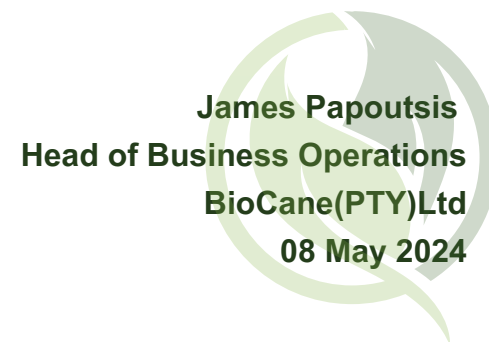


# BioCane (Pty) Ltd Cover Letter



Dear BDO South Africa,

I am writing to introduce, BioCane GreenTech, our sustainable bioplastic production business idea. We, additionally, express our keen interest in securing funding from BDO South Africa. We believe that BDO shares our vision of driving positive change and a just transition.

Our project is centered around creating sustainable economic development in the Somkhele mining community, as the Tande mine which once employed many community members is now no longer in operation. We have partnered with a local sugarcane farmer to supply the biomass, enabling us to establish our bioplastic production facility which allows for much needed economic diversification, job creation and environmental protection in the area.

We aim to contribute to environmental stewardship in the community, alongside providing for employment opportunities. Our project holds a unique proposition as we aim to tackle two significant environmental challenges by utilizing sugarcane to produce bioplastic. Traditionally, both the sugar industry and conventional plastic production have been associated with negative environmental impacts. However, by leveraging sugarcane, often seen in a negative light due to its extensive use within the sugar industry, we intend to disrupt this narrative and create a positive environmental impact. Our goal is to demonstrate that by utilising materials associated with negative connotations, sugarcane, into sustainable bioplastics, we can contribute to a greener future while addressing the issues posed by traditional plastic production.

Additionally, we plan to address the community's and our own water and energy needs by boring boreholes flowing directly into filtration tanks and installing solar panels. To facilitate a just transition we will leverage both technology and sustainable business practices, transitioning towards renewable energy sources in the area and ensuring empowering the community at large.

We are requesting funding from BDO South Africa to support the implementation of our project. With your support, financially and in terms of your strong network, we are confident that we can make a meaningful impact on the lives of the residents in the Somkhele mining community and contribute to the broader goals of sustainable development and economic empowerment in South Africa.

Thank you for considering our proposal. We welcome the opportunity to discuss our project in more detail, address any concerns BDO might have and explore potential partnership opportunities with BDO South Africa.

Sincerely,

James Papoutsis  
Head of Business Operations

# BioCane(Pty) Ltd

## Business Plan



## Contents Page

1	BioCane Cover Letter	14	Triple Bottom Line	27	Operations Delegation
2	Cover Page	15	Shareholder's Analysis	28	5-Year Budget - Costs and expenses
3	Contents Page	16	Positioning in Industry for Growth	29	5-Year Budget (continued)
4	Ownership and Management	17	SDG's addressed	30	Cost Breakdown
5	Vision and Mission	18	Risk Analysis	31	Cost Breakdown (continued)
6	Executive Summary	19	Target Market	32	5-Year Budget - Revenue and Profit
7	Market Strategy	20	Target Market (continued)	33	References
8	Market strategy (continued)	21	Target Market (continued)		
9	Technology Use	22	Global Competitors		
10	SWOT Analysis	23	Competitors SA		
11	PESTELE Analysis	24	Competitors SA (continued)		
12	PESTELE Analysis (continued)	25	Chat GPT Prompt and Response		
13	PESTELE Analysis (continued)	26	Chat GPT Prompt and Response (continued)		

# Ownership and Management

Meet the **BioCane (Pty) Ltd** team

**BioCane (Pty) Ltd** has been established as a private company that is mainly owned and managed by 6 individuals, namely:



## Our Vision

Plastic waste is a global concern. It has been estimated that over 300 million tonnes of plastic are produced annually, of which 19-23 million tonnes end up in aquatic ecosystems, polluting lakes, rivers, and innumerable habitats on a global scale. This does not account for the extensive magnitude of plastic that ends up in landfills or our surrounding environment annually.

We seek to diminish the damage done plastic by plastic through the production of sugarcane bagasse bioplastic.

Bioplastic is a biodegradable plastic that is made or derived from biological materials.

Unlike its synthetic counterpart, which can take up to 500 years to decompose, bagasse takes no more than 6 months to decompose completely. Making it the more environmentally friendly and the more sustainable option by a landslide.

Through collaboration with the South African sugar industry, which is ranked in the top 15 of approximately 120 sugar-producing countries worldwide, we as BioCane Ltd will not only reduce plastic pollution and carbon emissions but also promote economic growth, and cultivate a sustainable future, both domestically and globally.

## Our Mission

Our mission is to leverage bagasse sugarcane bioplastic production to create high-quality, sustainable solutions that help clients make a just transition from the usage of synthetic plastic to a biodegradable, environmentally friendly bioplastic alternative. By offering environmentally friendly substitutes, we hope to transform the plastics sector while also empowering the community and promoting regional economic development. Through collaboration, diversity and the use of technology we strive to be paragons of excellence by conserving the environment and enhancing the quality of life in the community of Mtubatuba.



## Executive Summary

Our company, BioCane , seeks to address two critical issues simultaneously: the environmental impact of traditional industries and the economic revitalization of the Somkhele Mining community. Inspired by the urgent need to transition away from environmentally harmful practices, BioCane will utilise sugarcane, historically associated with negative environmental consequences, to produce bioplastic—a sustainable alternative to conventional plastic.

Operating in the Somkhele mining community in KwaZulu-Natal, BioCane GreenTech hopes to be the forefront of sustainable development, economic diversification, and job creation. By partnering with a local sugarcane farmer, we aim to provide a viable market for their produce thus empowering the traditional farming culture and help the farmer expand their farm, create jobs and invest in modern, efficient agricultural practices.

Our bioplastic production facility will leverage renewable energy sources, with 100 solar panels dedicated to powering our operations and an additional 50 panels allocated to providing electricity to the community during load shedding thus contributing to a just transition in the mining community. To highlight our commitment to environmental sustainability and address the lack of water in the area, we plan to bore 12 boreholes thus ensuring sustainable water access for both our facility and the surrounding community. We aim to redefine the narrative surrounding industries with negative environmental impacts, paving the way for a greener, more sustainable future.

We invite collaboration with local stakeholders, including our sugarcane supplier, community organizations, sustainable boring companies and renewable energy companies, to ensure the long-term success and viability of our initiatives.

# Go-to-market strategy

## **We have 2 go-to-market strategies:**

- One focused on generating revenue.
- The other focused on giving back to the community in which we operate (Corporate Social Responsibility).

## **Income generating**

### **Market**

Plastic manufacturing has contributed to approximately 1.9% of the country's GDP, constitutes around 16.6% of the manufacturing sector, and has been defined as a crucial sector by the government. However, most of these manufacturers are not sustainable. BioCane (Pty) Ltd aims to enter the market and provide an eco-friendly and sustainable substitute.

### **Value proposition**

We provide high-quality plastic to our customers through collaboration, diversity, and the use of technology whilst doing the least possible damage to the environment. By using sugarcane, one of South Africa's largest natural resources, we provide biodegradable plastic through the use of an entirely solar-powered production process. By purchasing our products consumers will not only be contributing to the conservation of the environment but also economic development and sustainability.

### **Target market**

Consumers who value sustainability and are looking for eco-friendly alternatives to synthetic plastic.

### **Channels**

Bioplastic is sold to customers from our factory based in Mthubatuba KZN as well as our website depending on the personal preference of the customer. Should a client based in South Africa be unable to collect the goods, BioCane (Pty) Ltd will provide delivery at a fee that is specific to the distance travelled for the delivery.

