SUSTAINABILITY REPORT 2019

Algoa Brick
Algoa Port Elizabeth

Part of SWITCH AFRICA GREEN project:

'Promoting Inclusive Sustainable Practices in the South African Clay Brick Sector'

executed by the CBA, EMA and PfI

This deliverable relates to:

Task 3.2

Result 3.2.1

This project is co-funded by the European Union

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Acknowledgement

The SWITCH Africa Green project "Promoting Inclusive Sustainable Practices in the South African Clay Brick Sector" was initiated in 2018 and aims to promote sustainable practices in the South African clay brick sector. The project is co-funded by the European Union and executed jointly by The Clay Brick Association of Southern Africa (CBA), EcoMetrix Africa (EMA) and Partners for Innovation (PfI).

INTRODUCTION

In line with clay brick sustainability framework, and the sustainability categories contained therein, sustainability reports have been compiled on the basis of production data collected from various clay brick manufacturers across the sector. This data has been captured and analysed on the sustainability portal developed by EcoMetrix Africa. The data was analysed across key sustainability indicators (KSIs) which were formulated for the nine sustainability categories contained in the sustainability framework developed by the Clay Brick Association (CBA). Sector-level benchmarks for each KSI were developed on the basis of data collected from clay brick production sites across the country, which was aggregated to arrive at benchmarks reflecting performance over three baseline years (2015, 2016 and 2017).

This sustainability report is for Algoa Brick. Production performance data of the company's site(s) was collected and captured for the baseline years as well as subsequent years and was aggregated to reflect the overall sustainability performance with respect to the KSIs defined for each sustainability category. In addition, and where applicable, sector benchmarks with respect to the KSIs in each sustainability category have been reported. These can be used to assess the annual sustainability performance for each KSI against the sector's performance at an aggregate level.

Pivotal to the sustainable transformation of the Clay Brick Sector, is the ongoing monitoring and reporting on the performance of clay brick producers across key sustainability indicators. This fulfils one of the key objectives of the SWITCH Green Africa Project, funded by the European Union and jointly implemented by the CBA, EcoMetrix Africa and Partners for Innovation.

In 2017 the Clay Brick Association (CBA) developed a sustainability report for the South African clay brick sector, in which it defined nine sustainability categories. The categories were developed on the basis of similar sustainability categories which have been defined and reported on by the UK clay brick production sector since 2014. These categories are also linked to the United Nation's Sustainable Development Goals (SDGs), which were adopted by a number of countries globally on September 25th, 2015, as a set of goals to end poverty, protect the planet and ensure prosperity for all as part of a new sustainable development agenda. These categories have been adopted in the Switch Africa Green Project as means of measuring, monitoring and reporting sustainability performance at a company and sector level.

The figure below provides a schematic overview of the SDGs and how they link to the sustainability categories as defined for the South African Clay Brick sector. The sector's aspirations, with respect to each sustainability category, is also described.

1. GHG Emissions
Reduce the direct and indirect emissions of greenhouse gases (GHGs) with the aim to mitigate climate change

2. Energy
Reduce energy consumption across the clay brick value chain and increase the share of sustainable fuel in the clay brick production process

9. Continual Improvement
To improve the sustainability of the clay brick sector on a continues basis

3. Air Pollution
Monitor and mange air pollution resulting from the production of clay bricks

8. Socio-Economic Sustainability
Contribute to economic development via the facilitation of equal employee development across race and gender

4. Water
Reduce the use of water during the production of bricks and increase the share of alternative water sources

7. Biodiversity
To minimize the impact on communities and wildlife during extraction and restore the ecological conditions following closure

5. Waste
Reduce waste generation during production and improve recycling of waste during the clay brick life cycle

6. Materials
To use natural resources in an efficient manner during the production of clay bricks

The report is structured in line with the nine sustainability categories and reflects Algoa Brick's annual performance with respect to the KSIs in each category, as well as the sector benchmark (where applicable) for each KSI. The sector benchmarks are indicated with a black horizontal line in the charts in each section. Where the financial year differs from the calendar year, the data shown for the baseline years are reported in terms of the financial year, while subsequent years from 2018 onwards are based on a calendar year in line with global practices.

