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# Report 3

# Industry analysis of the electrical contracting industry

November 2018 – July 2019

# **ABOUT THIS PUBLICATION**

GIZ / SD4GE commissioned two studies aimed at deepening an understanding of the trends and dynamics of plumbers and electrical contractors in South Africa. The objectives of this study included the imperative to strengthen the range of institutions (public, private and not-for-profit) that impact these trades. An additional aim of the research was to provide an overview of current development in these trades, both at industry level and firm level. The findings are useful for better planning informed by greater awareness of the transformations and changes emerging in the specific contexts of industry.

The study produced three publicly available reports. This third report homes-in on the electrical industry-level dynamics. It took the insights from the high-level study further and looked at the key institutions representing the private sector. A firm-level survey was designed to understand better the challenges confronting company owners, and what pressures they were facing in terms of productivity, market changes and staff. The results of the business owner survey for electrical contractors are discussed in this report.

GIZ/SD4GE commissioned PEM Consulting and Mesopartner Africa to conduct the industry diagnosis. Dr Shawn Cunningham and Annelien Cunningham from Mesopartner led and coordinated the industry diagnosis. A team of researchers from TIPS (Trade & Industrial Policy Strategies) conducted research and statistical analysis. The TIPS team included Asanda Fotoyi, Sajid Sherif, Mbofholowo Tsedu while Saul Levin provided policy insight and guidance.

The research would not have been possible without the help and support of the industry bodies and their members. The Institute of Plumbing (SA) (IOPSA) and Plumbing Industry Registration Board (PIRB) contributed and supported the plumbing analysis. Electrical Contractors Association of South Africa (ECASA) and the National Bargaining Council for the Electrical Industry (NBCEI) supported and contributed to the electrical analysis.

GIZ / SD4GE would like to thank all the stakeholders and industry members for their valuable contribution.

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# 1 Introduction

This project concerns the understanding of the trends and dynamics of two trades: plumbers and electrical contractors. In the past, much of the focus of GIZ/SD4GE was on improving the supply-side issues of (green) skills delivery in South Africa. Despite the attention to improving the quality of education, GIZ/SD4GE has always had a strong focus on involving the private sector in its work, especially when it comes to the workplace learning, which is central to the dual systems approach.

This report provides an industry perspective of the electrical contracting trade, from the view of the electrical contractor business owner. Our interpretation of the industry analysis is that it is much more than just understanding the demand for, and shifting patterns of, the uptake of skills. We understand that the purpose of an industry diagnosis is to provide GIZ/SD4GE and its stakeholders with insight into, and several perspectives of, the pressures faced within the industries, the firms that comprise the industries and the institutions that promote them. This analysis will make it possible to strengthen the range of institutions (public, private and not-for-profit). It will also inform GIZ/SD4GE and its stakeholders to better plan for the changes that are emerging. It may even make it possible to detect shifts that have not yet been discovered or articulated.

The report is structured around the work packages that made up the contract. The first work package concerns a high-level overview of the industries, and the results are captured in a separate, namely report number 1. Our aim was to scan the publicly available statistics to better understand what is known, what is being tracked and what is changing. This high-level overview also revealed how the two trades, plumbing and electrical, are structured, which organisations are identified with the sectors and what the high-level dynamics are.

The second work package homed in on the industry-level dynamics. It took the insights from the high-level study further and looked at the key institutions representing the private sector. Then a firm-level survey was designed to better understand the decisions confronting company owners, and what pressures they were facing in terms of productivity, market changes and staff.

This report describes the findings of the research into the electrical contracting business owner and the electrical industry analysis. The findings of the plumbing industry study are captured in report 2.

# 2 Understanding the perspective of the electrical contracting industries

Companies make optimal decisions in a local context in a decentralised way. These different experiences and perspectives add up to a rich set of archetypes from which we can extract ideas about problem pressures, appetite for expansion, interest in skills development or market preferences. An industry diagnosis provides more depth than the simpler stereotypes of small vs. large, or white vs. black.

We approached the industry diagnosis on two distinct levels:

- The first was to develop an understanding of the industries at a more aggregate level, using a combination of interviews, desktop research and statistical analysis. To structure the findings Porters Diamond (Porter, 1998) was used as a guideline, although additional dimensions had to be captured that did not feature in the original work of Professor Michael Porter.
- The second was a firm-level analysis aimed at business owners.

Porter's "Diamond" of competitiveness attempts to isolate the factors that influence the competitiveness of industries and nations (1998:71). An adapted illustration is shown in Figure 1.

Porter's Diamond has four attributes that shape the environment in which local firms compete, promote or impede the creation of competitive advantage. These four dimensions all exert a force on each other, with the Diamonds of different contexts and countries' exerting different kinds of forces on each other.

Porter (1998:77) explains that for each economic activity, goods and services are produced with a combination of factors that reflect the factor endowments of the entity in question. Thus goods and services that can be produced with a relatively high proportion of labour to capital tend to be manufactured in countries where labour is relatively abundant. Arrow (1999:17) adds that knowledge is becoming an increasingly important factor in production, which is affecting the ability of firms to remain competitive. While capital and labour are considered private goods, growth is achieved through increases in knowledge.

Figure 1: Porter's Diamond of competitive advantage



Adapted from Porter (1998:71)

At a later stage, Porter added the government and chance as two additional forces. This is a recognition of the role of governments in creating an enabling business environment. Chance affects not only the industry being studied, but all the factors in the Diamond model.

Table 1 shows the different factors of production as originally described by Porter (1998:77).

Factor type	Description				
Factor conditions	Cover natural resources, climate, location, unskilled and semi-skilled labour, and debt capital				
Advanced factors	Include modern communications infrastructure, highly educated personnel such as graduate engineers and computer scientists, and university research institutes in sophisticated disciplines				
Generalised factors	Include the transport system, debt capital and well-motivated and qualified employees who can be employed in a wide range of industries				
Specialised factors	Involve narrowly skilled personnel, infrastructure with specific properties, knowledge bases in particular fields and other factors relevant to a limited range or even just to a single industry				

Table 1: Different factors of production

#### Source: Porter (1998:77)

To conduct the firm-level analysis, we engaged with representatives of the electrical contractors association, ECA(SA), to determine what current data they had in their possession and knowledge gaps. The plumbing engagement was done earlier (November 2018), hence the electrical research instrument could draw on the insights gained from the plumbing business owner survey. Both surveys were designed in close cooperation with the industry bodies to ensure that they derived value from the research approach and results, and to enable them to further research questions and interesting findings that arose. In both cases the industry bodies took responsibility for disseminating the surveys to their members and non-members. The survey design process was treated by PEM/Mesopartner as an important capacity development and industry association strengthening process.

The electrical contracting industries was diagnosed during the period of March to May 2019, and the main results are discussed in the following two chapters.

