron and steel making Backing at Policy Level through ZNIDP, LCS, NTP and NES [2019 – 2023] which explicitly prioritises the iron and steel industry for export development and promotion Backing at Policy Level through the NDS 1 [2021 – 2025] which prioritises the resuscitation of the engineering, iron and steel industry through; · securing investors in the iron and steel industry; · resuscitation of steel foundries and use of modern technologies in the sector; · processing of scrap metals into new steel products; · strict control of scrap metal exports to ensure adequate throughput to domestic foundries; · promotion of manufacturing of steel billets from scrap metal; · facilitation of increased supply of coal and electricity to the iron and steel industry;	• Innovative ways of attracting funding for investment into new iron and steel making plants and inclusive participation of key and willing players in the engineering, iron and steel sector. • Incentivising investors who invest in iron and steel production to supply all key downstream players in the value chain. • Protection and ring fencing investments against the major risks that threaten viability of operations. • Establishing sub-sectors support teams through representative and advocacy institutions to help government in overseeing policy implementation for the benefit of the sector.
Construction Projects, Infrastructure Renewal and Urbanisation	• Identifying major iron and steel products and establishing value chain linkages and clusters around them • Seeking of funding to capitalize players along the value chain to enhance production capacity and product competitiveness against imports • Technical Support and Skills Training to enhance product quality through synergies amongst different players including training institutions, research and development, industry and Technology Suppliers
Ongoing investment project in New Iron and Steel Plant in Mvuma as well as the Resuscitation of ZISCO	• Explore opportunities presented by the new investments and identify potential areas of inclusive participation (local content) and impact of the investments to downstream actors and sector as a whole as far as addressing the current constraints is concerned.

5.2 Automotive Industry

5.2.1 Major challenges, threats and weaknesses

MAJOR CHALLENGES, WEAKNESSES & THREATS	REMEDIAL ACTION
Poor quality of locally available inputs Obsolete/outdated technology not able to meet capacity and product requirements on Difficult to access funding due to high interest rates; complex collateral requirements; long processing time and short tenure limiting technology upgrading and working capital injection Absence of working capital leading to slow progress on local production of components and assembled goods High cost of production limiting product competitiveness, making it cheaper to import than buy locally. This is attributable to obsolete technologies, high cost of utilities and poor efficiency Low uptake of locally assembled trucks, buses and other types of vehicles due to policy shift resulting in influx of low cost second hand vehicles from Japan, etc., and cheaper imports from foreign assembly plants	• Establishment of strong business cases for particular products like buses, trucks, cars, etc., to attract and justify funding and financial support • Establish sustainable value chain linkages and partnerships with regional and global partners for SKDs and CBUs • Mobilising and structuring funding packages for retooling based on strong business cases. • Stimulate local demand by promoting the consumption of locally made vehicles for large consumers like Government Institutions, parastatals, public institutions and large corporates. Appropriate policies can enhance local offtake. • Inclusive participation of sub-sectors players in the review and formulation of policies that promote the local automotive value chain.
Power outages and erratic supply of gases (Oxygen and Acetylene)	• Establish clusters and strong value chain linkages around bankable product lines in the sub-sectors
Broken value chain making it difficult to smoothly assembled goods	• Establishment of sustainable/viable and reliable dedicated power lines around major value chain clusters with the full involvement of IPPs, ZETDC, firms and investors to ensure bankable power purchase agreements with viable tariffs for both power producers and consumers
High staff turnover and failure to retain skills Lack of innovation and creativity	• Will be addressed as capacity utilization improves • Training of special skills through collaboration with technology suppliers and local, regional and global training institutions. • Capacitation of training institutions to handle new technologies as well as train students on technology transfer, innovation, continuous improvement and new product development

5.2.2 Major strengths and opportunities

MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON OPPORTUNITIES AND STRENGTHS
Existing basic infrastructure and land at assembly plants like AVM Africa, Deven and Quest among others. The supporting services are spatially distributed in a manner that makes it easy to re-establish clusters and value chain linkages.	• Re-establishment of the broken down value chain cluster around strong business cases. • Strengthening of the Sector Representation Institute like MIAZ and EISAZ.
High number of second hand vehicles in Zimbabwe	• Consider innovations around reverse engineering, recycling, upgrading and conversion
Existing market offered by government institutions; parastatals; large corporates; the mining industry; individual consumers and the public transport sector	• Comprehensive market analysis, development of strong business cases • Mobilising and structuring of funding for the strong business cases for retooling, working capital and CAPEX
Backing at Policy Level through ZMID Policy [2016 – 2026] which seeks to resuscitate the automotive industry through import substitution and increasing local content to 40% and increasing exports by 50% Backing at policy level through ZNIDP, LCS [2019-2023] NDS 1 [2021 – 2025] which supports the sector through · industrial support to increase the supply of domestically manufactured buses and delivery trucks, thereby potentially benefiting the upstream industries that manufacture bolts, batteries, steel sheets, tyres, upholstery, paint, carpet manufacturers; and reducing the import bill; · development of strategy to enhance the local assembly of private vehicles to increase job creation and reduce import bill on new and recycled vehicles and accessories; · effecting of measures that promote consumption of locally manufactured goods like increase in import duty on imported buses, compelling of line ministries to purchase vehicles from local assemblers among others	• Active and proactive participation of the sub-sectors and its representative body in the review, formulation and implementation of policies that enhance sector competitiveness • Identification and maximizing of opportunities presented by existing policy interventions through strategies that tap into these opportunities • Active and proactive participation of the sub-sectors and its representative body in the review, formulation and implementation of policies that enhance sector competitiveness • Identification and maximizing of opportunities presented by existing policy interventions through strategies that tap into these opportunities

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MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON OPPORTUNITIES AND STRENGTHS
Backing at Policy Level through SI 89 of 2021 which bans importation of second hand vehicles that are ten years and older.	· Establish strong business cases to support local production of Electric Vehicle in Zimbabwe. · Establishing strong value chain linkages with local, regional and international players to support local electric vehicle production. · Mobilise funding to implement electric vehicle production. · Development of strong synergies and collaborations with academic institutions, technology suppliers, and training institutions to ensure a viable e-mobility value chain for Zimbabwe and the region.

5.3 Electrical Engineered Goods

5.3.1 Major challenges, threats and weaknesses

MAJOR CHALLENGES, WEAKNESSES & THREATS	REMEDIAL ACTION
Funding costs are too high which makes cost of borrowing to be high Lack of funding for working capital and retooling Non-availability of foreign currency to import critical raw materials Lack of long-term planning and poor marketing strategies Inconsistent economic policies	• Presentation of strong business cases for strategic value chains in the sector to attract funding • Building of clusters around the attractive value chains • Seeking of funding for capitalization in collaboration with strategic large domestic and regional markets • Offer after sales service to out-compete imports • Ring fencing of investments ear marked for the clusters to minimize risk. • Establishment of strong sector and sub-sectors representing institution to proactively address advocacy and policy issues with policy makers and implementers.
Heavy reliance on cheap imports by the local market resulting in huge loss of business for the sector Obsolete equipment resulting in high production costs, huge losses and low production efficiency High production and transportation costs bringing the product price up	• Investment in new and competitive technologies with technical support from relevant institutions for technology and skills transfer. • Establishing value chain linkages with regional and global players (mainly OEMs and Technology Suppliers). • Training of personnel in collaboration with technology suppliers, Original Equipment Manufacturers (OEM) and Training Institutions. • Establishing strategic clusters to for joint transportation of materials to minimize transport costs.
Brain drain and Loss of skills 'for greener pastures' to regional and international companies Inexperienced and demotivated workforce	• Specialised training programmes for personnel and unemployed graduates to form a pool of competent expertise for the industry. These trainings are to be done in collaboration with training institutes and technology suppliers with financial assistance from institutions like ZIMDEF among others.

