# Metal chamber Phase II step down report

**Title:** Occupational skills demand dynamics in the metal Industry

**Purpose:** The main aim of the research study was to identify and estimate occupational skills demand in the metal industry.

**The objectives** of the research study were the following:

- **Demand:** Identify and estimate the extent of occupational skills demand in the Metal Industry.
- **Supply:** Identify supply-side weaknesses and bottlenecks currently in the provision of education and training for occupations in demand.
- **Balance:** Make recommendations for addressing occupational skills demand and improving the technical skills base in the Metal Industry.

## Research methodology

The study used more than one research method through triangulation in order to enhance confidence in the ensuing findings. Since much social research is founded on the use of a single research method and as such may suffer from limitations associated with that method or from a specific application of it, triangulation offers the prospect of enhanced confidence. The study therefore used a combination of literature review, interviews, workshops and a survey.

## Key findings

- **Occupations in high demand**: the table below lists the occupations that were found to be **absolutely** hard to fill.

| Professionals | Technicians and associate professionals | Craft and related trade workers |
|---|---|---|
| Electrical Engineer Project Manager | Mechanical Engineering Technologist | Millwright |
| Mechanical Engineer | Metallurgical Engineering Technologist | Fitter and Turner |
| Construction Project Manager | Pattern-makers | Toolmaker |
| Chemical Engineer | Metallurgical Engineering Technologist | Air-conditioning Mechanic |
| Metallurgist | Rope designers | |
| Production/Operations Manager | | |
| Production/Operations Manager | | |

- **Skills gaps :** The following were found to be the major skills gaps in the metals sector:

1. Leadership skills
2. Management skills
3. Production skills
4. Basic numeracy and literacy
5. Technical engineering skills
6. Supervisory skills
7. Customer service skills
8. Communication/interpersonal skills

9. IT skills
10. Marketing and sales skills

❖ **The impact of skills shortages** was found to be the following:

1. Higher production costs
2. Some employees working longer hours
3. Declining productivity
4. Loss of business opportunities
5. Delivering late on our products
6. Loss of skilled employees
7. Loss of market share or profitability
8. Error rates are increasing
9. Lose business to competitors
10. Inability to upgrade to new technology

## Other key findings

- Technical education at most post-school institutions is not always as relevant or up to date as it should be. Technical education often takes place in a classroom environment. Instructors are often teaching material (or utilising equipment) that is outdated or somewhat irrelevant. Technical education often misses the most important point of modern technical work which requires excellent critical thinking and problem-solving skills in a pressure- packed environment on the factory floor or wherever the work takes places.

- Industry and educational institutions tend to form one-to-one partnerships in an ad hoc manner with limited objectives.

- Qualifications and unit standards are being driven by training providers instead of employers.

- Lack of emphasis on high level, specialised skills training (which may not entail a full qualification). Such training includes world class manufacturing, technical and production training, innovation, machine manufacturers' training and cutting edge developments in a specific industry.

- New jobs and new skill requirements are continually emerging. As they do the skills needs of employers change to suit changing business processes, technological developments, customer demand, legislative requirements and a host of other factors. New technologies mean that initially few are familiar with these applications. Employers are unable to find suitable job applicants.

- There is a concern among some industry representatives that the merSETA disbursements are not geared to meeting the training priorities of these industries.

## Recommendations

❖ There is a need for the merSETA to enter into an **intimate conservation** with the metal industry representatives to ensure that investments in skills development is consonant with the diverse and changing needs of this industry. Moreover, it is informed directly by the needs of this constituency. The merSETA Sector Skills Plan, Strategic Plan and Business Plan should talk directly to addressing industry skills needs at the level of the factory floor. There

is a need for the merSETA to review its priorities in consultation with stakeholders. Funding should be flexible to accommodate the needs of **diverse learner needs.**

- The merSETA should make provision for high-end, specialised skills training which would not necessarily involve the achievement of a national qualification on the NQF. This is necessary to ensure that workers keep up-to-date with new technologies and practices.

- To prepare workers for the technology-infused, high productivity workplaces of advanced manufacturing, Science, Technology, Engineering and Math (STEM) skills must be a key focus of our nation's educational system. Employers and the merSETA must **invest in job-specific, sustainable training programmes** to ensure workers can continue to advance with the evolution of new business processes. And, the investment of skills levies in workforce development through the Skills Development Act and other programmes such as SIPs must be focused on training to the demand needs of the metals, engineering and related industries.

- Broader and more **sustainable links must be forged between educational institutions and businesses** to ensure the alignment between a wide variety of sources of learning, including TVET colleges, universities, and industry-sponsored continuing education programmes. Industry and educators need more formal and frequent communications to refine curricula to meet current and emerging needs. It must be emphasised that **current technology must be taught**. We need to continue to provide strong underpinning engineering principles while also providing students with the opportunity to connect with the physical workplace and current technology. This is why many universities are strengthening their high-value-add 'design-build' activities in the design spines of the engineering curriculum.

- Accessing **non-traditional and under-represented labour pools** is a key national priority. Women and historically disadvantaged workers are two significant talent pools that are not yet fully leveraged by these industries. Further, there are skills and experience in other sectors which could be effectively leveraged into metals and engineering organisations. With policies and practices catered to address the needs and requirements of these specific groups, organisations must make an active effort to increase the available talent pool, particularly at management and professional levels.

- To **develop faculty** that can deliver an excellent manufacturing education, educators should:
    - Keep up to date on using new technologies;
    - Work with industry to understand current technical needs and update curriculum;
    - Collaborate with industry, professional organisations and government on projects.
- Share best teaching practices, especially when it comes to alternative teaching methods, through appropriate continuing education programmes for instructors at all levels.
- The demand for some basic skills is extensive in these industries such as basic reading skills (defined as the ability to read basic manuals), basic writing skills and basic maths skills (the ability to add, subtract, multiply, divide, and handle fractions).
- Curriculum should be based on **industry standards** and developed in close consultation with industry. Real-world curricula must be developed collaboratively with the relevant industries so that the skills being taught are precisely those that the industry needs. Technical education and training must reflect the requirements of the knowledge economy— skills such as **critical thinking and problem solving**—because these attributes are important in today's manufacturing and other technical work settings.