# 3 The electrical contractor landscape in South Africa

The electrical contracting industry has a longer history of professionalisation, and has been regulated more strictly for a longer time than the plumbing and many other trades. The Electrical Contractors Association of South Africa – ECA (SA), was founded in 1950, and is registered in terms of the Labour Relations Act.

Electrical contracting, as a form of technical business, is part of a larger domain of electrical engineering that ranges from electrical engineering technology to the more academic research on new forms of electrical distribution and application. This means that new technological developments in the electrical engineering industry that are relevant to electricians tend to be disseminated better than we found in, for instance, the plumbing industry. The scope of activities in this industry is defined clearly in the extended agreement of the National Bargaining Council for the Electrical Industry of South Africa (Department of Labour, 2017:46). It explicitly excludes the iron, steel, engineering and metallurgical industries, the local authority undertaking and the building industry.

Electricians work in the private sector and in the public sector. Electrical contractors are available on the market for shorter-term contracts and projects. They typically work either on call-outs or in a project configuration. Their work and standards are regulated, and the whole industry is more formal.

Up to the early 1990s, state-owned companies in the steel, electrical utility and transport sectors were the main employers and training partners of the electrical trade. The apprenticeship model was in widespread use, and many of the more established electrical contractors operating today were qualified under this system.

The electrical contracting trade is regulated by the Department of Labour. This provides a barrier to entry for many who are not qualified to work on electrical installations. However,

due to poor enforcement of regulations, there are still many electrical contractors who are working informally.

#### 3.1 Formal organisation of the industry

The formal and officially recognised employer organisation in the electrical contracting industry is the ECA. According the ECA, they represent more than 70% of all electrical contractors in South Africa. The ECA is recognised by the Department of Labour and by the largest union in the sector, the South African Equity Workers Association (SAEWA).

The ECA and SAEWA are the two major stakeholders of the National Bargaining Council for the Electrical Industry of South Africa. The Labour Relations Act (LRA) provides for the self-regulation of industries through the medium of centralised bargaining within bargaining councils. The NBCEI is a bargaining council as envisaged in the LRA whose mission it is to create and maintain industrial peace and stability in the electrical industry. The NBCEI website<sup>1</sup> lists the following services:

- Forum and facilities for collective bargaining
- Settlement of labour disputes
- Provision of social benefits for the upliftment of all persons falling within the industry, i.e. pension fund, provident fund, leave pay fund and sick pay fund
- The NBCEI consists of representatives from both employers' and employees' organisations and has equal representation of both groups
- The agreements negotiated are, where necessary, extended by the state to include the entire electrical industry once satisfied that the parties to the council are in the majority. For this reason all employers and employees falling within the electrical industry resort under the jurisdiction of the NBCEI
- Bargaining councils are not funded by the state and all employers and their employees pay a council levy towards the funding of the council

Only contractors registered with the Department of Labour are permitted to work on electrical systems according to the Electrical Installation Regulations (Department of Labour, 2009). It costs about R120 to register, but only qualified people can apply.

Furthermore, all electrical contractors have to comply with the bargaining agreement that was signed into law by the Minister of Labour (Department of Labour, 2017). This means that all staff, even those on short-term contracts, have to be registered with the NBCEI. Employers have to transfer their workers' sick benefit fund and pension contributions to the NBCEI. The NBCEI's agents may also enter any workplace without prior appointments to verify compliance, so in effect they play the role of the industry's labour police.

It is possible for electrical contractors to be registered with the NBCEI and the Department of Labour, and not to be registered with the ECA. However, the ECA provides a wide range of services to electrical contractors that include legal, labour, contractual and technical services. For instance, the ECA represents electrical contractors not only in negotiating with labour, but they also represent their members in negotiating with the Joint Building Contracts

<sup>&</sup>lt;sup>1</sup> See <u>www.nbcei.co.za</u>

Committee and other structures. The ECA has regional offices in Johannesburg, Pretoria, Durban, Bloemfontein, Port Elizabeth, East London and Cape Town.

There are other regulations that also shape the marketplace, including the Construction Regulations, the Electrical Machinery Regulations and the General Machinery Regulations. Occupational Health and Safety legislation is also important.

There are electricians working in fixed employment in industry and the public sector. They also have to be registered with the Department of Labour, and they have to comply with many of the same laws and regulations. That means that when these individuals shift from being employed to being a self-employed contractor, they are often already capacitated and aware of many of the laws, regulations and best practices in the industry.

For instance, the Association of Municipal Electricity Utilities (AMEU) is an association of municipal electricity distributions. Although their activities are mainly focused on the challenges of distributing electricity through municipalities, their activities affect many electrical contractors who are involved in reticulation.

The Institute of Electrical and Electronics Engineers (IEEE) is a global non-profit professional organisation for the advancement of electrical technology with over 420 000 members. They are active in South Africa and play a critical role in disseminating new standards, good practices and promoting new technological advancements. Most of their members are professional engineers. The IEEE has been active in South Africa for more than 40 years.

The South African Institute of Electrical Engineers (SAIEE) was established in 1909 and has 6 000 members. Members are professionals engaged in academic research, manufacturing, electronics, telecommunications, measurement and control, mining and power infrastructure. They work closely with the ECA as electrical contractors are central to electrical engineering plans and projects.

The South African Photovoltaic Industry Association (SAPVIA) is a not-for-profit body promoting the solar photovoltaic electricity market. SAPVIA promotes the responsible and sustainable transition to cleaner energy. SAPVIA does not have a regulatory function, but they play an important role in disseminating technical and legal information to their members. They promote the Solar PV Technician Qualification course and the PV Assessment programme.

The Steel and Engineering Industries Federation of Southern Africa (SEIFSA) is a federation of industry associations that is engaged with the government and other industry bodies. Their members include organisations such as the Association of Electric Cable Manufacturers of South Africa, the Electrical Engineering and Allied Industries Association (representing many manufacturers of equipment and materials used in the electrical field), the Electrical Manufacturers Association of South Africa, the Refrigeration and Air-Conditioning Manufacturers Association, the South African Refrigeration and Air-Conditioning Contractors Association, the Gate and Fence Association and others.

The Master Builders Association (MBA) of South Africa is a national representative body of the building and construction industry. It operates as a federation of registered employer associations representing contractors and employers. The MBA represents its members on national bodies and lobbies national government on legislative and other policy issues. It also provides a range of services to its members.

The Department of Labour engages with the industry through the ECA. The Department of Labour directly receives registrations from contractors, and they directly inspect work sites, and investigate accidents and contraventions of regulations.

The Engineering Council of South Africa (ECSA) is a statutory body formed in accordance with the Engineering Profession Act (46 of 2000). ECSA oversees standards, professional development, registration and regulation within the engineering professions. For certain kinds of installations, such as those requiring higher or medium voltage certificates of compliance under SANS 1014202, the competent person must also be registered with ECSA. Electrical contractors may be subcontracted as part of a team working on a construction, installation or maintenance project.

