BIOBLOOM

International Business Plan

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I. Executive Summary

Who are We?

BioBloom, a new biofuel company set to start operations in the **Gujarat** state of **India**, was established to address a multitude of environmental and social problems that unfortunately affect the country today. By using a comprehensive processing method to **convert** algae into biogasoline, biodiesel, and biojet fuel, we are excited to offer Indians an **alternative** to environmentally harmful traditional fuels.

Mission Statement

At BioBloom, we're not just producing biofuel; we're cultivating a greener tomorrow. Our innovative venture in India harnesses the untapped potential of algae, transforming harmful algal overblooms into a sustainable energy source. By reflecting corporate social responsibility in all of our commitments and increasing awareness about the need for environmentally friendly fuel sources, BioBloom aims to create a sustainable future for all."

Problem

- Algal blooms pose significant threats to India's environment
- Environmental and health downsides to India's traditionally used fuel
- India's rural areas suffer from economic stagnation and the use of monoculture

India needs a cleaner and more efficient fuel source

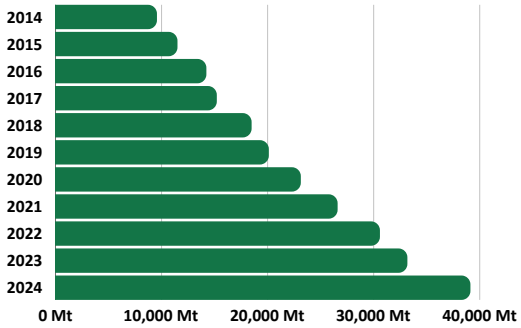
Solution

- BioBloom will launch algae collection initiatives to remove algae from India's coasts and waterways
- Development of an advanced algae processing mechanism to convert algae into biofuel
- Incorporation of rural coastal communities into BioBloom's business model

Analysis of the International Business Situation

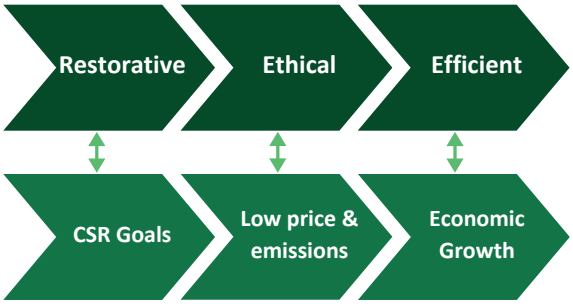
- India's improved access to affordable vehicles and its expansion in trucking has significantly **boosted** its economy and **demand** for **fuel**.
- This economic boom is beneficial for BioBloom, aligning with our business model by leveraging India's growth to introduce a sustainable and cleaner fuel option.
- India is recognized for having the largest democracy in the world.
- The company will pay a tax rate of **15%** by registering as a Private Limited Company.
- India's progressive stance on biofuel is demonstrated through its National Policy on Biofuels, which supports BioBloom's growth with various **incentives** and **aids**.
- BioBloom's operations are to be initiated in Gujarat and Karnataka, states chosen for their **ideal climates** for algae cultivation, including ample sunlight and tropical conditions, facilitating algae growing, harvesting, and collection.

Estimated amount of algae in India in metric tons (Mt) (2014-2024)



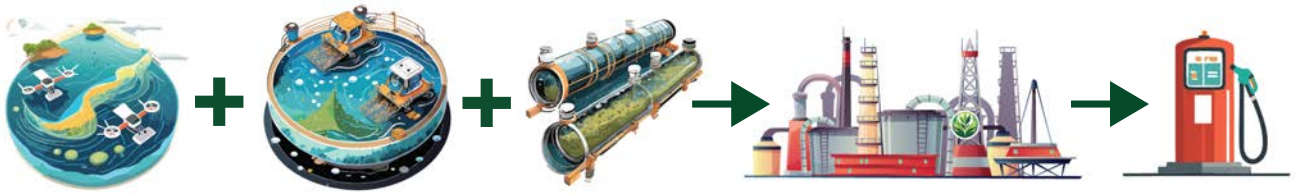
Unique Value Proposition

BioBloom knows it can **revolutionize** the biofuel market by helping its customers meet their corporate social responsibility goals, creating low-price and low-emission biofuels for the public to take advantage of, and by developing opportunities for economic growth in Indian coastal and rural communities. By focusing heavily on these customer benefits, BioBloom aims to **minimize** the harmful algae pollution found in Indian waterways and coasts, while also decreasing the use of traditional fuels and their subsequent emissions. Additionally, the company prides itself on its restorative, ethical, and efficient **values**.



Operations

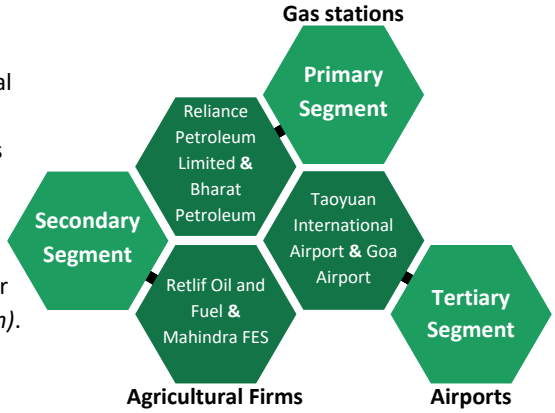
The first step in BioBloom's biofuel production operation is **algae collection**, which we will accomplish through various cleanup initiatives partnered with the Government of India, as well as algae cultivation through **vertical farming**. BioBloom will then process this algae to create **bio-crude oil**, and will further refine this oil into biogasoline, biodiesel, and biojet fuel. By selling these biofuels to both domestic and international customers, BioBloom hopes to increase the use of clean biofuel, working towards a future with less air pollution.



Algae Collection *(See Section VI. Solution)* | **Algae Cultivation** *(Vertical farming)* | **BioBloom algae processing facility** | **Customers**

Customer Segments

BioBloom offers an easy way for businesses worldwide to achieve their corporate social responsibility and environmental objectives. By adopting a **primary, secondary, and tertiary market B2B segmentation model**, BioBloom plans to market its different fuels directly to businesses. Beneficially, this two-dimensional approach will enable us to effectively categorize potential clients, target those who would most benefit from its offerings, and **optimize** revenue streams. After considerable secondary research, BioBloom has created a list of **6** potential domestic and international customers for our first year of business, two from each of our target markets *(direct sales revenue stream)*.