5.3.2 Major strengths and opportunities

MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON OPPORTUNITIES AND STRENGTHS
Export opportunities for products in the region by producing high quality products at competitive prices Import substitution through capitalization and retooling to increase the capacity of the existing strong brands Maximising the use of the existing distribution network along the value chain	• Establishing strong business cases for the targeted products/value chain to attract funding at competitive rates • Access to funding for retooling and new technology to enhance competitiveness for export market as well as import substitution • Carrying out extensive marketing for brand awareness in the region with support from institutions like Zimtrade, EISAZ and other Sector Representative Institutions • Promotes local manufacturing and discourage importation of products that can be locally manufactured • Formation of value chain cluster based on products with strong business cases for both export market and import substitution
Backing at policy level through the Energy and Renewable Energy Policies which seeks to promote energy production to ensure self-sufficiency by increasing power production, transmission and distribution capacity; promote renewable energy to reach the 1800MW target by 2030 and development of local value chains to support policy	• Identify the strategic lines supported by policy, establish the value chain linkages and develop strong business cases for purposes of mobilising funding
Idle skilled labour	• Making use of the idle skilled labour in training and capacity building for the industry in collaboration with training institutions, industry with support from institutions like Zimdef

5.4 Equipment and machined parts manufacturers

5.4.1 Major challenges, threats and weaknesses

MAJOR CHALLENGES, WEAKNESSES AND THREATS	REMEDIAL ACTION
Difficulty in accessing funds, lack of financial relief; internal cash flows and liquidity challenges Lack of access to foreign currency and long delays in the release of foreign currency to procure raw materials and Capital Equipment.	• Formation of strong business/value chain oriented clusters to bid for funding on the RBZ Auction System or other formal foreign currency systems. • Make use of the strong value chain oriented clusters to access funding from banking institutions and relief/grant funding from regional (AfDB, Afrexim Bank, etc.) and international developmental institutions (IFC, IMF, WB, UN, etc.); • Strategic linkages with global value chains
Unavailability of raw materials and over-reliance on imports	• Policy intervention to minimize obstacles to the importation of critical raw materials that are not manufactured locally • Promotion and Incentivise Investment in new plants and technologies that are aimed at producing critical and strategic raw materials for feed stocking the assembled goods sector
Multi - currency payment systems	• Establishment of policies that ensure stability of currency for operators in the sector • Ring fencing investments in the sector to ensure sector stability, growth and expansion thereby attracting investors.
Competition from imports and influx of low priced inferior products from China and India Obsolete machinery – retooling is expensive	• Enforce regulation of imported products with assistance of supporting institutions like Bureau Veritas and Standards Association of Zimbabwe and SIRDC. • Investment in advanced technologies to compete with high quality and cost competitive imported products. This would require the building of strong value chain networks with strong business cases to attract funding for retooling.
Lack of Competent skills	• Fostering strong synergies and collaboration with capacity building institutions to develop competent skills (Universities, Research and Development Institutions; Polytechnics and Technical Training Institutions; Technology Suppliers, Professional Bodies – ZIE, ECZ, etc.) • Seeking funding from funding institutions like Zimdef to train skills • Promotion and incentivisation of private firms and institutions offering on the job; apprenticeship, graduate learnership and technical training programmes like Delta Training Institute (Dt1), AAMines Training Institute (AAMTI); ZESA Training Institute, ZISCO Steel, Morewear, etc. • Mobilise financial support to train the large number of unemployed graduates on special skills that can enhance the technical capacity of the sector

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MAJOR CHALLENGES, WEAKNESSES AND THREATS	REMEDIAL ACTION
Poor and disjointed supply chain	• Strengthen the capacities of business support and industry representing institutions • Updating the roles, services, packages and mandates of business support and industry representing institutions to match the important needs of the sector. • Awareness campaigns and visibility of business support institutions in-order to attract membership and build capacity for advocacy and formidable synergies to enhance sector competitiveness • Create strong synergies amongst supporting institutions, e.g. industry representing bodies like CZI, EISAZ, MIEAZ, SMEAZ and ZIF with ZIE and ECZ • Strengthening the capacities and roles of inclusive negotiation forums for labour rates and creating a competitive standards that ensures the long term sustainability of the sector • Ring fencing the sector from corruption by empowering and capacitating sector representative organs as a watchdog for advocacy against corruption
Legislation that does not support the sector	
Managing and predicting labour rates	
Corruption	

5.4.2 Major strengths and opportunities

MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON THE STRENGTHS AND OPPORTUNITIES
Mining industry growth	• Identify major equipment, parts and products that become the centre of value chain based clusters to attract investment in the sector, beginning with low hanging fruits • Building of capacity around these clusters to leap frog the sector • Building strong business cases around these value chains and mobilise funding • Ring fence the strategic value chains with the full support of S16 of 2016 and SI132 of 2017
Agriculture sub-sectors growth	
Export potential	
SI 6 of 2016 which supports retooling where companies can import equipment duty free	
SI 132 of 2017 which protects engineering companies as it regulates the importation of engineering products that are produced locally	
Backing at Policy Level through ZNIDP, LCS [2019-2023] NDS 1 [2021 – 2025] which supports; - i) Resuscitation of the machine tools and accessories manufacturing sub-sectors; ii) inclusive participation of The engineering, iron and steel sector in the provision of intermediate goods and services to support the USD12Billion Mining Sector Growth Strategy/Road Map; and iii) rehabilitation and expansion of water treatment plants and range boosters, sewerage network and pump stations among others	
Backing at Policy Level through APF [2012 – 2032] and DAP [2018 – 2023] which supports; · Decentralization of service and repair of farm mechanization equipment; farm structures and post-harvest facilities and technologies; · Provision of spares, technical back-up and capacity building; · Rehabilitation, modernization and development of irrigation schemes (over 2.5 million of developed irrigation; 200Ha irrigated per administrative district by 2030). Engineering iron and steel products envisaged include agricultural tractors (including pedestrian controlled - two-axle tractors, single axle tractors), balers (straw and fodder balers including pick-up balers), combine harvesters (threshers), harvester and threshers, manure spreaders and fertiliser distributors, milking machines, ploughs (e.g. reversible and non-reversible ploughs), root or tuber harvesting machines, seeders, planters and transplanters, soil working equipment, threshing machines and track-laying tractors (crawlers), irrigation pumps, and centre pivots amongst others	