### **Competition**

We have several South African based competitors. These include, but are not limited to, Ethekeeni Plastic Manufacturers, Tough Plastics T/A Coxen Plastics, and Duratract Plastic (Pty) Ltd. Many of the aforementioned entities however, produce synthetic plastic that is detrimental to the environment. Our unique selling point is that we not only provide high-quality plastic but also prioritise the environment during and after production.

# Corporate Social Responsibility

## Value proposition

Other than shareholder wealth BioCane (Pty) Ltd also prioritises giving back to the community. This is done through job creation as well as the installation of boreholes, water purification systems, and solar panels in the local community.

## Target Market

The Somkhele mining community that has suffered many losses due to the closure of the mine in their community.

## Channels

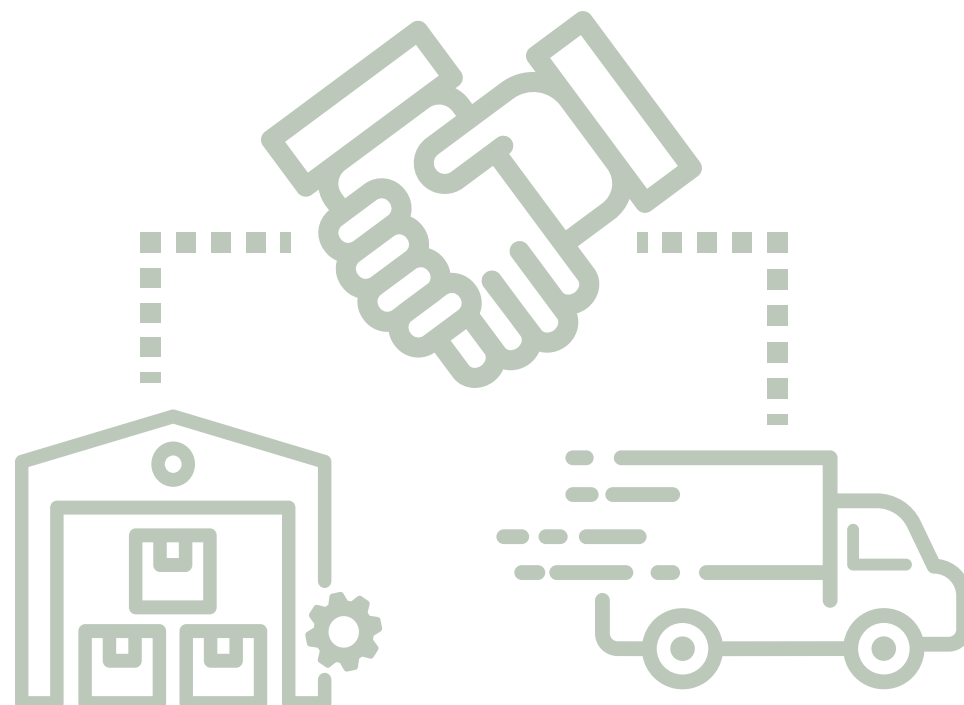
We will start our recruitment process in the local community. This will create a new job opportunity for those who lost their jobs due to the mine closure as well as others seeking work.

Solar panels will be installed in the community and the factory solar panels will also feed into the community's electricity to provide consistent and eco-friendly energy.

Boreholes will be installed to provide water for the community. This water will then enter a water purification system that will deliver quality water to each household.

## Revenue Streams

The solar panels, boreholes, and purification systems will be installed using a portion of the original budget of R10 million. Any maintenance carried out thereafter will be done using the company's profits.





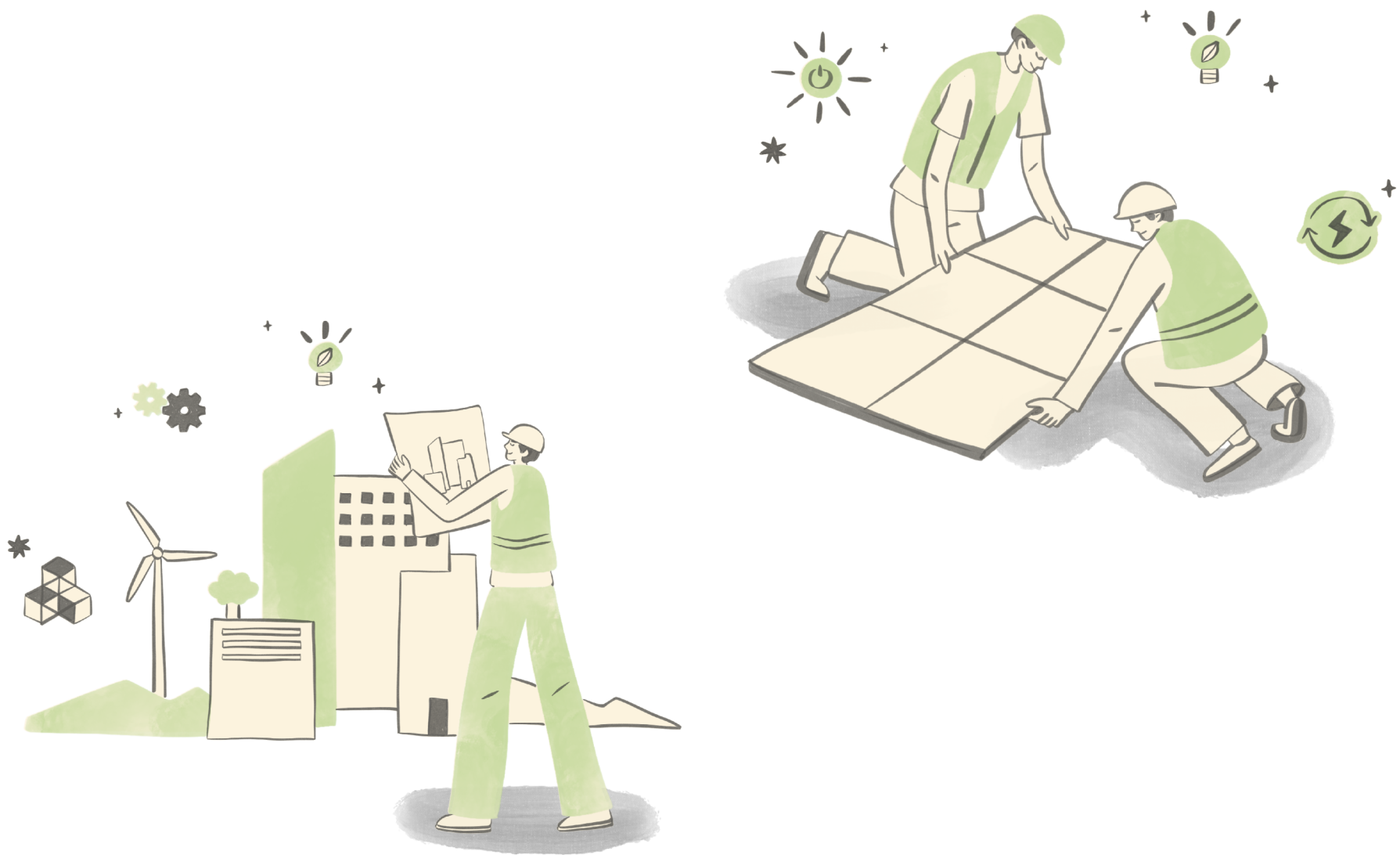
## Technology use

Our business plan has a well formulated system to incorporate the technological advancements of the Fourth Industrial Revolution. By manipulating and using such technologies we were able to make developments within the business that support both sustainability and profitability.