Channels

Channel Type	Description	Methods
Marketing	BioBloom will directly market to potential customers through **industry trade shows** and exhibitions throughout Asia. We will also participate extensively in **digital marketing** (LinkedIn Ads, Google Ads, and Programmatic Advertising) and **physical marketing** (Billboards and Flyers) to reach businesses and consumers.	• Industry Trade Shows • Digital Marketing • Physical Marketing
Distribution	BioBloom will distribute biofuel domestically by operation its own trucks. Likewise, it will also utilize trains for long-distance distribution, taking advantage of India's specialized **dedicated freight corridors**. Internationally, BioBloom will transport its product through cargo ships and railway.	• Trucking • Railroad • Cargo Navigation
Collection and Cultivation	BioBloom will rely on two main methods to supply algae to create its biofuel. Through **algal bloom cleanup operations**, we are actively working towards a cleaner future for India while also accumulating algae for our production. Moreover, in order to maintain a consistent stream of algae, we will also grow our own algae by engaging in **vertical farming**. Through this innovative process of cultivating our own algae, we **reduce the risk** of dependency on algal blooms.	• Algal Bloom Cleanup Operations • Vertical Farming

Revenue Streams

BioBloom has 3 main revenue streams: **direct sales, byproduct utilization, and government contracts**. Through direct sales, which make up **77.91%** of our projected first-year income, BioBloom will sell its biofuels straight to domestic and international businesses. Additionally, this stream will allow BioBloom to build long-term, mutually beneficial relationships with customers, thereby boosting customer loyalty. In our byproduct utilization revenue stream, BioBloom will be selling valuable byproducts such as biochar, β-carotene, and phycobiliproteins for significant profits, rather than harmfully disposing of them in the environment. This stream will account for **18.13%** of our first-year income. Finally, BioBloom will partner with the Government of India through the **Swachh Bharat Abhiyan** (Clean India Mission) program to help clean waterways in India through our algal bloom cleanup operations. These government contracts will comprise **3.96%** of our projected first-year income. By diversifying its revenue streams into 3 categories, BioBloom can shield itself from unexpected external **threats**, pushing the company towards a promising future in the biofuel industry.

Cost of Structure

Capital Expenditures

Reaching **$1,046,049**, capital expenditures will be our largest expense as it includes all of our equipment, machinery, leases, permits, licenses, etc. These purchases are crucial for the launch of BioBloom's algae processing operations.

Distribution Costs

BioBloom's distribution costs, including handling, storage, freight, trucking, and cargo ship fees associated with our biofuel delivery, are estimated to be **$41,153.90** in Year 1. However, these costs will vary based on the amount of sales brought in by our business.

Human Resource Costs

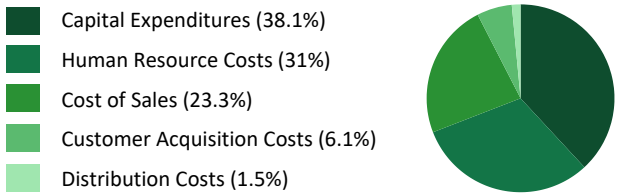
Through our company hierarchy, we will have a total of 55 employees comprised of Vice Presidents, Directors, and Labor Workers. The aggregate expense on all human resources is **$851,362** including employee salary and full-time/part-time benefits of *Provident Fund* and *Employee State Insurance*.

Cost of Sales

BioBloom's cost of sales encompasses the collection of stock and direct overhead. Our collection of stock involves acquiring algae biomass from two primary collection channels (vertical farming and algal bloom cleanup), and direct overhead accounts for extra costs associated with shipment. Our total cost of sales comes out to **$640,527** in Year 1.

Customer Acquisition Costs

BioBloom will divide its customer acquisition costs by its three marketing channels: industry trade shows, digital marketing, and physical marketing. These platforms will be crucial for BioBloom to develop brand exposure and retain customers. With a total cost of **$166,088**, we estimate an acquisition cost of **$27,681.30 per customer**.



Detailed Financials

In BioBloom's first year of operations, the company is expected to see a loss of **$301,220**, as a result of extensive machinery and lease expenses. Despite this loss, BioBloom is positioned to excel in the biofuel industry with a total first-year revenue of **$1,817,267** and a gross profit of **$1,176,740**. As seen in our condensed 3-year income statement, BioBloom will have a positive net income of **$52,379** by 2025 and an astounding **$625,194** net income in 2026. These figures indicate a transition to profitability, underscoring BioBloom's promising growth trajectory and potential within the industry.

Condensed 3-Year Income Statement

	2024	2025	2026
Revenue	$1,817,267	$2,635,037	$3,820,804
Cost of Sales	$640,527	$864,711	$1,167,360
Gross Profit	$1,176,740	$1,770,326	$2,653,444
Gross Margin	*64.75%*	*67.18%*	*69.45%*
Salary & Wages	$851,362	$979,066	$1,125,926
Operating Expenses	$523,636	$591,980	$673,992
EBITDA	($198,258)	$199,280	$853,526
EBITDA Margin	*-10.91%*	*7.56%*	*22.34%*
Other Expenses	$102,963	$146,901	$228,332
Net Income	($301,220)	$52,379	$625,194
Net Income Margin	*-16.58%*	*1.99%*	*16.36%*

Year 1 Waterfall Chart

A waterfall chart showing BioBloom's net cashflows is shown to the left. Our influx of cash is primarily fueled by funding and income, but significant startup expenses counteract this, leaving us with an ending cash balance of **$239,630**.

Long Term Business Plan

Phase 1
Launch BioBloom and initiate operations. Demonstrate high growth and continuous expansion.
(2024-2025)

Phase 2
BioBloom becomes financially profitable and provides indications of company sustainability
(2025-2027)

Phase 3
Expand the company to Mulki, Karnataka, opening a second base of operations in the country.
(2027-2029)

Phase 4
Broaden business operations into other channels and expand social initiatives in rural coastal communities.
(2029+)

Request for Financing

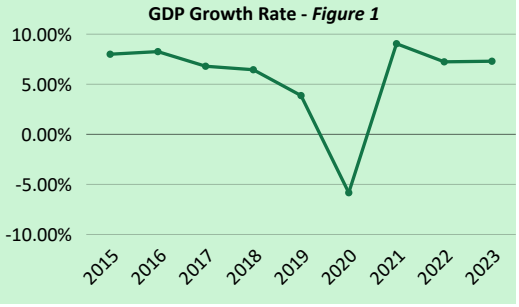
To commence operations for BioBloom in India, we are requesting a loan of $1.575 million, which will be paid over a span of 7 years at a 6.10% interest rate. This investment, along with $225,000 from the co-founders, will be used to make all initial purchases of machinery, vehicles, marketing, customer relations, permits, and more. This loan is extremely important for BioBloom to help start up operations and provides funding for all initial expenses. All things considered, we believe that this is a very promising **opportunity** for all investors. Together, we can combat algal blooms and work towards a **new India** which is more **environmentally friendly** for its citizens.

II. Analysis of the International Business Situation

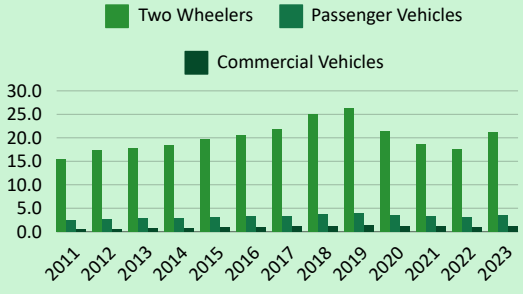
A. Economic, Political, and Legal analysis of the trading country

1. Economic System

Known for its extensive agricultural economy and history dating back to over 5000 years ago, India has played a major role in shaping the world's events. When the country gained independence in 1947 following over two centuries of British colonization, it adopted a Soviet influenced **mixed planned economy**, adopting protectionist economic policies. However, due to severe economic stagnation in the early 1990s, the government adopted a **capitalist market economy**, allowing for greater initiatives in private businesses and foreign investment[1]. Now, the country boasts a **7.3%** GDP growth rate throughout 2023 **(Figure 1)**, making it one of the fastest economically growing countries in the entire world, putting it ahead of many developed western nations[2].



