



Republic of Zambia

Industry Strategy for Engineering Products

“The Hub of Manufacturing of Engineering Products in the Region”

Ministry of Commerce, Trade and Industry

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Industry Strategy for Engineering Products

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Acronyms

CEEC	Citizen Economic Empowerment Commission
CSO	Central Statistics Office
CTI	Commercial, Trade and Industrial Policy
DRC	Democratic Republic of Congo
DRI	Direct Reduced Iron
EIZ	Engineering Institution of Zambia
FDI	Foreign Direct Investment
FNDP	Fifth National Development Plan
IA	Implementation Agency
ITC	International Trade Centre
JICA	Japan International Cooperation Agency
KIZ	Kaizen Institute of Zambia
MCTI	Ministry of Commerce, Trade and Industry
MFEZ	Multi Facility Economic Zones
MMD	Movement for Multiparty Democracy
MMI	MM Integrated Steel Mills
MMMD	Ministry of Mines and Minerals Development
MOF	Ministry of Finance
MSMEs	Micro, Small and Medium-sized Enterprises
NCC	National Council for Construction
NISIR	National Institute for Science and Industrial Research
NTBC	National Technology Business Centre
PACRA	Patents and Companies Registration Agency
PF	Patriotic Front
SABS	South African Bureau of Standards
SGS	Société Générale de Surveillance
SNDP	Sixth National Development Plan
TEVETA	Technical Education, Vocational and Entrepreneurship Training Authority
UMCIL	Universal Mining and Chemical Industries Limited
UNZA	University of Zambia
ZABS	Zambian Bureau of Standards
ZAM	Zambia Association of Manufacturers
ZAMEFA	Metal Fabricators of Zambia Limited
ZDA	Zambia Development Agency
ZESCO	Zambia Electricity Supply Corporation Limited
ZWMA	Zambia Weights and Measures Agency

Foreword

The Government of Republic of Zambia has reaffirmed its commitment to accelerating industrial growth by increasing its manufacturing base in order to achieve continuous economic growth and diversification. This is aimed at fostering a shift from Zambia's economic and industrial structure that has in the past heavily depended on the extraction and exportation of copper, with little value addition.

To achieve this, the Ministry of Commerce, Trade and Industry (MCTI), identified six priority sectors in its policy statements of 2009 as areas of focus in broadening and diversifying the manufacturing sector. The six sub-sectors within the manufacturing sector identified for enhanced value addition are outlined as follows: Engineering products, Gemstones, Leather and leather products, Processed foods, Textiles and garments and Wood and wood products.

The Project of Industry Strategy Formulation for Engineering Products which has been realized with the Technical Cooperation from the Japan International Cooperation Agency (JICA) is the first attempt, among the six priority sectors, to transform policy statements into strategies and action plans. It is envisaged that once successful, the process will be used as a model in developing strategies and action plans for the other five (5) manufacturing sub-sectors.

The strategy has identified Steel and Copper fabrication, amongst many engineering products, as targets for accelerating growth of engineering products industries in Zambia. Over the last five years, several steel making and copper fabrication companies have emerged dynamically in Zambia. Utilizing available resources, they have been expanding business, exporting their products to the growing regional markets, as well as serving the domestic markets. The strategy formulated herein strives to make this dynamic development a continual process and to further expand and diversify the manufacturing base of the target sectors, and through this, to cement Zambia's competitive position for manufacturing steel and copper fabrication products in the regional markets.

The timeframe of the strategy is five years. Performance review will be conducted annually. While the Government will implement and monitor the strategy, the success of it hinges on all the key players and stakeholders playing an active role in making available some key materials such as copper sheets, zinc ingot, and ferrous raw materials including the Direct Reduced Iron (DRI) technology that have been missing in the local supply chain.

Issues of Safety, Environmental and Quality standards in production will need to be observed as stipulated by rules and regulations. Further, exporting companies will need to explore new markets and ensure their workers acquire new skills for their further growth. With all this, it will become clearer and more visible over the next five years that Zambia is a hub of manufacturing of engineering products in the region.

Hon. Robert K. Sichinga, MP

MINISTER OF COMMERCE, TRADE AND INDUSTRY

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The success in formulating the industry strategy for engineering products comes in the wake of concerted efforts and inputs from a spectrum of individuals and institutions among them - government officials and company executives from the private sector who participated in the stakeholder consultative process in Lusaka, Southern and Copperbelt Provinces of Zambia. The strategy document is a result of extensive and comprehensive consultations within Zambia through Workshops and Seminars, Technical Meetings and Reviews taking into consideration of international best practices from Africa and beyond.

The Ministry recognizes and extends special acknowledgements to the Japanese Government who through its Japan International Cooperating Agency, JICA, rendered technical support for the Project. Special thanks are due to the Working Group for Engineering Strategy that consisted of counterpart personnel drawn from the Engineering Products Sector Advisory Group (SAG). Further, recognition is made to contributions made by the following particular institutions: Zambia Development Agency (ZDA); Zambia Bureau of Standards (ZABS); Zambia Weights and Measures Agency (ZWMA); and National Technology Business Centre (NTBC).

Above all, the Ministry wishes to commend the tremendous efforts made by the JICA Experts, Mr. Nobuhisa Iwase and Mr. Masato Sawaki of IMG Incorporated, in drafting the strategy paper. Other contributors include Mr. Chali Mweemba - Local Expert for the JICA Project, Mr. Chola Musonda - Desk Officer for Engineering Products, Mr. Tobias Mulimbika - Director Industry and officers within the Industry Department in the Ministry of Commerce, Trade and Industry for logistical, research and policy guidance provided during the industry strategy formulation.

Stephen Mwansa

Permanent Secretary

MINISTRY OF COMMERCE, TRADE AND INDUSTRY

Executive Summary

1. Since independence, Zambia's economic and industrial structure has been heavily dependent on the extraction and exportation of copper. While Zambia has experienced rapid economic growth in recent years, its economic structure has remained fragile as it continues to depend on the condition of the international copper market. In response, the Government of the Republic of Zambia has reaffirmed its commitment to accelerate industrial growth by increasing its manufacturing base in order to achieve further economic growth and diversification.
2. To realize this commitment, the Ministry of Commerce, Trade and Industry (MCTI), identified six priority sectors in its policy statements in 2009. This project of industry strategy formulation for engineering products has been realized with technical cooperation from the Japan International Cooperation Agency (JICA). This is the first attempt, among the six priority sectors, to transform policy statements into strategies and action plans. In the course of the project, a Working Group for Industry Strategy Formulation of Engineering Products, comprised of relevant government ministries and agencies and private companies engaged in this strategy's selected target sectors, was formed. The working group conducted series of discussions to formulate the basis of the strategy.
3. The iron/steel and copper fabrication sectors, amongst many engineering products, are selected as target sectors for this strategy. Over the last five years, several steel making and copper fabrication companies have emerged dynamically in Zambia. Utilizing available resources, they have been expanding business, exporting their products to the growing regional markets, as well as serving the domestic markets. The strategy formulated herein strives to make this dynamic development a continual process and to further expand and diversify the manufacturing base of the target sectors, and through this, to cement Zambia's competitive position for manufacturing iron/steel and copper fabrication products in the regional markets.
4. All important information resides with companies. The private sector, or companies, is the basic unit to realize the strategy. The primary targets are companies exporting products in the target sectors, and the secondary targets are companies supplying raw materials, spare parts and other relevant services to the primary target companies.
5. The target companies are facing many challenges and hindrances for further growth. Domestic sales are being hampered by sub-standard imported products. The old regime of import duties remains and prevents steel fabricators from reducing costs. Domestic manufacturers are struggling to establish their brand in the regional markets while the national body of standards has yet to provide a certification that regional markets recognize. Exporting companies are facing many obstacles in basic infrastructures to expand production activities. Yet they have no venue through which they address these issues to the government.
6. Many exporting companies need local suppliers while they are too busy to find what is possibly available locally and to let local suppliers know what is required for their operations. As a

result, almost all sub-materials and spare parts are imported at a high cost. Some key materials such as copper sheet, zinc ingot, and ferrous raw materials including Direct Reduced Iron (DRI) are missing in the local supply chain. Safety and environmental standards are not necessarily observed in production as stipulated by rules and regulations. Exporting companies need new markets and skilled workers for their further growth.

7. The timeframe of the strategy is five years. Based upon the understanding of the issues to be overcome over the next five years, the strategy set twenty action plans with clear assignment of responsibilities to the government ministries and agencies. Through implementing those action plans, the government will create a level playing field, and ensure quality products. The government will prepare a business environment where target companies can accelerate the increase of their production capacity and where local supporting industries are nurtured to serve exporting companies. The government will continue to realize foreign direct investments (FDIs) in target segments, create new markets and a culture of training. The government will ensure that such development will be sustainable by enforcing safety and environmental safeguards policies. The government will implement the actions plans in accordance with an implementation schedule set herein.
8. During the course of implementing the strategy, it is envisaged that more local suppliers will supply materials and spare parts to the exporting companies. Some of them will join the group of exporting companies. As more local companies follow this path, industry clusters consisted of many micro, small and medium-sized enterprises (MSMEs) will develop in some areas. From there, more exporting companies will emerge, deriving benefit from the industry clusters. The strategy foresees this virtuous cycle with the acceleration of the private sector dynamism.
9. A performance review of the strategy implementation will be conducted annually. For the first half of the first year, activities in connection with the target companies mainly concentrate on establishing contact with the existing exporting companies, building trust with them, and understanding their situation and future plans.
10. The successful implementation of the strategy will benefit other segments in the engineering products sector by demonstrating good execution in the target sectors. This engineering products strategy will be a good model for other priority sectors identified in MCTI's policy. This bandwagon effect will spread to the entire manufacturing sector. The manufacturing sector will grow as a result of implementing the competitive strategy, and enhance the manufacturing sector's position in the Zambian economy. The manufacturing sector will become the driving force for economic growth, through which Zambia will move toward the status of a prosperous middle-income nation as envisaged in the Vision 2030.
11. The government will implement and monitor the strategy. Over the next five years, it will become clearer and more visible that Zambia will emerge as the hub of manufacturing of engineering products in the region.

I. Background

1. Policy Statements

Since independence, Zambia's economic and industrial structure has been heavily dependent on the extraction and exportation of copper. While Zambia has experienced a rapid economic growth in recent years, its economic structure has remained fragile as it continues to depend on the condition of the international copper market. In response, the Government of the Republic of Zambia has reaffirmed its commitment to accelerate industrial growth by increasing its manufacturing base in order to achieve further economic growth and diversification.

For the past thirty years, Zambia has been implementing its development agenda using five year national development plans. Currently, it is implementing the Sixth National Development Plan (SNDP 2011–2015) which is the successor to the Fifth National Development Plan (FNDP). These plans are aimed at realizing the aspirations of the Vision 2030 of becoming “a prosperous middle-income nation by 2030.” While the FNDP set the pace for improving economic infrastructure and investing in human development, the SNDP aims to build a more solid and upgraded economic base on the gains of the FNDP in the process of attaining the Vision 2030. The main thrust of the SNDP is to facilitate the scaling up of the manufacturing sector towards higher value added and to upgrade capacity in the provision of related services. During this period, emphasis is being placed on transforming industrial businesses and complementary services, particularly micro, small and medium-sized enterprises (MSMEs) into strong value-creating entities.

The government, through the Ministry of Commerce, Trade and Industry (MCTI), in 2009 also developed a Commercial, Trade and Industrial Policy (CTI). Its overall vision is to develop an enabling economic environment in Zambia, which supports private investments, assists the development of domestic productive capacities, and contributes to the expansion of Zambia's international trade.

In CTI, the government in consultation with cooperating partners has identified six main priority sectors, namely; processed foods; textiles and garments; *engineering products*; gemstones; leather and leather products; and wood and wood products. In connection with engineering products, the government particularly has highlighted better utilization of scrap metals in the domestic market.