Some of the technologies used include the use of an online store or delivery service. By using the internet to distribute and sell our product we can reach a much larger audience and thus improve profits. This moves away from the traditional physical store which increases clustering in towns and cities.

Another technology is the use of solar energy as a renewable and sustainable energy source. By investing in solar panels, batteries and invertors we were able to fully run our operation off solar power in our first year of production, above that we were able to invest excess capital.

The use of new advanced machinery that is used during the production process was another one of our main technological processes. Through extensive research we found equipment that will lessen the impact of the production process on the environment, Although the price of the equipment increased exponentially it fit within the boundaries of our budget and provided us with far greater benefits in the future.



# SWOT Analysis

## Strengths:

- 1. Environmentally friendly:** Bioplastics are manufactured from sugar cane. This helps to combat growing environmental issues while also providing a sustainable alternative to synthetic plastics. This allows us to contribute to a greener South Africa.
- 2. CSR and CSI:** Construction of borehole water systems in Mtubatuba tends to a need for clean water, resulting in a beneficial social impact. Hence, we are contributing towards SDG 6, Clean Water and Sanitation. We also intend on providing the community of Mtubatuba with a solar power plant which will generate green electricity which addresses SDG 7, Clean and Affordable Energy.
- 3. Tending towards changing customer preferences:** The biodegradable plastics market is experiencing growth due to increased emphasis from governments and other organizations on climate change, changing customer preferences. By focusing on bioplastics, we are working towards reducing our carbon footprint while capitalizing on a new market.

## Weaknesses:

- 1. Complicated production process:** Our business operational processes require a great deal of skill and attention to detail. It is to ensure that the best quality bioplastics are produced. The chances for error are very large and the business must work extremely hard to minimise this.
- 2. Requires a high amount of capital:** The start up and operation costs of our bioplastic production facilities as well as the construction of the solar farms alongside the borehole water initiative we want to run, require a significant upfront investment. This is why we hope BDO as our main shareholder can come to the table and contribute a substantial amount to the business.
- 3. Market Competition:** Both sectors in which we want to operate within face competition from established businesses which requires our business to offer unique products in order to obtain a large market share.

## Opportunities:

- 1. Changes in Technology:** To maximise efficiency while still maintaining competitive prices on our products, we have to continuously stay at the fore front of new technology which improves bioplastic production methods. Doing so will allow us to capture a larger market share.
- 2. Potential to expand further:** Other than Mtubatuba, there's potential for broad expansion of our mission to provide communities with clean and safe water into other towns with similar challenges relating to economic growth and water access.
- 3. Partnerships and Collaborations:** Working alongside our government, NGOs, or international organizations can provide access to funding, expertise, and resources for scaling operations.

## Threats:

- 1. Changes in regulations:** Changes in regulations are not uncommon in South Africa. These changes could affect our production processes which in turn could affect overall profitability. It is our job to make sure we stay informed about any regulation changes to prevent our company from being on wrong side of the law.
- 2. Volatile market:** The preferences of customers are ever-changing; prices of raw materials are prone to regular fluctuations as well as the availability of raw materials are issues which our company will inevitably encounter. These have an effect on production of bioplastics.
- 3. Environmental and service delivery issues:** Droughts and natural disasters can influence sugar cane supply chains, which will causing operational concerns. South Africa is a country which deals with its own fair share of water challenges as well as 'load shedding' and these could become a potential hinderance to the business.

# PESTELE Analysis

## **Political:**

Conflict in and between nations: political instability and trade wars pose a big threat to the sustainability of our business. It can affect our supply chain as well as market access to the products offered.

Government incentives: governments may decide to incentivise companies who are more sustainable in their day-to-day operations to do more towards achieving a greener south Africa. These may be in the form of government subsidies or tax credits. These could benefit our business as we prioritise acting sustainably over profits.

Government policies: local government may introduce new policies about the environment, renewable energy, and construction. These may affect our day-to-day operations potentially increasing our overhead costs and potentially further complicating our operations.

## **Economic:**

Economic growth: since we are operating our business mainly in South Africa, the economic growth of our country directly affects our business. It influences the number of potential investors willing to invest into our business as well as the fact that it affects the customers which buy our products. Low economic growth leads to a sellers' market which poses a threat to our profitability.

Exchange rate: The South African Rand is weak in comparison to most external currencies. It is also subject to fluctuation in its value. This means that almost everything that is imported into SA from outside of the country is going to be expensive. We have to pay higher prices than companies based in other countries to import certain materials. This affects products cost as well as our overall profitability negatively.

Inflation: Inflation is inevitable in south Africa. It is a problem in which businesses must adapt to or else they will fail. It affects our pricing strategies as we have to price goods in such a way that it is affordable but still is relatively profitable.

Unemployment rate: South Africa is currently going through a huge unemployment crisis. There is a record number of unemployed young individuals unemployed in the country. A high unemployment rate means that there is a smaller pool of customers to market our goods to which means that there has to be greater emphasis on the quality of products we sell or else, competitors will have an edge over us.

## **Social:**

Changes in preferences: nowadays individuals have become more aware of the state of our climate and are thus going to be more inclined to purchase a product which not only is high quality but is also not harmful to the environment.

According to the UN, 65% of people aged between 18 and 35 agree that climate change is an emergency. Our main product being bioplastic is a positive to us as we are offering an affordable alternative to a harmful substance in synthetic plastics.

Lifestyle barriers: Not all South Africans live the same lifestyles. There is a great disparity between the 'rich' and the 'poor'. Hence, they both afford different things. The middle class and poor people are more likely to go for the cheaper option and not necessarily the best option for the environment based on their income level. Whilst the 'rich' purchase more sustainable products as they can afford most products and don't need to worry about finances. They aren't limited by their lifestyle.

Age distribution: We are most likely going to target middle aged people as they are the subset of people who have the resources to be able to support our businesses. Younger people may have an interest in doing so but may never necessarily do it. The young are more likely to be unemployed whilst older people have more disposable income.

## **Technological:**

Technological changes: technology nowadays is changing very rapidly. What was new a few months ago is probably outdated by now. We are in a technological renaissance. As a business we have to keep up to date with any changes with technology that is relevant to our industry. However new technologies do not come cheap at all and may require a great deal of capital to fund. Our company needs to be at the forefront of any technological changes that occur within our industry so that we can be ahead of our competitors.

Technological awareness: On top of having to ensure that we have the most up to date technology within our business to maximise production which increases profitability, we also need to ensure that our employees are well-equipped to deal with the technology that has been provided. This means training them to be more comfortable with using said technology which could be potentially large expense for the business to cover.

## **Ethical:**

CSI (Corporate Social Investment); The company's internal structures have to be ethically correct to ensure that we are not guilty of non-compliance with labour laws. We also have to contribute to the betterment of our employees. We are responsible for ensuring we are not found guilty of unethical behaviour like corruption. The company should donate to local causes that address issues which affect the community.

CSR (Corporate Social Responsibility): The company must address social and environmental issues of the community it operates in as best as possible. The company has the responsibility to not harm the environment or the people within the community in which it works in. We also have to promote diversity and inclusion within our internal and external structures. Our company is committed to providing better opportunities for those in Mtubatuba and to ensure that we make the town better than the way we found it. This could be in the form of providing employment opportunities as well as humanitarian assistance where needs be.

Marketing: The company has the responsibility to ensure that any advertising campaigns which they put out into the public are not misleading in any sense and that they provide a true reflection of what the product is. The company must be in compliances with the various ASA regulations. This builds credibility and trust with stakeholders and customers.

## **Legal:**

Regulatory Compliance: The company must be in compliance with the various laws and bylaws set by the regulatory bodies in South Africa to be legal and to maintain public trust.