5.4.2 Major strengths and opportunities

MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON THE STRENGTHS AND OPPORTUNITIES
Spatially and well distributed engineering iron and steel sub-sectors across the country Idle production capacity in the sub-sectors (though some of it is due to obsolete equipment) Spatially distributed and well established academic and training institutions across the country	• Selection of champion firms, identification of supporting firms and creation of a spatial cluster networks of value chain linkages centred around strategic value chains and thus establishing both physical and virtual special economic zones for the engineering, iron and steel sector of Zimbabwe • Creation of synergies with existing capacity building institutions in the spatial matrix.
Though in bad shape, availability of rail and road transport network across Zimbabwe	• Mobilise resources for rehabilitation of roads and rail infrastructure around strategic value chain clusters.
Availability of trained but unemployed graduates with capacity for special training Take advantage of influential experts and captains of industry in the diaspora for capacity building, synergies and global and regional value chain linkages	• Identify special skills required to support the most attractive value chains and select graduates for special training through special collaboration with technology suppliers, local, regional and global training institutions and the industry • Take inventory of Strategic Diaspora Contacts and establish synergies • Organise funding for this special capacity building from local, regional and international developmental institutions (e.g. African Development Fund (ADF), Zimdef, etc.

5.5 Foundry and Associated Engineering

5.5.1 Major challenges, weaknesses and threats

MAJOR CHALLENGES, WEAKNESSES & THREATS	REMEDIAL ACTION
Shortage of raw materials, especially scrap steel limiting capacity	· Establishing the collective scrap needs of the sub-sectors with the help of representative institutions like ZIF and EISAZ to help enforce the banning of strategic scrap exports · Lobbying and advocacy for government support in regulating the exportation of scrap ahead of the needs of the sub-sectors · Restructure and explore Innovations around the scrap collection, value addition and recycling, transportation and distribution and auctioning to ensure improved availability, reliability and reduced cost. · Investment in new primary and secondary steel production plants and expanding the existing ones, enhanced by incentives from government

Continued...

MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON THE STRENGTHS AND OPPORTUNITIES
Low capacity utilization due to the use of ageing and obsolete equipment Stiff competition from imports Lack of research and development resulting in threats of product substitution; and failure to meet new demand on the market	• Improving access to funding to replace ageing and obsolete equipment centred on bankable value chains and business cases in the sub-sectors. This will enhance competitiveness to compete with imports • Training of special skills in the sub-sectors to ensure high quality and cost competitive foundry products for the market • New innovations and product development to meet the changing needs on the market and compete with new and innovative products.
Non-availability of energy and power (frequent and long power outages) and cost is too high	• Collectively engage ZETDC for dedicated power and sustainable tariffs to protect sensitive but attractive value chains in the sub-sectors. • Lure investment into New Power Production (e.g. Utility Solar) by engaging IPPs and ZETDC to invest given the guaranteed offtake offered by the energy intensive processes and establish sustainable and win-win Merchant Power Purchase Agreements • Establish strategic sub-sectors clusters around strategic value chains and the collective needs for critical energy sources like coking coal/coal and gases; and develop a cost effective distribution system in close collaboration with the suppliers.
Lack of research and development resulting in product substitution threats and failure to meet new demand on the market	• Establishing and strengthening collaborations and synergies of industry with training, academic and research and development institutions, especially on the strategic value chains to enhance competitiveness • Capacitating the local research and development and training institutions to support the sub-sectors
Long lead time for policy implementation	• Proactive Advocacy work by sub-sectors representing bodies

5.5.2 Major strengths and opportunities

MAJOR STRENGTHS AND OPPORTUNITIES	LEVERAGING ON THE STRENGTHS AND OPPORTUNITIES
Mining industry growth Agriculture sub-sectors growth Export potential SI 6 of 2016 which supports retooling where companies can import equipment duty free SI 132 of 2017 which protects engineering companies as it regulates the importation of engineering products that are produced locally Backing at Policy Level through ZNIDP, LCS [2019-2023] and NDS 1 [2021 – 2025] which supports; · Resuscitation of steel foundries and use of modern technologies in the sector; · Processing of scrap metals into new steel products; · Strict control of scrap metal exports to ensure adequate throughput to domestic foundries; · Enhanced coke production for local foundries;	• Identify major equipment, parts and products that become the centre of value chain based clusters to attract investment in the sector, beginning with low hanging fruits • Building of capacity around these clusters to leap frog the sector • Building strong business cases around these value chains and mobilise funding • Ring fence the strategic value chains with the full support of S16 of 2016 and SI132 of 2017
Spatially and well distributed engineering iron and steel sub-sectors across the country Idle production capacity in the sub-sectors (though some of it is due to obsolete equipment) Spatially distributed and well established academic and training institutions across the country	• Selection of champion firms, identification of supporting firms and creation of a spatial cluster networks for strategic value chains value chain linkages and thus, establishing both physical and virtual special economic zones for the engineering, iron and steel sector of Zimbabwe. • Creation of synergies with existing capacity building institutions in the spatial matrix.
Though in bad shape, availability of rail and road transport network across Zimbabwe	· Mobilise funding for rehabilitation of roads and rail infrastructure around strategic value chain clusters.
Availability of trained but unemployed graduates with capacity for special training Take advantage of influential experts and captains of industry in the diaspora for capacity building, synergies and global and regional value chain linkages	• Identify special skills required to support the most attractive value chains and select graduates for special training through special collaboration with technology suppliers, local, regional and global training institutions and the industry. • Take inventory of Strategic Diaspora Contacts and establish synergies. · Organise funding for special capacity building from local, regional and international developmental institutions (e.g. African Development Fund (ADF), Zimdef, etc.

5.6 Fabricated metal and steel products

5.6.1 Fabricated metal and steel products

MAJOR CHALLENGES, WEAKNESSES AND THREATS	REMEDIAL ACTION
Raw material shortages Delays at the border when importing raw materials due to bureaucracy and long procedures affecting product delivery times. Loss of margins due to indirect imports Scarcity of foreign currency to import raw material – steel and long lead times to accessing money from the Auction System Difficulties in accessing funds from banks for importation of raw materials, resulting in low capacity utilization and failure to service the market	• Resuscitation on investment in new local steel plant as source of steel feedstock. An import substitution proposal on the new steel plant or increased capacity of existing steel producers to be tabled to government and industrial stakeholders for support. Notable players include Steel Makers, Disco and ZISCO. • Government and banking support in the interim for firms to easily access funding and foreign currency to import critical raw materials • Special priority should be given to critical EIS firms involved in production to get forex for raw materials importation
Shortage of land to increase capacity	• Government to facilitate land acquisition by industry players from councils on viable terms through developmental funding institutions. • Negotiation with firms with redundant land and facilities
Load shedding	• Discussion with ZETDC on dedicated power lines for the sector. Tripartite Merchant Power Purchase Agreements involving industrial clusters, independent power producers (IPP) and ZETDC to establish Utility Scale Solar Power Plants to ensure reliable and high quality power to the industry; · Investment in new energy efficient technologies in production
Unfriendly tariffs, high tax rates	• Formation and capacitation of sector representative bodies for advocacy to ensure sustainable tariffs
Cheap imports	• Invest in new and competitive technologies to produce cost competitive and high quality products that can out-compete imports • Advocacy work by representative bodies for the regulation of imports to ensure competitiveness and uptake of locally produced product
Corruption and unfair practices on the market	• Enforcement of SIs and the law with the help of industry representing bodies and relevant government arms
Ageing equipment or machinery resulting in high cost of production and poor quality of products	• Invest in new technologies that are productive efficient • Technical support from supporting institutions like SAZ and SIRDC in appraising new technologies to ensure sector competitiveness
Lack of qualified skills	• Strengthen collaboration among industry, technology suppliers, local, regional and global capacity building institutions • Capacitation of local capacity building institutions to train relevant skills