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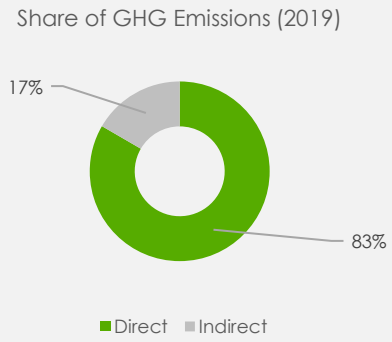
1 GHG EMISSIONS

Greenhouse gases (GHGs) arise from the clay brick production process in the form of direct emissions from fuel combustion and indirect emissions from the use of grid-supplied electricity.

Share of GHG Emissions

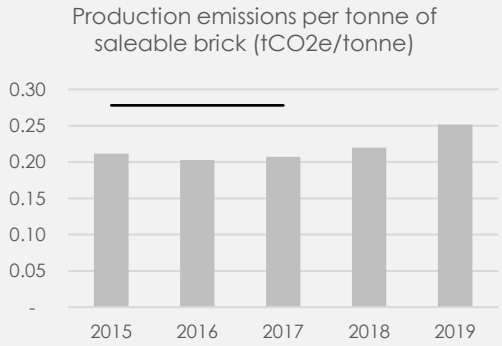
The figure to the right shows the share of GHG emissions from the two main emission categories for Algoa Brick. Direct emissions from fuel consumption accounted for 83.4 percent of total emissions and indirect emissions from electricity consumed for 16.6 percent.



Key Sustainability Indicators

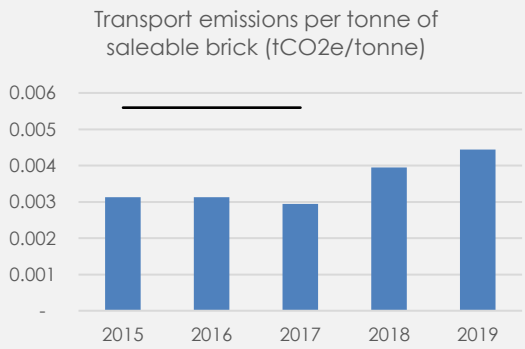
Production emissions intensity

Production emissions include all GHG emissions that arise during the manufacturing of clay bricks. Production emissions intensity is measured as total GHG emissions per tonne of saleable brick produced. In 2019, emissions stood at 0.25 tCO_2e per tonne of brick, which is 9.5 percent lower than the sector average over the 2015 – 2017 period.



Transport emissions intensity

Transport emissions include all GHG emissions that arise in the transportation of clay bricks to off takers. Transport emissions intensity is measured as total GHG emissions per tonne of saleable brick. In 2019, transport emissions were 0.004 tCO_2e per tonne of brick, which is 20.57 percent lower than sector average over the 2015 – 2017 period.



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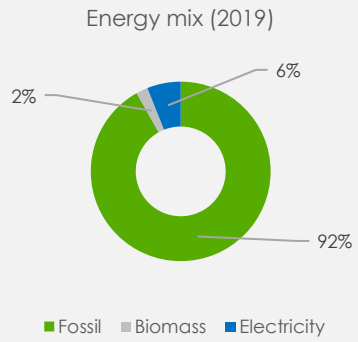
2 ENERGY

Energy is consumed during clay brick production and as related processes. Among other things, energy is used as body, firing and drying fuel as well as for transportation. Energy sources include fossil fuels such as coal, diesel and natural gas as well as biomass and electricity.

