Case Study: Ibert Biogas and combined heat and power facility

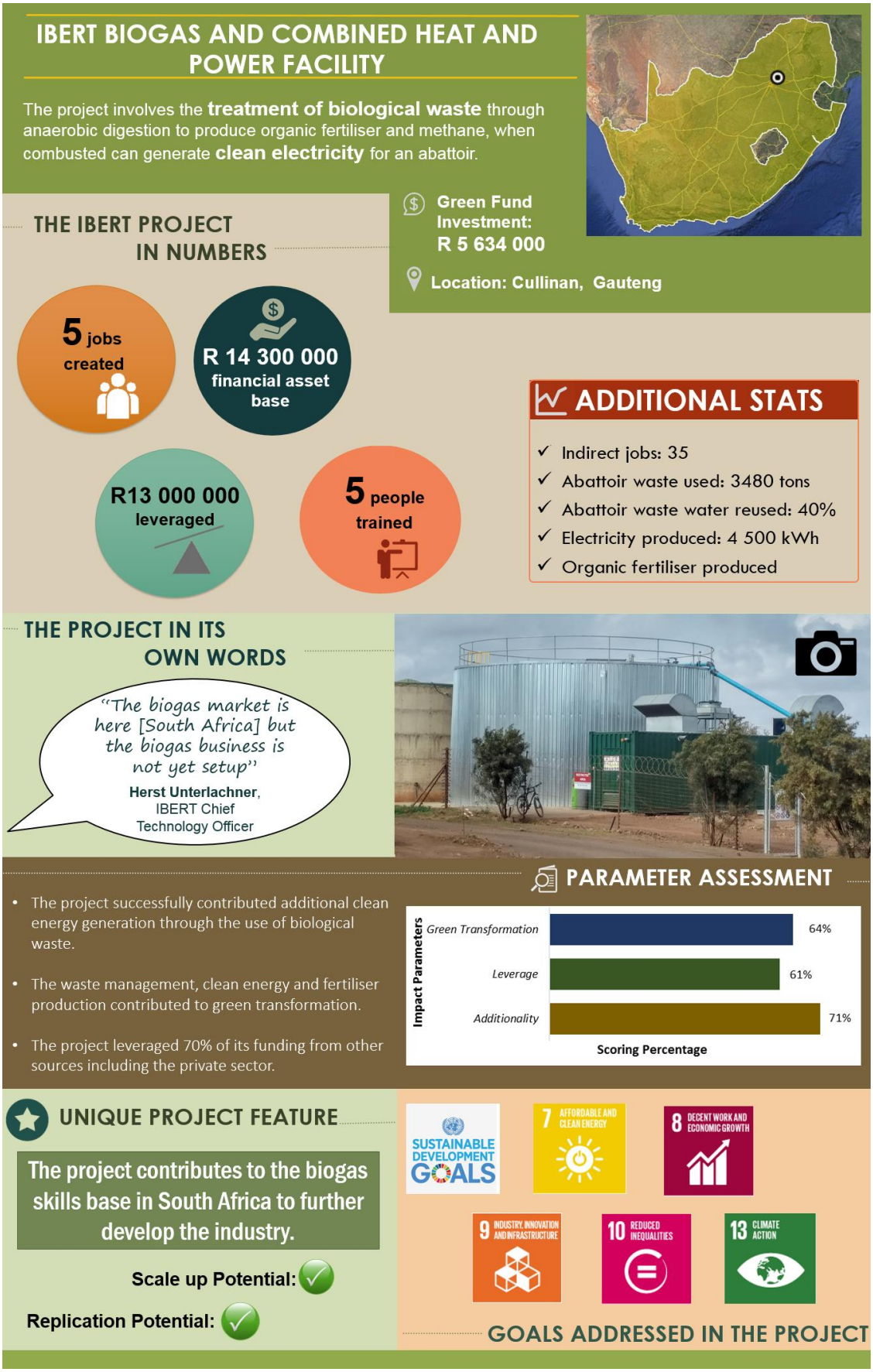
The Ibert project involves the treatment of biological waste at the Cavalier Abattoir to produce methane and organic fertilizer through anaerobic digestion. As a result this project will supply the abattoir with clean electricity from a low carbon, renewable energy source and will also assist the abattoir to use and manage its waste responsibly and effectively, imposing less environmental impact. The anaerobic digestion technology was designed by Iskhus Bio4Gas Express Reactor Technologies (IBERT) (Pty) Ltd.

The first energy supply from this project was produced in April 2016 despite initial delays with project implementation as a result of site repositioning and change in subcontractors. In addition, the excessive use of water in the abattoir has led to the dilution of the organic material used in the digester. This resulted in the organic material not supplying as much gas as initially planned for. In addition, activities has been impacted by cash flow problems as a result of the withdrawal of an equity partner who committed a significant amount of funds towards this phase.