5.6.2 Major strengths and opportunities

MAJOR STRENGTHS AND OPPORTUNITIES	TURNING THE OPPORTUNITIES INTO BUSINESS
Local availability of raw materials locally	• Investment in new steel plants for local value addition to feed the downstream processes • Formation of clusters around bankable steel product value chains and presentation of cluster-based proposal to funding institutions and government for project funding and support • Government support through implementation of policies that promote local content
Increased construction activities – dams, roads, housing, renewable energy (solar and hydropower, etc.)	
Increased mining activities	
Increased agricultural activities	
Increased transport activities	

5.7 Cross Cutting Issues

The major cross cutting issues are as follows;

- High tax rates threatening competitiveness against imports
- A difficult export processing procedure with complex bureaucracy mired by corruption and long lead times resulting in loss of the export market (existing and new markets)
- Unprofitable exports due to policy constraints. e.g. the 40% liquidation of export earnings at official auction exchange rate against the prevailing parallel market rate and delays in accessing foreign currency renders exporting a loss making venture.
- Difficulties in accessing forex at the auction system to import critical raw materials
- Mal-practices from informal traders bringing in finished products that can be manufactured locally threatening local value addition
- Inconsistent policies making the sector a high risk investment destination. In this way, it has become difficult to get CAPEX for retooling and working capital.
- High inflation and production costs

CHAPTER 6: KEY PERFORMANCE INDICATORS

The key performance indicators and targets were derived from the analysis and are presented in this section

6.1 Capacity Utilisation (%)

Subsector	Baseline (%) 2021	2022	2023	2024	2026
Primary & Secondary Steel Production	15% (1Shift)	20% (1Shift)	30% (1Shift)	50% (1Shift)	70% (3Shift)
Automotive Industry	10% (1Shift)	15% (1Shift)	20% (1Shift)	25% (1Shift)	50% (3Shift)
Electrical Engineered Goods	33% (1Shift)	50% (1Shift)	80% (1Shift)	80% (2Shift)	70% (3Shift)
Equipment Manufacturers	50% (1Shift)	55% (1Shift)	60% (1Shift)	80% (1Shift)	80% (3Shift)
Foundry and Associated Engineering	30%(1Shift)	45%(1Shift)	50%(1Shift)	60%(2Shift)	80%(3Shift)
Fabricated Metal and Steel Products	55%(1Shift)	60%(1Shift)	80%(1Shift)	80%(2Shift)	80%(3Shift)

6.2 Capacity Utilisation - Quantities

Subsector	Baseline (2021)	2022	2023	2024	2026
Primary Steel Production (Mt/y)	0.48	0.55	0.65	1	2
Automotive Industry	4000	6000	8000	10000	20000
Electrical Engineered Goods {Transformer Equivalent Units}	6000	7000	8000	12000	24000
Electric Cabling and Wires (tonnes)	2000	2500	3000	4000	10000
Mining Equipment and Parts Manufacturers (usd50,000equiv. machine)	800	900	1000	2000	4000
Industrial and General Purpose Machine (usd10,000equiv. machine)	3100	4000	4500	6000	10000
Agriculture and Forestry Equipment (usd5000equiv. machine)	20000	25000	30000	45000	60000
Water Engineering and Pumps (usd1000equiv.)	15000	18000	25000	30000	50000
Foundry and Associated Engineering (tonnes/y)	15000	22000	25000	30000	120000
Fabricated Metal and Steel Products (Mt/y)	0.6	0.7	0.9	1.6	2.4

6.3 Annual Revenue Targets (USDMillion)

Subsector	Baseline (USD Million) 2021	2022	2023	2024	2026
Primary Steel Production	292	350	450	800	2500
Automotive Industry	5	6	8	10	61
Electrical Engineered Goods	373	435	500	750	1000
Mining Equipment and Parts Manufacturers	40	45	50	100	200
Industrial and General Purpose Machine	31	40	45	60	150
Agriculture and Forestry Equipment	114	140	170	250	450
Water Engineering and Pumps	15	18	25	30	72
Foundry and Associated Engineering	15	22	25	30	120
Fabricated Metal and Steel Products	376	440	560	1000	1500
TOTALS	**1261**	**1496**	**1833**	**3030**	**6053**

6.4 Employment Targets (Number of employed people)

Subsector	Baseline 2021	2022	2023	2024	2026
Primary Steel Production	700	1000	1500	2400	7000
Automotive Industry	600	750	1000	1200	7300
Electrical Engineered Goods, Refrigeration and Air-conditioning	2000	2500	3000	4000	5000
Machined parts, Equipment and Assembled Goods	5000	5500	6500	8000	15000
Foundry and Associated Engineering	800	1200	1500	2000	5500
Fabricated Metal and Steel Products	3000	3500	4500	8000	8000
Engineering Services, Repairs and Maintenance	1000	1200	2000	3000	4000
TOTALS	**13100**	**15650**	**20000**	**28600**	**51800**

CHAPTER 7: STRATEGIES TO MEET THE TARGETS

1. Establish stable and sufficient primary and secondary steel production capacity to meet the present and future needs of the sector

ACTION	DELIVERABLES	BY WHO	BY WHEN
1. Identify products with the strongest business case and establish the value chain linkage and cluster with inclusive participation of sub-sectors actors	Product Business case at macro-economic level; clear value chain linkage, cluster and spatial distribution	All sub-sectors clusters, coordinated by EISAZ	End of June, 2022
2. Full feasibility study for resuscitation of local copper mines, mineral processing and refining to provide feedstock for the local electrical engineered goods value chain.	Feasibility Study Report	EISAZ, Electrical engineered goods cluster	End of August, 2022
3. Establishment of investment requirements for competitive technical capacity enhancement	Technical capacity needs for the value chain and the CAPEX and Working Capital Requirements	All sub-sectors clusters, Technical Support Institutions	End of June, 2022
4. Development and Structuring of Funding Models; and Mobilisation of Funds for the Value Chains	Bankable Funding Models; Number of fruitful engagements with financial institutions indicated by Funding facilities with favourable terms like competitive interest rates (<10%); long	All sub-sectors clusters; Financial Institutions that support the sector	Models by end of June, 2022; Funding by end of December, 2022

ACTION	DELIVERABLES	BY WHO	BY WHEN
5. Ensure availability of affordable, reliable, uninterruptible and high quality energy and power to support the critical operations of the value chain by bringing together the key stakeholders in the power supply value chain like IPPs, SAPP and ZETDC and negotiating viable offtake and tariff agreements	Viable Offtake Agreements (PPAs) and competitive tariffs; sealed investment deals in power generation, transmission and distribution to ensure uninterruptible power supply to critical operations	All Subsector Work Groups; Financial Institutions that support the sector	Offtake Agreements and Tariff Models By end of August, 2022

2. Establish a well-defined, transparent and Local Scrap Value Chain that ensures maximum utilisation of local scrap for the local industry to increase capacity utilisation of sub-sectors such as primary and secondary steel production and foundries.