2. JICA Project

This project is the first attempt, among the six priority sectors, to transform policy statements into strategies and action plans. The engineering products sector has been chosen since it has many close links with mining and other manufacturing sectors. The development of the engineering products sector is expected to bring large spill-over effects directly to metallurgical and mechanical industries, and indirectly to many other sectors like agriculture, construction, power, mining, transportation and communications through providing basic materials, equipment, machinery, and other necessary inputs.

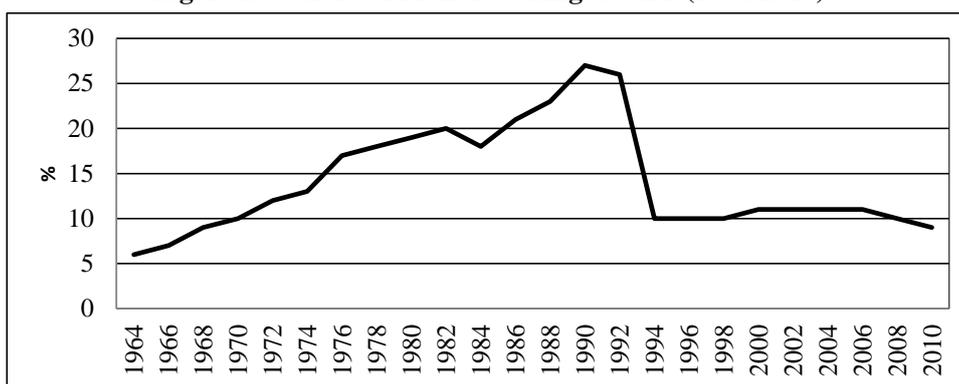
For this industry strategy formulation, the Zambian government through MCTI entered into an agreement with the Japan International Cooperation Agency (JICA) in April 2011 as part of the Japanese government’s technical cooperation. In the course of this project, a Working Group for Industry Strategy Formulation of Engineering Products, comprised of relevant government ministries and agencies and private companies engaged in the strategy’s selected target sectors, was formed¹. The working group conducted series of discussions related to industry strategy formulation for engineering products and formed the basis of the strategy. The strategy presented herein is expected to transform the engineering products sector into a vibrant driving force in the development of the manufacturing sector.

In accordance with the strategy, the government will create a business environment, in which engineering products companies continue to expand business and increase their exports to the regional markets. The government will also further develop links between domestic producers and regional purchasers, and exporting companies and domestic suppliers. Through this strategy, Zambia will work towards becoming the manufacturing base of engineering products in the region.

3. Historical Perspective of the Manufacturing Sector

When Zambia became independent, the manufacturing sector only accounted for 6% of GDP. The manufacturing sector’s share increased and culminated at 27% in 1990 with the government’s pro-manufacturing policy, in which import substitution and nationalization of major corporations were the main driving forces. In this regime, each company was assigned and served a specific line of production of particular products for national monopoly enterprises such as the Zambia Consolidated Copper Mines. There was no competition among companies in the market where national monopoly enterprises procured products supplied by nominated companies in accordance with their annual plans.

Figure 1: Share of Manufacturing of GDP (1964-2010)



Source: Engineering Institution of Zambia (EIZ), Central Statistics Office (CSO)

During this regime, the Zambian economy had been declining. In order to break this economic deadlock, the government decided to liberate its economic system in 1991. Since then, the manufacturing sector’s share of GDP has plummeted and finally settled at the realistic level of

¹ See Annex 1, “Working Group for Industry Strategy Formulation for Engineering Products”.

around 10%, which the market economy could sustain, given the resources and technologies available to Zambia. The manufacturing share had stayed around that level².

A long time after having steered itself into a liberalized economic system, Zambia eventually regained the power to accelerate its economic growth in 2005, largely backed by sustainable macroeconomic policies, strong copper markets and debt relief implementation. In the middle of this growing economy, more new manufacturing companies have emerged in the engineering products sector. Many foreign investors have been coming to Zambia and finding it as the regional manufacturing base of their products.

Having learned lessons from history, the strategy does not set a direct target of increasing the share of manufacturing sector, but rather sets the direction of the engineering products sector and helps to create a business environment where engineering products companies continue to grow and become the driving force of further economic growth. This will enhance the importance of the manufacturing sector.

² It was reported by the Central Statistics Office (CSO) that the share fell below 10% after the Great Recession triggered by the financial crisis in US in 2008 and declined to 9% in 2011.

II. Target Sectors

1. Selection of Target Sectors

This strategy focuses on iron and steel making and copper fabrication as target sectors. The iron and steel sector supplies finished steel products, such as bars and angles used for construction materials, and also flat products used as raw materials for further value addition activities. This target sector also includes metal fabrication of steel products. The copper fabrication sector manufactures products, such as copper rod, copper cable and wires, and other copper-based products.

These two target sectors are selected by the following reasons:

- (1) Zambia has potentials to develop resource-based, metal-related manufacturing sectors by utilizing the country's rich mineral resources. Taking into consideration that demands for basic and fabricated metals have been increasing recently and will continue to do so in the future in both the domestic and the southern African regional markets, Zambia has a comparative advantage to become the hub of manufacturing of iron and steel products as well as of copper fabrication products in the region;
- (2) The iron and steel sector is a basic industry that should provide cost-effective and quality materials for the construction sector and for all manufacturing sub-sectors including many engineering products companies. The sector can produce a huge scale of multiply effects on industrial development in terms of value addition and employment generation. Due to this sector's significance to the industrial development, many advanced and developing countries have formulated policies and strategies for developments of this key industry;
- (3) The development of an efficient iron and steel sector that supplies basic materials for many manufacturing activities in Zambia will stimulate and promote more investments in various manufacturing sectors. It can also improve external conditions for nurturing domestic MSMEs in metal fabrication businesses through providing a wide range of steel products with cheaper price and higher quality; and
- (4) Zambia has made efforts to nurture its copper fabrication industry over the last 50 years. Recently, the country's copper export has shifted from the ore to the copper products in the upper-stream of value chain such as refined copper (copper cathode). Further development and diversification of copper fabrication products has become more viable due to the country's rich natural resource for the products combined with a gradual accumulation of the technology and human resource foundation by emerging copper fabrication companies.

Actually, several scale steel manufacturers started over the last five years, while new lines of copper fabrication were added to Zambia. Emerging steel companies have been expanding business by exporting their products to the regional markets. The recent manufacturing of transformers in Zambia indicates the diversification of Zambian copper fabrication sector which had been the regional base of manufacturing copper rod and cable alone over a long period of time. Zambia has rich deposits of natural resources for the selected target sectors, namely copper, iron ore and coal. The development of the target sectors is expected to bring a large spill-over effect on local suppliers, particularly in the iron and steel sector.

Table 1 shows export and import value relating to engineering products, ores and copper cathode over the last five years³. From 2006 to 2010, total exports of Zambia increased by almost twofold from \$3.8 billion to \$7.2 billion while imports increased by 1.7 times from \$3.1 billion to \$5.3 billion. What is particularly notable is the drastic expansion of export of steel products which increased over eightfold from \$2 million in 2006 to \$17 million in 2010. At the same time, the trade deficit in the iron and steel sector recorded US\$ 281 million in 2010, which amounted to -15% to the country's US 1.9 billion total trade surplus. With the country's constant population increase and economic growth in both medium-and long-terms, steel demand is expected to constantly increase, which lays out a serious question as to how Zambia should develop this basic industry in order to avoid a rapid increase in trade imbalance. This is also one of the reasons that this strategy focuses on the iron and steel sector. The increase in imports of ores and copper and related articles mainly represents copper ores and unwrought copper from the Democratic Republic of Congo (DRC).

Table 1: Zambia's Trade Structure in Relation to Engineering Products

(US\$ million)	2006			2010			2010/2006	
	Export	Import	Balance	Export	Import	Balance	Export	Import
Total Exports & Imports of Zambia	3,770	3,074	696	7,200	5,321	1,880	1.9	1.7
HS26 Ores, slag and ash	422	30	392	524	841	-318	1.2	28.3
HS72 Iron and Steel	2	100	-98	17	142	-125	8.1	1.4
HS73 Articles of Iron and Steel	5	99	-95	7	163	-156	1.5	1.6
HS74 Copper and articles thereof	2,613	8	2,605	5,418	244	5,173	2.1	29.8
HS84 Machinery, boilers, etc.	60	648	-588	70	866	-796	1.2	1.3
HS85 Electrical, electronic equipment	40	254	-214	46	248	-202	1.1	1.0
HS87 Vehicles other than railway, tramway	3	315	-312	17	374	-357	5.7	1.2

Source: International Trade Centre (ITC), 2011

Note: HS is Harmonized Commodity Description and Coding System, a multi-purpose international nomenclature developed by the World.

2. Iron and Steel Sector

Zambia experienced dynamic development in steel making over the last five years. Good Time Steel, which was set up by Chinese investors, started its operations in 2008. Trade King, a leading confectionery, beverages and detergents company, went into the steel business by constructing a steel mill in Kafue, called Universal Mining and Chemical Industries Limited (UMCIL), and commenced its operations in 2008. Using steel scraps available from domestic markets as raw

³ On Table 1, most of HS74, "Copper and articles thereof", exported from Zambia is "copper cathode", which is produced through refining process to make "electrolytic copper" that has 99.99% copper content.

material, they have been expanding production and exporting steel products to the regional markets. Until then, steel production was limited to mill balls and spare parts in the Copperbelt, serving mining companies. Almost all steel products for construction uses were imported from South Africa while steel scraps were largely recycled back to South Africa. Domestic steel producers are estimated to have produced a little more than 100,000 tons of finished steel products in 2011. The domestic finished steel production came to account for around 50% of the total apparent steel consumption of around 200,000 tons in Zambia⁴.

Although they have been growing fast, their lines of products are limited to long steel products such as deformed (round) bars, sections and angle bars, which is still far from satisfying the needs of major contractors in the construction sector. There are neither hot rolled sheets nor tube production facilities in Zambia. UMCIL already obtained the certificate of manufacturing process in accordance with the South African Bureau of Standards (SABS), which is a quality assurance entity widely recognized and accepted in southern Africa. This helped UMCIL to be recognized as a quality product producer. However, there are cases where major contractors, mainly non-Zambian, request the SABS certification for each batch of production, which is not feasible under the quality certification regime in Zambia. UMCIL still has a long way to establish its brand in the regional markets.

As is shown in Table 2, 14,900 tons of long steel products were exported in 2010 from a negligible level in 2006, which kept imports of the same products lines from increasing substantially. Over the same period, however, imports of other lines of products increased substantially: from 44,500 tons to 56,300 tons for flat steel products; and from 13,700 tons to 23,200 tons for tube and pipes. These imports more than offset the trade surplus contributed by the recently-emerged domestic manufacturers. Zambia is still in a substantial deficit position in steel products trade. In other words, further development of domestic steel manufacturers can find huge business opportunities to increase volume and upgrade lines of their products. Their competitors are steel companies from South Africa.

⁴ “Apparent steel consumption” is an index globally used. It is calculated by the following formula: domestic production + import – export. Apparent consumption is presented in terms of the two different stages of a very long production chain of the iron and steel sector: crude steel equivalent and finished steel equivalent. Because apparent consumption does not include the amount of consumption of imported steel-content manufacturing products such as fabricated metal structures, automobiles, heavy trucks, construction machinery and electric appliance, an apparent consumption figure does not reflect real steel consumption in a country. Including the steel consumption of imported steel-content products (indirect steel imports), which is roughly estimated at around 200, 000 tons in Zambia, *the self-sufficiency rate of steel consumption for Zambia is estimated at around 25%*.