Intellectual Property Rights: Our company needs to get the necessary documentation to acquire patents, trademarks and copyrights for our prized assets to ensure that nobody else can replicate what we do.

Contractual Agreements: Legal contracts, agreements, and permits for water infrastructure projects, land use and use of certain chemicals/ products must be carefully negotiated and adhered to, to guarantee project legality and to reduce risk.

Health and safety laws: there are certain health and safety laws that have been set out by the department of health and sanitation and well as the department of energy which our business is forced to adhere to. We need to ensure that we are constantly in the know when it comes to the specified regulations set out.

## Environmental:

**Climate Change:** Climate change impacts, such as water scarcity, extreme weather events, and biodiversity loss, influence water resource availability, agricultural productivity, and environmental regulations. All of the above has an effect on the sustainability and profitability of the company. Hence it is something that our company values highly and we intend on doing our level best to do our part.

**Sustainability Initiatives:** Growing emphasis on sustainability, circular economy principles, and carbon footprint reduction drive demand for eco-friendly products and environmentally sustainable practices. This means that our business stands to benefit as we offer a greener option to synthetic plastics while using green electricity sources to power our factories and offices.

**Environmental Regulations:** Compliance with environmental standards, emission limitations, and waste management rules is vital in lowering environmental effect and meeting the demands of regulators.



# Triple bottom line

## People:

We, as an entity, see people as the very core of our operations. Without people, our company does not exist. Our entire business model is geared towards making people's lives better as best as we can. We had identified a gap in Mtubatuba that we felt had to be filled. We have decided to bore borehole water systems throughout the town of Mtubatuba.

We want to provide people with a safe, accessible water source. This is a cost-free initiative on our part in order to fulfil our social responsibility within the community. The construction of our factory is going to require workers and we intend on employing people from Mtubatuba to carry out the necessary duties in their respective roles. Our company also aims to employ full-time workers from the town to work for us in production. This will generate a plethora of jobs for the community and assist with addressing the problem of unemployment.

## Planet:

Our company prides itself in its drive towards a greener future. We envision a greener future for South Africa. With all this in mind, we too as a business want to play our role in ensuring that our dream becomes our reality. We intend on constructing a solar farm which will power our factories and various office spaces. We understand that the usage of fossil fuels for power generation is unsustainable. We want to make an effort to reduce our reliance on the Eskom coal-powered electricity grid and make strides towards a better future. We will also use the solar farms to power the surrounding area so they too can benefit from it.

Not only are we focusing on generating green energy to reduce greenhouse gas emissions and our overall carbon footprint, but we have also centred our business around developing and selling an alternative to plastics. We believe that bioplastics are the way forward. We will create these using sugar canes which are 100% natural. Plastics are harmful to the environment and are responsible for 3.4% of global greenhouse gas emissions. Bioplastics take three to six months to decompose fully while synthetic plastics take several years to do so. Biodegradable plastics are better for the environment when compared to synthetic plastics. Not only would we be contributing towards SDG 9, we also would be catering towards SDG 7(Affordable and Clean energy).

## Profit

The goal of every business to generate a profit. Our business is no different. We want to do so in a sustainable manner. A certain percentage of our profits will go towards building borehole water systems in and around Mtubatuba. We geared our business towards maximising profits but always maintaining a level of sustainability within our operations. We are confident that our operating structure will enable us to achieve our goals and have a positive impact on the lives of those within the community. We want to also ensure that we equip our employees with the best possible tools to grow alongside the company. Being profitable is a big goal of ours but that also works alongside reaching our other goals. Our focus in this regard would be SDG 8(Decent work and economic growth).



# Shareholder's Analysis of BioCane (Pty) Ltd

BioCane (Pty) Ltd, a private company owned by students from University of the Witwatersrand, proposes a dual-focused business model aimed at producing bioplastic from sugar cane whilst simultaneously operating a sub-business that constructs borehole water systems for people in Mtubatuba. Our main purpose is to create sustainable value in Mtubatuba wherein all stakeholders benefit from our operations. We want to catalyse an increase in economic activity within the community and bring a new lease on life to the community.

## Investors

BDO, as a potential Investor, plays a crucial role in the development of our factory in Mtubatuba and the foundations of our intention to start the construction of borehole water systems in the town. It is important for us to be as transparent as possible about our internal operations and our financial statements. We will do this by sending out statements to BDO as our main potential stakeholder as well as regular meetings with the relevant parties from BDO to keep them up to scratch with the goals and intentions of the company. We intend on keeping sustainability as a major aspect of our business. It will remain an important factor in our decision making.

## Employees

Our employees are one of, if not, the most important pieces of the puzzle that is our business operations. Their health, safety and development is of the utmost importance to us.

## Residents of Mtubatuba

The state of Mtubatuba currently prompted us to want to find a sustainable solution to aid the development of the community. We aim to provide them with jobs during the construction of our factories as well as to work within said factory upon its completion. Through job creation, we hope to spark the economic revolution of the town and improve the lives of multiple families in the area. We will take into consideration our residents' feedback to create a better environment for them.

## Community

BioCane (Pty) Ltd sees the community of Mtubatuba as a priority. Our mission is to incorporate local sustainability initiatives. We want to ensure that we put them in the best position possible. On top of providing jobs, we want to do our part of social responsibility and building borehole water systems across Mtubatuba. We aim to provide water to combat the struggling of the residents of Mtubatuba. We also intend on providing them with an alternative source of electricity by building 50 solar panels separate from those that power the business which will assist the community to deal with the load shedding crisis that is ongoing.

# Positioning in Industry For Growth

BioCane (Pty) Ltd is strategically positioning itself within the growing industry of bioplastics, capitalizing on the increasing demand for sustainable alternatives to traditional plastics.

Here is how our business is positioning itself for growth within this industry:

**Tapping into the Trend of Bioplastics:** The global awareness of environmental issues and the push for sustainability has led to a significant shift in consumer preferences and corporate practices. Companies across various industries are seeking alternatives to conventional plastics, and bioplastics have emerged as a promising solution. By focusing on the production of bioplastics derived from sugar cane, our business aligns with this growing trend and positions itself as a provider of eco-friendly alternatives.

**Investing in Innovation and Research:** To stay competitive and meet evolving market demands, our business is investing in innovation and research within the field of bioplastics. This includes exploring new technologies, improving production processes, and enhancing the performance characteristics of bioplastic products. By staying at the forefront of bioplastic innovation, our business maintains a competitive edge and ensures relevance in the market.

Collaborating with key stakeholders (our target market) in the bioplastics industry, including suppliers (local sugar cane farms), manufacturers, research institutions, and government agencies, is crucial for our business's growth strategy. These strategic partnerships enable knowledge sharing, resource pooling, and access to new markets, enhancing our business's capabilities and market reach.

**Diversifying Product Offerings:** While initially focusing on bioplastics derived from sugar cane, our business is also exploring opportunities to diversify its product offerings. This may include expanding into other biomass sources for bioplastic production, developing new types of bioplastic materials, or offering complementary products and services that align with the sustainability objectives of our target market.

**Adopting a Circular Economy Approach:** In line with global efforts to transition towards a circular economy, our business is adopting a holistic approach to production and resource management. This involves optimizing resource use, minimizing waste generation, and implementing closed-loop systems where possible. By embracing the principles of the circular economy, our business not only reduces its environmental footprint but also enhances its long-term sustainability and resilience.

By placing itself at the intersection of sustainability and innovation within the bioplastics industry, BioCane (Pty)Ltd is well-positioned for growth and success in the future. Through strategic investments, partnerships, and a commitment to continuous improvement, our business can capitalize on the opportunities presented by the growing demand for bioplastics and contribute to a more sustainable future.