ACTION	DELIVERABLES	BY WHO	BY WHEN
1. Establish the scrap steel requirements for the strategic value chains	Scrap steel requirements in tonnes by subsector/value chain	Foundries and Engineering cluster & primary and secondary steel production, Zimbabwe Institution of Foundrymen, EISAZ	By end of July 2022
2. Establish a Clear and Well Defined Scrap Steel Value Chain for the Local Industry, Potential/Capacity and the Local requirements	Local scrap steel production capacity and potential (tonnes/year). scrap steel value chain map and spatial distribution	Foundries and Engineering cluster & primary and secondary steel production, Zimbabwe Institution of Foundrymen, EISAZ	By end of July 2022
3. Establish innovative ways of improving the local scrap value chain from collection, distribution, auctioning, processing, usage and disposal	Innovative ways for scrap identification, collection, distribution, auctioning and value addition; increased volumes of scrap steel; competitive scrap prices; investments into scrap steel value addition technologies	Foundries and Engineering Cluster & primary and secondary steel Production, Zimbabwe Institution of Foundrymen, EISAZ; Research and Development Institutions; Academic Institutions	By end of December, 2022
4. Review Policy and SIs regulating Scrap Steel and submit report and proposal to regulatory authorities and policy makers	Scrap steel regulation review proposal/report for improved and effective SIs	EISAZ and ZIF, MoIC	By end of September 2022
5. Oversee the implementation of revised SIs and regulations on scrap steel	Improved local consumption of scrap, Improved capacity utilisation of local foundries and primary and secondary steel production	EISAZ, ZIF, MoIC	Periodic monitoring and performance review

3. Import Substitution and Exports promotion for engineering, iron and steel products and services

Identify products with the strongest business case and establish the value chain linkage and cluster with inclusive participation of sub-sectors actors

ACTION	DELIVERABLES	BY WHO	BY WHEN
1. Establish the scrap steel requirements for the strategic value chains	Scrap steel requirements in tonnes by subsector/value chain	Foundries and Engineering cluster & primary and secondary steel production, Zimbabwe Institution of Foundrymen, EISAZ	By end of July 2022
2. Develop a comprehensive electric vehicle value chain to substitute the conventional ICE based imports as well as reduce consumption of fuel for	Comprehensive electric vehicle value chain map; electric vehicle assembly plant(s)	EISAZ, Automotive cluster, electrical engineered goods cluster; Ministry of Energy and Power Development; MoIC	By 2025
3. Develop a comprehensive solar and energy storage value chain for the local and regional market to increase local content of solar technology, increase renewable energy usage and minimize imports of both technology and	Comprehensive solar value chain map and feasibility report. Number of solar and energy storage manufacturing plants and services	EISAZ, Automotive cluster, electrical engineered goods cluster; Ministry of Energy and Power Development; MoIC	By 2025
4. Establishment of Investment requirements for competitive technical capacity enhancement	Technical capacity needs for the value chain and the CAPEX and working capital requirements	All subsector clusters, technical support institutions	End of June, 2022
5. Development and structuring of funding models; and mobilisation of funds for the value chains	Bankable funding models; number of fruitful engagements with financial institutions indicated by funding facilities with favourable terms like competitive interest rates (<10%); long tenure (up to 5years); less stringent collateral requirements, etc.	All subsector clusters; financial institutions that support the sector	Models by end of August, 2022; Funding by end of December, 2022

ACTION	DELIVERABLES	BY WHO	BY WHEN
6. Ensure availability of affordable, reliable, uninterruptible and high quality energy and power to support the critical operations of the value chain by bringing together the key stakeholders in the power supply value chain like IPPs, SAPP and ZETDC and negotiating viable offtake and tariff agreements	Viable Offtake Agreements (PPAs) and Competitive Tariffs; Sealed Investment deals in power generation, transmission and distribution to ensure uninterruptible power supply to critical operations	All sub-sectors clusters; ZETDC, IPP Representatives	Offtake Agreements and Tariff Models By End of December, 2022
7. Human Capital Development to meet the needs of the value chain cluster as well as development of local capacity for technology transfer, innovation and continuous improvement	Identify appropriate skills needs and their numbers; and suitable training institutions; evidence of strong collaboration/synergies with technology suppliers, training and professional/special skills development institutions; number of personnel trained and certified	All sub-sectors clusters; training institutions; professional development and certifying bodies; technology suppliers	Skills needs report by end of june 2022; evidence of strong synergies by end of August, 2022
8. Develop a unique facilitation template for value chain actors to easily access forex from financial institutions to fund the importation of critical raw materials for the value chain	Model for easy access to forex; Evidence of sealed agreements for accessing forex from institutions like RBZ.	All sub-sectors clusters, RBZ, EISAZ	End of July, 2022
9. Advocate for policies, laws and SIs that promote local content and disincentivise importation of products that are manufactured locally	A Comprehensive review of existing policies and SIs and CBA report; decrease in presence of imported and inferior final product	All Subsector Work Groups; Ministry of Industry and Commerce, EISAZ	By End of June, 2022

ACTION	DELIVERABLES	BY WHO	BY WHEN
1. Establish Business and Technical Viability Committees responsible for operationalization of Sector Strategy Implementation	Committes formed with clear Terms of Reference; Ease of Doing Business and Macroeconomic Environment	EISAZ, NEC & Key Stakeholders	End of June 2022
2. Identify gaps in representing institutions and establish effective institutions to represent strategic sub-sectors/value chains	Number of effective institutions formed	EISAZ	End of July 2022
3. Reviewing of mandates of Sector Representative Institutions and aligning their mandate to the new needs of the Sector	Updated Mandates	Sector Representative Institutions; Professional Bodies	End of June, 2022
4. Awareness drives and public campaigns to ensure visibility to sector actors	Number of awareness campaigns and level of visibility	Sector Representative Institutions; Professional Bodies	Continuos
5. Fund-raising activities to ensure viability and sustainability	Number of fundraising activities and fund raising potential	Sector Representative Institutions; Professional Bodies	Continuos

5. Establish robust and inclusive funding facilities for CAPEX and Working Capital for attractive and strategic local engineering, iron and steel value chains

ACTION	DELIVERABLES	BY WHO	BY WHEN
1. Preparation of funding models and packages for attractive value chains based on the requirements of the various sub-sectors (e.g. Working Capital Requirements – Small Scale – USD25,000/annum per firm; Small to Medium Scale – USD100,000 to USD500,000; Medium Scale – USD500,000.00 – USD1 Million; Large Scale – USD1 Million – USD5 Million (or greater)	Funding packages and models for strategic and attractive value chains	Selected clusters; Associated Financial Institutions; EISAZ and other sub-sector representative bodies	By end of August, 2022