Table 2: Export and Import of Iron and Steel Products for Zambia

Year	Import				Export			Unit Price
	Volume (1,000 ton)		Value (million US\$)		Volume (1,000 ton)		Value	Import (\$/ton)
	2006	2010	2006	2010	2006	2010	2010	2010
Ferro-alloys, ferrous raw materials and semi-finished steel	1.7	0.9	1.9	1.4	5.6	18.3	3.9	1,631
Ferro-alloys	1.7	0.8	1.7	1.1	1.2	2.4	2.6	1,303
Steel scrap	0.0	0.0	0.0	0.0	4.3	15.7	1.0	-
Long steel products	44.6	45.9	38.0	52.8	0.2	14.9	10.2	1,151
Bars & Rods	19.5	20.1	15.5	20.4	0.1	12.5	8.6	1,013
Angle, Shapes & Sections	17.6	20.1	16.9	25.5	0.2	2.4	1.6	1,270
Wire	7.6	5.7	5.6	6.9	0.0	0.0	0.0	1,217
Flat steel products	44.5	56.3	44.2	69.1	0.1	1.1	0.9	1,228
Hot-rolled coils & sheets	16.8	14.9	16.1	18.6	0.0	0.0	0.1	1,249
Cold-rolled coils & sheets	5.6	7.7	7.0	9.4	0.0	0.4	0.2	1,225
Coated coils & sheets	22.1	33.8	21.1	41.2	0.1	0.6	0.6	1,220
Tube, Pipes & Others	13.7	23.2	32.5	46.4	0.6	0.4	1.5	2,003
Sheet pile & Rails	1.6	3.5	2.0	4.1	0.4	0.1	0.1	1,149
Tube, Pipes & Fittings	12.1	19.7	30.5	42.4	0.2	0.4	1.3	2,156
Stainless & Alloy steel products	7.3	7.4	15.9	19.6	0.3	0.5	1.9	2,652
Total Steel Products (1)	111.8	133.6	132.5	189.4	6.9	35.3	18.5	1,417
Fabricated steel products (2)	27.4	49.1	66.9	116.5	1.3	3.4	5.7	2,373
Structures (rods, angle, plates)	11.9	19.2	28.4	47.0	0.3	0.8	0.6	2,444
Cloth, grill, netting & fencing	2.0	2.7	2.6	4.5	0.0	0.1	0.1	1,651
Screws, bolts, nuts, etc.	1.9	4.9	8.4	12.2	0.1	0.1	0.4	2,469
Other articles of iron or steel	11.7	22.2	27.4	52.9	0.9	2.5	4.5	2,379
Grand Total ((1)+(2))	139.2	182.7	199.4	305.9	8.1	38.7	24.1	1,674

Source: JICA Experts based on the data of ITC

As the recently-emerged steel manufacturers expanded their production, it has been getting harder to find steel scrap at a reasonable price for steel makers⁵. It is clear that steel scrap alone will not be able to sustain Zambian steel making, as its economy grows further. Envisaging this situation, UMCIL is planning to start iron making based on a Direct Reduced Iron (DRI) process, utilizing iron ores supplied by its own iron mines. There are many iron ore deposits in Zambia; however, due to a high transportation cost that comes with being a landlocked country, Zambian iron mines have not been developed until now. UMCIL is working to change this situation by tapping into its rich iron ore deposits with the plan of using the DRI process.

DRI iron making may provide a good solution for the availability of iron to steel making in Zambia. When the feasibility of DRI production in Zambia becomes clear and more DRI facilities are coming out, it will bring about a revolutionary impact on the promotion of the Zambian manufacturing sector. DRI is not only a substitute of steel scrap, raw material for steelmaking for construction use, but also a much higher quality raw material for producing flat steel products that become intermediate materials for many different kinds of manufacturing such as metal fabrication, machine building and transport equipment manufacturing.

⁵ An export ban has been put in place for scrap steel since September 2011.

A long time before scale steel making started, steel fabrication companies made investments to meet the growing demand of the construction sector. SAFINTRA, a leading steel fabricator operating in east and southern Africa, came to Zambia in 2005 by acquiring a Zambian roofing company. Procuring galvanized and colour coated steel sheets from its manufacturing base outside Zambia, it processes them into corrugated steel sheets for roofing to meet customers' demand in Lusaka and the Copperbelt. There are over 30 similar cold roll-forming makers of galvanized sheets in Zambia, and several of them are with a similar size of operation as SAFINTRA.

MM Integrated Steel Mills (MMI) from Tanzania went one step further. It set up a cold rolling mill followed by a continuous galvanizing line. Importing hot rolled coils (sheets) from India, it commenced both cold rolling and continuous galvanizing operations for flat products in 2011. Under hard competition with Chinese and South African makers, it supplies its corrugated steel sheets to the construction sector directly. For further value addition, it plans to introduce a colour coating process in its manufacturing lines. MMI currently relies on imported goods for all key materials and spare parts, including zinc ingot. Like other steel makers and steel fabrication companies, future operations depend on how much of the materials and spare parts can be domestically procured to reduce costs.

Among many growing sectors, transportation and agriculture sectors are noted in connection with steel fabrication. AGROFUEL is a transportation company with a large fleet of trucks and trailers operating across borders. It acquired a division of the state-owned engineering products company and started making truck trailers since 2004. The expertise acquired in this process helps the company meet the requirements for constructing large steel structures for mining companies. SARO AGRO is a farm machinery manufacturing and service company. Importing major components like engines, indicators and key equipment, it is assembling all kinds of farm machines to meet the demands of all types of farmers. It provides maintenance and repair services for products sold through its channel. Both companies are continuously facing an absolute lack of skilled workers in the expansion of their business. They can rely on expats' assistance in only limited occasions due to the nature of business and competition with overseas manufacturers. Both companies are also struggling against the old regime of import duties to reduce their manufacturing cost. For example, tyres are still protected by import duties long after all tyre makers retreated from Zambia. The import duties need to be streamlined to provide a fair competitive ground for steel fabrication companies.

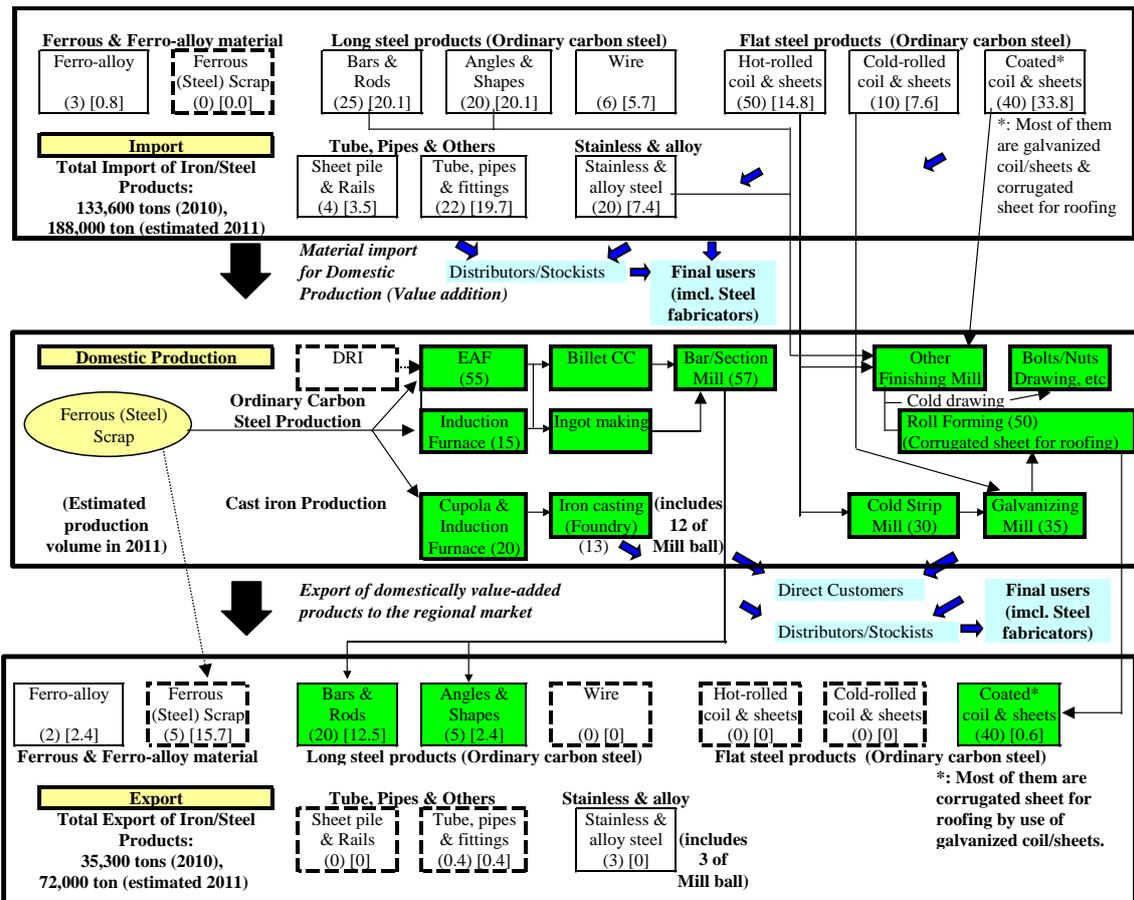
Because of large copper mining activities, cast iron manufacturers were clustered in the Copperbelt, supplying mill balls and spare parts to the copper mines. After the adoption of the economic liberalization policy in 1991, they faced severe competition from imported products from South Africa, China and India. The share of mill ball supply fell to a third of the total mill ball consumption at mines in 2011. For their survival, they are either upgrading the quality of products like forged mill balls or less relying on mill ball production by capturing new demand at mines and for other sectors. The leading company is SCAW, producing a third of the domestic supply of mill

balls⁶.

The material flow of the iron and steel sector is presented in Figure 2. The overall contribution of the iron and steel sector is estimated to be around 0.3% of GDP. Around 6,000 employees are estimated to work directly in this sector. It is by far the largest segment in the engineering products sector⁷. If industries serving the sector are included, the economic effect of the iron and steel sector would be of a much larger magnitude.

Figure 2: Material Flow of Iron and Steel Products

(Figures in 1,000 tons, Year (2011), [2010])



Source: JICA Experts

3. Copper Fabrication Sector

In 2011, Zambia produced 676,000 tons of copper⁸, out of which 640,000 tons was exported in the form of cathode and blister, and the volume processed further at domestic market is limited only to around 33,000 tons, less than 5% of the total copper production. Metal Fabricators of Zambia Limited (ZAMEFA), a leading cable and wire company operating in southern Africa, had

⁶ SCAW was founded by Anglo American in 1960 to serve the mining company. It was nationalized in 70's and privatized in mid-90's. The current owner is the private fund based in South Africa.

⁷ The share of the iron and steel sector is estimated to account for over 2% of the manufacturing sector.

⁸ All figures are expressed in net copper ton, otherwise defined.

been the only domestic user of copper cathode produced in Zambia until ZALCO Limited, a local scrap metal collector and manufacturer of copper products, started production of copper rod in 2011. ZAMEFA was established in 1968 as a state-owned enterprise and is now 75% owned by General Cable, a world leading cable and wire company. ZAMEFA is processing cathode into rod and further into cable and wire, mainly exporting its products to the regional markets. ZAMEFA is competing with major cable and wire companies from China, India and South Africa for large contracts of Zambia Electricity Supply Corporation Limited (ZESCO), mining and construction companies. In the domestic market for the general public, ZAMEFA's sales are being hampered by imported sub-standard products, as it is difficult for non-professionals to judge their product quality from their appearance.

There have been several cable and wire manufacturing companies emerging in Zambia over the last couple of years. ZALCO started producing copper wires for domestic markets, using initially scrap copper collected by its channel of Central Recycling and subsequently procuring copper cathode from mining companies. There are a few other small companies manufacturing only cables and wires in Zambia. Procuring copper rod from ZALCO, they are supplying products to domestic markets for construction uses.

El Sewedy, a leading cable and wire company in Egypt, invested in transformer manufacturing by establishing El Sewedy Electric Zambia Limited in 2009⁹. Supplying Zambian made transformers to the regional markets as well as the domestic market, El Sewedy has been rapidly expanding business, based in Ndola. The company still imports all its major raw material, copper sheets, since Zambia does not have a copper sheet production facility. Zambia's primary copper processing capacity is limited to copper rod facilities. Zambia does not have copper tube production facilities, either. There is neither copper alloy manufacturing nor alloy material production like zinc ingot for brass making in Zambia. Other than a small volume of manufacturing using scrap metals at foundries, all copper foundry and copper alloy products are imported.