## SDG's that we address:

**SDG 8: Decent Work and Economic Growth:** By providing employment opportunities to the residents of Mtubatuba and teaching them valuable skills in biomass and bio-plastic production, our business directly contributes to SDG 8. Creating sustainable jobs helps alleviate poverty, reduces inequality, and promotes economic growth within the community.

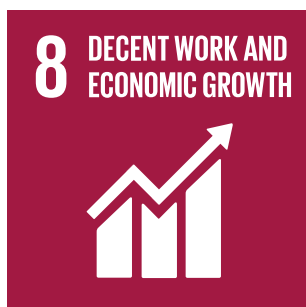
**SDG 9: Industry, Innovation, and Infrastructure:** Our plan to establish biomass and bio-plastic production facilities involves developing infrastructure and promoting innovation in the use of renewable resources. By utilizing sugar cane to produce biomass and plastic, we're contributing to sustainable industrialization and fostering innovation in the manufacturing sector.

**SDG 6: Clean Water and Sanitation:** Through the implementation of boreholes and rainwater harvesting systems to obtain water for both production processes and community supply, our business addresses SDG 6. Ensuring access to clean water not only supports our production operations but also improves the quality of life for the residents of Mtubatuba, promoting health and well-being within the community.

**SDG 12: Responsible Consumption and Production:** Our business model promotes responsible consumption and production by utilizing sugar cane, a renewable resource, to produce biomass and bio-plastic. By recycling biomass and using it as a raw material for plastic production, we contribute to reducing waste and minimizing environmental impact.

Additionally, by teaching sustainable production techniques to employees and adopting eco-friendly practices throughout our operations, we encourage responsible consumption and production patterns within the community and beyond. This aligns with the objectives of SDG 12, which aims to ensure sustainable consumption and production patterns for a more sustainable future.

By focusing on these SDGs, our business not only addresses the economic challenges faced by Mtubatuba but also contributes to broader sustainable development objectives, promoting social, economic, and environmental well-being.



# Risk Analysis

## Potential Risks

1. Supply issues : BioCane plans to use a singular local producer to supply us with the sugarcane that we need for bioplastic production, this could pose a risk of disruptions in the chain of supply. Any problems that may come about with the supplier, such as deliveries that are delayed or quality issues, can negatively impact our process of production and lead to a shortage of supply.
2. Price fluctuations: Sugarcane costs are unpredictable because of different factors like the weather, the market's demand, and government policies. Prices of sugarcane that are always changing could impact BioCane's costs and affect our profits.
3. Quality control: It is crucial for our business to keep a certain level of quality. Quality that is not consistent from the producer could lead to products that are not up to our standards, complaints from clients, and damage our brand's reputation.
4. Environmental risks: Manufacturing plastic from sugarcane may be perceived as a more sustainable alternative to traditional plastic production. However, there could unfortunately still be environmental risks associated with energy consumption if our current sustainable energy supply turns out to be insufficient, waste generation, and getting rid of by-products. If the commerce fails to comply with the necessary environmental regulations it could result in BioCane incurring fines, penalties, and taking a hit to our reputation.
5. Competition: Competitors in the market for eco-friendly plastic products continuously increase, it is evident that there are more companies that are entering the space. Keeping up with forward-moving technology and sustaining a unique advantage over said competitors, in terms of the products we cultivate, may be challenging and risky.

## Risk Mitigation

1. Diversify our supply chain: In order to reduce the risk of and disruptions in the supply chain, BioCane can work with a number of suppliers to source the sugarcane needed for our production process. This can help lessen the impact of any issues with only one supplier as well as ensure a supply of sugar cane that is consistent.
2. Hedge against price fluctuations: The business may enter into long-term supply contracts with suppliers in order to keep prices at a constant level and hedge against volatility. Moreover, implementing measures that will help save on costs and monitoring the market on a regular basis can help the business better manage and predict the costs of our raw materials.
3. Hone in on quality control: The business may adopt strict quality control procedures and audit suppliers on a regular basis to be certain that the quality of the sugar cane that is sourced. Pouring financial capital into putting equipment through multiple assessments and training employees on quality expectations may help prevent the production of finished goods that are not up to code as well as maintain a satisfactory level of quality in the bioplastic that we manufacture.
4. Adopt sustainable practices: To address environmental risks, the business can implement production processes that have the underlying purpose of protecting the surrounding environment, minimizing waste, and recycling by-products. BioCane needs to comply with environmental regulations and acquire certifications for sustainable practices with the sole purpose of helping to mitigate risks as well as enhance the company's reputation as a business that is both responsible and eco-conscious.
5. Product differentiation: To remain competitive in the market, the business can prioritise research and growth to cultivate products and processes that are unique. Making the business products different from other products within the same market, branding, and marketing approaches can not only help attract clients but also create a customer base that is loyal.

# Target Market

Our target market would mainly be companies who are not currently using bio-degradable packaging and plastics as well as some who are making use of said packaging materials but are looking for a more cost-effective and local alternative.

## **Plastic Packaging Manufacturers:**

Many manufacturers of plastic packaging materials have not fully embraced bioplastics due to factors such as cost, availability, and compatibility with existing production processes. Companies like Amcor, Berry Global, and Sealed Air primarily produce conventional plastic packaging for various industries, including food and beverage, personal care, and pharmaceuticals.

## **Fast Food Chains:**

Although some fast-food chains have started exploring bioplastics for their packaging, many still rely heavily on conventional plastic containers, cups, and utensils. Companies like McDonald's, Burger King, and KFC continue to use traditional plastics for their takeaway and dine-in packaging.

*How:* A fast-food chain can switch to biodegradable and compostable packaging made from biomass materials for its takeaway containers, cups, and utensils. By using bioplastics derived from sugarcane or other renewable sources, the chain can reduce its environmental footprint and appeal to eco-conscious consumers.

## **Beverage Companies:**

While some beverage companies have introduced bioplastics for their bottle packaging, many still predominantly use conventional PET plastics. Companies like The Coca-Cola Company, PepsiCo, and Nestlé Waters produce billions of plastic bottles each year, contributing to plastic pollution worldwide. Some are making the move to bio-plastics but not entirely and not locally.

While Coca-Cola has introduced plant-based PET bottles in some markets, the majority of its beverage packaging still utilizes traditional plastics, contributing to plastic waste generation globally. Coca-Cola's carbon emissions for 2020 were approximately 59 million metric tons CO2 equivalent.

Nestle, a leading multinational food and beverage company, has made efforts to reduce its plastic usage, but the majority of its packaging still consists of conventional plastics, especially for its bottled water and packaged food products. Nestlé's carbon emissions for 2020 amounted to approximately 92 million metric tons CO2 equivalent.

*How:* A beverage bottling company can use bioplastics for its bottle packaging to reduce its reliance on traditional PET plastics. Bioplastic bottles can be made from sugarcane-based biopolymers, providing a sustainable alternative to petroleum-derived plastics.

## **Personal Care and Cosmetic Brands:**

Personal care and cosmetics brands often use plastic containers and packaging for their products, but adoption of bioplastics varies across the industry. Companies like Procter & Gamble, Unilever, and L'Oréal continue to use conventional plastics for packaging a wide range of beauty and personal care products.

Despite Unilever's commitment to sustainability, including its "Plastics Pact" initiative, the company still relies heavily on traditional plastics for packaging its food, home care, and beauty products. Unilever's carbon emissions for 2020 totalled around 61 million metric tons CO2 equivalent.

## **E-Commerce and consumer goods:**

Despite its focus on sustainability and environmental stewardship, Amazon's packaging materials primarily consist of conventional plastics for shipping and product packaging. Amazon's carbon emissions for 2020 totalled around 60 million metric tons CO2 equivalent.