There are approved electrical inspection authorities (AIA) that validate the certificates of competence issued by electrical contractors. In the past, municipalities had the function of inspecting and certifying the work of electrical contractors, but this regulation has fallen aside. However, there are ongoing talks between the ECA, DOL and municipalities to bring back the function of the municipal inspector.

The Electrical Conformance Board of South Africa (ECB) was established in 1983 (as the Electrical Contracting Board) and originally had a close relationship with the ECA. Its original function was the registration of electrical contractors until the Department of Labour took over registrations in 2009. Unlike the ECA, it is not an employer's organisation. It is now more involved in training and standards development and is positioned to promote the interests of the industry. Promoting conformance, cooperation and support, the ECB works closely with organisations such as the South African Bureau of Standards (SABS) to assist in the regulation of the industry. The ECB is a not-for-profit organisation funded entirely by its members and donations.

#### 3.2 Electrical contractors in South Africa

The previous section describes the landscape that electrical contractors operate in. It is clear that the industry is well-regulated. Many of the organisations that have been established are driving better project delivery, standards, compliance and use of technology. The fact that so many institutions exist means that in general the industry is also under pressure to be professional.

For instance, in South Africa it is commonplace to see workers riding on the back of open construction or maintenance vehicles. This is against the law (Construction Regulation 23(2) and the National Road Traffic Act of 1996), and it is hard to regulate. However, with the NBCEI, ECA and the SAEWA actively policing work sites, members and employees, this law is being

more strictly enforced. However, this also means that those who cannot afford proper safe vehicles remain informal and operate illegally.

Two categories of electricians have been identified using the SASCO (South African Standard Classification of Occupations) codes provided in the LMD datasets:

- Type-A electricians fall under classification 713, which represents "Building finishers and related trades workers":
  - > 7137 Building and related electricians.
- Type-B electricians fall under classification 724, which represents "Electrical and electronic equipment, mechanics and fitters".
  - > 7241 Electrical mechanics and fitters
  - > 7242 Electronics fitters
  - > 7243 Electronics mechanics and servicers
  - > 7245 Electrical line installers, repairers and cable jointers.

According the LMD data, there were approximately 160 515 persons employed as Type-A electricians in the country in 2017 (See Figure 2).



Figure 2: Type-A electricians in South Africa, 2013-2017

Source: Statistics South Africa, Labour Market Dynamics, 2017. Electronic Database

Of these, 24 804 owned their own companies. There were 109 316 persons employed as Type-B electricians, of whom 19 481 owned their own companies (See Figure 3).

Figure 3: Type-B electricians in South Africa, 2013-2017



Source: Statistics South Africa, Labour Market Dynamics, 2017. Electronic Database

Figure 4 shows the number of electrical business owners in 2017 using the Statistics South Africa LMD dataset. It shows that in 2017, of the 24 804 Type-A electrical business owners:

- 10 352 employed one or more people
- 14 452 were own-account workers.

In 2017, of the 19 481 Type-B electrical business owners:

- 3 418 employed one or more people
- 16 063 were own-account workers.

Thus Type-A electricians are more likely to be employers than Type-Bs. Electrical contractors fall mainly into the Type-A category if the Bargaining Council definitions are used.



Figure 4: Number of electrical business owners, 2017

Source: Statistics South Africa, Labour Market Dynamics, 2017. Electronic Database

Type-A business owners in the formal sector are most likely to employ one or more people, whereas business owners in the informal sector are more likely to be own-account workers. The Type-B formal sector tends to be dominated by employers, although there are a notable proportion of own-account workers in some years (See Figure 5).



Figure 5: Formal and informal electrical business owners, 2013-2017

The LMD data reveals that most of the Type-A electricians are in Gauteng, including those in the formal and informal sector (See Figure 6). With regard to the formal sector, the Western Cape came second in the number of Type-A electricians to Gauteng. Most Type-B electricians are found in Gauteng and the Western Cape. The Western Cape has the largest number of Type-B electricians in the formal sector, while Gauteng has the largest number of Type-B electricians in the informal sector.





Source: Statistics South Africa, Labour Market Dynamics, 2017. Electronic Database

Source: Statistics South Africa, Labour Market Dynamics, 2017. Electronic Database

The LMD dataset contains data on the business size of respondents (Figure 7). The majority of Type-A electrical businesses in the informal sector do not employ anyone. There is far more equal distribution regarding firm size in the formal sector. Nevertheless, most Type-A electrical businesses in the formal sector employ between 2 to 4 employees. Relative to Type-A, Type-B businesses tend to be smaller in size. The greater proportion of Type-B businesses in the informal sector employ no one. The largest proportion of Type-B businesses in the formal sector employ no formal sector employ of Type-B businesses in the informal sector employ no one. The largest proportion of Type-B businesses in the formal sector employ only 1 person.





Source: Statistics South Africa, Labour Market Dynamics, 2017. Electronic Database

The majority of Type-A and Type-B electrical business owners are black, Indian or coloured and operate in the informal sector.

More than half of Type-A electrical business owners are older than 34 years, but younger than 55 (see Figure 8). There is a small proportion of 20 to 24-year-old Type-A electricians. Type-B electricians show a similar age distribution relative to type-A electrical business owners.



Figure 8: Electrical business owners by age, 2017

Source: Statistics South Africa, Labour Market Dynamics, 2017. Electronic Database

One of the key challenges of managing a small technical business such as an electrical contractor is how costs and job estimations are done. In the owner survey, 71% of respondents use either timesheets or job cards when calculating the costs of jobs. However, 29% of the respondents indicated that they did not use either timesheets or job cards when calculating the cost of jobs. In an interview with the CEO of the ECA, the fact that many electrical contractors had inaccurate job costing and expense management was flagged as an important issue. The ECA also regularly hosts training events of job estimation, tendering and cost controls.

In the business owner survey, the respondents were asked to choose between one of three internal pressures (Figure 9). This internal pressure says something about the main strategy or priority of the business owner. The most prevalent internal pressure among respondent firms was to increase the productivity and performance of current employees. A third of the firms were inclined to reduce staff – expanding the business with adequately skilled people was the lowest priority.

#### Figure 9: Internal pressure faced by electrical contractor business owners



Source: Electrical Contractor Business Owners Survey (TIPS, 2019)

In the survey we probed to better understand the major challenges that are constraining the electrical companies. The results are shown in Figure 10. More than half of the respondents reported that getting new or repeat business was a challenge. Management of staff was not reported as a constraint to business for the vast majority of the respondents. However, from our conversations with the ECA, the low importance of managing staff is not reflecting the kinds of labour support requested from the ECA offices.