It is estimated that around 1,800 tons of copper scrap is collected and recycled in Zambia annually at present. Central Recycling collects around 900 tons, which is all processed at the ZALCO's plant in Kabwe. The balance is handled by other recycle dealers. Copper scrap is an important material for foundry companies, which process copper alloy materials for mining companies and construction sectors. Some of copper bars and alloys produced there are exported to South Africa. An export ban has been in place for copper scrap since 2007.

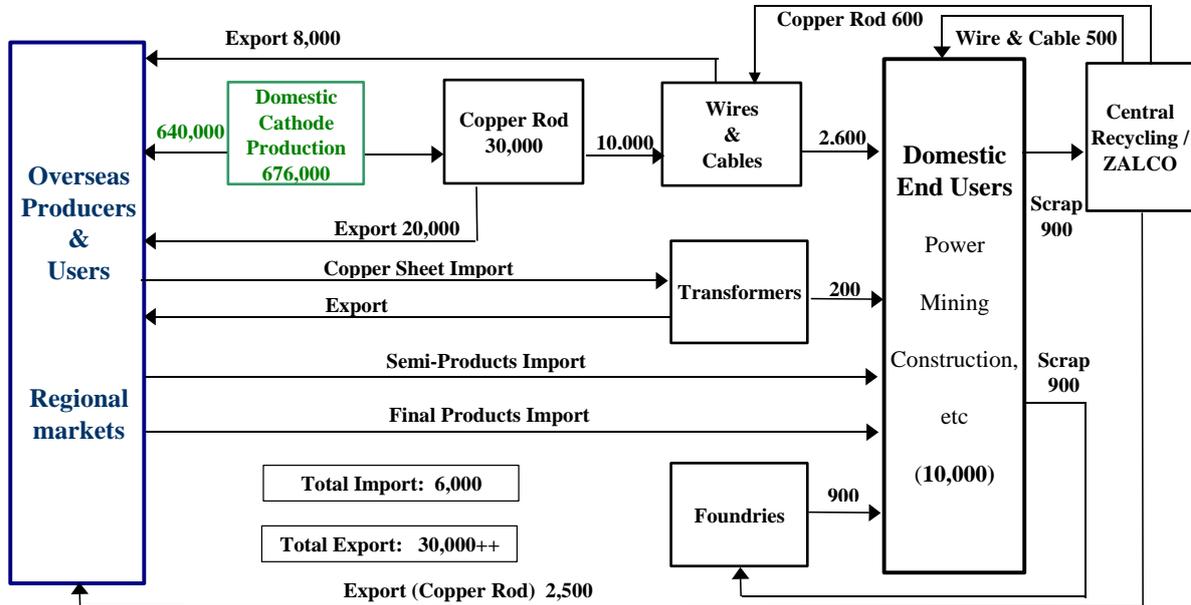
The total consumption of copper for Zambia is estimated to be around 10,000 tons in 2011¹⁰. Copper cable and wire account for around 70% of the total consumption, out of which over 40% is sourced from domestic manufacturers. Domestic foundry fabricators produce various types of copper and copper alloy products classified as others in Figure 4, using scrap metals as raw materials. The volume supplied by them is limited to less than 10% of the total consumption.

⁹ El Sewedy has 60% of El Sewedy Electric Zambia's total shares and the remaining 40% is owned by ZESCO.

¹⁰ There is no statistics on copper consumption in Zambia at present. Figures presented here are estimated based on the pattern of consumption of comparable countries and discussions with copper fabrication companies in Zambia.

Copper sheet and tube are all imported. The overall imported products are estimated to account for around 60% of the total copper consumption in Zambia.

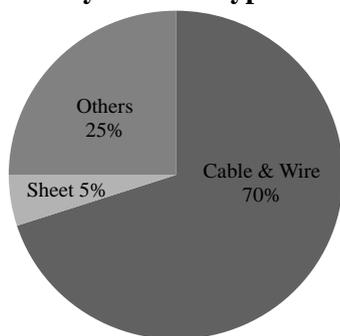
Figure 3: Material Flow of Copper in Zambia



Note: All Figures are in metric tons.
Source: JICA Experts

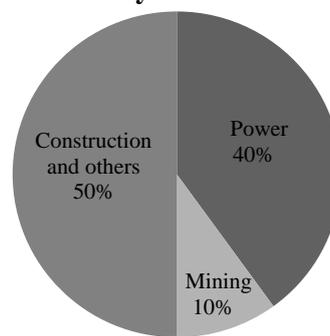
Major users of copper products are the power, mining and construction sectors. As shown in Figure 5, the share of each sector in the current Zambian market is estimated at around 40% for power sectors and 10% for mining sector and the remaining for construction sector and others. The overall contribution of the copper fabrication sector is estimated to be less than 0.1% to GDP. Around 1,000 employees are working directly in this sector.

Figure 4: Zambian Copper Consumption by Product Types



Source: JICA Experts

Figure 5: Zambian Copper Consumption by Sector



III. SWOT Analysis

1. Target Sectors

The current status and prospect of the target sectors are analysed in this section by using the framework of SWOT analysis. The target sectors' strengths and weaknesses are different, depending upon who they are competing against. The features of the target sectors are focused in two different groups of competitors: large companies from large exporting countries like South Africa, China and India, and neighbouring countries. The first group is exporters to Zambia and their competitive ground is the domestic market. The second group is importers of Zambian products and their competitive ground is the market of each neighbouring country.

Table 3: SWOT (vs. South Africa, China, India, etc)

Strength	Weakness
<ul style="list-style-type: none">- Existing leading companies- Endowment of natural resources- High transportation cost¹¹	<ul style="list-style-type: none">- Lack of skilled workers- Lack of supporting industries- High manufacturing cost
Opportunity	Threat
<ul style="list-style-type: none">- Growing domestic market- Growing regional market	<ul style="list-style-type: none">- Aggressive exporting behaviours by companies from large exporting countries- Environmental degradation

Compared with the first group countries, the target sectors in Zambia are facing many weaknesses. Zambia is far from having a sufficient body of mechanical, electrical, metallurgical and all kinds of specialist engineers. New manufacturing companies had to import machinery and equipment from those competing countries. In addition, their operations are still supported by a substantial number of expats coming together with such machinery and equipment. There is not a sufficient number of supporting industries to supply quality materials and spare parts. Therefore, new manufacturing ventures heavily rely on imports of materials, sub-materials, spare parts, and all kinds of inputs to keep their operations going. This situation makes the manufacturing cost high in Zambia.

The current weakness of high manufacturing cost in Zambia can be offset by the advantage of the landlocked country situation, which causes exporting companies to bear high transportation cost. If a trailer is chartered from the seaport of Durban, South Africa, to Lusaka, it costs around US\$10,000. This transportation costs add on \$200 to \$300 to a ton of steel products for exporting companies from such countries as China, India and South Africa. Zambia is endowed with rich natural resources like iron ore, coal and copper. Rich water resources of the Zambezi and Kafue Rivers provide sources of hydropower for industrial activities. Even though Zambia is facing the weakness of high manufacturing cost, new ventures can be challenged to grow dynamically by utilizing the advantage of being a landlocked country with rich natural resources.

¹¹ High transportation cost is usually seen as a "weakness;" however, when the production capacity is established inside the landlocked country, high transportation cost becomes a "strength" against competitors from abroad, which is described below.

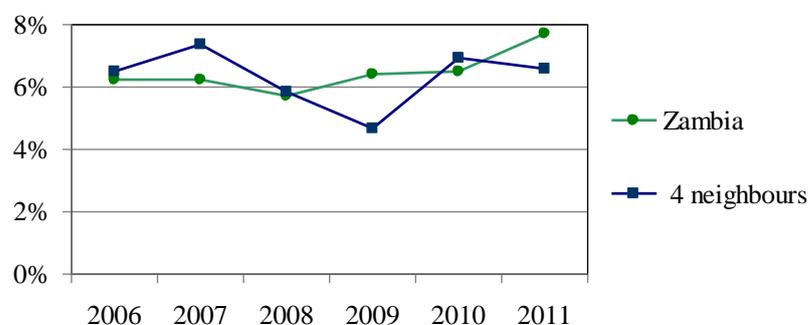
To those already operating in Zambia, there is a huge opportunity for further growth since they are located in the middle of growing markets. Zambia has the population of around 13 million with GDP of \$17 billion. This market may be small for many manufacturing companies under the competitive situation of many imported products. The size of the economy of the four neighbouring countries, i.e. DRC, Malawi, Mozambique and Zimbabwe,¹² is 120 million people with the combined GDP of \$29 billion. If those markets are included as target markets for Zambian manufacturers, the size of the market increases over ten times in terms of population and almost 3 times in GDP. If Angola and Tanzania are included, it expands to 15 times in population and 9 times in terms of GDP¹³. By including these regional markets, Zambian manufacturers can target for a large market of 197 million people with the combined GDP of \$154 billion.

Table 4: Population and GDP of Neighbouring Countries (2010)

	Population (million)	GDP (US\$ billion)
Zambia	13	17
4 countries total	120	29
DRC	68	13
Malawi	16	5
Mozambique	23	10
Zimbabwe	13	2
6 countries total	184	137
Angola	19	84
Tanzania	45	24
Zambia + 6 countries	197	154

Furthermore, these markets are in the middle of rapid growth. From 2006 to 2010, Zambia's GDP grew at an average rate of 6.2%, and the combined GDP of four neighbours (including that of Zimbabwe, a country that had a negative growth due to domestic unrest) also grew at average annual rate of 6.2%. The rapid growth of the region including Zimbabwe is expected to continue in upcoming years. Opportunities to Zambia also mean opportunities to its competitors. As the markets are growing, competitors will also focus on the markets of Zambian manufacturers to seize the opportunity. Even before the markets reaching such size, those competitors may change their strategy and take aggressive approaches to the markets if their main markets slow down due to various reasons including economic slowdown.

Figure 6: GDP Growth of Zambia and Neighbours



Source: CSO and EIU

¹² They are the neighbouring countries whose per capita income is lower than that of Zambia.

¹³ Here, Botswana and Namibia are not included since they have been in a customs union with South Africa since 1969.

The opportunities can be captured by Zambian manufacturers only if they continue sustainable operations by complying with safety and environmental standards. Most manufacturers are young in Zambia. They are currently learning safe and environmentally friendly practices through their operations. Without their continued efforts, they will face difficulties in continuing operations due to these constraints. It is imperative that effective monitoring for all manufacturers be installed and that they be made aware of the importance of complying with the standards again. Those manufacturers need to be assisted when they face the difficulties in compliance.

The competitive position and opportunity of Zambia in comparison with its neighbouring countries is summarized below in Table 5, using the framework of SWOT analysis. Since independence, Zambia has never engaged in a war with other countries or entered into a civil war. Zambia has been enjoying a multi-party political system and has completed a democratic presidential election six times peacefully. The government administration has just changed from the Movement for Multiparty Democracy (MMD) to the Patriotic Front (PF) in September 2011. Although the country had a difficult time economically during the 80's and 90's when the public sector driven economy stopped providing incentives and stimulus to the economy, the Zambian economy regained the power to grow in 2005, and has been experiencing rapid growth. This stable political and economic environment is an invaluable asset to the Zambian economy. Many foreign investors chose Zambia as their investment destination because of this asset.

Table 5: SWOT (vs. Neighbouring Countries)

Strength	Weakness
<ul style="list-style-type: none"> - Stable political and economic environment - Existing leading companies and existing production base - No major competitors in the region 	<ul style="list-style-type: none"> - Landlocked without seaport - High manufacturing cost
Opportunity	Threat
<ul style="list-style-type: none"> - Regional base for manufacturing and marketing 	<ul style="list-style-type: none"> - Policy reforms of neighbouring countries for pro-competition and pro-foreign investors

In this favourable business environment, several new companies have emerged dynamically while the existing companies have grown. The existence of leading companies and production base is counted as a strength when the competitive position of the target sectors is considered. Luckily, there are no competitive manufacturers in the target sectors in Zambia's neighbouring countries yet. This strength has been more than offsetting the unique feature of a landlocked country without a seaport, which causes high manufacturing cost. All neighbouring countries are sharing the weaknesses of Zambia as described in comparison with the exporters to Zambia.