Although this project faced a number of administrative and planning difficulties, the project implementer has put significant effort into sharing the lessons learnt from this project in order to enhance the South African bioenergy sector. In addition, as a result of this project, a specific safety valve is now being produced in South Africa. This not only supports the local biogas maintenance industry, but also contributes to building biogas knowledge and creating employment. An interesting point to note is that the project has applied more than one financing mechanism to ensure successful implementation of the initiative. The following institutions have financed the project:

- Project developer – own investment
- Green Fund – (Department of Environmental Affairs) – refundable grant
- Industrial Development Cooperation – Loan
- Global Environment Facility - Grant

Infographic 1 summarises the most important aspects of the Ibert investment project.



Infographic 1: Ibert combined heat and power facility

1.1.1.1 Causal Chain

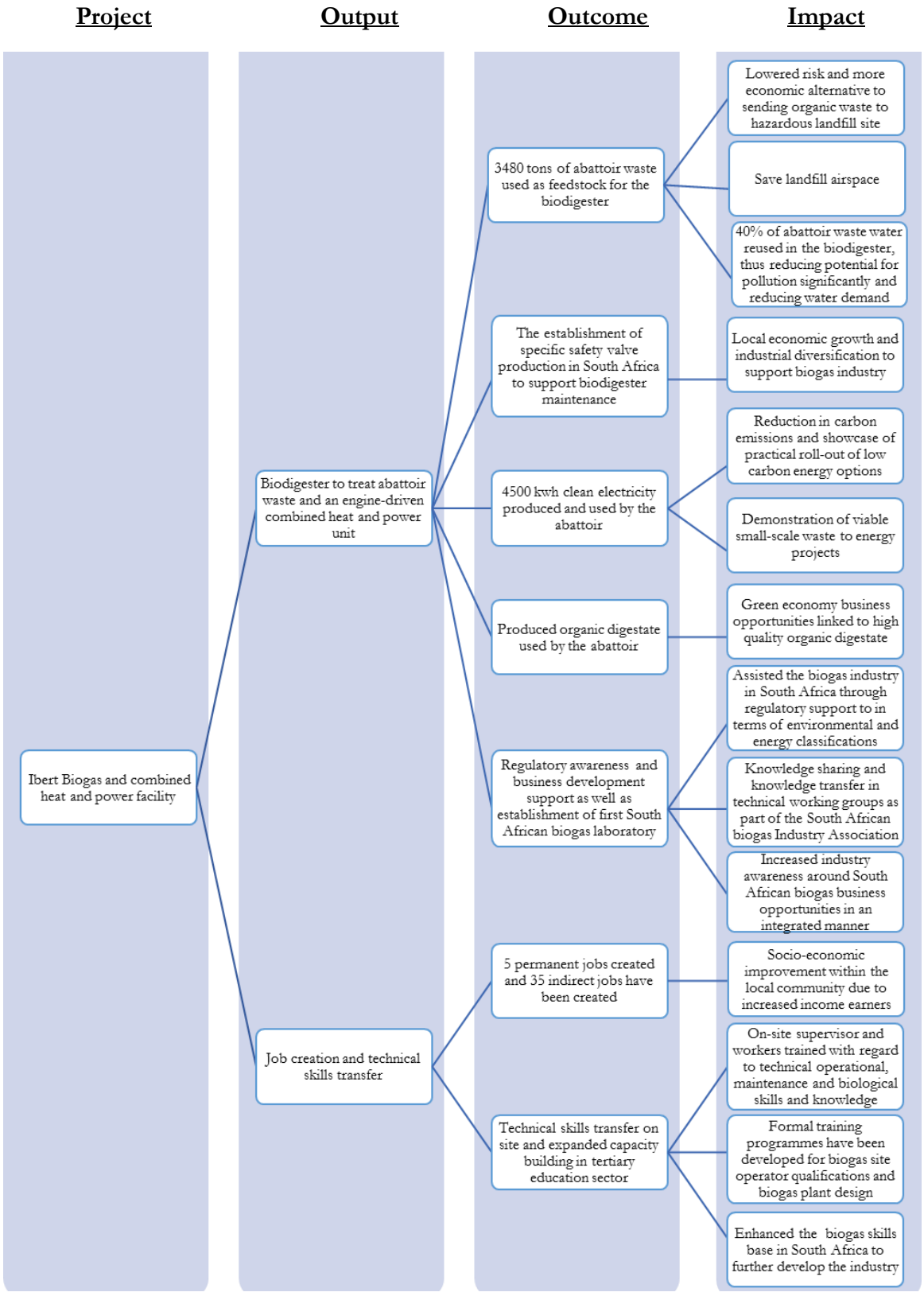


Figure 1: Causal chain for Ibert Biogas and combined heat and power facility

Impact Assessment

The Ibert investment project scored relatively consistently for the three impact parameters. The matrix below outlines the seven project outcomes for the Ibert investment project.