P&G, one of the world's largest consumer goods companies, primarily uses conventional plastics for packaging its products, including household cleaners, personal care items, and laundry detergents. In 2020, P&G reported Scope 1 and Scope 2 greenhouse gas emissions of approximately 2.1 million metric tons CO2 equivalent.

## **Automotive Industry:**

While some automotive manufacturers have started incorporating bioplastics into interior components and packaging materials, the industry as a whole still relies heavily on conventional plastics. Companies like Toyota, Volkswagen, and General Motors continue to use traditional plastics for various applications in vehicle production.

Toyota, one of the world's largest automakers, predominantly uses conventional plastics for interior components and packaging materials in its vehicles, with limited adoption of bioplastics in select models or applications. Toyota's carbon emissions for 2020 were approximately 15 million metric tons CO2 equivalent.

GM's vehicle production still relies heavily on traditional plastics for various components and packaging materials, despite the company's efforts to enhance sustainability and reduce its environmental impact. GM's carbon emissions for 2020 totalled around 24 million metric tons CO2 equivalent.

It's important to note that the adoption of bioplastics varies widely among companies and industries, and many factors influence their decision-making processes, including cost, performance, consumer demand, and regulatory requirements. As sustainability concerns continue to grow and technological advancements improve the viability of bioplastics, more companies may transition to these alternatives in the future.

According to a report by *McKinsey & Company*, while there is increasing interest in sustainable packaging solutions, the adoption of bioplastics remains relatively low among large corporations. However, the report also indicates a growing trend towards sustainability, with 72% of executives surveyed expressing intentions to increase investments in environmentally friendly packaging solutions in the next five years.

*Statistics:* According to a report by Grand View Research, the global bioplastics market size was valued at USD 7.65 billion in 2020 and is projected to reach USD 21.75 billion by 2028, growing at a CAGR of 14.0% from 2021 to 2028. The beverage packaging segment is expected to witness significant growth due to increasing consumer demand for sustainable packaging solutions.

According to a report by *Transparency Market Research*, the global market for biodegradable plastics was valued at USD 6.12 billion in 2020 and is projected to reach USD 15.7 billion by 2030, growing at a CAGR of 9.6% from 2021 to 2030. The electronics industry is expected to contribute to the demand for biodegradable plastics in packaging applications.

According to a study published in the journal *Science Advances*, the food service industry is a significant contributor to plastic pollution, with fast-food packaging being one of the main sources of single-use plastic waste. Transitioning to biodegradable packaging materials can help reduce plastic pollution and mitigate environmental impact.

According to a report by *Euromonitor International*, the global market for biodegradable packaging materials was valued at USD 13.6 billion in 2020 and is projected to grow at a CAGR of 9.3% from 2021 to 2025. The food and beverage industry is one of the key sectors driving the demand for biodegradable packaging materials.



# Competitors:

## Global competitors

### NatureWorks LLC

Competitor Profile: NatureWorks is a company that is at the forefront of Ingeo™ biopolymer production, which is inferred from renewable plant materials such as corn. The company offers an array of bioplastics for different applications, this includes packaging, fibres, and 3D printing.

Differentiation: our commerce might set itself apart by focusing on locally accessible biomass sources, such as sugarcane, and advancing the benefits of feasibility in the region. Moreover, emphasizing the loftier execution or cost-effectiveness of our bioplastics compared to competitors' merchandise seems be a key separation strategy.

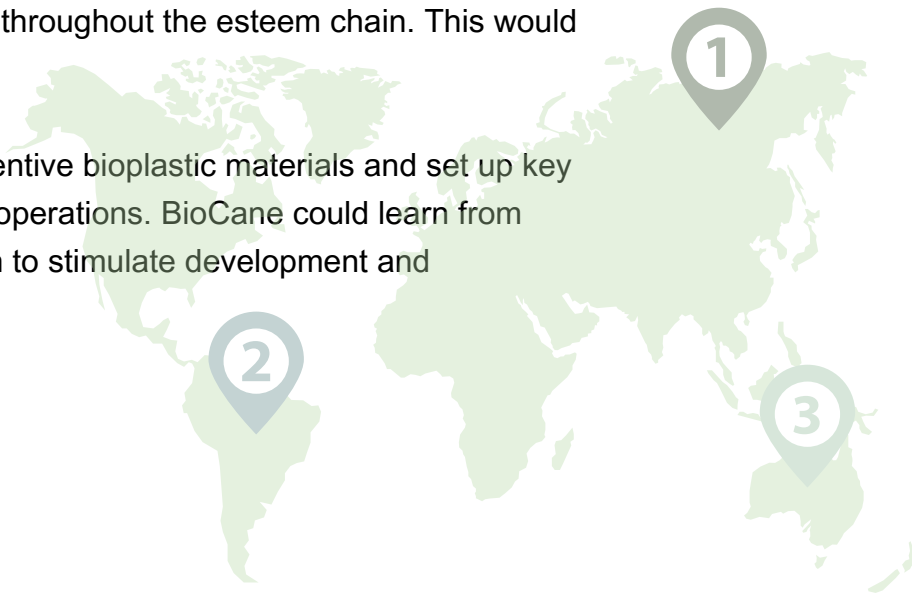
Learnings: NatureWorks has effectively set itself up as a pioneer in the bioplastics industry, illustrating the versatility and reasonability of plant-based materials on an international scale. BioCane may learn from NatureWorks' market situating, development methodologies, and supply chain administration procedure to drive development and competitiveness.

### Novamont S.p.A.

Competitor Profile: Novamont is an Italian company known for its creation of Mater-Bi®, a biodegradable and compostable bioplastic developed from renewable raw materials such as starch and vegetable oils. The company offers various bioplastic products for bundling, farming, and individual care applications.

Differentiation: Our commerce could differentiate itself by centring on the special properties and applications of sugarcane-based bioplastics, highlighting our more ideal points of interest over competitors' products in terms of execution, resilience, or our impression on nature. Also, emphasizing our commitment to practices that we can sustain in the long run throughout the esteem chain. This would seemingly set us apart from our competitors.

Learnings: Novamont has spearheaded the improvement of inventive bioplastic materials and set up key associations with industry partners and inquire about institution operations. BioCane could learn from Novamont's approach to collaboration and market diversification to stimulate development and competitiveness.





## South African Competitors

### Bioplastics (Pty) Ltd

Competitor Profile: It is a South African company specializing in the generation of biodegradable and compostable bundling materials. The company offers a plethora of items, including shopping sacks, containers for food items, and agrarian mulch movies, made from plant-based bioplastics.

Differentiation: Our commerce differentiates itself by advertising a broader extend of bioplastics and biomass products ahead of packaging, such as development materials, customer products, or biofuel-added substances. Also, emphasizing our commitment to neighbourhood work creation and community advancement might enable South African consumers and businesses to resonate with us.

Learnings: Bioplastics (Pty) Ltd. has illustrated the ability to produce biodegradable bundling arrangements locally in South Africa. Our commerce may learn from their involvement in exploring administrative prerequisites, sourcing crude materials, and building associations within the community.

### Green Home Pty Ltd

Competitor Profile: Green Home is a South African company specializing in the production of compostable and biodegradable food packaging and catering supplies. The company offers a wide range of products, including takeaway containers, cups, cutlery, and food wraps, all made from plant-based materials such as bagasse (sugarcane fiber), PLA (polylactic acid), and cornstarch.

Differentiation: Our business could differentiate itself by emphasizing the use of locally sourced sugarcane as a primary raw material for bioplastic production, highlighting the environmental and economic benefits of supporting local agriculture and communities. Additionally, focusing on product innovation and customization to meet the specific needs of South African customers, such as packaging solutions tailored for traditional food items or cultural events, could set us apart from competitors.