GDP Growth Rate - ***Figure 1***



Growth of Indian Vehicle Industry in Millions - *Figure 2*

BioBloom stands to benefit significantly from India's booming automotive and commercial transportation sectors, marked by rapid growth and substantial foreign investment. As seen below, the high Compound Annual Growth Rates **(CAGR)** quantify this massive growth.

- India's personal automotive market CAGR: **9.7%** (2023-2030)[3]
- India's trucking industry CAGR: **7.86%** (2024-2032)[4].
- India's automotive industry remains a preferred destination for foreign direct investment (FDI) exceeding **$3 billion**.

Furthermore, India's top foreign direct investors include the US, UK, Japan, France, and Germany, emphasizing India's global economic integration and the increasing opportunity for innovation and development in its automotive industry.

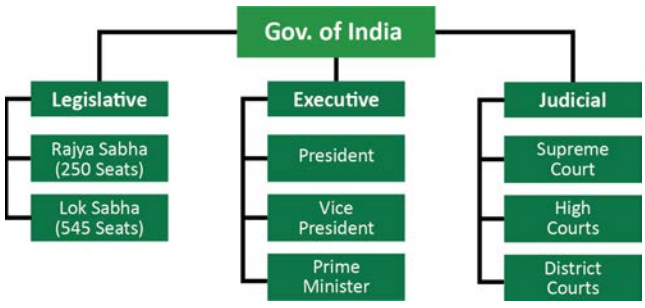
Ultimately, India's increased accessibility of **affordable** automotives and expansion of trucking for its commerce has led to an unprecedented boom to its general economy, pushing it to be an eventual superpower in the coming decades. However, the increase of automotives on its roads has led to **depletion of fossil fuels** and a rapid push towards speeding up **climate change**, harming the environment and making the lives of India's poorest more harsh. Nevertheless, this industrial explosion proves invaluable to BioBloom's business model, exploiting India's growth by introducing a more **sustainable** and **cleaner** fuel to power its machinery.

2. Government Structure and Stability

India, well-known for having the biggest democracy globally, has become a leader in the geopolitics of Asia. The nation's independence movement saw thousands of pioneers, including the well-known Mahatma Gandhi and Bhagat Singh, struggle to establish democracy and self-governance. Gandhi's nonviolent demonstrations would later serve as an inspiration to many American civil rights activists, including Martin Luther King Jr.

India's government, which is headed by the current prime minister Narendra Modi, now resembles a parliamentary democratic republic with over **28 states** and **8 territories**. The government is split into three branches: the legislative, executive, and judicial, mirroring the American system as well **(Figure 3)**. Moreover, the bicameral parliament of the nation, the **Lok Sabha** and **Rajya Sabha**, makes up the legislative branch and similarly, the Supreme Court of India is housed in the judicial branch. The executive branch, or the Prime Minister's office, is responsible for overseeing government operations.

India has also demonstrated improvements in government spending, fiscal health, labor and business freedom, and integrity, making it a stable democracy, according to Heritage's 2023 Index of Economic Freedom[5]. Likewise, At **78.5**, India's tax burden rating is actually among the **best** in the world[6]. Additionally, as part of government oversight, the Indian government uses a wide range of agencies to track businesses within specific industries in order to regulate private enterprises.



Indian Government Structure - *Figure 3*

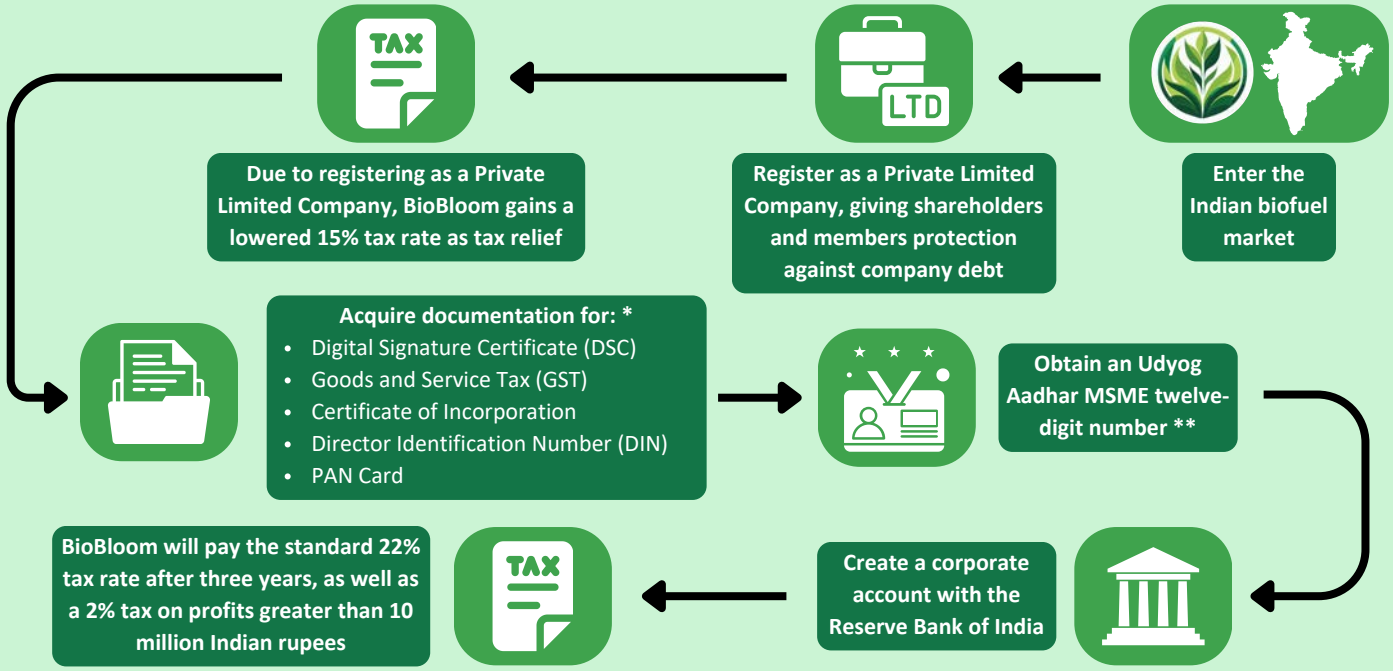
[1] https://mpra.ub.uni-muenchen.de/93158/
[2] https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2022&locations=IN&start=1961&view=chart
[3] https://www.grandviewresearch.com/industry-analysis/india-automotive-market
[4] https://www.imarcgroup.com/indian-truck-market
[5] https://www.heritage.org/index/country/india
[6] ibid

APTA Countries - *Figure 4*

Internationally, India shines as a beacon in terms of trade as well. With over **11 bilateral** agreements already in place and 7 in negotiation, the country is committed to making international trade more accessible. For example, major multilateral free trade agreements the country is part of include the Asia-Pacific Trade Agreement (APTA) **Figure 4**, ASEAN-India Trade in Goods Agreement, ASEAN-India Trade in Services Agreement, ASEAN-India Investment Agreement, Global System of Trade Preferences (GSTP), India Mercosur Preferential Trade Agreement, and the South Asia Free Trade Agreement (SAFTA)[7]. Additionally, India is one of the five rapidly growing economies that make up the **BRICS alliance**, which is expected to rule the global economy by 2050. All in all, India's pursuit of free global trade through multiple free trade agreements and economic organizations helps fortify its diplomatic ties with other nations, making it a significant international player.