Table 1: Impact matrix for the Ibert investment project

Project outcomes	Green Transformation	Leverage	Additionality
3480 tons of abattoir waste used as feedstock for the biodigester	Medium	Low	Medium
The establishment of specific safety valve production in South Africa to support biodigester maintenance	High	Very high	Very high
4500 kwh clean electricity produced and used by the abattoir	Medium	Medium	Medium
Produced organic digestate used by the abattoir	Medium	Medium	Medium
Regulatory awareness and business development support as well as establishment of first South African biogas laboratory	Very high	Very high	Very high
5 permanent jobs created and 35 indirect jobs have been created	Low	Low	Medium
Technical skills transfer on site and expanded capacity building in tertiary education sector	Very high	High	Very high

The Ibert project scored highest in additionality at 75% followed by green transformation at 64% and leverage at 61%.

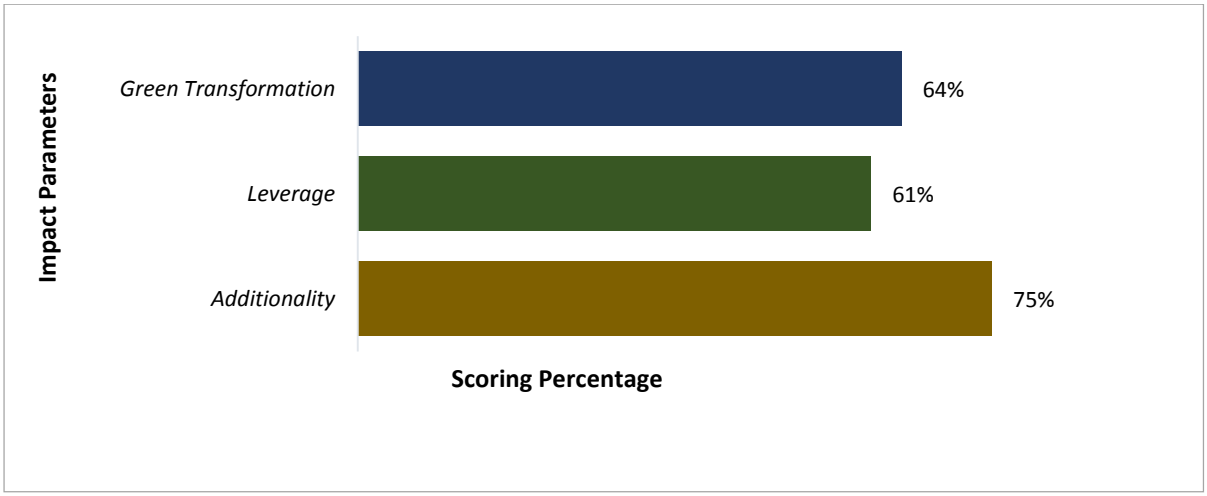


Figure 1: The scoring percentage of each of the impact parameters for the Ibert investment project

Green Transformation

The Ibert project scored 64% for its impacts in terms of green transformation. The project was particularly transformative through the on-site transfer of technical skills related to biogas and the associated training programmes that have been developed. The project is enhancing the biogas skills base in South Africa to support the further development of the industry. Another aspect of high green transformation has been the establishment of biogas safety valve production in South Africa to support local maintenance. The project has played a key role with respect to increasing industry and regulatory awareness around biogas as well as providing regulatory input and sharing technical knowledge.

Leverage

The impacts of the Ibert project scored 61% with regards to leverage. Of the project costs an amount of R13 million was initially covered by leveraged finance. However, this assessment has considered the current financial position of the project in assessing leverage which has resulted in a lower score. The regulatory awareness and technical training offered through the project also contributes to the leveraging of support for the developing biogas industry. Similarly, support for the biogas industry is leveraged through the establishment of safety valve production in South Africa for biodigester maintenance.

Additionality

With a score of 68%, the additionality of the Ibert project impacts is the highest scoring impact parameter. The project in highly additional in terms of what it contributes to the emerging biogas industry in South Africa. Both the generation and use of biogas as a renewable energy source and demonstration of abattoir waste alternatives are not business as usual. The technical skills transfer on-site and through training programmes are highly additional to the greater biogas industry in South Africa. Similarly, the regulatory awareness and knowledge sharing achieved by the project are additional to the development path of biogas in South Africa. The establishment of a biodigester safety valve production in South Africa is another highly additional project feature due to the localisation of manufacturing which would not have occurred outside of this project.