Figure 10: Challenges constraining electrical firms



Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

In the question described in the preceding paragraph, respondents could also select "other". They could provide an explanation of what they meant. When codified, the results show that 8 respondents complained about regulatory burden, 6 complained about the poor business climate, and 4 complained about the skills of existing employees. Non-payment by clients and unregistered electricians each had 3 complaints.

It is clear that the current economic climate is not conducive to getting more business. The respondents of the survey could identify external effects on their business by severity (see Figure 11). The current economic climate is the most extreme external constraint, followed by the impact of unregistered electricians. Interestingly, regulatory compliance is regarded as hardly constraining. The issue of recruitment of adequately skilled people is explained by the ECA as the challenge of new recruits having the right qualifications or paperwork, but not being able to do the work that is required.



Figure 11: Electrical business owners: external constraints by severity

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

## 4 The electrical contractor business owner survey results

The survey design process only started in April. A first step was to assess the data that the ECA already had. A survey instrument was developed with the ECA, using the plumbing business owner survey as a starting point (see Annexure 2.6). As in the plumbing business owner survey, the intention of the survey was to better understand the constraints and reality experienced by electrical contractors. In the first week of May, the research instrument was handed to the ECA for dissemination to its regional offices and members. The ECA also disseminated the survey through the NBCEI.

The results of the electrical contractor business owner survey presentation composed by TIPS is contained in Annexure 2.10. The survey analysis was presented to GIZ/SD4GE and the ECA on 30 May 2019.

In the remainder of this chapter the results of the statistical analysis conducted by TIPS will be discussed.

In total, 145 business owners completed the survey. Five of the respondents indicated that they were not registered with the DoL as prescribed by law. 131 business owners responded that they were registered with the NBCEI, and 115 indicated that they were members of the ECA. Three DSPP host companies completed the survey, and two SAPVIA members participated.

The respondent electrical firms tended not to be too large, with more than half having fewer than 10 employees (see Figure 12).



Figure 12: Firm size of electrical business survey

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

In the electrical survey, we asked the respondents to indicate the number of years the company had been in operation (see Figure 13). The respondent electrical firms tended to be in operation for quite some time, with 50% having operated in the industry for more than 15 years. Almost 20% of the firms were young, and had been in existence for less than 5 years.

In terms of gender, 128 respondents were male and 17 female.



Figure 13: Electrical firms' years in operations

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Figure 14 shows that 77% of the respondent firm owners were white, while the other races made up a fairly equal proportion of the remaining responses.



Figure 14: Racial profile of electrical firm respondents

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Figure 15 shows the age distribution of the company owner respondents. None of the surveyed owners were younger than 25 years old. Almost 70% of the respondents were older than 45 years.





Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Figure 16 shows the B-BBEE level of the companies surveyed. 30% of the respondents indicated that they were exempt micro enterprises, indicating a lower financial turnover. 23% were recognised as level 4, and 10% declared that they were not compliant at all. 14% of the respondents declared that they were at level 1.





Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

We asked the respondents to specify how many branches, offices or cities the firm operates from. 89% indicated that they operated from only one site, with 7% indicating 2 offices. Only 4% indicated that they operated from 4 or more offices.

With regard to the spatial distribution, most of the respondents operated from Gauteng, KwaZulu-Natal or the Western Cape, with the Eastern Cape following closely (see Figure 17). When this data is considered with the question about the number of branches, it can be concluded that most electrical contractors operate from one base, even if they work in other provinces.



Figure 17: Spatial distribution of electrical company respondents

In the electrical company owner survey, we asked the respondents to indicate the number of partners, members or directors there were in their organisation. The results are shown in Figure 18. More than half of the firms had only one partner, member or director. Nevertheless, almost 30% of respondent firms had two people at the highest level of the organisation.

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Figure 18: Number of partners, members or directors



Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

#### 4.1 Basic factors of production

The following sub-sections will look into the basic factors of production:

- Skills
- Labour
- Finance

Thereafter the more advanced factors of production will be discussed.

#### 4.1.1 Skills

The ECA plays a central role in skills development in the electrical contracting field. The ECA has its own training centres, but also contracted training providers in the region. They focus on both apprentice and semi-skilled training programmes aimed at supporting formalisation and pathway progression in the industry. During April to May 2019, the ECA website listed several training courses, such as:

- A master installation electrician unit standard course
- An electric fence installer course
- A course on managing pension funds and benefits
- A certificate of compliance course
- A SANS 10142-1 Certificate of compliance refresher course
- An earthing and bonding course
- An installation rules course aimed at helping registered FET college students prepare for national examinations
- A PV solar course

Many of these ECA courses run on a monthly or quarterly basis. Additional short courses on costing, estimation, tendering, business management, human resource management and other topics are also presented. Many of the courses are not only technical but explain to participants how the knowledge gained can be used to expand the service offerings of electrical contractors. While most of the courses are presented in Pretoria, Johannesburg and Cape Town, many are repeated in other regions.

In the company owner survey, we asked the respondents to identify their preferred training providers (see Figure 19). On-the-job training was by far the most commonly used training method. Notably, the ECA is the most important formal training provider. The second most important training providers are all formal institutions. The ECA training centre operates in Gauteng and Cape Town. This means that companies from the other provinces might be more dependent on private training providers.



Figure 19: Training providers preferred by firm owners

In Section 5.2 the training preferences are further analysed to better understand which kinds of firms prioritise different training providers.

SEIFSA operates an accredited training centre that offers training, amongst others, for millwrights and electricians. They offer apprenticeship programmes, trade-related short courses, vocational training and trade test preparation courses, and they conduct

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

competency assessments. The SEIFSA Training Centre<sup>2</sup> website states that their apprenticeship programmes last 24 weeks.

The career paths of electrical contractors and operators are signed into law by the Minister of Labour as part of the sector-wide bargaining council agreement (Government Notice No. 1094 of 2018, 2018). There are three categories of construction operator (Elconop) labour defined in the main collective agreement of the NBCEI, namely Elconop 1, Elconop 2 and Elconop 3. There is no formal training programme for Elconop 1, but Elconop 2 and 3 are required to undergo formal practical training at an accredited training centre.

The employment or promotion to Elconop 1 is based solely on the employer's assessment of the capabilities of the employee. The promotion is done by the employer writing to the NBCEI of the decision and registering the individual at the DoL.

To progress to Elconop 2, an employer identifies an Elconop 1 who is a suitable candidate and will arrange for an accredited training provider to train the individual. The four-week course comprises induction (M0), installing wireways (M1), installation of cables (M2) and finally the wiring of premises (M3). On completion of the course, the candidate returns to the employer for three months' on-the-job training. Thereafter the candidate is required to take the Elconop 2 final test. The candidate receives the Elconop 2 designation (and salary promotion) once he has successfully passed the test. The Elconop 2 card is issued by the NBCEI.