3. Government Agencies and Regulations

Flowchart of the steps BioBoom must take to commence operations



* ***Digital Signature Certificate (DSC):*** *Electronic ID for signing documents*
Goods and Service Tax (GST): *India's Sales Tax System*
Certificate of Incorporation: *Proof of company formation*
Director Identification Number (DIN): *Unique ID for company directors*
PAN Card: *Indian tax payer identification number*

** ***Udyog Aadhar MSME twelve-digit number:*** *After approval, BioBloom will be appointed a unique 12 digit code that will provide the company with preferential financial treatment from the Government of India ,including increased funding, lower interest rates, longer repayment deadlines, easier processes to obtain licenses, and more*[8]

Important policies and regulations

National Policy on Biofuels (2018)

In an attempt to keep up in the advancement of biofuel innovation, India's Ministry of New and Renewable Energy's National Biofuel Policy was approved by the Prime Minister in 2018[9]. Thankfully, the policy **promotes domestic biofuel production**, aiming to reduce reliance on imports and stimulate the economy. Thus, BioBloom expects to receive substantial **financial support** for its rural biofuel infrastructure investments from the government.

Environment Protection Act of 1986

India's Environment Protection Act (1986) safeguards our commitment to sustainability. BioBloom will strictly adhere to **emission standards** enforced by the act, aiming for eventual carbon neutrality. Likewise, BioBloom's safe handling protocols will ensure worker safety during algae processing, which may involve hazardous materials. Overall, the regulations described in the act ensure that BioBloom operates **responsibly** within the ecosystem[10].

Renewable Energy Certificate

As we establish our business and operations, we will need to first acquire a renewable energy certificate. As per the updated guidelines from 2022, the general overview of qualifications for the certificate include production in an environmentally sustainable manner, accurate measurement of biofuel production, compliance with **state and central regulations**, submission of legal documentation, and adherence to multiple technical standards[11].

[7] https://commerce.gov.in/international-trade/trade-agreements/
[8] https://msmeregistrar.org/faq.php
[9] https://pib.gov.in/Pressreleaseshare.aspx?PRID=1532265
[10] https://www.indiacode.nic.in/bitstream/123456789/4316/1/ep_act_1986.pdf
[11] https://cercind.gov.in/regulations/REC-Regulations-2022.pdf

B. Trade Area and Cultural Analysis

1. Geographic and Demographic Analysis

Geographic: India is the **largest** country in South Asia, bordered by the Indian Ocean and sharing boundaries with seven other nations. The stunning Himalayan Mountains, the lush Northern Plains, the Peninsular Plateau, the Great Indian Desert, and the Coastal Plains are just a few of the nation's many geographical wonders. Likewise, Gujarat, located on the western coast of India, is a vibrant state renowned for its rich cultural heritage, bustling commercial activity, and diverse landscapes. As BioBloom initiates its operations in **Gujarat**, it can expect significantly greater **algae cultivation** and harvesting opportunities when compared to other rural regions with less development.

Demographic: India's linguistic diversity is shown in the staggering **121 languages**[12] that are spoken in the country, despite the nation's 22 recognized languages. Many of these languages comprise distinct ethnic groups as well. Moreover, with over 425 million native speakers, Hindi is the most spoken language in India and the official language of the federal government. Along with Hindi, English is an official language of the federal government and is utilized in government operations. Furthermore, the majority of Indians—80% Hindu, 14.2% Muslim, 2.3% Sikh, and 1.7% Christian—consider their religion to be of utmost importance. Recently in the headlines as well, India is now the **most populated country in the world**, with over 1.4 billion people living there, and overtaking China as the most populous nation.

Competitive Advantages

1. Growing fuel industry with need for sustainable sources

India's fuel industry has rapidly grown over the past decades and shows no signs of slowing down. However, rapid fuel production has left no room for sustainable practices to be implemented, resulting in **significant pollution** in bodies of water and many consequential algal overblooms. This provides the perfect opportunity for BioBloom, where we can take excess algae from blooms and **convert them into a sustainable fuel** source.

2. Ideal location for year-round cultivation

In addition to algae collection from waterways, India's abundant sunlight and climate provide an ideal environment for year-round algae cultivation, ensuring a consistent and **cost-effective biomass supply**. Importantly, the country's skilled workforce and research capabilities offer a pool of talent for innovation in biofuel technology.

Competitive Disadvantages

1. Poverty in rural areas

A disadvantage we face is the **lowered awareness** of environmentally friendly fuels. Particularly in rural areas, people do not have the capital to invest in more sustainable fuels and consequently stick with fossil fuels, burning wood, and other **unsustainable fuels**.

2. Cultural shift towards sustainability is challenging

Most rural farmers have a stagnant mindset on traditional fuel; thus, BioBloom plans to **initiate partnerships** with such areas, implementing pilot programs and subsidized access to our sustainable biofuel in an attempt to redefine cultural boundaries.

2. Analysis of Potential Location

Vadodara, Gujarat: BioBloom has selected Gujarat as its initial operational base due to several strategic factors. For instance, because Vadodara is located near the Gulf of Khambhat[13], the area is algae rich as it's notorious for its **predominance of natural algal blooms**. Likewise, BioBloom benefits from the tropical, sunlight-abundant climate of Gujarat, an essential factor in our algae cultivation endeavors. Along with the city's abundance of **algae-growing and harvesting opportunities**, Gujarat's robust infrastructure and connectivity simplify the logistics of transporting and managing algae, helping to make production cost-effective in the city.

Mulki, Karnataka: Mulki, a rural area located along the Malabar Coast in Karnataka will be the base for the third phase of BioBloom's expansion. The **Malabar Coast** serves as a major geographical advantage as it has more than **100+ algal blooms**[14], presenting a significant growth opportunity for our company. Through educational initiatives and training programs, we seek to empower farmers to actively participate in the biofuel production process, fostering a sense of ownership and shared responsibility. Furthermore, our engagement with the rural communities goes beyond providing a fuel alternative. BioBloom envisions the creation of a holistic ecosystem that not only produces biofuel sustainability but also contributes to the overall socio-economic development of Karnataka's rural areas.

BioBloom's Targeted Locations - *Figure 6*

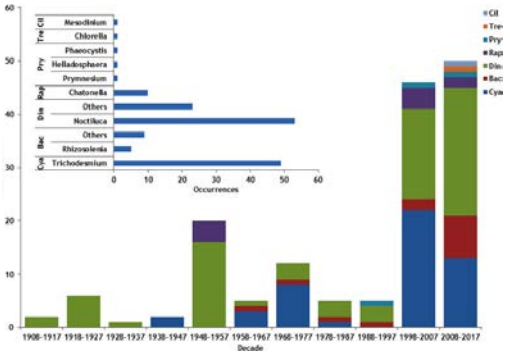
Given that BioBloom will be based in India, no trade documentation is required between India and the USA. However, the company will need to register with Gujarat's and Karnataka's respective local environmental and biofuel management authorities. Additionally, as we plan to export algae-based biofuel to international clients, we will benefit from India's various multilateral free trade agreements. Likewise, India's legal and regulatory framework offers **significant potential for growth and expansion** in the biofuel sector. Overall, our chosen locations provide optimal conditions for sustainable algae cultivation and a suitable energy supply for our operations.