If Zambia continues to successfully expand its manufacturing base, it can be the regional base of manufacturing and marketing engineering products. Once it can establish the critical mass of manufacturing and marketing base, this can be the real strength in terms of competition with the neighbouring countries. This favourable scenario can be achieved only with incessant efforts to expand the manufacturing base at home. It is reminded here once again that Zambia is living in a competitive world. If it falters, other neighbouring economies will take Zambia's position in the

regional markets. In this regard, the region has good lessons to be learned from the economic management of Zimbabwe.

2. Iron and Steel Sector

Five years ago, Zambia almost totally depended on imported steel products from South Africa. But now, a half of domestic apparent steel consumption is supplied by domestic producers. Emerging companies are energetically working towards further growth, but they are facing many challenges to expand their operations. Their lines of steel products are still limited so that large contractors do not bother to find the small volume of limited type of products from domestic manufacturers, even though they produce quality products. Domestic producers are far from establishing their brand recognition in the regional markets.

Table 6: SWOT for Iron and Steel Sector

Strength	Weakness
<ul style="list-style-type: none"> - Rich deposit of iron ore and coal - High transportation cost for value of steel products 	<ul style="list-style-type: none"> - No recognition of quality products - Limited types of product lines - No metal production of ferroalloy and galvanization (Zinc ingot) - No recognized accrediting agency - Remaining old regime of import duties
Opportunity	Threat
<ul style="list-style-type: none"> - Increasing demands - Big room for import substitution - DRI iron making 	<ul style="list-style-type: none"> - Limited availability of steel scrap - New steel project in Zimbabwe - New DRI project in Tanzania

The certification issued by SABS functions as the standard proves in the regional markets that products are in compliance with the quality standard. UMCIL has already obtained this certificate for its manufacturing process, but cannot meet the more stringent batch by batch certification which is required by certain customers who want use such steel products for structures. Zambia has the Zambian Bureau of Standards (ZABS), but it does not have a metallurgy section. Therefore, if an application is filed for the certification of steel products, it needs to outsource testing and verification. ZABS's resources are allocated to the different areas. Even if ZABS can issue the certificate, the markets including Zambian domestic market do not recognize it as the necessary certification.

There are many weaknesses that the steel making and fabrication sector has to overcome. Since the sector is young, there are almost no supporting industries supplying sub-materials and spare parts necessary for the sector. Consequently, many materials and spare parts are being imported at a high cost by bearing high transportation cost. Zambia used to produce zinc ingot in Kabwe, but the production facility was closed down a long time ago due to environmental reasons. Zinc is an important material to companies like MMI. There is good reason to manufacture it domestically, if a project that is technically and financially feasible is identified. Vehicle and machinery assembling companies like AGROFUEL and SARO AGRO are importing both a large quantity of and wide varieties of parts and components for their production. The existing import duties regime is old,

retaining unnecessary protection still in certain areas such as tyres. The current structure of duties is not designed to encourage vehicle and machinery assemblers to expand their domestic production, sales and exports.

Despite many weaknesses and obstacles, steel making and fabrication companies are growing because they are operating in the growing markets. The domestic steel production is estimated to account for 50% of the apparent steel consumption. With rapidly demands for steel products in Zambia and the region, there are huge opportunities for import substitution and for expanding exports to the regional markets as domestic manufacturers upgrade production and increase lines of products, particularly in long products for construction use and commodity-grade flat products.

Steel scrap is currently the only source of raw material for steel making domestically available in Zambia. As steel production increases, steel makers are facing difficulty in finding sufficient volume of scrap from the domestic market. The situation has been aggravating recently. Some steel mills have had to shut down their operations for some time due to the constraint of the availability of scrap. The volume of domestic steel scrap available domestically is not sufficient to sustain the increasing production of steel making in Zambia. Judging from the growing demand for steel products in Zambia, it is most likely that the unavailability of sufficient steel scrap supply will worsen in upcoming years. Foreseeing this situation, UMCIL plans to start sponge iron (DRI) production from its own iron ore deposit through a coal-based DRI technology.

The DRI technology is suited to a country like Zambia of 13 million people with rich deposits of iron ores and coal. This technology enables iron making on a smaller scale without requiring a huge investment in a blast furnace. The iron making project of UMCIL will become an answer to solve its constraint of raw material of steel scrap. Iron making projects near iron ore mine sites, if possible, may provide raw materials to other steel makers, and be another important exporting sector to the regional markets. As the economy grows, it is a natural step to produce steel by utilizing scrap steel collected in domestic market. The neighbouring countries, other than the ones with seaports and resources which may attract blast furnace investments from foreign investors, are facing similar problems. Therefore, if Zambia succeeds in establishing large capacities of DRI production, DRI will become a strategically important export item to the region.

It is reported that ESSAR, a large Indian steel maker, is interested in the rehabilitation project of steel plant in Zimbabwe. It is also reported that a DRI project is under consideration in Tanzania. They are still in early planning stages, and thus may not be an immediate threat to Zambian steel manufacturing. Anticipating the competition to come from the neighbouring countries in the future, Zambia needs to cement a better position to outcompete and capture further business opportunities.

As shown in Table 7, the steel demand in Zambia is expected to increase from around 200,000 tons in 2011 to around 300,000 tons in 2016 at the average annual growth of 12%. In the regional market, the demand is estimated to increase from 1.6 million tons in 2011 to 2.2 million tons in 2016. The total market size including Zambia is expected to reach 2.5 million tons in 2016, which is over 8 times of the Zambian market.

Table 7: Projected Steel Consumption in Zambia and the Region (Finished Steel Base)

	Total Consumption			Per Capita Consumption	
	2011 (1,000 t)	2016 (1,000 t)	% increase (annual)	2011 (kg/person)	2016 (kg/person)
Zambia	199	302	12.0%	14.7	19.2
4 Neighbours*	917	1,154	4.7%	7.7	8.5
6 Neighbours**	1,644	2,195	6.0%	8.3	9.6
Total	1,843	2,497	6.3%	9.3	10.9

* DRC, Malawi, Mozambique, Zimbabwe

** 4 neighbours + Angola, Tanzania

Source: JICA Experts

3. Copper Fabrication Sector

Zambia has been trying to add more value to copper produced domestically since independence. ZAMEFA is the symbol of that effort. Having endured the difficult time of economy, it has been accumulating experience and expertise to produce quality cables and wires for the regional markets. The businesses of copper mining, smelting and refining, and of copper fabrication are different in nature. The former creates a high value of copper cathode that can cross borders and oceans to every corner of the international market, while copper fabrication does not create such high value addition and thus has to have a market large enough to be served nearby. The current situation and history of the copper mining industry and copper fabrication manufacturing in Zambia justify that statement.

Yet ZAMEFA is still here in Zambia, expanding production capacity and supplying products largely to the regional markets. Its copper rod facility is the only one in southern Africa other than a facility in South Africa. There is no doubt that this position provides a competitive advantage to Zambian cable and wire manufacturing business. This will solidify the base of manufacturing and marketing cables and wires in the regional markets as it expands production.

Table 8: SWOT for Copper Fabrication

Strength	Weakness
<ul style="list-style-type: none"> - Presence of leading companies: ZAMEFA and El Sewedy - Existing copper rod production facility - Existing copper cathode production base 	<ul style="list-style-type: none"> - Small market to maximize scale of economy - Only copper rod produced, no sheet - No metals produced for copper alloy
Opportunity	Threat
<ul style="list-style-type: none"> - Preemptive investment to create entry barrier to neighbouring countries 	<ul style="list-style-type: none"> - Construction of copper sheet and tube copper alloy facilities in the neighbouring countries - Further penetration of sub-standard products

ZAMEFA is competing with large cable and wire companies in the world for large procurement requirements of ZESCO and mining companies, and with South African companies for large construction projects of, for example, shopping mall. In small lot businesses, ZAMEFA's domestic sales are being hampered by increasing imports of sub-standard products. For cables and wires it is

difficult for non-professionals to tell differences in quality from product appearance. There is a tendency to purchase cheaper products, the quality of which may manifest in a sudden breakage after a short period of time or in an incident leading, for example, to a devastating fire. The situation needs to be corrected for the benefits of the general public.

El Sewedy chose Zambia as its manufacturing base for southern Africa, and constructed a transformer manufacturing facility in Ndola. It has been growing rapidly, serving growing demand in Zambia as well as in the region. El Sewedy is also looking at the regional market for possible sales of packaging substation by utilizing its engineering expertise acquired in North Africa and the Middle East. For further expansion, El Sewedy has to reduce its manufacturing cost. It is still importing a large quantity of copper sheet from the Middle East since the initial plan to set up a copper sheet manufacturing facility in Ndola has not been materialized. Continuation of the inexistence of copper sheet production facility will make its manufacturing cost high and suppress profits that might have been used for other investments. The Zambian market alone may still be too small to accommodate a copper sheet production facility, but the size of the regional markets may justify such a project. If it is realized, it will help reduce the manufacturing cost of El Sewedy, and may create some other fabrication businesses based on copper sheet produced in Zambia. If established, this will create another entry barrier to copper fabrication businesses in the regional markets.

After the export ban was put in place, copper scrap has been well recycled in Zambia. ZALCO started manufacturing copper products from copper scrap. The export ban should continue from the perspectives of better utilization of resources and the nurturing of copper fabrication businesses inside the country. Most copper scrap collected by scrap dealers other than Central Recycling is utilized as important materials for copper alloy manufacturing at foundry companies. Copper and copper alloy products manufactured by foundry companies are supplied to mining enterprises, municipalities and construction businesses in various forms. Products are manufactured mainly for small lot orders, with some companies taking orders of one unit and, making molds for those. This approach to business provides a good reason for existence of many foundry companies in the Copperbelt. Those foundries are accumulating expertise and experience, which may be connected to emerging steel and copper fabrication companies which are too busy to look into the possibility of manufacturing spare parts at home.

Basically, Zambia is not producing the metals necessary for copper alloy manufacturing. Zinc is a good example. It is a material indispensable for brass manufacturing. The zinc project mentioned in the previous section may also provide a new opportunity for copper fabrication businesses. Unlike the steel products, copper fabrication products do not have a large untapped domestic market. Copper fabrication needs new markets for further growth. Nobody at this stage imagines that copper tube companies like MAKSAAL, a quality copper and copper alloy tube producer in South Africa, would make an investment in Zambia¹⁴ since the market is fragmented and is

¹⁴ MAKSAAL is a quality producer of copper and copper alloy tube in South Africa, which is well recognized by Zambian cooling system service companies. The case is cited as an example. This report does not confirm any plan or intention of the company to invest in Zambia.

believed to be too small to host copper tube manufacturing. Zambian users of its products for cooling and water systems, however, will benefit from an investment like that. This type of investment in new markets will further expand and diversify the copper fabrication sector. The possibility of new markets should be studied to solidify the competitive advantage of copper fabrication in Zambia for the neighbouring countries.

Table 9 shows the size of copper consumption for Zambia and the neighbouring countries. All the countries including Zambia are in the middle of a high growth stage of copper consumption¹⁵. Assuming that per capita copper consumption will increase as per capita income increases, the volume of copper consumption for Zambia and the neighbouring countries is estimated over the next five years. The volume of copper consumption in Zambia is estimated to increase from 10,000 tons in 2011 to 12,000 tons in 2016. The size of Zambian market alone is still small to justify the capacity expansion of ZAMEFA and the set-up of a new copper sheet production facility. However, if those producers look at the regional market consisting of DRC, Malawi, Mozambique, Zimbabwe, Angola and Tanzania, they can find good reasons to do so. The regional market including the Zambian market is estimated at 95,000 tons in 2011. It will increase to 113,000 tons in the next five years. The regional markets will provide copper fabrication companies with increasing business opportunities.

Table 9: Projected Copper Consumption

(Unit: 1,000 tons / year)

	2011	2016
Zambia	10	12
4 Neighbours*	37	43
6 Neighbours**	85	102
Zambia + 6 neighbours	95	113

* DRC, Malawi, Mozambique, Zimbabwe

** 4 neighbours + Angola, Tanzania

Source: JICA Experts

¹⁵ It is generally observed that per capita consumption of copper will constantly increase until per capita income (GDP per capita) reaches a certain level (\$7,000-\$10,000).