Energy Mix

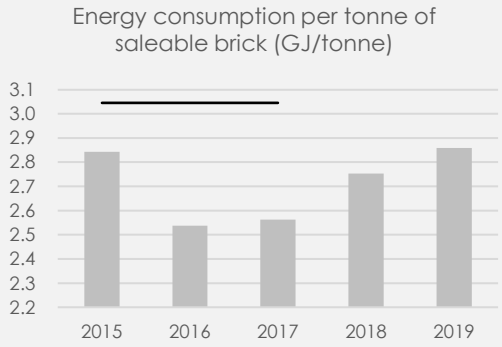
The figure to the right shows the energy mix for Algoa Brick. The energy sources consist for 91.8 percent of fossil fuels, 2.1 percent of biomass and 6 percent of electricity. The latter can include electricity supplied by both the grid and renewable sources.



Key Sustainability Indicators

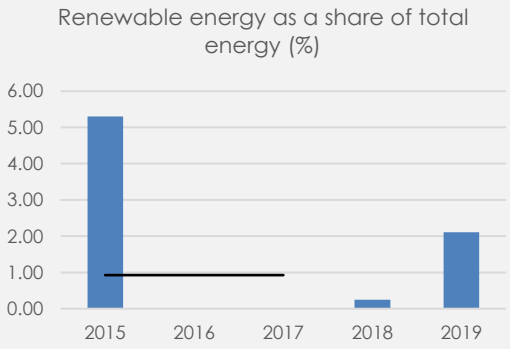
Production energy efficiency

Production energy efficiency is measured as the energy consumed in gigajoule (GJ) per tonne of saleable bricks produced. In 2019, total energy used was equal to 2.86 GJ/tonne saleable bricks, which is 6.1 percent lower than the 2015 – 2017 sector average.



Renewable energy use

Renewable energy use is defined as the total energy from renewable sources consumed as a share of the total energy consumed in the production of bricks. Alternative energy use accounts for 2.1 percent of the total energy consumed. This is 126.9 percent higher than the 2015 – 2017 sector baseline average.



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3 AIR POLLUTION

Quarrying and raw material preparation activities produce varying amounts of dust, which needs to be continuously monitored. Moreover, the combustion of fuels in the kiln during firing results in the emission of air pollutants such as sulphur dioxide and particulate matter.

Local Air Quality Management

Local air pollution from clay brick operations can present a significant environmental problem, especially in densely populated areas. For this reason, from a sustainability perspective, it is important to have controls in place that limit these emissions to what is allowed at a specific site.

Key Sustainability Indicators

Compliance to air emissions limits

The table below shows the type of air emissions and the status of compliance to local air emissions limits by Algoa Brick in accordance with the National Environmental Management: Air Quality Act 2004.

Year	Flue gas – SO_2	Flue gas – HF	Particulate Matter	Dust fall
2015	100%	100%	100%	N/A%
2016	100%	100%	100%	N/A%
2017	100%	100%	100%	N/A%
2018	100%	100%	100%	N/A%
2019	100%	100%	100%	N/A%

The status is expressed as a percentage of the sites compliance to specified air emissions limits.

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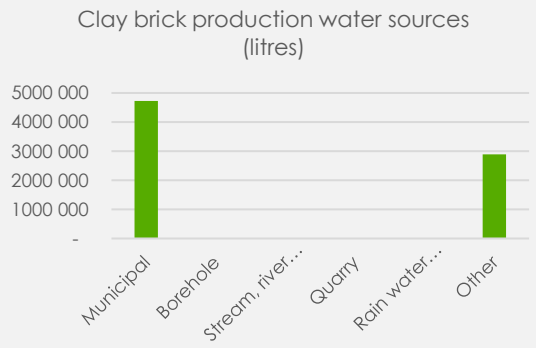
4 WATER

During the clay brick production process, water is mainly used in the mixing of raw materials (i.e. clay, body fuel and other additives) to produce the right mixture with the composition and plasticity to form the required brick type. The water can come from several sources, including mains, quarry, borehole, rainwater harvesting, rivers, streams and dams among other sources.

