Regaining competitiveness in machinery & equipment cluster

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1 Problem statement

South Africa has established capabilities in machinery and equipment sector and is well positioned to supply growing markets in southern Africa. Moreover, growth in the sector creates direct employment, as well as having substantial employment effects in related activities such as transport and logistics, financial and engineering services.[1] The hollowing out of the industry has been at a major cost in terms of employment, and reindustrialisation has the potential to reverse this trend. The metals, machinery and equipment (including electrical machinery) value chain accounts for the largest source of formal employment in the manufacturing industry, contributing around 300,000 direct jobs in total, of which the machinery and equipment accounts for more than half. With technology changes the linkages between activities such as electronic control systems, process machinery and engineering and design are even more important.

Concerted action to support clusters, including addressing challenges in terms of investment, skills and infrastructure, will mean significantly improved competitiveness and the replacement of deep sea imports into South Africa and into other markets in SADC, adding at least 45,000 direct jobs in 5 years and around six times this number when linkages are taken into account. Research has identified key bottlenecks to better performance and employment creation are lack of artisanal skills, poor funding support, low levels of research and development, high electricity prices and poor implementation of local procurement policies.[2] Efforts to enter the regional market have also been hampered, evidenced by companies losing market shares in key markets.[3]

2 Jobs impact

The machinery and equipment sector is labour absorbing such that an increase in output (through improving trade performance and competitiveness versus imports) results in a commensurate increase in employment. It was one of the few sectors to record employment growth alongside output growth in the 2000s. There are employment multipliers of around six for increased jobs in the machinery and equipment.

The estimated employment of improved competitiveness and investment in expanded capacity to meet growing regional demand means the trade balance would, instead of deteriorating, improve by 20% from a deficit of $5 billion (R65 billion) to $4 billion (R52 billion)

[1] https://www.competition.org.za/s/IDTT-MME-Final-Project-Report.pdf
[2] https://www.competition.org.za/s/IDTT-MME-Final-Project-Report.pdf
[3] https://www.competition.org.za/s/CCRED-Working-Paper-1_2015_Capital-equipment-Fessehaie-r0zb.pdf

between 2018 and 2023.[4] Given estimated growth in demand for machinery & equipment in SADC including South Africa of around 4% pa, this means output around 40% higher than in 2018.[5] Direct employment creation of 45,000 over three to five years, with the multiplier meaning around 270,000 jobs being created in total. The impacts across electrical machinery and in the value chains is substantially larger while, some increased in capital intensity will lower the employment creation somewhat.

3 Theory of change

What has to be done?

An initiative that takes the form of a cluster with a central coordinating office that engages with the government and private sector needs to be implemented. The initiative will address five key pillars:

- **Skills development**: Government-led initiatives have not been able to meet the skills gap mainly because of the persistent issues around the quality of TVET colleges and the MERSETA. Addressing the skills constraint through leveraging off existing industry initiatives will enable local companies to adapt and adopt technology in light of the technological sophistication linked to the Fourth Industrial Revolution.
- **Testing facilities**: Establishing testing facilities and innovation hubs is high capital outlay that small and medium-sized companies can ill-afford. Setting up such a facility will assist companies to test their products to ensure quality and technical standards are met.
- **Electricity prices at equivalent to Eskom for heavy industry**: There is a structural bias in the cost and supply structure of electricity between high voltage customers (upstream steel sector - supplied directly by Eskom) and low voltage customers (mainly downstream users - supplied by municipalities). As a result companies are faced with relatively higher electricity costs. Offering developmental electricity tariffs for the machinery and equipment sector will improve cost competitiveness
- **Development finance**: Accessing development finance for expansion and upgrading given the high costs associated with operating obsolete machinery. This would take the form of offering grants (or rebates) to firms that have purchased plant and machinery which has contributed towards employment creation.
- **Optimisation of procurement**: Public procurement policy aimed at stimulating demand has been ineffective, with companies facing significant barriers to accessing the programme. Optimising local procurement by state-owned enterprises and municipalities through effective monitoring and evaluation at a company level that prioritises value addition.

Outputs:

- Improved technological capabilities

[4] This is just for machinery & equipment (excluding electrical machinery).
[5] This is because maintaining the trade performance (rather than a continuing deterioration) would imply 22% higher output. The improvement in the trade balance from better competitiveness adds an additional 20%.