12 https://www.cartoskill.com/interactive/linguistic-diversity-of-India/
13 https://www.jagranjosh.com/general-knowledge/coastal-states-of-india-1591187800-1
14 https://www.researchgate.net/figure/Reportings-of-algal-blooms-along-the-west-coast-of-India_tbl1_257632867

III. Problem

1 Negative environmental effects of algal blooms along the coasts of India

Algal blooms along India's coasts pose significant environmental challenges that are only projected to become more widespread. With massive blooms spotted in a number of locations such as the Arabian Sea and the coasts of Western India, algal blooms are frequently caused by nitrogen over-enrichment from industrial waste and agricultural runoffs. With this environmental emergency studied heavily by researchers Oyeshina Gideon Oyeku and Subir Kumar Mandal, their paper, ***Historical occurrences of marine microalgal blooms in Indian peninsula: Probable causes and implications***, shows concerning findings[15]. As India's marine environment creates employment for over 3.5 million and generates over $7 billion in income from recreation, fishing, and other miscellaneous economic activities, this delicate system is threatened by the **exponential expansion of algae** in India's waters. Specifically, the negative impacts of these algal blooms extend beyond environmental degradation, profoundly affecting human health and the economy. Recorded instances of **shellfish poisoning** due to **algal toxins** have resulted in numerous hospitalizations and several fatalities in coastal communities, with one human intoxication event recently happening in 2015 due to seafood contaminated in part by algae[16]. Likewise, algal blooms disrupt marine life by depleting oxygen in water, leading to fish deaths and **declining fish catches**, which adversely affect the livelihoods of local fishermen. Unfortunately, this is particularly evident in the west coast of India, a major contributor to India's fishing economy. Though estimating an economic figure for damages caused by algal blooms is challenging, it can be reasonably assumed the uncontrolled growth of different algae species **(Figure 7)** has disrupted the incomes of many[17]. All these issues are especially prevalent in the Gulf of Khambhat (Gujarat) and the Malabar Coast (Karnataka), pointing BioBloom to target these areas in its biofuel ventures.



Growth of Different Algae Species on India's Coasts[17] (1908-2017) - *Figure 7*

2 Flaws in current traditional fuel being used by the public

Global warming is often cited as the world's **most pressing crisis** by younger generations, making the urgent need for a more sustainable and cleaner fuel source evident as we look at the production of traditional fuels and conventional biofuel production. Not limited to the environment, the vulnerable health of India's young stand at **risk** from pollution as well. When extracting natural gases, harmful techniques such as hydraulic fracking are used, which lead to increased erosion and the risk of aquatic contamination. Not only does natural gas extraction pollute underground water reservoirs, but it also contributes to the decrease of surface waters and habitat fragmentation. Another main flaw in traditional fuel is the excessive **air pollution** that the burning of fossil fuels emits. Significant amounts of carbon dioxide, airborne particulate matter, sulfur dioxide, and nitrogen oxide are released into the atmosphere, stemming health and environmental problems in surrounding ecosystems. Though there have been efforts to use seemingly more sustainable biofuel sources, the environmental and health effects are just as **detrimental**. Notably, most biofuels are derived from crops such as corn, sugarcane, and palm oil. The large-scale cultivation of these crops often leads to **deforestation** and loss of arable land, contributing to habitat loss and the decrease of biodiversity. In India specifically, we can see this with the mass cultivation of jatropha for biofuel[18]. Evident in the 2000s, extensive plots of forest were cleared to make space for jatropha plantations. This large-scale deforestation led to significant soil erosion, causing algal overblooms, and disrupted greenhouse gas levels, leading to increased global warming. Given these challenges, BioBloom's algae-based biofuels can significantly mitigate these issues, offering a greener, cleaner, and more sustainable energy source.

3 Economic stagnation and limited opportunities in rural areas of India

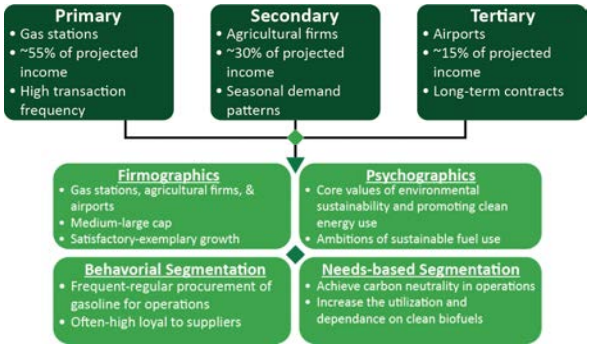
India's farmers serve as the backbone of the country, but their living conditions further add to the ongoing environmental crisis in their communities. Many rural areas depend on a single type of agricultural product, making them highly susceptible to **market price fluctuations**, pests, and diseases specific to that crop. This highlights the downsides of prioritized monoculture in India.

As a result, educated individuals and young talents often move to urban areas, creating an agricultural **divide**. Most importantly though, there is an extreme lack of access to clean biofuel in rural areas. Burning wood and other **harmful** substances is the only option for rural Indians[19]. Introducing algae farming into these environments, our clean biofuel will help solve many of these disparities.

[15] https://www.sciencedirect.com/science/article/pii/S0078323420300671#bib0055
[16] ibid
[17] ibid
[18] https://www.npr.org/sections/thesalt/2012/08/22/159391553/how-a-biofuel-dream-called-jatropha-came-crashing-down
[19] https://indiaclimatedialogue.net/2014/07/17/millions-die-indians-still-cook-wood-dung/

IV. Customer Segments

Businesses globally are increasingly focusing on sustainably sourcing products, and BioBloom offers an easy way for them to achieve their **corporate social responsibility** and **environmental objectives**. By adopting a **primary, secondary, and tertiary market B2B segmentation model**, BioBloom plans to market biofuels directly to businesses such as gas stations, agricultural firms, and airports. This two-dimensional approach will enable us to effectively categorize potential clients, target those who would most benefit from its offerings, and optimize revenue streams. BioBloom prioritizes customer satisfaction, ensuring their needs and goals align with the company's core values. This segmentation model will streamline customer management and **boost customer loyalty**, scaling BioBloom's influence in the biofuel sector.



Overview of Customer Segmentation Model - *Figure 8*

BioBloom's **primary** target market will be the automotive industry, approximating over **42.5%** of our revenue. Our **secondary (32.3%)** and **tertiary (25.2%)** target markets are agricultural firms and aviation facilities respectively. In addition, we divide each of these market segments into their corresponding B2B segmentation models, comprised of four main sections: **Firmographics** (company-level demographics), **Psychographics** (company-level ambitions and attitudes), **Behavioral Segmentation** (company-level loyalty rates and procurement patterns), and **Needs-based Segmentation** (company-level problems, needs, and goals). **Figure 8** provides an overview of the characteristics and specifications that BioBloom searches for in its clients based on extensive secondary research.