Learnings: Green Home has successfully positioned itself as a leading provider of sustainable food packaging solutions in South Africa, catering to a growing demand for eco-friendly alternatives in the food service industry. Our business could learn from Green Home's commitment to quality, customer service, and continuous improvement, as well as its efforts to raise awareness about the environmental impact of conventional packaging materials and promote sustainable consumption habits among consumers and businesses alike.

## Sappi Limited

Competitor Profile: Sappi Limited is a South African pulp and paper company that produces a range of specialty cellulose and biomaterials from sustainably managed forests and agricultural residues, including sugarcane bagasse. The company's products are used in various applications, including packaging, textiles, and pharmaceuticals.

Learnings: Sappi Limited can draw inspiration from global examples like Tate & Lyle and Mitr Phol Group in terms of diversifying its product portfolio and expanding into bio-based solutions derived from sugarcane. By investing in research and development and forging strategic partnerships, Sappi Limited can capitalize on the growing demand for sustainable materials and contribute to the circular economy





# Chat GPT Prompt and Response

## Prompt:

"I am doing a project for my Accounting Information Systems Module and we are required to work in a group to make a sustainable business model for a business operating in a rural area that once was the workforce for a anthracite mine which has now shut down. We have decided to partner with a local sugarcane farmer to process the sugarcane into bioplastic. We will be boring 12 boreholes (2 for our production and 10 around the community which each borehole will run into 2-3 tanks that will filter the water). We will also set up 100 solar panels (with batteries, inverters, ect.) for our production and an additional 50 solar panels (with batteries, inverters, ect.) will feed into the community so they have lights and some plugs for when they have load shedding. Our business name is BioCane. Can you now give me an operations delegation, one that bares in mind the different employees we would need for our operation?"

## Response:

### Operations Delegation

**Management:** At BioCane, effective management is crucial for overseeing our operations and ensuring long-term success. The Operations Manager will spearhead daily activities, oversee staff, manage finances, and develop strategies to drive growth and sustainability.

**Production Team:** Our production team will be responsible for manufacturing bioplastic from sugarcane. This team will consist of skilled technicians, engineers, and production line workers who will operate machinery, monitor production processes, and maintain quality standards.

**Quality Assurance:** To uphold our commitment to excellence, a dedicated quality assurance team will conduct regular inspections and tests to ensure that our bioplastic meets industry standards for strength, durability, and eco-friendliness.

**Logistics and Supply Chain:** Efficient logistics and supply chain management are essential for timely delivery of raw materials and distribution of finished products. Our logistics team will coordinate transportation, manage inventory, and optimize supply chain operations to minimize costs and maximize efficiency.

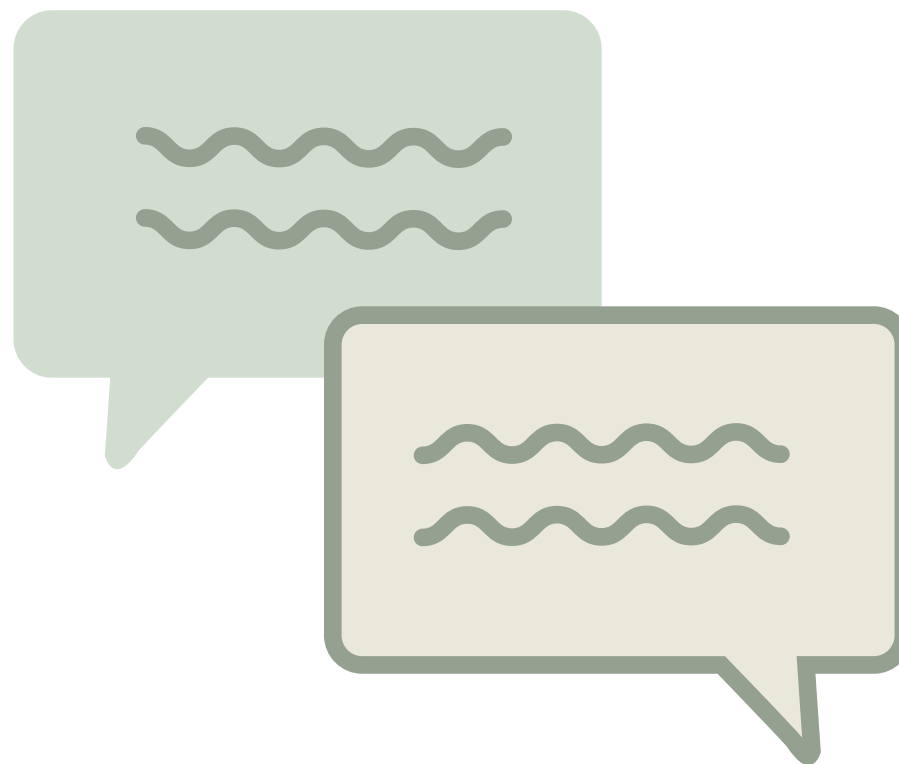
**Environmental Compliance:** Given our focus on sustainability, an environmental compliance officer will ensure that our operations adhere to all relevant environmental regulations and standards. This includes monitoring emissions, waste disposal practices, and overall environmental impact.

**Community Engagement:** BioCane is committed to fostering positive relationships with the local community. A community engagement coordinator will facilitate outreach programs, educational initiatives, and partnerships to promote environmental awareness and social responsibility.

**Safety and Security:** Ensuring the safety and security of our facility and employees is paramount. Our security team will monitor access points, conduct regular patrols, and implement safety protocols to protect personnel and assets.

**Administrative Support:** To streamline administrative tasks and provide excellent customer service, an administrative support team will handle inquiries, manage documentation, and assist with scheduling and coordination.

**Training and Development:** Continuous training and development programs will be implemented to empower our employees with the necessary skills and knowledge to excel in their roles and contribute to the company's success. By effectively delegating responsibilities across these key operational areas, BioCane will establish a robust foundation for sustainable growth and positive impact within the community.



# Operations Delegation

## **Management:**

One of the most important aspects of our company is its management. The daily decisions that will propel growth and sustainability, like those pertaining to personnel, finances, and strategy development, will be handled by our operations manager. Additionally the management will need to ensure the quality of shipments is both competitive and compliant with industry standards.

## **Production Team:**

The actual process of manufacturing sugarcane into bioplastic will be the responsibility of our production team. As many members of the community as possible will work for this team, and we'll make sure technology is used to its full potential so that contemporary methods can be applied and a fair transition can occur.

## **Logistics and Supply Chain:**

Without an efficient logistics and supply chain management team we will fail, as such we understand the importance of this team as they will be essential for the timely delivery of unprocessed sugarcane from our supplier and the distribution of our finished bioplastic to our clients. Additionally the team will need to supply the production team with all the necessary products to complete their production of bioplastic.

## **Security:**

Ensuring the safety and security of our facility and employees is paramount. Our security team will monitor access points, conduct regular patrols, and implement safety measures to protect personnel and company assets. Administrative Support: To streamline administrative tasks and provide excellent customer service, an administrative support team will handle inquiries and invoicing, manage the finances, track work hours, ect..