ACTION	DELIVERABLES	BY WHO	BY WHEN
2. Improvement of access to funding for actors in the Sector for both CAPEX and Working Capital through collective engagement with Financial Institutions, government funding and development institutions	Easy access to forex for strategic and critical raw material imports; competitive loan terms like interest rates, long tenure and more relaxed collateral conditions;	Sector Representative Institutions; EISAZ, RBZ; Financial Institutions	By end of December, 2022

6. Human capital development through synergies with training institutions and technology suppliers to enhance competitiveness

ACTION	DELIVERABLES	BY WHO	BY WHEN
1. Establish Skills requirements for every critical value chain and establish a Critical Skills Requirement List and Training Needs to present to Training Institutions	Critical Skills Requirement List and Training Needs Report	Clusters/Value Chain Firms; Representative Institutions; ECZ, ZIE	End of December, 2022
2. Establish synergies between strategic and attractive value chain actors/firms and training and academic institutions; and technology suppliers	No. of Formal Synergies; Number of training programmes	Professional Bodies (e.g. ZIE, ECZ); Value Chain Clusters; Training Institutions (Universities and Colleges; R&D Institutions); Representative Institutions like EISAZ, ZIF, etc.	Continuous; At least one synergy per value chain by End of December, 2022
3. Facilitate the running of appropriate training programs in collaboration with professional bodies; training institutions and technology suppliers	Customised Training Curriculum and Registration of Certification Bodies; Number of Special Skills Trained/year	EISAZ, Representative Bodies	EISAZ, Representative Bodies

7. Inclusion of MSMEs in value chain and formalisation of the informal sector

ACTION	DELIVERABLES	BY WHO	BY WHEN
Creation of incentives for formalization of the EIS MSMES in the informal sector Outreach programmes to reach out to the EIS informal sector	Agreed incentive scheme for EIS	EISAZ Informal sector representatives Ministry of Finance and Economic Development Zimra Ministry of Women Affairs, Community, Small and Medium Enterprises.	By end of first quarter 2023.
Formalisation of the EIS informal sector	Formalised MSMEs	EISAZ Informal sector representatives Zimra	Continuous
Identification of champion firms that work with MSMEs and incorporation of the MSMEs into the value chain	Number of cluster linkages involving MSMEs	EISAZ Informal sector representatives Champion firms	Continuous By December 2022 And continuously update

CHAPTER 8: SECTOR STRATEGY IMPLEMENTATION PLAN

The implementation shall be driven by the private sector with the firms being at the centre of execution. A program steering committee comprising EISAZ, NEC, Representatives from the Business and Technical Viability Committees, supported by the Ministry of Industry and Commerce shall facilitate effective and efficient sector strategy implementation. Under the Program Steering Committee shall be the Business and Technical Viability Committees.

The Business Viability Committee (BVC) shall comprise executives from champion firms and key stakeholders from regulators and policy makers. Their main mandate shall be to eliminate or minimize the major constraints threatening the viability of the sector.

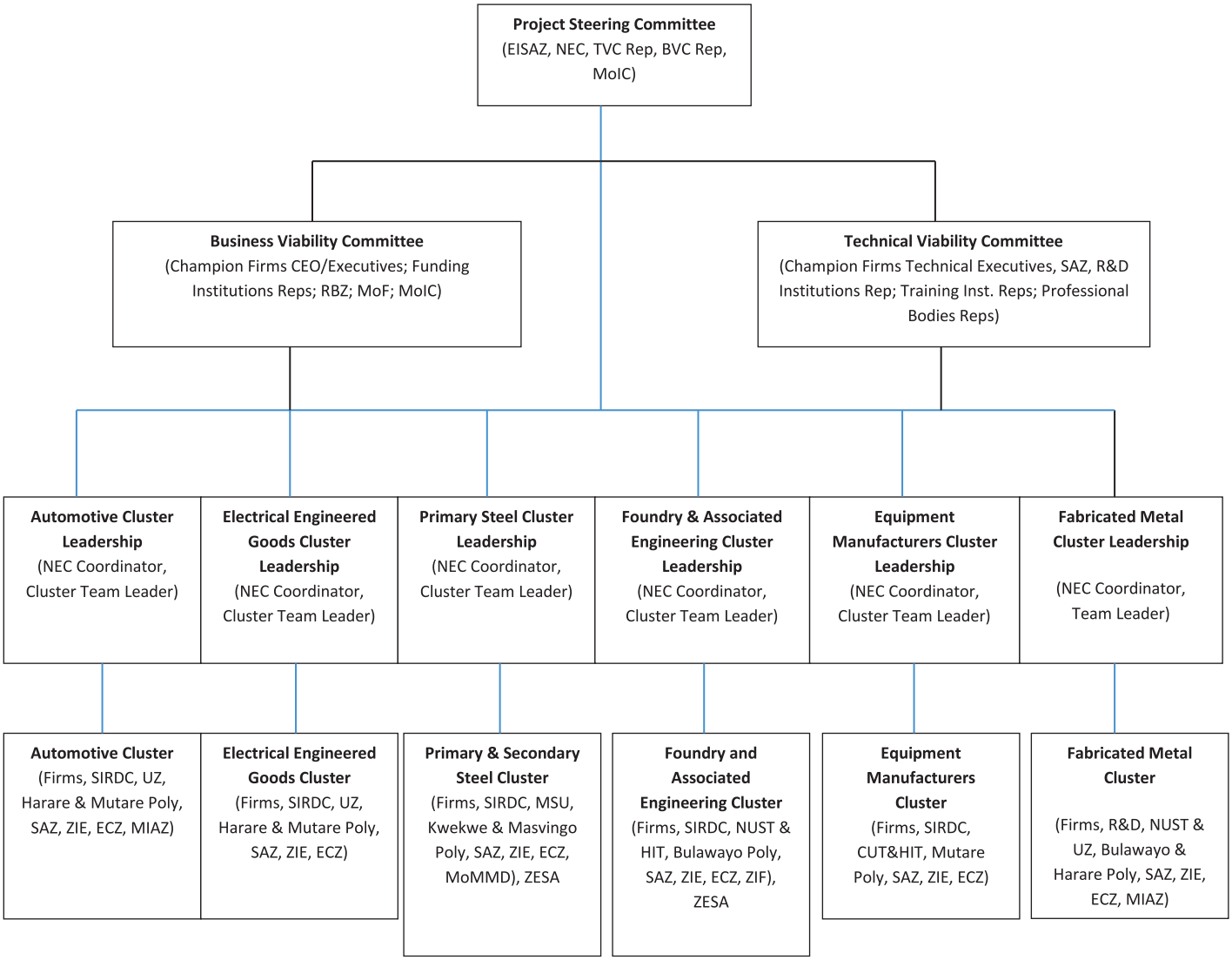
On the other hand, the Technical Viability Committee (TVC) shall comprise the technical executives from the firms; professional bodies; training institutions, standards bodies; and technology regulators with the key mandate of developing and maintaining a technologically competitive and sustainable sector taking into consideration environmental, climate change and related issues in line with global trends.