- Higher investment
- Cost competitiveness
- Skills constraints relaxed
- Meeting regional demand and realising scale & scope economies

How that would lead to the desired outcomes

South Africa will be the regional hub for machinery & equipment for SADC industrialisation.

4 Existing initiatives/experience

In machinery & equipment and related industries, there are cluster initiatives in place but these are not at the scale, nor with the leverage to have the necessary impact to alter the development path of the industry.

The South African Capital Equipment Export Council (SACEEC) established a **"School of Excellence"** in collaboration with the National Tooling Initiative Program (NTIP) to increase the number of artisans entering the industry and to prepare them for the challenges and opportunities associated with the introduction of new technologies and increasing automation in the workplace. SACEEC has partnered with the Gauteng Growth and Development Agency (GGDA) to implement the SACEEC Schools Programme (SSP) at four technical high schools in Ekurhuleni. The 3-year modular programme is currently being accredited by MERSETA and SACEEC is looking to roll out the programme nationally.

Other clusters and associations of particular machinery manufacturers include VAMCOSA (valves), SAPSDA (pumps), SAPC (pumps cluster), SAMPEC (mineral processing equipment), MEMSA housed at the Mandela Mining Precinct (underground mining equipment) and various others. These do not address the cross-cutting challenges in the five pillars above, nor do they have the influence or cross-government support (albeit supported by DTI).

Government has also got many initiatives, which operate separately and not part of an overall vision. The proposal for the Jobs Summit is to bring these initiatives together.

The **Durban Chemicals Cluster**, for example, was established in 2008 to develop the competitiveness of the local chemicals manufacturing industry. Given poor domestic demand and high import penetration the DCC provided for a mechanism to enhance growth and global competitiveness. In support of this, priority focus areas were identified i.e. skills and enterprise development, innovation to increase value addition, a focus on African markets for exports and investments in technology and capital equipment.[6] This requires linkages with a multitude of key industry stakeholders including for funding and coordination.

The **African Mining Vision** also sets out an agenda to develop national clusters for technology innovation and adaptation, which will facilitate lateral migration and upstream value addition in the medium-term. This would involve building knowledge networks, and niches involving academia, industry, government and other relevant stakeholders.[7]

[6] http://www.globalafricanetwork.com/wp-content/uploads/2017/05/Durban-2017-Sector-Development-Programmes.pdf

[7] http://www.africaminingvision.org/amv_resources/AMV/Africa_Mining_Vision_English.pdf

International experiences show that cluster growth is driven by robust internal and regional demand and, with this, there is great potential for clusters to be large providers of manufacturing jobs and drivers of economic growth. Clusters need to include engineering and design services, logistics, finance and important components manufacturers. The cluster is also supported by institutions for collaboration (IFCs) such as industry groups, research institutions and export. [8]

5 Constituency participation in implementation

What is the potential for constituencies to participate in the implementation of the proposal.

This initiative identifies a number of key constituencies for implementation, and these are listed in the table below, along with an indication of their potential to participate in the implementation of the proposal:

Constituency	**Potential to participate**
Government	To be confirmed
Business	Very likely
Labour	Very likely

6 Benefits

Group	**Job creation**	**Other benefits**	**Time frame for success**
Local manufacturing companies in machinery and inputs	Employment	Investment International competitiveness	2-3 years
Communities in industrial areas	Employment		2-3 years
FETs, Universities, Science councils		Targeted training	2-3 years
Government	Employment		2-3 years

[8] See for example with regard to the plastics cluster in Brazil https://www.isc.hbs.edu/resources/courses/moc-course-at-harvard/Documents/pdf/student-projects/Brazil_Plastics_2013.pdf

7 Cost and potential sources of funding

The key contribution is making most of existing programmes and initiatives through a 'champion.' This is to be based on three years of work and impact in two to three years.

The budget is estimated to be around **R5.7mn** per annum:

Group	**Anticipated costs**	**Potential sources of funding to implement the project**	**Time frame for impact**
Key cluster facilitators (3)	R3mn	Government funding (incl. DTI and IDC)	2-3 years
Experts and advisors, for technical advice and upgrading	R2mn		
Running costs (@15% of total)	R750 000		

8 Risks

Lack of political and conflict of interest may undermine the effective implementation and coordination of the initiative given the diversity of the constituents. Moreover, the different constituents may be unable to reach consensus on the different pillars of the cluster initiative.

9 Risk mitigation

To address the conflict of interest, the cluster initiative will identify priority pillars that can steer the agenda, which will be managed by the cluster champion.

10 Additional comments