A significant concern for all consumers, particularly international ones, is the **feasibility of shipping**. While the increased production volumes of foreign manufacturers are enticing, financial considerations drive BioBloom to prioritize **larger** contracts from local clients during the first year of operation. Recognizing the risks and rewards associated with international shipping, we are committed to closely monitoring geopolitical uncertainties, shifting regulations, and fluctuating market conditions, **mitigating risk** whenever possible.

B2B Segmentation Model of BioBloom's Potential Corporate Customers

	Customer	Location	Firmographics	Psychographics	Behavioral Segmentation	Needs-based Segmentation
Primary	Reliance Petroleum Limited[20]	India	• Gas Station • **Cap**: Large • **Growth**: Exemplary • **Point of Contact**: Aejazur Rahman	• **Values:** "Corporate sustainability, quality excellence, and paradigms of innovation" • **Ambitions:** Sustainable fuel use	• **Procurement Frequency**: Frequent gasoline acquisition for its operations • **Brand Loyalty**: Highly loyal to suppliers	• Achieve Net Carbon **Zero** by 2035 • Maintain at least 100 GW of renewable energy generation by 2030
Secondary	Bharat Petroleum[21]	India	• Gas Station • **Cap**: Large • **Growth**: Satisfactory • **Point of Contact**: Manisha Gadge	• **Values:** "Social responsibility and environmental initiative" • **Ambitions:** Sustainable fuel use	• **Procurement Frequency**: Regular gasoline acquisition for its operations • **Brand Loyalty:** Highly loyal to suppliers	• Commitment to **20%** ethanol blending in petrol, contributing to reducing oil import dependence and carbon emissions
Secondary	Retif Oil and Fuel[22]	USA	• Agricultural Firm • **Cap**: Medium • **Growth**: Exemplary • **Point of Contact**: Brandon Lorio	• **Values:** "Environmental awareness, employee empowerment, and ethical business practice" • **Ambitions:** Sustainable fuel use	• **Procurement Frequency:** Frequent gasoline acquisition for its operations • **Brand Loyalty:** Often loyal to suppliers	• Increase biofuel utilization to **30%** by 2030 • Invest in new technologies that push forward fuel that emits less pollutants
Secondary	Mahindra FES[23]	India	• Agricultural Firm • **Cap**: Medium • **Growth**: Satisfactory • **Point of Contact**: Satish Thakare	• **Values:** "Quality focus, corporate citizenship, and carbon-neutral operations" • **Ambitions:** Sustainable fuel use	• **Procurement Frequency:** Regular gasoline acquisition for its operations • **Brand Loyalty:** Highly loyal to suppliers	• Achieve carbon **neutrality** by 2040 • Decarbonizing its entire supply chain • Sustainable agri. practices
Tertiary	Taoyuan International Airport[24]	Taiwan	• Airport • **Cap**: Large • **Growth**: Exemplary • **Point of Contact**: Fischer Lee	• **Values:** "Corporate social responsibility and employee value" • **Ambitions:** Sustainable fuel use	• **Procurement Frequency:** Frequent gasoline acquisition for its operations • **Brand Loyalty:** Often loyal to suppliers	• Achieve **Net-Zero** Emissions by 2050 by purchasing clean-burning airline fuel • Invest heavily in renewable energy development
Tertiary	Goa Airport[25]	India	• Airport • **Cap**: Medium • **Growth**: Satisfactory • **Point of Contact**: Rajesh Pauskar	• **Values:** "Environmentally friendly practices and ethical business" • **Ambitions:** Sustainable fuel use	• **Procurement Frequency:** Regular gasoline acquisition for its operations • **Brand Loyalty:** Highly loyal to suppliers	• **Reduce** greenhouse gas emissions from aircraft from purchasing sustainable and clean fuel • Achieve **Net-Zero** Emissions

[20] https://www.ril.com/
[21] https://www.bharatpetroleum.in/about-bpcl/vision-and-values.aspx
[22] https://www.retif.com/industries/farming-fuel-lubricants/
[23] https://www.mahindrausa.com/--careers
[24] https://www.taoyuanairport.com.tw/vision?lang=en
[25] https://www.gmrgroup.in/goa/

V. Unique Value Proposition

The Sustainable Biofuel

Mission Statement: *"At BioBloom, we're not just producing biofuel; we're cultivating a greener tomorrow. Our innovative venture in India harnesses the untapped potential of algae, transforming harmful algal overblooms into a sustainable energy source. By reflecting corporate social responsibility in all of our commitments and increasing awareness about the need for environmentally friendly fuel sources, BioBloom aims to create a sustainable future for all."*

A. Company Values and Characteristics:

BioBloom prides itself in its **restorative, ethical, and efficient** core business practices, proudly practicing its 21st century **corporate social responsibility** in an business environment which requires adherence to these qualities for success**.**

Restorative: BioBloom leads in eco-restoration by linking financial success with environmental stewardship. Through converting harmful algal blooms into sustainable biofuel, we tackle eutrophication and hypoxia, benefiting aquatic ecosystems. This approach not only addresses environmental concerns but also supports the Indian economy by mitigating the algal blooms that accounted for over a **23%** opportunity cost for clamming and commercial fisheries[26]. Through our dual solution in attacking both algal blooms and unsustainable fuels, BioBloom nurtures environmental and economic restoration in Indian communities.

Ethical: BioBloom is dedicated to maintaining high ethical standards, ensuring compliance with biofuel production regulations, labor laws, and safety standards, while aiming for carbon-neutral emissions to serve as a model for others. Through regular quality assurance checks, we guarantee the delivery of high-quality fuel, enhancing customer trust. Our commitment extends to supporting local communities by providing employment and promoting economic growth in rural areas. Ultimately, our focus on ethics can help reduce losses with a **39%** boost in employee productivity, increasing overall innovation and customer satisfaction[27].

Efficient: BioBloom prioritizes efficiency in its operations, aiming to minimize waste and environmental impact. Our biofuel production process is designed for low water and energy use, leveraging advanced biotechnology to optimize natural characteristics of algae for higher biofuel yields. Likewise, our closed-loop system also recycles our algae processing mechanism's byproducts, supporting carbon neutrality. This approach results in a **high-energy**, **low-impact** product, embodying our commitment to resource efficiency and environmental stewardship.

B. Customer Benefits:

CSR Goals ⟷ **Low price & emissions** ⟷ **Economic Growth**

CSR Goals	Low price & emissions	Economic Growth
Corporate Social Responsibility **(CSR)**, the onus of a company to limit its impact on society and the environment, has become a mandatory **quality** for almost any business to have. BioBloom recognizes many of its corporate customers, such as Bharat Petroleum[21], are **struggling** to meet their biofuel implementation goals in their bid to become socially responsible. Thus, in order to fill this gap in the industry, we provide companies a straightforward method to purchase clean and efficient biofuel to **meet** CSR goals.	At the gas pump, everyday local Indians will not have to worry potential downsides of purchasing our biofuel. BioBloom's state of the art manufacturing process allows the company to create fuel that has a price per liter which is **competitive** to or even **cheaper** to traditional gasoline, essentially giving customers the liberty to not have to choose between monetary cost and environmental cost. Moreover, BioBloom's fuel will emit **less pollutants** than traditional gasoline *(See Section VI. Solution for specifics).*	Customers from rural and coastal areas in India will see **economic benefits** in their communities when they purchase BioBloom's biofuel as well. To power its operations, BioBloom will **source employment** and **grow algae farms** in rural and coastal areas in India that have suffered through economic stagnation and algal overblooms. By making these communities play a major role in the daily operations of BioBloom, our company hopes to foster technical education, introduce more capital, and increase overall quality of life.