Under the Viability Committees are the six clusters, each with a cluster leadership comprising an NEC Coordinator and Cluster Team Leader (from the member firms) to articulate Cluster Specific Issues. The Clusters are as follows;

- Automotive
- Primary and Secondary Steel Production
- Foundry and Associated Engineering
- Fabricated metal and Steel products
- Electrical Engineered Goods
- Equipment Manufacturers

Each cluster shall have member firms and key stakeholders with high impact to the viability of the cluster. For instance, ZESA would be a key stakeholder to the energy intensive Primary and Secondary Steel production cluster.

The Implementation organogram is presented in the Figure below.


Project Steering Committee
(EISAZ, NEC, TVC Rep, BVC Rep, MoIC)
Business Viability Committee
(Champion Firms CEO/Executives; Funding Institutions Reps; RBZ; MoF; MoIC)
Technical Viability Committee
(Champion Firms Technical Executives, SAZ, R&D Institutions Rep; Training Inst. Reps; Professional Bodies Reps)
Automotive Cluster Leadership
(NEC Coordinator, Cluster Team Leader)
Electrical Engineered Goods Cluster Leadership
(NEC Coordinator, Cluster Team Leader)
Primary Steel Cluster Leadership
(NEC Coordinator, Cluster Team Leader)
Foundry & Associated Engineering Cluster Leadership
(NEC Coordinator, Cluster Team Leader)
Equipment Manufacturers Cluster Leadership
(NEC Coordinator, Cluster Team Leader)
Fabricated Metal Cluster Leadership
(NEC Coordinator, Team Leader)
Automotive Cluster
(Firms, SIRDC, UZ, Harare & Mutare Poly, SAZ, ZIE, ECZ, MIAZ)
Electrical Engineered Goods Cluster
(Firms, SIRDC, UZ, Harare & Mutare Poly, SAZ, ZIE, ECZ)
Primary & Secondary Steel Cluster
(Firms, SIRDC, MSU, Kwekwe & Masvingo Poly, SAZ, ZIE, ECZ, MoMMD), ZESA
Foundry and Associated Engineering Cluster
(Firms, SIRDC, NUST & HIT, Bulawayo Poly, SAZ, ZIE, ECZ, ZIF), ZESA
Equipment Manufacturers Cluster
(Firms, SIRDC, CUT&HIT, Mutare Poly, SAZ, ZIE, ECZ)
Fabricated Metal Cluster
(Firms, R&D, NUST & UZ, Bulawayo & Harare Poly, SAZ, ZIE, ECZ, MIAZ)

CHAPTER 9: KEY PILLARS FOR SUCCESS

The key pillars for the successful implementation of the sector strategy are as follows;

1. A strong primary steel production cluster with adequate capacity to supply globally competitive products to supply the down-stream industry.
2. Use of appropriate, sustainable, adaptive and globally competitive technologies for local value addition to enhance export competitiveness as well as outcompete the imports.
3. Identification of attractive and strategic value chains with great impact at sectorial level and the creation of dynamic and functional value chain linkages to produce globally competitive value added engineering, iron and steel products.
4. Securing of viable funding for value chains with strong business cases and establishing innovative and dynamic ways of minimizing risk and exposure of investment funders and businesses by creating and guaranteeing a business friendly environment.
5. A strong and dynamic human capital base to produce competent and adequate skills for the strategic value chains of the sector.
6. Strong and dynamic sector representation and support pillars for advocacy, marketing, business support network and benchmarking.
7. Establishment of a dynamic, inclusive and effective implementation strategy with the participation of the key stakeholders like firms, professional bodies, sector representative bodies, MSMEs, R&D, academia, energy and power suppliers, technology suppliers, government departments; funding institutions, etc. The result oriented implementation strategy shall be underwritten by Sector Strategy Implementation Coalition Agreements.
8. A Business Friendly Operating Environment anchored on Business Friendly Policies and an effective, lean and efficient implementation instruments and organs.
9. Monitoring, Evaluation and Review of Sector Strategy Implementation via Key Performance Indicators (KPIs) such as Capacity Utilisation, Employment Levels and Annual Revenues.

APPENDICES 1: MAJOR PARTICIPANTS OF CLUSTERS

Automotive Cluster

COMPANY	LOCATION
National Spring Steel	Harare
Car Guard	Harare
Mike Appel	Harare
Turbo Solutions	Harare
Deven Engineering	Harare
Bellini Coach Works	Harare
Gud Africa	Harare
J. Mann Power Transmission	Harare
Davland Motors	Kariba
Quest Motors	Mutare
AVM Africa	Harare
Leofree Technologies	Bulawayo
P & C Engineering	Bulawayo
United Springs	Bulawayo

Electrical Engineered Goods and Related Services; Refrigeration and Air-conditioning

Electrical Engineered Goods and Related Services

COMPANY	LOCATION
CAFCA	Harare
Morganite Zimbabwe	Harare
JVS Projects	Harare
Treggers Products	Harare
Carbontek	Harare
Nical manufacturing	Harare

COMPANY	LOCATION
Carlisle Engineering	Harare
Bismind Electrical	Mutare
GEC Zimbabwe	Harare
Williams Eng	Bulawayo
Grid Transmission	Harare
Begom	Kwekwe
IE Holdings/Power speed	Harare
Ames Eng	Bulawayo
Industrial Technical services	Harare
MMS Rewind	Bulawayo
Hawkers Siddeley Engineering	Harare/Bulawayo

Refrigeration and Air conditioning

COMPANY	LOCATION
Country Cool Air Conditioning	Harare
Optional Air	Harare
Thermacool	Harare
Climax Ref	Bulawayo
Coolmech Ref & Aircon	Harare
Ref Air	Bulawayo
Electra Elect Installation and Repairs	Harare
Gees ref	Bulawayo
Thermal comfort	Harare

Primary and Secondary steel Producers' Cluster

MAJOR PLAYER	LOCATION
Steelmakers	Redcliffe
Pannelink Man	Bulawayo
Naisonale Invest	Bulawayo
RSC Steelforce	Bulawayo
Zisco Steel	Redcliff
Steel brands	Harare
Steelworld/Glanmount	Harare
Haumin	Harare
Haggie Rand	Kwekwe
SIMBI Steel	Masvingo

Foundry and Associated Engineering Cluster

COMPANY	LOCATION
Midlands Metal	Gweru
Craster International	Harare
National Metal Founders	Bulawayo
Kubota Engineering and Foundry	Harare
Precision Equipment	Bulawayo
Industrial valves & Steel Supplies	Harare
O' Conolly	Bulawayo
Clarson	Harare
Anolle Casting	Bulawayo
Northway Foundries	Chinhoyi

COMPANY	LOCATION
TA Foundries	Harare
Bulawayo Metal Founders	Bulawayo
Non Ferrous Die Casting/ Bloomrest	Norton
Family Castings	Bulawayo
Central African Forge	Harare
Nimr & Chapman	Bulawayo
Steam Team	Harare
Golden Wave Enterprises	Gweru