IV. Strategy

1. Objectives and Timeframe

The overall objective of the industry strategy for engineering products is to expand the competitive industrial base of engineering products by increasing the number of exporting companies in the target sectors and by expanding their production level. The strategy clearly envisages that Zambia will solidify the position of manufacturing and marketing engineering products in the region, and will become ***“the hub of manufacturing in the region”***.

In the course of implementing this strategy, the number of employees will increase particularly in the iron and steel sector. That will increase as a result of the expansion of the activities, not other way around. The target companies are expected to make efforts to minimize employment to stay competitive. More employment will be generated in both newly established exporting companies and local companies, including MSMEs, serving those exporting companies. This strategy envisages that the increasing manufacturing activities of the exporting companies will bring large spill-over effects to those related supply chains.

In order to implement this strategy successfully, the government will improve and prepare the business environment where the target sectors will further grow. The government will also take proactive steps to attract both foreign investors into Zambia and domestic entrepreneurs to expand and diversify the manufacturing base of the target sectors.

The target sectors are the iron and steel sector and the copper fabrication sector. All important information resides with companies. The private sector, or companies, is the basic unit to realize the strategy. The primary targets are companies exporting products in the target sectors, and those that are capable of exporting their products and planning to do so in a few years. The secondary targets are companies supplying raw materials, spare parts and other relevant services to the primary target companies. Scrap metal processing companies like Central Recycling/ZALCO are included as target companies due to the reasons provided before. Furthermore, those companies that supply their products to the secondary target companies can be added as the tertiary targets when the strategy implementation unit of the government finds it appropriate.

The key words are “private sector dynamism” and “competition”. Exporting companies are exposed to competition and thus care about quality and marketability of products and operational efficiency. Those companies who supply materials and spare parts also need to follow the same standard. An increasing number of those companies will strengthen the competitive position of Zambia in the target sectors. Dynamism in the private sector is and will be a key driving force for the industrial development, and hence the strategy should seek for simulating and increasing the private sector dynamism.

The timeframe of the strategy is five years. A performance review will be conducted annually. In the third year, a mid-term review will be held to review the performance up to the half-way point, and revise strategy and action plans, if necessary. For the first half of the first year, activities in

connection with the target companies will mainly concentrate on establishing contact with the existing exporting companies, building trust with them and understanding their situation and future plans.

At the end of the first half year, selected target indicators will be decided to measure the performance of overall objectives. The numbers of exporting companies and export supporting companies, the number of FDIs, the scales of capacity expansion and localization of raw materials and spare parts are examples of such indicators to be monitored. The continuous day-to-day efforts of visiting companies, building the network of those companies, receiving feedbacks and providing inputs to reforms for rules and regulations and policy formulation are the base of implementing and monitoring the strategy.

Table 10 shows how much the share of manufacturing sector will be to GDP under various scenarios of the growth rate of the manufacturing sector. Case 2 assumes that the manufacturing sector will grow at 10% per annum, around 1.7 times as much as the expected average growth rate of the Zambian economy (6%). This growth path will ensure the achievement of what is envisaged in the Vision 2030: the manufacturing sector share to GDP to reach 18% by the year 2030. It is believed that the target sectors have been expanding more than this rate over the last five years as indicated by the export growth of steel products. In the situation where many FDIs come to Zambia, many plants increase productions by 20% or above, and many companies plan to expand their production capacities, the continued growth of the target sectors at this pace over the next five years is considered feasible. The target sectors will become the important driving force to achieve the Vision 2030.

Table 10: Manufacturing Sector Share to GDP*

Assumed growth rate of Manufacturing Sector	Base	1st	2nd	3rd	4th	5th	-
	2011	2012	2013	2014	2015	2016	2030
Case 1: 8%	9%	9%	9%	10%	10%	10%	13%
Case 2: 10%	9%	9%	10%	10%	10%	11%	18%
Case 3: 12%	9%	10%	10%	11%	11%	12%	26%

* The GDP is assumed to grow at 6% per annum (Baseline scenario of VISION 2030).

Source: JICA Experts

2. Issues

Before the strategy can be formulated, the major issues surrounding the target sectors, which are discussed in the previous sections, are summarized below. Although there are many issues for the target sectors, these issues are considered as major hindrances for the target companies to be overcome in the five-year timeframe of the strategy.

- (1) Domestic sales are being hampered by sub-standard imported products.
- (2) Import duties charged for the goods not manufactured domestically (ex. tyres) cause high manufacturing costs.
- (3) Major contractors require the certification of SABS for procurement in Zambia as well as abroad.

- (4) There is no clear enforcement process for local manufacturers to comply with national quality standards.
- (5) Exporting companies are facing many obstacles in basic infrastructures to expand production activities. Most of them cannot be resolved by themselves. Yet they have no venue through which they address these issues to the government.
- (6) Many exporting companies need local suppliers. Yet they are too busy to find what is possibly available locally and to let local suppliers know what is required for their operations.
- (7) Apart from the remaining foundry cluster in the Copperbelt, industry clusters have not yet been developed to support exporting companies and to create synergy effects which will help future exporting companies develop.
- (8) Almost all sub-materials and spare parts are imported at a high cost.
- (9) Some key materials such as copper sheet, zinc ingot, and ferrous raw materials including DRI are missing in the local supply chains.
- (10) Safety and environmental standards are not necessarily observed in production as stipulated by rules and regulations.
- (11) For the further growth of the existing exporting companies, new markets have to be developed
- (12) An absolute lack of skilled and semi-skilled workers is ubiquitous.

3. Strategy

Based upon understanding of the major issues above, the strategy is formulated to strengthen and expand the manufacturing base of engineering products, and to cement the competitive position of Zambia in manufacturing and marketing engineering products in the regional markets. The strategy consists of the following components:

- (1) Create a level playing field;
- (2) Ensure quality products;
- (3) Accelerate the increase of production capacities of the existing exporting companies;
- (4) Nurture local supporting industries serving for exporting companies;
- (5) Improve realization of FDIs in target segments;
- (6) Enforce safety and environmental safeguard standards;
- (7) Create new markets; and
- (8) Create a culture of training.

(1) Create a level playing field

The government will provide a fair competitive ground for domestic manufacturers to compete with imported goods in the domestic market. Two major issues are identified to be resolved: sub-standard products and unnecessary import duties. Sub-standard products are currently flooding in the market since there is no strict law restricting importation of such products. Certain strict laws to require importers to ensure the quality of products before importation will be introduced. Some domestic manufacturers, for which the import duties were charged to protect, have not been in

operation for a long time. This old regime of import duties will be streamlined in order not to be a hindrance for competition. The government will charge tax from profit of manufacturers not from importation of necessary materials for manufacturing.

(2) Ensure quality products

The government will establish a system for ensuring the quality standards of domestic products and to help manufacturers establish a brand image in the regional markets. The national quality standards for engineering products will be pronounced to all domestic manufacturers while certain law enforcement system will be introduced to ensure compliance. In the assistance of brand image creation, the accrediting system will be introduced to enable SABS's certification to be obtained in Zambia.

(3) Accelerate the increase of production capacities of the existing exporting companies

The government will eliminate the constraints in the business environment for the existing exporting companies to expand their production and increase sales at home as well as abroad. Soft constraints, for which a substantial budget may not be required to change, will be eliminated as soon as possible through inter-departmental and ministerial coordination. Constraints relating to physical infrastructure will be prioritized in terms of economic benefits, and development projects will be implemented in accordance with the identified order of priorities

(4) Nurture local supporting industries serving for exporting companies

The government will compile the needs of the target sectors as well as related industries, disseminate business information and help build the business network. The government will provide the venue for exporting companies and local supporting industries to exchange business information. As the business network expands, the government will help provide the location of manufacturing (like Multi Facility Economic Zones [MFEZ]) and promote investments to create industry clusters.

(5) Improve realization of FDIs in target segments

The government will help find partners for investments in the identified important missing links in supply chains. Currently the following segments are identified as candidates: copper sheet, zinc ingot and DRI production facilities. The government will help those investments to be realized as soon as possible. The government will continue to identify such strategic investments in the target sectors and promote investments. Foreign investors are highlighted in this strategy component since new manufacturing processes and technologies are expected to come mainly from outside investments. This does not, however, exclude domestic entrepreneurs to invest in the strategic segments of the target sectors.

(6) Enforce safety and environmental safeguard standards

The government will review the current system of safety and environmental safeguards, and identify the reasons why the current system has not worked as envisaged. The government will set new procedures, and implement and monitor them so that safeguard policies will work.

(7) Create new markets

The Vision 2030 envisages that Zambians will live in a strong and dynamic middle-income industrial nation. That means Zambia will be an important venue for many consumer goods. From that perspective, the government will study the possibility of new markets for the target sectors and other sectors serving for them. The government will build a business environment for such future investments.

(8) Create a culture of training

The government will create a culture of training in the target sectors, which will be the backbone for increasing the number of engineers and skilled workers necessary to further expansion and development. For that purpose, the government in cooperation with industry associations will conduct a pilot project(s), which will train trainers of skilled workers and create a sustainable system, through which a culture of training will be implanted in the target sectors. A pilot project will focus the scope and the level of training and training trainers, which will be directly usable and transferable to the companies in need¹⁶. MCTI has been implementing a “Kaizen” program with JICA for various companies and institutions over the last few years. The government will use this program to help establish the culture of training.

4. Other Issues for Medium- and Long-Term

Other major issues to be tackled and solved in the both medium- and long-terms in order for the country to promote the manufacturing sector are described below.

(1) Prepare reliable industrial statistics

Currently there is no reliable, integrated industrial statistics in such form as “industrial census”. MCTI and ZDA are unable to effectively assess and analyse industrial data, which policy makers in many other countries can normally conduct. It is vital for policy makers and implementation agencies to access and analyse updated information of the industry such as production volume, shipment value and gross value added in each major category of manufacturing sub-sectors. A national project for collecting industrial data and statistics should be designed and implemented with the drafting and enacting the law relating to the collection and use of those statistics.

(2) Enhance culture of effective management and quality assurance

Zambian companies need to develop a system and procedures for more effective management, particularly in quality assurance. Obtaining ISO 9001 certification is one example for such an effort. In order for more exporting companies and local suppliers to move forwards, a culture of effective management and quality assurance has to be developed. Establishment of an industrial organisation such as “Zambia Management Association”, which provides series of management training to company managers, may be one option to be sought.¹⁷ ZABS may be able to encourage more

¹⁶ General skill training continues to be handled and should be strengthened by the existing training systems of various national vocational training institutes, particularly in such technological areas as metallurgy and mechanical engineering.

¹⁷ When the Kaizen Institute of Zambia (KIZ) that is already registered and expected to implement ISO 9000/14000 consultation commences its effective operations, this issue may be covered and implemented by KIZ. See Action 8-(ii).

companies to obtain ISO 9001 by embarking continuous training on the issue. More importantly, stronger mind for “entrepreneurship” among Zambian investors and managers are to be constantly encouraged and promoted through enhanced higher education system and efforts by industry organisations.

V. Implementation and Monitoring

1. Action Plans and Implementation Schedule

In order to implement the strategy and to monitor its progress effectively, action plans and an implementation schedule are set for each component of the strategy.

(1) Create a level playing field

(i) Introduce SGS type system

Société Générale de Surveillance (SGS) is an internationally-respected multinational quality control company, headquartered in Switzerland. One of its main services is pre-shipment inspection of traded goods at export points to prevent sub-standard items from disrupting markets. South Africa and Kenya have already adopted such SGS-type quality inspection services for their imported goods. For the first quarter of Year 1, MCTI and the Zambia Development Agency (ZDA) will solicit petitions from the private sector that are facing the issues of sub-standard products. Following the compiling of the petitions, ZABS will draft the law during the second quarter. MCTI and ZABS will cooperate to assist parliament to enact the law by the end of Year 1.