[26] https://www.sciencedirect.com/science/article/abs/pii/S1568988322001445#:~:text=These%20disruptions%20result%20in%20significant,these%20marine%20resources%20for%20subsistence.

[27] https://gitnux.org/work-ethics-statistics/

VI. Solution

1 Initiate algal bloom cleanup and harvesting operations throughout India's west coast and waterways, as well as vertical farming for algae cultivation

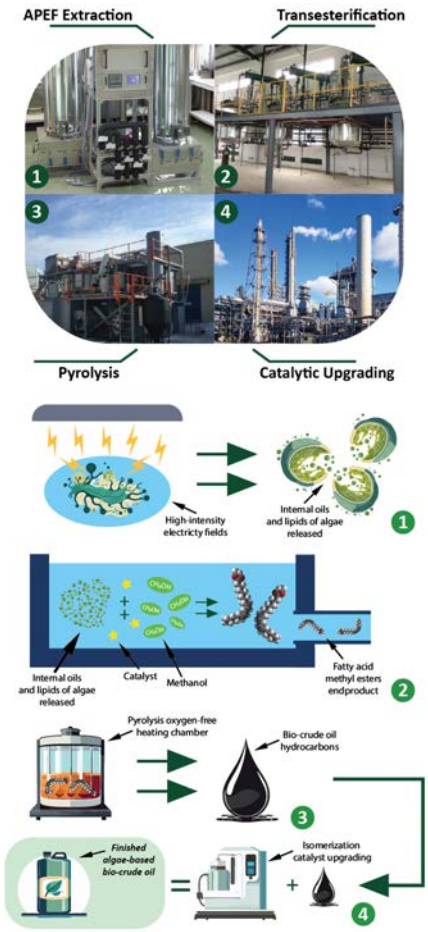
Figure 9

BioBloom will harvest algal overblooms and cultivate farmed algae to produce sustainable biofuel **(Figure 9)**. As algae acculumates energy-rich oils, algae is the ideal energy source for BioBloom's biofuel production. Thus, as part of collection, BioBloom will initiate various algal bloom cleanup initiatives throughout the India's western coast and other waterways.

A. The first step in our cleanup operations involves the use of a **bioacoustic separation machine** attached to the undersides of drones. Through sound waves released by this machine, clusters of algae will be formed and then separated from their surroundings, making it easier for BioBloom to harvest large amounts of biomass without harming local aquatic ecosystems.
B. Next, to collect the aggregated algae, we will be deploy **mechanical skimmers and nets** in the waters to efficiently scoop up large quantities of algae from the water's surface, giving us the algae biomass to process.
C. In addition to cleanup and harvesting, BioBloom will set up algae cultivation operations in rural Indian farms along the coast to produce surplus biomass. Using **vertical farming**, we will stack enclosed **photobioreactors** to grow algae with minimal land use[28]. These farming systems distinguish our algae cultivation from traditional biofuel methods, as we build upwards rather than horizontally to sustain surrounding ecosystems.

Along with collecting algae from waterways contracted by the Government of India through the Swachh Bharat program, we estimate our operations will remove at least 50% of algal blooms along the Gulf of Khambhat and the Malabar Coast by 2030.

2 Implement an innovative, sustainable processing mechanism to meet market demands



Representation of Processing Mechanism - *Figure 10*

To transform algae into actual fuel, BioBloom will introduce a cutting-edge, sustainable processing mechanism backed by rigorous research and scientific principles. Our patent-pending natural processing mechanism will convert algae into **bio-crude oil** through a combination of **algae-pulsed electric field (APEF) extraction, transesterification, pyrolysis, and catalytic upgrading (Figure 10)**.

1. Once biomass from algae cleanups and cultivation are transported to our biorefineries, they will undergo APEF Extraction. In this initial stage, algae cells are exposed to short bursts of high-intensity electric fields, disrupting the cell walls of the algae and causing them to release their internal oils and lipids **without the need for** harsh chemicals.
2. The extracted oils then undergo transesterification, where they are reacted with methanol in the presence of a catalyst to create **fatty acid methyl esters** (FAME), a key ingredient in biodiesel. With transesterification, BioBloom will pay particular attention to reaction conditions, such as temperature, catalyst concentration, and methanol-to-oil ratio.
3. The fatty acid methyl esters are then subjected to pyrolysis, where they are heated in an oxygen-free environment until they break down into bio-crude oil[29]. Through pyrolysis's thermal decomposition, BioBloom extracts valuable hydrocarbons from the biomass while also significantly **reducing the volume of waste**, contributing to the overall sustainability of our processing mechanism.
4. Our final step is catalytic upgrading. Here, we further refine our bio-crude oil into higher-quality fuel through isomerization catalyst reactions under high pressures. This upgrade increases the compatibility of our bio-crude oil with existing petroleum infrastructure, allowing for **easier integration** into current fuel distribution systems.

- Extra Step: BioBloom will then **refine** its bio-crude oil into biodiesel, biogasoline, and biojet fuel, each requiring specific refining processes. 50% of the bio-crude oil in each of our production batches will be refined into biogasoline using **fractional distillation** and **catalytic cracking**. Biodiesel will be produced from 30% of each batch through further **impurity removal**. Finally, the remaining 20% of each bio-crude oil batch will be converted to biojet fuel utilizing **hydroprocessing**.

As algae naturally contains low sulfur contents and algal pyrolysis leads to lower peak combustion temperatures and less NOx formation, BioBloom's algae-based biofuels emit significantly lower levels of air pollutants than fossil fuel-based fuels.

[28] https://farm-energy.extension.org/algae-for-biofuel-production/#Production.2Fagronomic_information
[29] https://www.e-education.psu.edu/egee439/node/696

3 Introduce algae-based biofuel through initiatives in rural areas to promote a culture of sustainable fuel use

To give back to the communities that BioBloom heavily depends on, the company has employed a comprehensive social program in an effort to boost the socioeconomic circumstances of those living in rural and coastal areas in western India.

Recognizing the financial burden of expensive gas cylinders for many living in poverty, BioBloom will offer biogasoline cylinders at a significantly lower price point **(₹600)** compared to the national average **(₹900)**. This initiative aims to make clean and sustainable fuel accessible to residents in rural and coastal areas of western India. *(Accounted for in the direct sales revenue stream).*

BioBloom will offer farmers **subsidized** biodiesel and algae-processing byproducts (e.g. biochar) *(Section VIII. Revenue Streams)*.

BioBloom will invest in rural communities by building vertical algae farms in targeted areas, creating local job opportunities and fostering economic development. In addition, BioBloom will provide **training programs** at these farms, equipping workers with the technical skills required for algae cultivation and processing, empowering them for future careers in the biofuel industry.

Through **public service announcements**, we aim to raise awareness and generate excitement about biofuel technology among the public.