Equipment Manufacturers and Machined Parts Cluster

Machinery parts & metal fabrication, assembly & engineering

COMPANY	LOCATION
Bulawayo Distribution Centre	Bulawayo
Swivel Metal	Bulawayo
Hems Eng	Bulawayo/Harare
Monarch Steel	Bulawayo
Visum Global	Bulawayo
Birch & Molloy	Kwekwe
Boltrec Eng	Zvishavane
Shabi Eng	Zvishavane
Kango	Bulawayo
Samburn pressing	Harare
Copperwares	Harare
Machinery Exchange	Harare
Metal Flex	Harare
Smart Building Solutions	Harare
Almin Metal Ind	Harare
Cochrane Pumps	Harare
Geosad Engineering	Harare
Canaudmetal box	Harare
Value Engineering	Harare

Mining & Mineral Processing Machinery Engineering, Fabrication, Assembly, Services, Repairs & Installations

COMPANY	LOCATION
Techmate Eng	Kwekwe
Van Gopal	Gweru
Matabeleland Engineering	Bulawayo
Epistle Invest	Bulawayo
Shepco Industrial	Bulawayo
Jacob Bethel	Bulawayo
Mine Machines	Bulawayo

Bolts and Nuts Manufacturing

COMPANY	LOCATION
Shepco BMA	Bulawayo
C T Bolts	Bulawayo
Tassburg	Bulawayo
Original Technology	Gweru
Industrial Bolts/Anther	Harare
Crittal Hope	Harare

Water Engineering, fabrication, etc.

COMPANY	LOCATION
Divyman Enterprises	Harare
Mono Pumps	Harare
Toronto Irrigation Services	Harare
EasycastTrading/Pumphouse	Harare
Centre Pivot Irrigation	Harare
HydraTech/Hanlith	Harare
Borehole Contracting	Harare
Water tight Eng	Bulawayo
Zimbabwe Valves	Bulawayo
Bancroft Neil & Water	Bulawayo

Agriculture and Equipment

COMPANY	LOCATION
Toronto Irrigation Services	Harare
Brown Engineering / Solestruct	Harare
Plowcon	Harare
Waterwright Irrigation	Harare
Mono Pumps	Harare
Centre Pivot Irrigation	Harare
Ayton Agricultural Engineering	Kadoma
Hastt Zimbabwe	Harare
Warrap Engineering	Harare
Appropriate Technology Africa ATA	Gweru
Zimplow	Bulawayo

Earth Moving Equipment

COMPANY	LOCATION
Barzem	Harare
Bell PTA	Harare
Machinery Exchange – Head Office in Harare	Bulawayo

Fabricated Metal and Steel Products Cluster

Doors and Window Frames

COMPANY	LOCATION
Fence and Frame	Bulawayo

Tubes, Pipes and Pressure Vessels

COMPANY	LOCATION
Marula Industries	Bulawayo
AMA Welders	Harare
Steam Team P/L	Harare
Olsteam Engineering	Harare
Cochrane Engineering	Harare
Essar Tubes & Pipes	Harare
Sprint Engineering	Harare

Steel Fabrication

COMPANY	LOCATION
Buys Eng	Shurugwi
RSC Steelforce	Bulawayo
Pump & Steel	Bulawayo
Oliken Eng	Kwekwe
Africa Steel/ Lanet	Harare
Ages Engineering (workington)	Harare
William Bain	Harare
Classecon roofing	Harare
Steel Building Company	Harare
Longden	Harare
Essar Tubes and Towers	Harare
Glanmant Manufacturing	Harare
Universal Eng/Machinery Exch	Harare
Nelson Construction	Harare
Pat Dunn	Harare
Monarch	Bulawayo
Geosad	Harare

Light steel works, welding and fabrication

COMPANY	LOCATION
Alpha Steel	Bulawayo
Leofree	Bulawayo
Claude Neon Signs	Harare
Sykes Signs	Harare

Steel Supply and Distribution

COMPANY	LOCATION
Steel Centre	Harare
BSI Steel	Harare
Steel Warehouse	Harare

Wire and Fencing

COMPANY	LOCATION
Scandia Wire	Bulawayo
Tesa Fencing	Bulawayo
National Fencing	Bulawayo
Fence Africa	Bulawayo
Tees Fencing	Bulawayo
Haggie Rand	Kwekwe
Star Fencing	Bulawayo

COMPANY	LOCATION
Safeguard	Harare
Survival Hardware	Harare
GDI	Harare

Appendice 2: Training institutions

UNIVERSITIES

UNIVERSITY NAME	MAJOR SKILLS FOR THE EIS SECTOR	LOCATION
University of Zimbabwe (UZ)	Mechanical, Electrical, Civil, Mining, Metallurgy, Renewable Energy, GIS & Surveying; Applied Environmental Science; Manufacturing Systems	Harare
National University of Science and Technology (NUST)	Industrial, Chemical, Process, Applied Physics, Applied Electronics	Bulawayo
Chinhoyi University of Technology (CUT)	Mechatronics, Fuels and Energy, Production Engineering, Agricultural, Environmental Science, Instrumentation and Nanoscience,	Chinhoyi
Harare Institute of Technology (HIT)	Industrial, Chemical, Electronics,	Harare
Bindura University of Science Education (BUSE)	Environmental Science	Bindura

POLYTECHNIC/VOCATIONAL TRAINING INSTITUTES

POLYTECHNIC/VOCATIONAL TRAINING INSTITUTE	MAJOR SKILLS FOR THE EIS SECTOR	LOCATION
Harare Poly	Metallurgy, Plastics and Rubber, Chemical, Water and Irrigation, Construction, Electronic Communication, Instrumentation and Control Systems, Computer Science, Electrical and Power, Mechanical, Vehicle Body Building, Civil, Automotive	Harare
Bulawayo Poly	Automotive, Civil, Water, Architecture, Quantity Surveying, Carpentry, Plumbing, Building, GeoInformatics and Surveying, Wood, Mechanical, Electrical and Electronic, Instrumentation, Production and Plant, Foundry	Bulawayo
Gweru Poly	Mechanical, Electrical, Automotive	Gweru
Mutare Poly	Construction, Civil, Quantity Surveying, Water and Irrigation, Automotive, Electrical, Mechanical	Mutare

POLYTECHNIC/VOCATIONAL TRAINING INSTITUTE	MAJOR SKILLS FOR THE EIS SECTOR	LOCATION
Masvingo Poly	Mechanical, Civil and Construction, Electrical, Automotive	Masvingo
Kwekwe Poly	Automotive, Civil and Construction, Electrical, Mechanical	Kwekwe
West Gate Training	Electrical, Mechanical, Automotive	Bulawayo
Msasa Training	Automotive, Mechanical, Electrical, Construction	Harare
Ruwa Vocational Training	Automotive, Mechanical, Electrical, Construction	Ruwa
Chitungwiza Vocational Training	Automotive, Mechanical, Electrical, Construction	Chitungwiza
Magamba Vocational Training	Automotive, Mechanical, Electrical, Construction	

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ZIMBABWE ENGINEERING, IRON & STEEL SECTOR STRATEGY

ENGINEERING IRON AND STEEL ASSOCIATION OF ZIMBABWE

ZIMBABWE
MINISTRY OF INDUSTRY AND COMMERCE

NATIONAL EMPLOYMENT COUNCIL
FOR THE ENGINEERING & IRON AND STEEL INDUSTRY

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