Water Resources Consumed

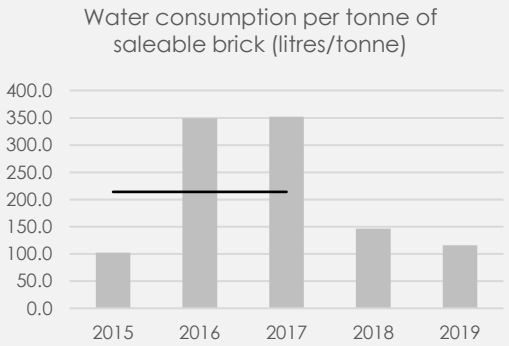
The figure to the right provides a breakdown of the litres of water across different sources for clay brick production by Algoa Brick. Overall, 7 623 000 litres of water were consumed in 2019.



Key Sustainability Indicators

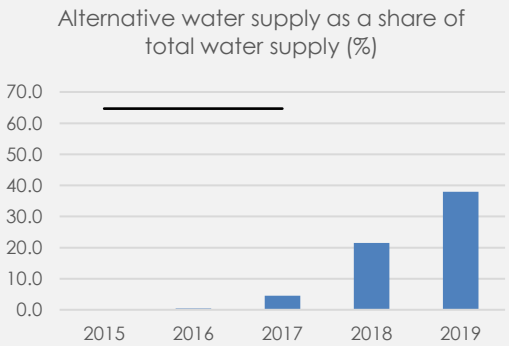
Water efficiency in production

Total water consumption in litres per tonne of saleable brick is the main measure of water efficiency in production. In 2019, Algoa Brick consumed 115.9 litres of water per tonne of brick. This is 45.8 percent lower than the 2015 - 2017 sector average.



Alternative water supply in production

Alternative water supply relates to the water consumed from non-mains sources as a share of the total water consumed in the brick production process. Overall, 37.9 percentage of water was consumed from alternative sources in 2019. This is 41.4 percent lower than the sector average for the 2015 – 2017 period.

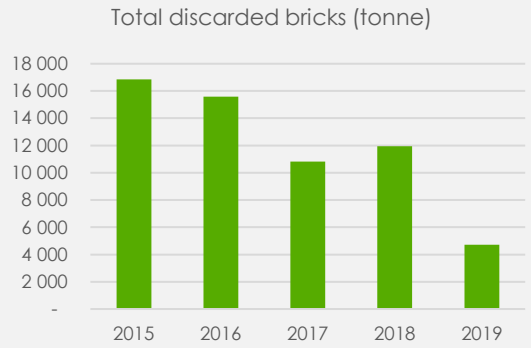


5 WASTE

Waste sources from the brick production process can range from discarded low quality bricks, strapping material, tyres and oil waste. Discarded or poorly fired clay bricks, that this report focuses on, can be reused as feedstock in the brick production cycle. This minimises the amount of waste sent to landfill and distributes their environmental impacts over an extended period (life-cycle).

Waste Generated

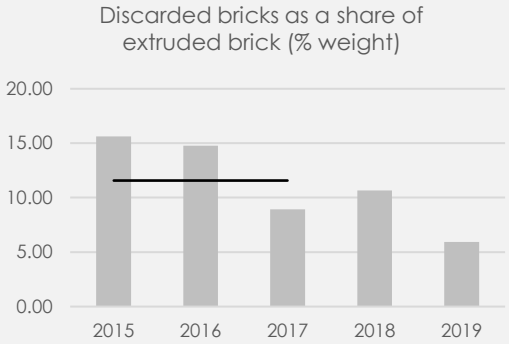
The figure to the right shows the tonnage of discarded bricks generated by Algoa Brick in 2015, 2016, 2017 and 2019.