(ii) Streamline import duties

MCTI and ZDA will identify the areas for reform in the current import duties system by contacting relevant companies for the first quarter of Year 1. Based upon the findings, MCTI will draft the proposal for reforms by the end of the first half of Year 1. MCTI will assist the Ministry of Finance (MOF) to put into effect a streamlined import duties system by the end of Year 1. All the relevant government ministries and agencies will follow up the remaining issues to be resolved through the same process thereafter.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5			
		I	II	III	IV																
1. Create a level playing field.																					
(i) Introduce SGS type system.																					
1. Help compile petitions from private sector.	MCTI/ZDA	■																			
2. Draft the law(s).	ZABS		■																		
3. Enact the law(s).	MCTI/ZABS			■	■																
(ii) Streamline import duties.																					
1. Identify areas to be reformed.	MCTI/ZDA	■																			
2. Draft the proposal.	MCTI		■																		
3. Introduce the new system.	MOF/MCTI			■	■																
4. Follow up the remaining issues, repeat 1-3.	MCTI/ZDA/MOF					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

(2) Ensure quality products

(i) Introduce SABS certification into Zambia

The SABS certification is the certification required for sales of engineering products in southern Africa. If manufacturers supply their products to large projects, they are required to demonstrate their products are produced in line with SABS. This action plan is intended to invite the SABS function into Zambia only in the areas of engineering products. In order to implement this, MCTI

and ZABS will negotiate with SABS on the terms and conditions that the SABS function will be conducted in Zambia for the first half of Year 1. ZABS will form the office and allocate (or hire) staff for such a function by the end of Year 1. The SABS service will be provided in Year 2.

(ii) Strengthen national quality measures for domestically manufactured goods

MCTI and ZABS will review the existing national quality standards and the performance of local manufacturers in the target sectors for the first half of Year 1. Based upon the findings, ZABS will draft compliance rules for locally manufactured goods with an enforcement mechanism by the end of the third quarter of Year 1. ZABS will monitor the performance of manufacturers and of an enforcement mechanism over six months until the end of the first quarter of Year 2. MCTI and ZABS will review the new standards and rules and procedures, and reform procedures, if necessary, over six months until the end of the third quarter of Year 2. This review and reform process will be continued every third quarter thereafter.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5				
		I	II	III	IV																	
2. Ensure quality products.																						
(i) Introduce SABS certification into Zambia.																						
1. Negotiate and agree the framework with SABS.	MCTI/ZABS	█																				
2. Establish office and train staff.	ZABS		█																			
3. Provide service.	ZABS				█																	
(ii) Strengthen national quality measures for domestically manufactured goods.																						
1. Review the existing quality standards.	MCTI/ZABS	█																				
2. Draft compliance rules for national goods.	ZABS		█																			
3. Monitor the performance.	ZABS			█																		
4. Feedback issues and reform procedures.	MCTI/ZABS					█																

(3) Accelerate the increase of the production capacity of the existing exporting companies

(i) Establish contact with the target companies

MCTI and ZDA will select target companies in the first quarter. ZDA will assign those companies to its staff who will conduct regular visits. The discussions will be documented by ZDA. This series of actions will continue over the five-year period of the strategy. This process will be the base for implementing the strategy and should be considered highly important to the successful implementation since only by undergoing this process the government can identify the needs of the target sectors.

(ii) Set annual target and monitor

MCTI and ZDA will identify and evaluate the plans of the target companies, and set the annual targets of the implementation agencies (IAs) before the end of the first quarter. Then, MCTI and ZDA will evaluate the performance of IAs within the first quarter of the following year. Reasons for and background of the performance should be analysed and documented for the future use of IAs. This process will continue over the period of this strategy.

(iii) Eliminate soft constraints

MCTI and ZDA will identify constraints in government procedures, rules and regulation which are hindering business activities (soft constraints) over six months starting from the third quarter of Year 1. Based upon the findings, MCTI and ZDA will draft proposals to eliminate the soft constraints in the first quarter of Year 2. MCTI will implement changes in rules and regulations in accordance with the proposals over six months starting from the second quarter of Year 2. MCTI and ZDA will follow up these actions thereafter.

(iv) Prioritize physical infrastructure developments

MCTI and ZDA will identify priority infrastructure projects in terms of expanding exporting companies’ production over the second half of Year 1. Then, MCTI and ZDA will assess budget and feasibility for those priority projects over the first nine months of Year 2. MCTI will recommend priority projects to relevant ministries and agencies, and invite the private sector, if appropriate. This exercise will be conducted again in the second half of Year 4 and onwards.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5				
		I	II	III	IV																	
3. Accelerate the increase of the production capacity of the existing exporting companies.																						
(i) Establish contact with the target companies.																						
1. Select target companies.	MCTI/ZDA																					
2. Conduct regular visits.	ZDA																					
3. Accumulate companies info in documents.	ZDA																					
(ii) Set annual target and monitor.																						
1. Identify and evaluate company plans.	MCTI/ZDA																					
2. Set annual target.	MCTI/ZDA																					
3. Evaluate performance of IAs.	MCTI/ZDA																					
(iii) Eliminate soft constraints.																						
1. Identify soft constraints.	MCTI/ZDA																					
2. Draft proposals.	MCTI/ZDA																					
3. Implement changes in rules and regulations.	MCTI																					
4. Follow up the remaining issues, repeat 1-3.	MCTI/ZDA																					
(iv) Prioritize physical infrastructure development.																						
1. Identify priority infrastructure projects.	MCTI/ZDA																					
2. Assess budget and feasibility.	MCTI/ZDA																					
3. Recommend priority projects.	MCTI																					

(4) Nurture local supporting industries serving for exporting companies

(i) Disseminate information and build network

ZDA will find potential candidates in local supporting industries serving exporting companies over the first six months of Year 1. Over the same period, ZDA will identify the needs of exporting companies. MCTI and ZDA will conduct a workshop for exporting companies and local suppliers in the second and the fourth quarter of each year to disseminate information and build a business network among them.

(ii) Develop industry clusters

Reviewing the achievement of the strategy over the first one and a half year, and evaluating the status of the target companies, MCTI and ZDA will set a scenario for nurturing industry clusters over the second half of Year 2. Then, MCTI and ZDA will make it clear how MFEZs will be utilized for that purpose. ZDA will promote investments in the identified clusters in the identified locations.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5			
		I	II	III	IV																
4. Nurture local supporting industries serving for exporting companies.																					
(i) Disseminate information and build network.																					
1. Identify potential candidates.	ZDA	■	■																		
2. Identify the needs of exporting companies.	ZDA	■	■																		
3. Conduct workshops.	MCTI/ZDA			■	■																
(ii) Develop industry clusters.																					
1. Set a scenario of industry clusters.	MCTI/ZDA							■	■												
2. Position MFEZs in industry clusters.	MCTI/ZDA							■	■												
3. Promote investments in identified clusters.	ZDA									■	■	■	■	■	■	■	■	■	■	■	■

(5) Improve realization of FDIs in target segments

(i) Realize investment in copper sheet

ZDA will identify potential investors who are interested in copper sheet production in Zambia over the first year. ZDA will negotiate the terms and conditions for investment with candidate investors over the second year. ZDA will conclude the agreement with the investors in the first quarter of Year 3.

(ii) Realize investment in zinc ingot

ZDA will identify potential investors who are interested in zinc ingot production in Zambia over the first year. ZDA will negotiate the terms and conditions for investment with candidate investors over the second year. ZDA will conclude the agreement with the investors in the first quarter of Year 3.

(iii) Realize investment in DRI

ZDA will identify potential investors who are interested in iron making through the DRI technology in Zambia over the first year. ZDA will negotiate the terms and conditions for investment with candidate investors over the second year. ZDA will conclude the agreement with the investors in the first quarter of Year 3.

(iv) Find and approach more target investments

ZDA will identify new target investments over the second half of Year 2, and will find candidate investors for the new target investments in the following year. ZDA will negotiate and enter the terms and conditions for investments with the new investors by the end of Year 4. ZDA will start to search for new target investments in Year 5.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5			
		I	II	III	IV																
5. Improve realization of FDIs in target segments.																					
(i) Realize investment in copper sheet.																					
1. Identify foreign investors.	ZDA	■	■	■	■																
2. Negotiate terms of investment.	ZDA					■	■	■	■												
3. Enter into agreement.	ZDA									■											
(ii) Realize investment in zinc ingot.																					
1. Identify foreign investors.	ZDA	■	■	■	■																
2. Negotiate terms of investment.	ZDA					■	■	■	■												
3. Enter into agreement.	ZDA									■											
(iii) Realize investment in DRI.																					
1. Identify foreign investors.	ZDA	■	■	■	■																
2. Negotiate terms of investment.	ZDA					■	■	■	■												
3. Enter into agreement.	ZDA									■											
(iv) Find and approach more target investments.																					
1. Identify new target investments.	ZDA									■	■										
2. Identify foreign investors.	ZDA													■	■	■	■				
3. Negotiate and enter into the agreement.	ZDA																	■	■	■	■

(6) Enforce safety and environmental safeguard standards.

(i) Create a new implementation and monitoring system

MCTI will coordinate with the relevant government ministries and agencies, including ZDA, Ministries responsible for labour and environment, to identify the issues in the current system of implementation and monitoring of safety and environmental safeguard policies over the first half of Year 1. The Ministries responsible for labour and environment and other relevant government parties will draft new procedures for implementation and monitoring, which will include enforceable corrective measures by the end of third quarter of Year 1. MCTI will coordinate to obtain the consents for the new procedures from the relevant government parties by the end of Year 1. The relevant government parties will announce the new procedures to the target sectors in the first quarter of Year 2.

(ii) Implement the new procedures

MCTI will coordinate a meeting(s), in which MCTI, ZDA and other relevant ministries will explain the new procedures to the stakeholders over the first quarter of Year 2. Following a six months trial period in the second and third quarters of Year 2, ZDA and other relevant government parties will implement the new procedures, and will monitor and feed-back in Year 3 and onwards. Issues will be reviewed and reforms will be implemented, if necessary, during every first quarter of Year 3 and onwards.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5				
		I	II	III	IV																	
6. Enforce safety and environmental safeguards standards.																						
(i) Create a new implementation and monitoring system.																						
1. Identify issues in implementation and monitoring.	MCTI/ZDA/MOL/MOEn																					
2. Draft the new procedures.	MOL/MOEn																					
3. Obtain the consents of the relevant parties.	MCTI/ZDA/MOL/MOEn																					
4. Announce the new procedures.	MOL/MOEn																					
(ii) Implement the new procedures.																						
1. Explain the new system to the stakeholders.	MCTI/ZDA/MOL/MOEn																					
2. Set a trial period and implement.	ZDA/MOL/MOEn																					
3. Monitor the performance of the new system.	ZDA/MOL/MOEn																					
4. Feed back issues and reform the system.	MCTI/ZDA/MOL/MOEn																					

Ministry responsible for labor (MOL) and Ministry responsible for environment (MOEn)

(7) Create new markets

(i) Identify new markets

Fully utilizing databases, accumulated knowledge and experience obtained over the first two years, MCTI and ZDA will study the possibility of new markets over the first half of Year 3. Based upon the study, they will conduct preliminary feasibility studies for selected new markets which will reinforce missing links of supply chains. Identified new investments will be added to a list of actions under Strategy component 5 in the first quarter of Year 3.