To progress to Elconop 3, an employer identifies a suitable Elconop 2 candidate. The candidate must have been in employment continuously for 12 months. Again, the candidate will be sent to an accredited training provider for a four-week course that includes: three-phase transformers (M4), motors and starters (M5) and testing of installations (M6). On completion of the course, the candidate returns to the employer for three months' on-the-job exposure of the training, after which the candidate is required to take the Elconop 3 final test. Only on successfully passing the final test is the candidate promoted to Elconop 3 and the NBCEI issues an Elconop 3 card and designation.

The ECA(SA) provides the prescribed practical training courses for Elconop 2 and Elconop 3, as well as the relevant final tests, at its Meadowdale and Cape Town training centres, and also via training providers in the other major centres.

On complying with certain criteria, the next step of progression in the career path for the Elconop 3 is artisan status.

An electrician with a licence, known as a "registered person", is one who has applied to the Department of Labour (DoL) and has demonstrated his knowledge, skills and ability to conduct verification and certification of the construction, testing and inspection of the electrical installations for which he has been registered. The registered person is permitted to issue a Certificate of Compliance (CoC), which proves that the electrical installation is compliant.

<sup>&</sup>lt;sup>2</sup> <u>http://Training.seifsa.co.za</u>

Nick du Plessis (2015) provides an excellent overview of the process of becoming a registered electrician. The text below is from an article that he wrote for the ESI-Africa.com platform. Additional information can be found on the SAQA page, which outlines the National Certificate: Electrical Engineering<sup>3</sup>.

There are three categories of registered person permitted to issue CoCs: electrical tester for single phase, installation electrician, and master installation electrician. The process to progress from electrician and a list of accredited providers are given on the ECA website<sup>4</sup>.

**Category 1: Electrical tester for single phase:** This is an electrician who has been registered as an electrical tester for single phase in terms of regulation 11 (2) for the verification and certification of the construction, testing and inspection of electrical installations supplied by a single-phase electricity supply at the point of control, excluding specialised electrical installations. The unit standard for this category is outlined on the SAQA website, along with a list of accredited training providers<sup>5</sup>.

**Category 2: Installation electrician**: This is an electrician who has been registered as an installation electrician in terms of regulation 11 (2) for the verification and certification of the construction, testing and inspection of any electrical installation, excluding specialised electrical installations.

**Category 3: Master installation electrician:** This is an electrician who has been registered as a master installation electrician in terms of regulation 11 (2) for the verification and certification of the construction, testing and inspection of any electrical installation. There are four ways of becoming a Master Electrician which are described on the EE Publishing website<sup>6</sup>.

According to Du Plessis (2015), the process of obtaining a wireman's licence consists of three options – practical knowledge, theoretical knowledge and knowledge of statutory requirements – and each contains criteria or conditions that the applicant has to fulfil before applying for registration.

The minimum criteria for a person applying for registration as an installation electrician is that he/she must have a trade qualification either as

- an electrician
- an electrician (engineering)
- an electrician (construction)
- a millwright (electro-mechanical)
- a lift mechanic or
- the Electric: Chemical Electrical NQF level 4 qualification issued by the Chemical Industries Education and Training Authority (CHIETA).

<sup>&</sup>lt;sup>3</sup> <u>http://allqs.saqa.org.za/showQualification.php?id=72051</u>

<sup>&</sup>lt;sup>4</sup> https://ecasa.co.za/member-support/process-required-to-register-as-a-registered-person/

<sup>&</sup>lt;sup>5</sup> http://allqs.saqa.org.za/showUnitStandard.php?id=258966

<sup>&</sup>lt;sup>6</sup> https://www.ee.co.za/article/procedure-register-master-installation-electrician.html

The next step is to submit documentary proof of having complied with industry standards on inspection, testing and certification of three-phase industrial or commercial installations prescribed by the Energy Sector Education and Training Authority (ESETA). These standards require that an assessor, registered with the ESETA, assesses applicants to ensure that they have the ability to interpret the codes of practice in various electrical installations. Applicants will also have to use test instruments and inspection reports to demonstrate that they are familiar with these, and evaluate a CoC against an electrical installation correctly.

Finally, the applicant must submit proof of knowledge of the legislation and relevant health and safety standards applicable to electrical installations by passing the subject Installation Rules as administered by the Department of Education through a further education and training campus or college.

There are two examinations for this subject and the applicant must achieve a minimum of 50% for each. Although it is not a prerequisite to write them simultaneously, the second paper must be passed within twelve months of passing the first. However, if the applicant obtained more than 75% in either of the examinations, he/she will be permanently exempted from having to rewrite that examination.

Once the assessor has found the applicant to be competent, the details are sent to the ESETA, which will then issue the applicant with a letter for the Department of Labour to this effect. Registration as an electrical contractor equipped with a wireman licence must be done through the Department of Labour. Once the electrician has received his wireman licence, it has to be activated with the Department of Labour for a one-year/three-year period. Once the licence has been activated, the electrician is given a registration number by the Department. This registration number allows a contractor to purchase certificates of compliance, and this document must be submitted as proof when purchasing electrical certificates.

The survey respondents could select how important different training priorities were for their companies. The results are shown in Figure 20, which shows that occupational health and safety and product knowledge had the highest priority by far. The third-highest priority was the training of technical electrical assistants, followed by up-skilling staff to electrician.

It is interesting to see the high importance of a more experienced and knowledgeable technical electrical assistant. This is essentially the lowest "rank" in the electrical field, and it implies that there is a more demand at the lower skills levels.

🗖 Not applica	able 🔲	Low pr	iority	<b>■ Med</b> i	um prior	ity I	High priority	
Occupational health & safety	<b>21 9</b> 39			76				
Product knowledge		10	33	3		75		
ore experienced and knowledgeable technical electrical 25		11	3	39		70		
Up-skilling existing staff to electrician	Up-skilling existing staff to electrician 39		25		33	48		
Up-skilling existing staff to Installation Electrician IE		51		26	25		43	
Recognition of prior learning		49		29	29		38	
Up-skilling existing staff to Solar PV, battery backup		58		22	28		37	
Up-skilling existing staff to ELCONOP 3		50		33	26		36	
Business management training		46		30	36		33	
Up-skilling existing staff to ELCONOP 2		45		30	37		33	
Soft skills, e.g. Sales, Customer engagement, Literacy		55		31		30	29	
I have no need for further training	88		88			38		11 8
	0 2	0 4	40	60	80 1	00	120 140	

*Figure 20: Training priorities by importance* 

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

When the responses from this question is overlaid on the skills qualifications, then a picture emerges where the priorities of the electrical business owners to develop their staff qualifications are revealed. Figure 21 shows the different pathways for an electrician. It shows the different entry points. The most important pathway that is preferred by the industry is the Elconop pathway (showed in yellow). During the business owner survey, the respondents could indicate areas where they do not need training for their staff, or low priorities. The red blocks indicate the areas that are medium or high priority. The green blocks indicate the training priorities that were of low importance. The survey showed that the electrical contracting industry had a very broad range of requirements, from the lower entry designations all the way to an installation electrician. The blue channel shows the apprentice pathway that GIZ/SD4GE is supporting. The pathway starts with a company sending a staff member to a college or a training centre for the first modules (M0-M3).