Key Sustainability Indicators

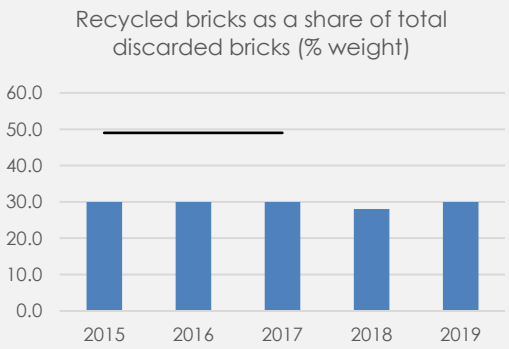
Discarded brick efficiency

Discarded brick efficiency is measured as the total amount of discarded bricks as a share of total saleable bricks. Overall, the discarded brick efficiency for Algoa Brick in 2019 was 5.93 percent. This is lower than the sector average over the period 2015 – 2017.



Brick recycling

Waste recycling is approximated by taking the share of the quantity of discarded bricks that is recycled or fed back into the production cycle. Algoa Brick recycled 30 percent of its discarded bricks in 2019, which is lower than the average of the sector.

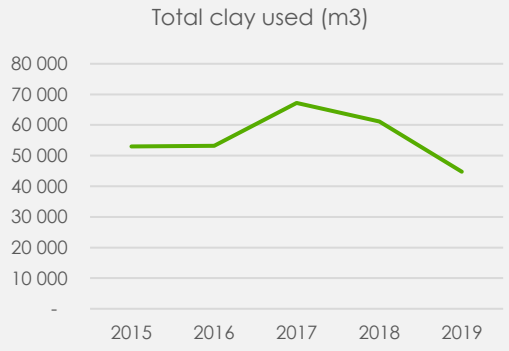


6 MATERIALS

Clay is the most common material used in the production of bricks. It is a finite natural resource, which is extracted from deposits, usually in close proximity to the brick manufacturing plant. Clay usage should be closely monitored and managed. Clay consumption is typically measured in cubic metres (m^3). Other materials used in clay brick production include packaging, pallets and colourants. This report focuses on the clay used and packaging material.

Clay Used

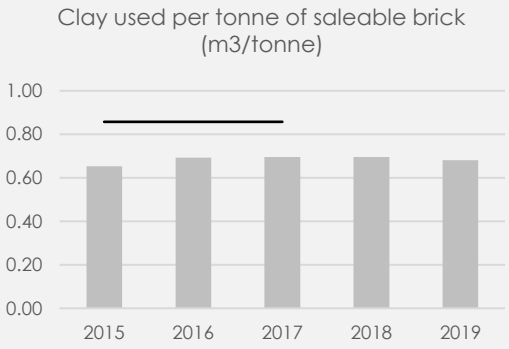
The figure to the right shows the total volume of clay used by Algoa Brick. The year 2019 saw a total clay consumption of 44 778 m^3 against an average of 57 801 m^3 for the 2015 – 2017 period.



Key Sustainability Indicators

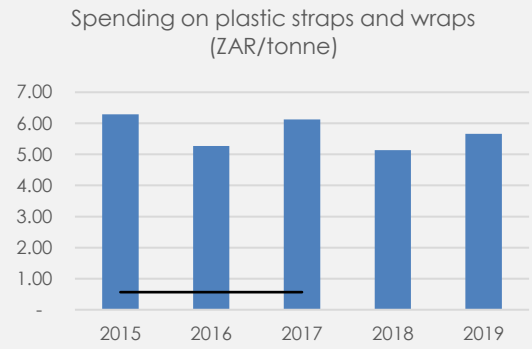
Clay resource efficiency

To gauge the efficiency of the use of clay in the clay brick production process, the volume of clay per tonne of saleable brick can be applied as a standard measure for clay intensity. For Algoa Brick, this was 0.68 m^3 in 2019.