(ii) Build business environment for new markets

MCTI and ZDA will identify pre-requisite conditions for FDIs for the identified new potential markets over the second half of Year 3. They will draft a plan to realize such pre-requisite conditions for possible investments in new markets over the first half of Year 4, and will make budgetary arrangements to realize the plans in the second half of Year 4.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5				
		I	II	III	IV																	
7. Create new markets.																						
(i) Identify new markets.																						
1. Study the possibility of new markets.	MCTI/ZDA																					
2. Conduct a preliminary feasibility.	MCTI/ZDA																					
3. Add to the target list under Strategy 5.	MCTI/ZDA																					
(ii) Build business environment for new markets.																						
1. Identify prerequisite conditions from 7-(i).	MCTI/ZDA																					
2. Draft the plan to realize such conditions.	MCTI/ZDA																					
3. Make budgetary arrangement for the plan.	MCTI																					

(8) Create a culture of training

(i) Conduct a pilot project for training

MCTI and ZDA will, with close consultation with the stakeholders, design a pilot project for the association of the target companies over the first half of Year 1. They will conduct a workshop for the stakeholders on the contents of the pilot project in the following third quarter of Year 1. Such technological areas as metallurgy and mechanical engineering are examples for a pilot project for training. A pilot project will be implemented for one year starting from the beginning of the third quarter of Year 1. MCTI and ZDA with close cooperation of the beneficiaries will transform such a pilot project into a sustainable form. The project will serve the association of the target sectors onwards. The pilot project does not have to be a single project. There could be more than one as far as the government finds sufficient budget to allocate for the appropriate form of association.

(ii) Introduce “Kaizen” to the industries

MCTI and ZDA will introduce the Kaizen Team of JICA to the target companies over the period of the strategy¹⁸. MCTI and ZDA will help the Kaizen team implement Kaizen to the candidates. Achievements will be shared with other stakeholders every year at the Kaizen conference held in the first quarter of a year.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5				
		I	II	III	IV																	
8. Create a culture of training.																						
(i) Conduct a pilot project for training.																						
1. Design a pilot project.	MCTI/ZDA	■	■																			
2. Conduct a workshop for the stakeholders.	MCTI/ZDA			■	■																	
3. Implement a pilot project.	MCTI/ZDA					■	■	■	■													
4. Conduct it in a sustainable form.	MCTI/ZDA									■	■	■	■	■	■	■	■	■	■	■	■	■
(ii) Introduce "Kaizen" to the industries.																						
1. Introduce the candidates to the Kaizen team.	MCTI/ZDA	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
2. Implement "Kaizen" to each candidate.	MCTI/ZDA					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
3. Feedback the achievement in the conference.	MCTI/ZDA							■	■			■	■			■	■			■	■	

2. Monitoring

Twenty action plans under the eight strategy components are described in the section above with the implementation schedule. These actions will be monitored by each implementation agency which is responsible for implementation. Target indicators for the strategy period will be decided after contacting the target companies over the first six months. Annual evaluation of the strategy will be conducted at the end of each year. In the fourth quarter of Year 3, a mid-term review will be conducted. It will be a more thorough and intensive review of each action plan and interim evaluation of the overall direction of the strategy. Based upon the findings, target indicators, action plans and strategy components will be revised and reformulated, if necessary.

The private sector will be invited to the annual reviews and the mid-term review of the strategy. It is suggested that the Working Group for Industry Strategy Formulation of Engineering Products

¹⁸ When KIZ commences its effective operations, this action will be implemented by KIZ with assistance of JICA.

be converted to the “Industry Council for Engineering Products” responsible for overall monitoring and consultation. The evaluation unit will be formed in MCTI and ZDA temporarily, and will join the strategy implementation unit in its review and monitoring exercise. This is a back stop of the institutional arrangement to keep the strategy implementation unit from falling into becoming a self-serving entity.

The overall evaluation of the strategy for the entire timeframe will be concluded in the fourth quarter of Year 5. Through this overall evaluation, MCTI and ZDA will identify the lessons learned and document their experience obtained through implementing and monitoring the action plans and strategy. This exercise will provide an invaluable asset for the formulations of the next industry strategy for engineering products and of those for other priority sectors. Strategy formulation is an on-going process as the country will grow to the middle-income nation. This industry strategy formulation will be remembered as the first attempt for that process.

Actions	Implementation Agency	Year 1				Year 2				Year 3				Year 4				Year 5			
		I	II	III	IV																
Overall review and monitoring.																					
1. Set target indicators for the strategy period.	MCTI/ZDA																				
2. Conduct annual review of strategy.	MCTI/ZDA																				
3. Conduct mid term review of strategy.	MCTI/ZDA																				
4. Revise strategy, if necessary.	MCTI/ZDA																				
5. Evaluate the overall performance of the strategy.	MCTI/ZDA																				

3. Functional Demarcation of MCTI and ZDA

This industry strategy is formulated by cooperation of the private sector and various government ministries and agencies, amongst others, ZDA. MCTI will be responsible for overall monitoring of the implementation of this strategy. Implementation of the strategy will be conducted jointly with the assistance of ZDA, and other government ministries and agencies.

Although the responsibility of each implementation agency is stated in the section of action plans and implementation schedule, the functional demarcation of MCTI and ZDA is explained here again to avoid confusion. In implementation of the strategy, MCTI is mainly responsible for policy issues and coordination of inter-ministries while ZDA is an important contact point with the target companies. Mostly, important business information will be fed to the government through ZDA. The functions assigned to ZDA are the ones that have been to be provided by ZDA in its activities of trade and foreign investment promotions. The strategy focuses more on the detailed areas and the specific companies with clear directions. Experiences from working on the strategy will become ZDA’s assets and they will enable ZDA to provide more thorough services to investors and local companies not only in the engineering products sector but also in other sectors.

VI. Concluding Messages

1. Over the last five years, several steel making and copper fabrication companies have emerged dynamically in Zambia. Utilizing available resources, they have been expanding business, exporting their products to the growing regional markets, as well as serving the domestic markets. This resulted from Zambia's strong determination and incessant efforts to create and maintain a stable political and economic environment.
2. The strategy formulated herein strives to make this dynamic development a continual process and to further expand and diversify the manufacturing base of the target sectors, and through this, to cement Zambia's competitive position for manufacturing iron/steel and copper fabrication products in the regional markets.
3. During the course of implementing the strategy, it is envisaged that more local suppliers will supply materials and spare parts to Zambia's exporting companies. Some of them will join the group of exporting companies themselves. As more local companies follow this path, industry clusters will develop in some areas. From there, more exporting companies will emerge, deriving benefit of the industry clusters, particularly of MSMEs. The strategy foresees this virtuous cycle.
4. The successful implementation of the strategy will benefit other segments in the engineering products sector by demonstrating good execution in the target sectors. This industry strategy for engineering products will be a good model for other priority sectors identified in MCTI's policy. This bandwagon effect will spread to the entire manufacturing sector.
5. The manufacturing sector will grow as a result of implementing the competitive strategy. The successful implementation of the strategy will enhance the manufacturing sector's position in the Zambian economy. The manufacturing sector will become the driving force for economic growth, through which Zambia will move toward the status of a prosperous middle-income nation as envisaged in the Vision 2030.
6. The strategy is the first attempt to transform vision and policies into workable action plans. The government will implement this successfully.

Annex 1. Working Group for Industry Strategy Formulation of Engineering Products

A. Private Sector

No.	Organisation / Institution
1	AFIL Energy Limited
2	Agro Fuel Investments Limited
3	Fox Foundry Limited
4	Good Time Steel
5	Heroes Foundry
6	Kalingalinga Wood/JV (small scale)
7	Kamloop Metal Fabricators (small scale)
8	MM Integrated Steel
9	Perway Industries
10	Safintra Zambia Limited
11	Saro Agro Industrial Limited
12	Universal Mining and Chemical Industries Limited (UMCIL)
13	ZALCO/METALCO Industries
14	Zambia Association of Manufacturers (ZAM)
15	Metal Fabricators of Zambia Limited (ZAMEFA)

B. Government

No.	Organisation / Institution
16	Citizen Economic Empowerment Commission (CEEC)
17	Engineering Institution of Zambia (EIZ)
18	Ministry of Commerce, Trade and Industry (MCTI)
19	Ministry of Mines and Minerals Development (MMMD)
20	National Council for Construction (NCC)
21	National Institute for Science and Industrial Research (NISIR)
22	National Technology Business Centre (NTBC)
23	Patents and Companies Registration Agency (PACRA)
24	Technical Education, Vocational and Entrepreneurship Training Authority (TEVETA)
25	Zambia Bureau of Standards (ZABS)
26	Zambia Development Agency (ZDA)
27	Zambia Electricity Supply Corporation Limited (ZESCO)
28	Zambia Weights and Measures Agency (ZWMA)

C. Academia

No.	Organisation / Institution
29	University of Zambia (UNZA) /Technological Development Advisory Unit

D. Others

No.	Organisation / Institution
30	ZDA/GZID
31	ZDA/UNIDO-SPX
32	JICA Zambia Office
33	JICA Experts (IMG Inc.)

Note: Only the organisations and institutions that participated in the Working Group meetings held in MCTI are listed in the table above. In addition to these members, the Project received cooperation and contributions from many other organisations and companies. MCTI and JICA express the utmost appreciations for those who have supported and assisted the Project.

Annex 2. Case Stories of Emerging Companies

Story 1: Universal Mining and Chemical Industries Limited (UMCIL)

“Dream into business”



Julius Kaoma from Lusaka Province earned a doctorate degree in metallurgical engineering from Colorado School of Mines in the United States of America. Working as a scientist at the National Institute for Scientific and Industrial Research over 25 years, he was involved in national projects related to steel making using domestic iron ore and coal. He wanted to establish a steel making factory on its own someday in Zambia, where all steel products were supplied from South Africa while Zambian scraps were recycled back to South Africa for steel making.

His long-time dream eventually came to reality when he met the management of Trade King, a leading company producing confectionery, beverages and detergents in Zambia. Trade King saw the future direction of the country in Dr. Kaoma's business plan, and sold one of its beverage businesses to move to the new steel making business in Zambia.

Universal Mining and Chemical Industries Limited (UMCIL) was born.

The steel plant commenced its operations in 2008 in Kafue, 50 km south of Lusaka, utilizing domestic scrap once shipped back to South Africa at a high land transportation cost. The plant obtained certification from the SABS to export steel products to neighbouring countries and also to South Africa. Foreseeing the limited availability of scrap steel, UMCIL is now constructing an iron making plant with DRI technology. Once in operation, domestic iron reserves which have never been utilized in a landlocked country will be mobilized. This will bring a revolutionary change in the iron and steel making sector in Zambia.



Story 2: Metal Fabricators of Zambia Plc (ZAMEFA)

“Symbol of aspiring value addition”



Four years after independence, Metal Fabricators of Zambia Plc (ZAMEFA) was established in Luanshya in the Copperbelt to manufacture wires and cables from copper cathode supplied by mines nearby. ZAMEFA was the determination and symbol of the new born country aiming to bring added value into the country which then solely relied on the copper mines.

The public sector driven development policy did not succeed. Economic activities were shrinking in 80's, while external debt was snowballing. ZAMEFA was experiencing a difficult time. Yet, the government continued to support ZAMEFA while Phelps Dodge, one of the founding architects for ZAMEFA, did not leave. ZAMEFA was privatized in 1996. But it had to wait another decade to see its business activities revive.

During the last five years of rapid growth in Zambia, ZAFEFA expanded its production capacity three times, shipping copper wire and cable products to neighboring countries. ZAMEFA is an important manufacturing base in southern Africa for General Cable, the parent company to Phelps Dodge since 2007. ZAMEFA's sales revenue has increased over twentyfold since its establishment. Zambia is now seeing its long aspiration turning into reality.



Story 3: ZALCO Limited

“Scrap into business; the revitalizing force of Kabwe”

Hussein Safieddine from Lusaka City was one of many merchants shipping metal scraps to South Africa until the export ban on scrap was put in place in 2007. Many scrap merchants appealed to the government to lift the ban. He saw it differently.

He set up a plant in Kabwe, and started manufacturing metal balls and bars from scrap metals collected in Zambia, expanding a line of business into cable and wire, plastics and paper.



ZALCO is named after materials the company is dealing in – zinc, aluminum, lead, copper and ore. At its collection points all over the country, there are always long queues of people bringing things for sale. Many people are also working in its stock yards extracting metals from scrap. ZALCO hires 1,400 people directly. Many other people are being benefited from his venture.



Kabwe was once a vibrant town of zinc and lead production. After the closure of the mines in early 90's, Kabwe lost many businesses, people and dynamic activities. ZALCO built a greenfield plant there, hiring 900 people and actively participating in community services. Mr. Safieddine has a strong belief that his business can grow with the development of communities.