The survey also showed how important on the job or in-house training are for the industry.

Figure 21: Electrical career pathways and blockages identified during business owner survey



A critical gateway in the electrical pathway is the registration at the Department of Labour. By law, all people working on electrical installations must be registered with the DoL. To be registered, a person must have completed the right tests. Once a person is registered, they can further advance their career, and their employability is greatly increased. Once a person is registered (and qualified) as an electrician, pathways into solar, construction, energy efficiency and other routes open up.

During July, we received the official statistics from the NCBEI of individuals that are registered with the council, and their level of qualifications. By law, all individuals working as electrical contractors must be registered with the NBCEI. Using the same diagram as in Figure 21, we have added in the statistics in a purple colour in Figure 22.

Figure 22: Electrical contractor qualifications including NBCEI statistics



The permanent and fixed duration employment statistics received from NBCEI was processed and are shown in Table 2 below.

	LP, NW,			
Qualification	GP, FS, MP	EC, NC	KZN	WC
95 General Assistant	434	51	95	100
91 Electrical Assistant	7215	1550	1875	2232
90 Elconop 1	2107	354	1020	1381
89 Elconop 2	772	178	226	614
88 Elconop 3	771	216	139	437
51 Apprentice Stage 1	131	83	24	7
52 Apprentice Stage 2	42	27	13	2
53 Apprentice Stage 2	26	24	8	1
54 Apprentice Stage 4	40	20	7	1
83 Electrician, Artisan & DAM	1158	328	231	328
82 Electrical Tester for Single Phase	100	20	8	66
81 Installation Electrician/Foreman	315	76	90	46
80 Master Installation Electrician	333	37	38	26
94 Storeman	225	36	13	39
85 Driver up to 3500kg	165	31	29	17
86 Driver 3501kg to 16000kg	216	26	13	18
87 Driver 16001kg and over	221	8	7	12

#### Table 2: NBCEI permanent and fixed duration employment

Source: NBCEI

#### 4.1.2 Labour

In the electrical contractor survey we asked the respondents to identify the number of staff of different skill or employee types (Questions 19 and 20 in the survey). The results in Figure 23 show that across all employee types, the average number of employees is less than two.

Figure 23: Number of employees by type



Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

The survey determined how the respondents recruited their electrical and technical appointments (see Figure 24). It is striking that recruitment agencies are the most important avenue by far, with newspapers in a distant second place. The smaller number of firms that pick up workers at the roadside speaks to the formalised environment that South African electricians operate in. A quick look at some online recruitment sites and newspapers showed that the adverts are mainly for higher-qualified workers, i.e. installation and master installation artisans with several years of experience.



*Figure 24: Typical recruitment avenues for electrical/technical appointments* 

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

#### 4.1.3 Finance and capital

To better understand how the workforce was organised, we asked the owners to state how many teams and vehicles they used in their companies (Figure 25). In the electrical survey the numbers of teams and vehicles were closely correlated. This may imply that a barrier to growth is the ability to add and finance additional vehicles. It is also notable that at a level of

4 or more vehicles, some vehicles are not in use. This could be a sign of the current economic conditions, with many companies reported to have cut back on staff.



Figure 25: Number of teams and vehicles

#### 4.2 Advanced factors: knowledge, technology and institutional support

Advanced factors are mainly about specialised infrastructure, technological institutions and the flows of knowledge in the system. While it is easy to see how knowledge can flow into a sector (like the electrical sector) through the formal education system, a lot of tacit and advanced knowledge that is more oriented to problem solving is disseminated through other means.

During our research we detected the following enablers of advanced factors of production:

- Trade journals
- Trade events

It is important to note that in Figure 20, the training priorities of company owners in many cases were safety, products and technical aspects. However, softer issues such as business management and sales also showed up in the results.

#### 4.2.1 Trade journals

There are several trade journals that directly target the electrical contracting industry. However, electrical technology is also covered in numerous other trade journals aimed at the built environment, security, alternative energy and other areas of specialisation.

The journal SA Electrical Contractor is published by the ECA six times a year. It is packed with articles about new technologies, changes in legislation and standards, regional events,

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

technical specifications and legal advice. The *SA Electrical Contractor* has regular features on, among others, diversity, gender equality and contractual issues.

*Vector* is the official journal of the Institution of Certified Mechanical and Electrical Engineers, and the official journal of the Illumination Engineering Society of South Africa. It is also endorsed by the ECA. This journal is more technical and consists of four sections that cover lighting, drives and switchgear, mechanical technology and construction and installations.

The journal *Energize* is more focused on power and energy. It is an informative journal that covers electricity generation, distribution, installation and alternatives. It contains regular features on green buildings, sustainable energy and energy generation and transmission.

Both Vector and Energize are published by EE Publishers.

Creamer Media's *Engineering News*<sup>7</sup> covers electrical and power engineering. They have several electronic newsletters that address topics such as power engineering, solar, microgrids and large electrical installations.

#### 4.2.2 Trade events

Several well-attended trade events are held annually in South Africa. The next Power and Electricity World Africa event is scheduled for 2020 in Johannesburg. This annual event is attended by 8 000 attendees from more than 40 countries, and has more than 300 exhibitors. The event is co-located with several events such as the Solar Show Africa, the Smart Electricity show, the Energy Storage show, the Clean Technology show and the Electric Vehicles show. It is one of the largest energy and electricity gatherings in Africa where new technologies are demonstrated, new equipment is showcased, where academics make presentations and where networking takes place.

There are several other events where electrical engineering is either addressed directly or as part of a larger trade show. For instance, there are several trade fairs for the building industry, such as the Totally Concrete expo in June. This expo targets electrical engineers, electricians and a range of building contractors.

#### 4.3 Supporting or enabling industries

The South African electrical and power equipment manufacturing sector is made up of both local manufacturers and multinationals with local factories. Many companies are globally competitive and export to many international markets. Manufacturers of electrical and power engineering equipment are supported by the South African Electrotechnical Export Council.

The electrical equipment and materials manufacturing base in South Africa is diverse and well established. It ranges from cable manufacturing to switch gear, from smart electricity meters to sub-stations.

Many international vendors have set up sales and distribution centres in South Africa.

<sup>&</sup>lt;sup>7</sup> <u>https://www.engineeringnews.co.za/page/electricity</u>

The wholesale and retail sectors are also well established, with merchants present in all the major centres in South Africa.

#### 4.4 Demand conditions

Electrical contractors are often sub-contracted by a wide range of professions, ranging from architects, professional engineers, building managers, to energy managers and other specialists. When engaging with these clients, electrical contractors are exposed to the standards, performance criteria and specific requirements of these other professions. Many of these professions are formally organised, so the knowledge is also disseminated along official channels between industry bodies, regulators and the education sector.