Packaging material efficiency

Total spending on packaging material per tonne of saleable brick is used as a measure for packaging material efficiency. In 2019, this number stood at 6 ZAR/tonne, compared to 0.6 ZAR/tonne for the sector on average. Hence, packaging material use was higher than what the sector used on average.



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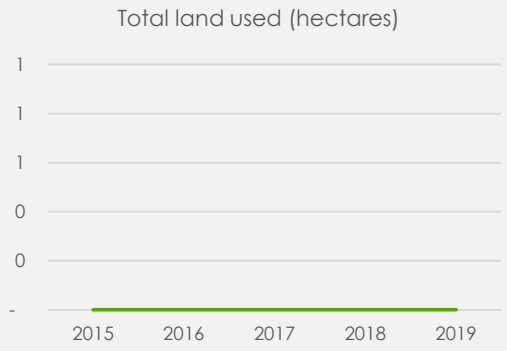
7 BIODIVERSITY

Sustainability in relation to biodiversity refers to the interaction and impacts of clay brick operations on the natural state of the ecosystems within the areas where brick operations are located. Clay brick manufacturers need to manage the direct and indirect impact of their operations on surrounding vegetation, animal life and natural water bodies.

Land Used

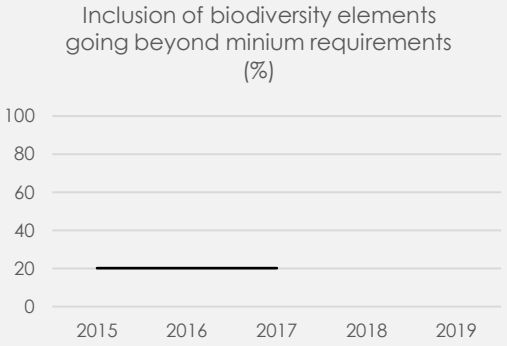
Algoa Brick operations used 0 hectares of land in 2015, 0 hectares in 2016 and 0 hectares in 2017. In 2019, land use amounted to 0 hectares.



Key Sustainability Indicators

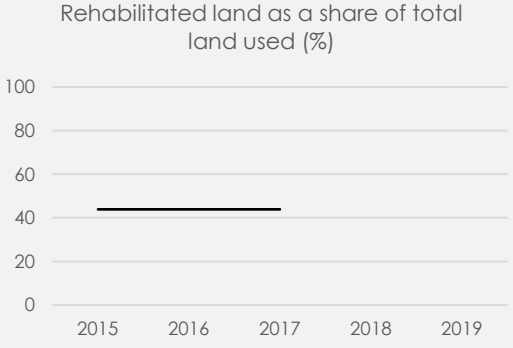
Biodiversity

Biodiversity can be gauged by the percentage of quarries for which biodiversity actions were implemented beyond the minimum requirements of the environmental management plan. By this measure, Algoa Brick included biodiversity elements in an estimated 0 percent of its quarries.



Site stewardship

Site stewardship is measured by the percentage of land used that is rehabilitated each year. In 2019, N/A percent was rehabilitated, which is N/A percent N/A compared to the sector average of over the 2015 – 2017 period.



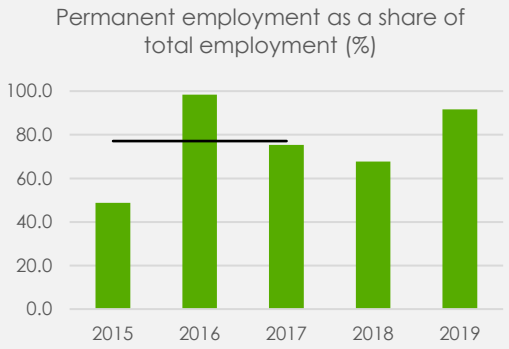
8 SOCIO-ECONOMIC SUSTAINABILITY

The formal clay brick manufacturing industry in South Africa consists of around 100 brick manufacturing sites producing approximately 3.6 billion bricks annually. These manufacturers, as well Informal clay brick producers who predominantly operate in rural areas, are an important source of employment. Below, socio-economic sustainability is measured using three parameters: permanent employment, gender equality and empowerment.