## **Cleaning and Maintenance:**

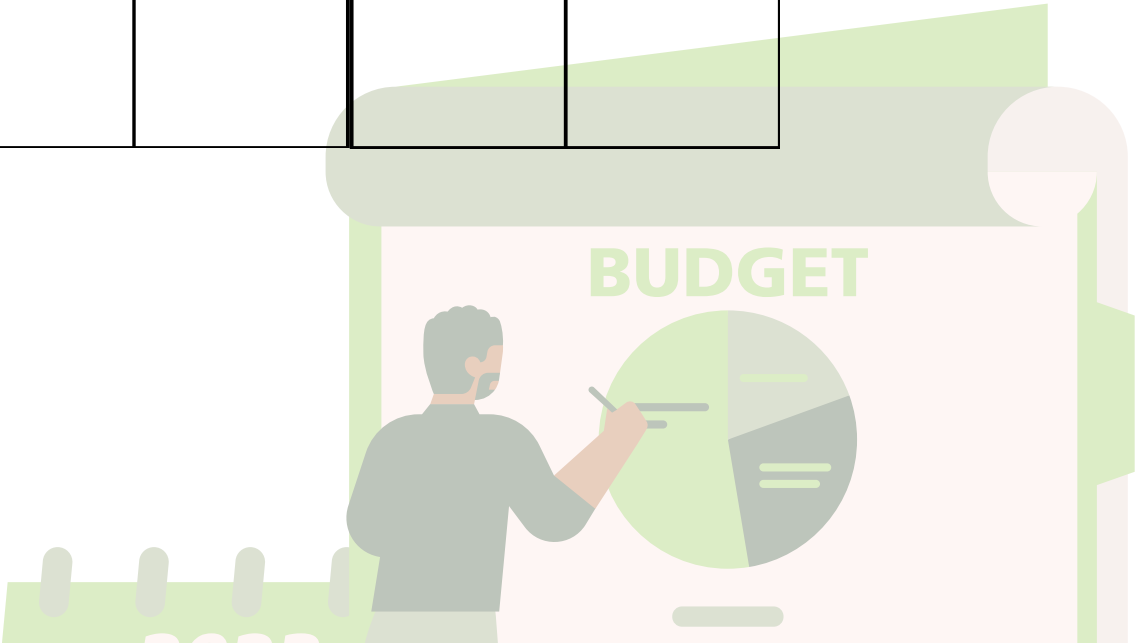
Our facility and equipment will be kept clean and maintained by our cleaning and maintenance team. The team will ensure a clean, healthy and safe environment for our employees to work in, thus allowing our employees to work productively and efficiently without the worry of machine malfunction nor production contamination

# Production Costs and Expenses

## 5-Year Budget

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Production expenses	3 Tons	3Tons	5 Tons	8 Tons	13 Tons	15 Tons
Feedstock costs		2700	4500	7200	11700	13500
Processing and conversion cost		3000	5000	8000	13000	15000
Fermentation cost		1200	2000	3200	5200	6000
Polymerization cost		3000	5000	8000	13000	15000
Utilities		1200	2000	3200	5200	6000
Research and development		900	900	1000	1100	1200
Overhead expenses						

Salaries	861600	877970	904971	922165	1179686	1202100
Equipment	4500000			400000		500000
Solar Power	1035000			34500	69000	
Water Sources	600000			20000		50000
Other expense						
Maintenance		500000	500000	650000	670000	750000
Total	6999300	1389970	1424371	2057265	1967886	2512600



## Cost breakdown

**Feedstock:** Sugar cane received from supplier estimated to be around R900 per metric ton. Calculations as per the 5-year budget are calculated using the formula  $900 \text{ zar} \times \beta$  where  $\beta$  is equal to the number of metric tons purchased.

**Processing cost:** Processing sugar cane into bagasse, estimated at a cost of R1000 per metric ton, Calculations as per the 5-year budget are calculated using the formula  $1000 \text{ zar} \times \beta$  where  $\beta$  is equal to the number of metric tons processed.

**Fermentation costs:** cost of fermenting bagasse o allow for polymerization estimated to cost R400 per metric ton, Calculations as per the 5-year budget are calculated using the formula  $400 \text{ zar} \times \beta$  where  $\beta$  is equal to the number of metric tons fermented.

**Polymerization cost:** cost of turning the sugar cane into plastics estimated to cost R1000 per metric ton, Calculations as per the 5-year budget are calculated using the formula  $1000 \text{ zar} \times \beta$  where  $\beta$  is equal to the number of metric tons polymerized.

**Utilities:** Cost of water and other factors used in the manufacturing process, estimated at R400 per metric ton, Calculations as per the 5-year budget are calculated using the formula  $400 \text{ zar} \times \beta$  where  $\beta$  is equal to the number of metric tons processed.

**Research and development:** Cost of finding cheaper ways to produce plastics estimated at R900 per year.

**Salaries:** Based of current industry and research it can be assumed that 10 workers are needed to run the production process in the factory. Earning R27.58 per hour, working 8 hours a day for approximately 250 days a year, we can assume that the total salary of all ten workers is equal to R551600 per year. The salaries also account for 3 managers with a salary of R70000 each and an additional R100000 for admin and cleaning staff. Increases on salaries throughout the 5-year budget were based off an estimated increase in the number of workers needed and inflation.

**Equipment:** An estimated once of payment of R4500000 for all equipment required in the production process, includes machinery needed to convert and produce plastics. Increases are due to increase in production quantity.

**Solar power:** Production will be run completely by solar energy at a cost of R690000 per metric ton of plastic produced. This amount includes solar panels, batteries, inverters and all other equipment required to sustainably produce electricity. An additional R345000 is being used to provide energy to the nearby town. This energy will be sold to the town at a discounted rate.

**Water Sources:** The most sustainable and efficient form of a water source was found to be Boreholes at an estimated cost of R600000 for 12 boreholes (R50000 each). Increases in costs were based off need and inflation. Excess water will be given to the nearby town.

**Maintenance:** Maintenance for all factory equipment, solar devices and water sources are estimated to be R500000 a year based off current industry and research on above mentioned items. Increases were calculated based off inflation.



# Revenue and Profit

## 5-Year Budget

	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue						
Sales of Bioplastic		900000	1500000	2400000	3900000	4500000
Profit before tax		-489970	75629	342735	1932114	1987400
Profit after Tax		-578165	62016	253624	1062662	1093070

Bioplastics are sold at R300 per kg and revenue is calculated using the formula  $300 \text{ zar} \times \beta$  where  $\beta$  is the number of Kilograms produced.

Income tax was calculated based of the current brackets given by SARS.

During the year 0 of production, we will be funded through our 10 Million rand capital and will not be earning any profit due to the time constraints of developing the factory required to carry out the processing of bioplastics.



## References:

1. Bplans: Business Planning Resources and Free Business Plan Samples. (n.d.). Solar Water Heater Distributor Business Plan. [online] Available at: <https://www.bplans.com/solar-water-heater-distributor-business-plan/>.
2. 24 Examples of Company Departments. (n.d.). Simplicable. <https://simplicable.com/en/company-departments>
3. Chat GPT: <https://chat.openai.com/share/53368078-2263-4ddd-80a1-9eb4a1b7ddd3>
4. Serle, J. (2023). How Long Do Biodegradable Bags Take to Decompose? [online] [www.sciencefocus.com](https://www.sciencefocus.com). Available at: <https://www.sciencefocus.com/science/how-long-do-biodegradable-bags-take-to-decompose>.
5. [www.oecd.org](https://www.oecd.org). (22 February 2022). Plastic pollution is growing relentlessly as waste management and recycling fall short, says OECD. [online] Available at: <https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm#:~:text=Plastics%20account%20for%203.4%25%20of%20global%20greenhouse%20gas%20emissions..>
6. UNDP (2021). World's largest survey of public opinion on climate change: a majority of people call for wide-ranging action | United Nations Development Programme. [online] UNDP. Available at: <https://www.undp.org/press-releases/worlds-largest-survey-public-opinion-climate-change-majority-people-call-wide-ranging-action>.
7. Simphiwe, M. (2023). Difference Between Corporate Social Responsibility And Corporate Social Investment. [online] CSR News. Available at: <https://csrnews.africa/difference-between-corporate-social-responsibility-and-corporate-social-investment/#:~:text=The%20primary%20focus%20of%20CSI>.