Figure 26 shows how the firm owner survey respondents get more business. Referrals are critical to the success of about 88% of the respondents. Owners do not seem to consider advertising as a viable avenue through which to get business. Sub-contracting is also a kind of tendering, and to work for a larger client an electrical contractor must submit a bid. It is possible to interpret "tenders" and "sub-contracted", but it is still valuable to interpret them separately.



Figure 26: Main means of getting more business

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

In the business owner survey, the respondents could indicate the relative importance of different markets for their firms. The results are shown in Figure 27. Construction, commercial maintenance and industrial maintenance are very important for more than half of the respondent companies. A third of the companies indicated that they tried to avoid local government, state-owned companies and appliance maintenance. This graph confirms the importance of the health of the construction sector for the electrical contracting business.

The avoidance of government can probably be attributed to the difficulties of getting paid by the government and the BEE requirements.



Figure 27: Client type by importance

The business owner respondents could indicate for each kind of client whether they were under pressure from their clients to:

- Make faster decisions on site
- Offer faster response times
- Provide higher quality of workmanship
- Offer lower prices.

These four types of pressure from clients can be used to differentiate between different business strategies. The results in Figure 28 show that lower prices constitute the core demand across all client types. Higher quality of workmanship features most notably in construction and commercial maintenance.

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)





Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

To better understand markets not served, we analysed the response to client types not served. The results are shown in Figure 29. 72% of the respondents indicated that they did not serve government clients. It also appears that renewables and reticulation are not be a key client type. Surprisingly, almost a third of the respondents indicated that they did not provide domestic maintenance services. The ECA explained that many electricians do not want to work in the domestic maintenance market due to the very low fees.





Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

#### 4.5 Government and NGO support

Due to the regulations of the Department of Labour, the electrical contracting industry benefits from strong support from different spheres of government. The electrical trade is

recognised and well-established. The ECA receives regular requests from international and domestic NGOs and government programmes to collaborate in different development programmes, and the industry is spoiled for choice of whom they want to work with.

Due to the high visibility of the ECA in the different provinces and major centres, it is involved with government in a decentralised way.

## 5 Cross-tabulating electrical business owners' results

By cross-tabulating the responses in different questions, the data becomes more granular. We can shift from working with averages and frequencies to more differentiated archetypes. These archetypes give GIZ/SD4GE, the ECA and other industry-supporting organisations a better idea of how to customise services, skills programmes and partnerships.

#### 5.1 Size of the business

In question 8 the owners were asked what their challenges were. We analysed the responses by cross-tabulating company size with the major challenges mentioned. The results in Figure 30 show that the administrative burden tends to diminish as firms grow in size. Debtors demanding credit is more of an issue for larger companies than smaller ones. The costing of jobs is more of a concern for smaller firms than for to larger firms. The ECA explained that larger companies often have internal departments that do quotes, control expenses and manage jobs. Getting new business is a challenge for all companies. The one and fifty company sizes were under-represented in the survey, so we are careful not to read too much into the results.



Figure 30: Challenges by company size

Internal pressure by company size: for company sizes of one or greater than 50, increasing productivity and performance of current employees is the most pressing internal issue. It

Source: Electrical Contractor Business Owners Survey, (TIPS, 2019b)

should be noted, however, that the sample size is small compared to other categories. The more reliable data is the employee range between 2 and 49 due to the higher responses. What stands out is that smaller companies (2 to 4 employees) reported that they were more likely to reduce staff.



Figure 31: Internal pressure by company size

Recruitment of adequately skilled people is more of a challenge for larger companies than for smaller companies (see **Fehler! Verweisquelle konnte nicht gefunden werden.**). The larger companies are more affected by current economic climate. The impact of unregistered electricians affects the smaller companies more. The ECA interprets this as a smaller company being less likely to work on larger projects. The smaller companies (smaller than 9 employees) are complaining more about compliance. The ECA interprets this as the burden of the wage agreement. However, these companies are ignoring the value of labour stability due to the bargaining agreement.

Source: Electrical Contractor Business Owners Survey, (TIPS, 2019b)



#### Figure 32: Extreme external constraints by company size

#### 5.2 Training preferences

To better understand training preferences, we cross-tabulated the preference of training providers with company sized (see Figure 33). On-the-job training emerges as being important across all firm sizes. A greater proportion of larger firms use private training providers. We are not sure if the private training provider also offer training for administrative and office staff. The smaller companies are more dependent on online training and YouTube.



Figure 33: Training provider by electrical firm size

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

#### Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Because training is an important issue for GIZ/SD4GE and the ECA, it was decided to do more cross-tabulations with other fields in the survey. Firstly, it was decided to look at the geographic location of the respondents and their tendency to prioritise on-the-job training. The results in Figure 34 show that firms based in Gauteng a more frequently prioritised on-the-job training, followed by the Western Cape.



Figure 34: Electrical firms: on-the-job training and location

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Those respondents who use ECA training centres are most likely to be based in the Western Cape and Gauteng as shown in Figure 35. This is not a surprise as the ECA training centres operate in these two regions. However, the high number of responses in the Eastern Cape must be further investigated. None of the respondents from the North West or the Northern Cape indicated that they used the ECA training centre.

Figure 35: ECA training centres prioritised by different provinces



Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Respondents who used private training providers are mostly based in Gauteng. No users of private training providers were found in the Northern Cape.



Figure 36: Private training providers by province

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

On-the-job training is by far most common among companies that have been operating for more than 20 years – they likely speak to older companies with highly experienced staff within their ranks, thus making on-the-job training the best option (see Figure 37).

Figure 37: On-the-job training by years in operation



Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Firms that have been operating for more than 20 years are approximately two times more likely to make use of ECA training centres than the other categories (see Figure 38).



Figure 38: ECA training provider preference by years of operation

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

Results suggest that firms that have been operating for less than 5 years and more than 20 years are most likely to make use of private training providers (see Figure 39).

Figure 39: Private training provider preference by years in operation



Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

#### 5.3 Owner age and company age

A notable proportion of owners aged 55 to 64 years own business across all firm age group categories, thus suggesting that older, more experienced people are entering and starting in the sector (See Figure 40).





Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

#### 5.4 Job estimation and costing

During the design of the business owner survey, the ECA expressed the view that many companies are not using timesheets. In the survey, respondents who indicated that they used timesheets also indicated that costing of jobs is not so much of a challenge (see Figure 41).



Figure 41: Cross-tabulating job cards with costing challenges

It was decided to cross-tabulate the responses that dealt with costing problems of those who used timesheets.

We cross-tabulated the costing of jobs with the internal pressure on the company (see Figure 42). Costing of jobs is likely to be a challenge for those firms that reported "reducing staff, do more work with fewer people" as an internal pressure. The respondents who selected internal pressure to expand the business or to increase productivity indicated that costing of jobs was not a challenge.