Key Sustainability Indicators

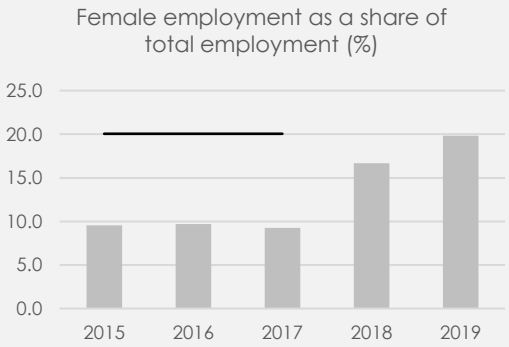
Permanent employment

Permanent employment is determined by the number of permanent staff divided by the total number of employees of the company. The percentage of permanent employment was 91.6 percent in 2019. This is higher that the sector average over the period 2015 – 2017.



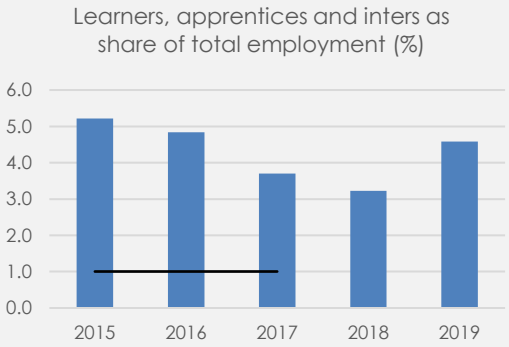
Gender equality

Gender quality is measured by female employment as a share of total employment within the company. The ratio of female employment compared to total employment was 19.8 percent in 2019. This is lower than the sector average over the period 2015 – 2017.



Employee empowerment

Employee empowerment is measured by the number of employees participating in learnerships, apprenticeships and internships as a share of total employment. In 2019, this number was 4.6 percent, compared to a sector average of 1 percent.



9 CONTINUOUS IMPROVEMENT

The need for continuous improvement should be embedded into all practices within the clay brick value-chain. Continuous improvement in environmental performance is measured by focussing on sustainability investment relating to both fuel and electricity renewable energy (RE) and energy efficiency (EE) measures.

Participation in Sustainability Monitoring

To improve its performance in terms of sustainability monitoring and reporting, Algoa Brick is participating in the sustainability monitoring programme of the Clay Brick Association and as such supplying and capturing information on the sector sustainability portal.

Key Sustainability Indicators

Investment in fuel-related measures

The figure below shows the overall capital investment in fuel efficiency and renewable fuel measures.

	2015	2016	2017	2018	2019
Total ZAR	1000 - 5000k	500 - 1000k	1000 - 5000k	> 5000k	<100k

Investment in electricity-related measures

Total capital investment in renewable electricity and electrical efficiency measures by Algoa Brick Algoa Port Elizabeth is shown in the table below.

	2015	2016	2017	2018	2019
Total ZAR	<100k	<100k	<100k	<100k	<100k

CONCLUSION

This sustainability report is based on an extensive data gathering effort through the online sustainability monitoring and reporting portal in collaboration with clay brick producers across South Africa. The report can be used at a management level, to assess the overall sustainability performance, as defined across the nine sustainability categories contained in the clay brick sustainability framework.

Continuous improvement as far as data quality is pivotal to companies being able to accurately measure and track their own sustainability performance, but also for accurate sector-level sustainability benchmarks to be formulated. This will be developed on an ongoing basis, from lessons learned in the project and brick manufacturers becoming more familiar with data entry in the sustainability portal and the benefits of sustainability reporting.