Figure 42: Internal pressure on those who reported that costing of jobs was a challenge

Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

#### Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

After discussing the results with the ECA, we decided to probe even deeper. The respondents who indicated that "management of staff is a challenge" were cross-tabulated with the response to "costing of jobs is a challenge or not" AND the business priority. The results are shown in Figure 43. The graph on the left shows that companies that find it harder to manage staff also report that costing jobs is a challenge. The owners who had the most challenges with costing of jobs and staff prioritised reducing their staff. The graph on the right shows that business owners who reported that managing staff was not a challenge, also responded that costing was not a challenge. Again, those owners who reported wanting to reduce their staff also had more challenges with job costing.



Figure 43: Cross-tabulating staff management challenges with costing of jobs AND business priority

Source: Electrical Contractor Business Owners Survey, (TIPS, 2019b)

We cross-tabulated the number of teams and vehicles with the number of years of operation of the company (see Figure 44.

Figure 44: Number of teams and vehicles by operating years



Source: Electrical Contractor Business Owners Survey (TIPS, 2019b)

The graph shows that the younger companies are more likely to have fewer teams and vehicles. It is interesting to note that the older companies often have 2 to 3 teams.

# 6 Recommendations from the electrical contractor industry diagnosis

Based on the industry diagnosis, we have developed several recommendations to GIZ/SD4GE and the ECA.

#### 6.1 Recommendations to the ECA

Question 27 in the Electrical Owner Survey asked, "What training do you want from the ECA?" The results are categorised in upskilling; price; business support; solar and other training; apprentice; and other comments. Training in solar was requested 18 times just in the small sample of organisations. Nine requests in the sample were for business-related training. Fourteen requests were for upskilling of staff to the next level of qualification. See Annexure 2.8 for the full list of requests.

Question 32 in the Electrical Owner Survey asked, "Do you have any suggestions for the ECA?" Suggestions are categorised by the ECA: unlicensed electricians; employment support; NBCEI; Department of Labour; and training. See Annexure 2.9 for the full list of suggestions.

Several respondents wanted more information from the ECA about their service offerings and about specific courses. The ECA should follow up with the companies to provide them with feedback. Members outside of the Gauteng and Western Cape wanted more training events and networking opportunities.

The survey offers an benchmarking opportunity for the people who participated to compare themselves with other respondents in order to improve their management practices.

Answers to several of the questions provided interesting information that could also be used in a poll form or in future surveys, as time-series data allows better analysis of changing conditions and priorities. One suggestion that was raised was to use a shorter survey instrument at member meetings to poll priorities. However, that may require very specific questions that must also take into account selection bias (in terms of the profile of the contractor who attends these meetings and who will be willing to participate in a poll). We strongly recommend that the ECA conduct a repeat of this survey, but to ensure that broader participation. PEM/Mesopartner and GIZ/SD4GE or TIPS will be able to advise the ECA on how to shorten the survey to make it easier for contractors to participate.

The course material being developed by the ECA (Johnny Cunniff) will be extremely valuable for electrical contractors wanting to conduct their own in-house training. There is pressure in the industry to upgrade the qualifications, performance and productivity of existing workers.

#### 6.2 Recommendations to GIZ/SD4GE

The industry diagnosis revealed the extent of the pressure on the electrical contracting market. There are high demands for skills development that will improve the performance and productivity of workers across a wide range, from the basics all the way to master installation electrician. The approach to training is either through an ECA training centre or by on-the-job training. With regard to the latter, the ECA is busy developing material to support company owners to conduct on-the-job training to assist employees to improve performance and pass the threshold exams and tests.

However, in the electrical market, the TVET colleges still have an important role to play. The ECA training centre is organising events in Gauteng and the Western Cape, but other provinces are underserved in the training programmes of the ECA. One of the reasons why the short courses of the ECA training centre are so popular is due to the many events using well-known electrical contractors as trainers, as well as the strong endorsement by the ECA. GIZ/SD4GE should explore whether the same calibre of trainers can be drawn into their programmes, or whether collaboration between a public TVET college and the ECA is possible. The ECA is already working with public training centres, such as the PREMOS training centre in Pretoria West, to conduct training courses in Pretoria. The trainers then use the curricula approved by the ECA for the courses.

The IRM programme is on target in the electrical market, as the survey showed that there is a strong demand for better trained electrical assistants. However, GIZ/SD4GE and the NBI would have to make sure that there are ways that currently employed staff can also participate in the programme, as the industry also stressed the importance of improving the productivity and performance of existing workers.

When compared to the plumbing industry, electrical contractors appear to be slower to take up online teaching and online guidance materials.

The electrical contractor's business owners survey revealed that there were bottlenecks in moving staff to higher levels of certification. The ECA is currently busy developing materials to support progress along the Elconop pathway. It would be important for GIZ/SD4GE to support this process. A few days' work by an expert such as Abeeda Holstock could be extremely valuable in assisting the ECA (through Johnny Cunniff) to finalise the materials. Volunteers from the ECA have already put together course materials based on different manuals, but they can probably benefit from more structured support.

The industry has also expressed demand for more training and information on PV and other green technologies. Perhaps this is an opportune time to reconnect the ECA with the other GIZ projects involved in green energy.

# 7 Conclusions

The electrical contracting industry is directly affected by the decline in the construction sector and the broader economic downturn. Electrical contractors are under pressure to cut back their expenses, while retaining their most essential and qualified staff. To cut costs, many contractors are prioritising the improvement of productivity and performance of their existing staff. Our findings are summarised in Figure 45.

#### Figure 45: Diamond of the electrical contracting landscape



Yet not all the contractors are in decline. Many respondents in the firm owner survey expressed an interest to add more adequately trained staff to their organisations. The industry prefers in-house on-the-job training and the ECA training centre. However, not all firm owners are good trainers, nor is the ECA accessible to staff beyond the centres in Gauteng and the Western Cape.

We expect that the moment the construction industry regains positive momentum, the electrical industry will be faced with staff shortages at all levels of the designation pathways.

### 8 Bibliography

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# SKILLS DEVELOPMENT FOR A GREEN ECONOMY (SD4GE)

The Skills Development for a Green Economy Programme (SD4GE) supports a structural change towards more employment-oriented dual TVET approaches in South Africa. It supports the:

- The cooperation of private and public stakeholders to promote dual training approaches
- The implementation of dual training approaches e.g. the dual system pilot project (DSPP), the centres of specialization (CoS), and dual short courses
- The strengthening of the capability of personnel involved in the implementation of dual training approaches: lecturers, in-company mentors and TVET college management.

On the German side it is implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ). GIZ collaborates with its national partner, the Department of Higher Education and Training (DHET).



Skills Development for a Green Economy (SD4GE) Programme

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