VII. Channels

A. Channels of Marketing

Industry Trade Shows		
Industry	**Description**	**Locations**
Automotive	BioBloom will attend trade shows and engage in demonstrations to promote the usage of biofuel in automotive transportation. These shows will include showcasing biofuel within current engines and **comparing engine efficiency** from biofuels with traditional fuels.	• **Autocare Expo 2024 (India)** November 21-23, 2024 • **Automechanika Kuala Lumpur (Malaysia)** August 1-3, 2024
Agricultural	Through Agricultural Trade Fairs, we will present the efficiency benefits of biofuels in farm machinery and the reduced carbon footprint that comes along with switching to biofuel.	• **AgriTech India 2024** August 22-24, 2024 • **Agri Asia (India)** September 20-22, 2024
Aviation	Targeting aviation trade shows, we will set up exhibitions of the advantages of switching to biofuel. BioBloom will touch on the benefits of reduced carbon emissions along with reduced costs in an effort for airlines and airports to adopt BioBloom's fuel.	• **Air Expo (India)** November 22-24, 2024 • **Japan International Aerospace Exhibition** October 16th-19th, 2024

Digital Marketing	
Method	**Description**
LinkedIn Advertising	BioBloom will advertise to procurement managers from targeted automobile, agricultural equipment, and aviation fuel service companies. LinkedIn is well-reputed as the most professional social media platform in which to network, connect, and build relations with manufacturing leaders. Utilizing LinkedIn's **professional algorithms** and features, we will be in perfect position to expand our customer base not only in India, but also internationally.
Google Ads	In order to expand our online presence and rank among the top producers of sustainable biofuels online, BioBloom plans to invest in Google Ads. Using **search and display advertising**, BioBloom can target keywords specific to customers of our 3 targeted customer bases: gas stations, agricultural firms, and airports. To increase our own sales, we will promote Google Ads with partnered businesses who buy our biofuel to their prospective customers in a bid to increase overall biofuel use in India and expand BioBloom's brand recognition.
Programmatic Advertising	BioBloom will use **artificial intelligence** to buy and place ads in real time across online platforms encompassing our targeted automotive, agricultural, and aviation sectors. These programmatic ads will be displayed on industry-specific websites and forums to ensure being seen by the most relevant potential customers, ultimately **maximizing our return on investment** by adjusting bids and advertisement placements to reach high-value leads.

Physical Marketing			
Industry	**Description**	**Locations**	**Quantity**
Billboards	BioBloom will put up billboards in **high-traffic** rural and urban areas by partnering with the advertisement agency **BuyMediaSpace** to encourage everyday Indian citizens to purchase BioBloom biofuel from partnered gas stations.	• Vadodara, Gujarat • Mulki, Karnataka	• 20 in Vadodara • 10 in Mulki
Flyers	BioBloom will collaborate with partnered gas station chains such as Reliance Petroleum Limited[20] to distribute flyers that encourage the gas station's customers to switch to our biofuel for their vehicles.	• Vadodara, Gujarat • Mulki, Karnataka	• 3K in Vadodara • 2K in Mulki

Notice: All marketing activities in Vadodara will start in Phase 1 of BioBloom's operations and all marketing activities in Mulki will start in Phase 3.

B. Channels of Distribution

Domestic Distribution: For distributions within 100 kilometers of the biofuel production facility, BioBloom will use its own trucks for efficiency and ease, avoiding the complexities of train loading. We'll ensure continuous tracking and support for these shipments. For longer distances, we'll leverage India's **Dedicated Freight Corridors** (DFCs) for their speed, cost efficiency, and **lower emissions**, using specialized tanker rail cars equipped for easy loading and unloading. Both transport modes will feature tracking and dedicated staff for immediate issue resolution, aligning with our sustainability goals.

International Distribution: BioBloom's international distribution strategy is divided into two main approaches. For countries accessible by land, including most landlocked Asian nations, we will utilize India's railway system to transport our biofuel to the border, after which it will be transferred to the respective country's freight systems for the most cost-effective delivery. For overseas shipments targeting countries on different continents or along Asia's coastlines, large **cargo ships** will be employed due to their superior capacity, **cost-efficiency**, and fuel effectiveness compared to aviation. Additionally, the simpler legal framework and fewer regulatory hurdles for shipping biofuel by sea make this option more viable. Upon arrival at the destination's nearest dock, rail systems will complete the delivery process, ensuring a seamless transition from sea to land transport.

C. Channels of Collection and Cultivation

Channel	Description	Expected Output in Year 1
Algal Bloom Cleanup Operations	The process of collecting algae from the Gulf of Khambhat, the Malabar Coast, and waterways contracted by the Indian government to clean up will consist of two steps: **separation** and **extraction**. The algae will be separated from its surroundings by the sound waves from the **bioacoustic separation drones and** then be extracted from the water with **mechanical skimmers**. However, since algal blooms are bound to be unpredictable, this channel will be our secondary collection source of our algae.	• Projected **463.6** Mt of algae collected (~%40 of total collection in Year 1)
Vertical Farming of Photobioreactors	Vertical farming will establish a **direct channel** of algae cultivation for BioBloom's biofuel production services. Being the primary source of our algae collection due to predictability and continuous expansion, we will expect a majority of BioBloom's algae to be cultivated by our **photobioreactors**.	• Projected **695.4** Mt of algae collected (~%60 of total collection in Year 1)

VIII. Revenue Streams

A. Revenue Model

BioBloom will divide its revenue into 3 main streams: **direct sales, byproduct utilization, and government contracts**. By diversifying its revenue streams, BioBloom will develop greater resistance against unexpected enterprise environmental factors.

Direct Sales: BioBloom will supply its sustainable biofuels directly to domestic and international customers, following the B2B segmentation model outlined in *Section IV. Customer Segments*. This will account for around **77.91%** of our projected first-year income, serving as our **most profitable and reliable** revenue stream. Furthermore, as seen in the **Three Years Sales Forecast** below, selling biogasoline to gas stations will be BioBloom's most valuable biofuel sold, making up **42.5%** of total direct sales in Year 1. In addition, to avoid significant losses from international price fluctuations, BioBloom must vigilantly monitor currency exchange rates, particularly for its direct sales. Having an impact on our direct sales, we recognize warmer months will have greater levels of algae production.

Byproduct Utilization: BioBloom's production process generates valuable byproducts, as seen in **Figure 11**, which can be sold for **significant profits**, rather than dumped out into the environment[30]. Specifically, we will be selling these byproducts to farmers and agricultural firms in rural India at a **subsidized price**, accounting for **18.13%** of our projected first-year income. Biochar, for example, can assist in producing organic fertilizers for soil amendment. As such, our byproducts will provide convenience farmers in struggling rural areas and create a substantial secondary revenue stream for BioBloom.

Government Contracts: Our final revenue stream is government contracts, where BioBloom will partner with the Government of India through the **Swachh Bharat Abhiyan** (Clean India Mission) program to help clean up waterways in India through our algal bloom cleanup operations. This will comprise **3.96%** of our projected first-year income. Furthermore, with our sustainability-focused initiatives, BioBloom can benefit from **governmental carbon credits**, which allow companies to sell credits gained from reducing greenhouse gas emissions for profits. One challenge BioBloom will have, however, is competition from other biofuel producers hoping to gain government contracts and funding.

Byproduct	Subsidized Price (US$)	Market estimation (US$ × 10^6/year)
Biochar	50 per kg	1250–3800
β-carotene	300–3000 per kg	>280
Astaxanthin	2,500–10,000 per kg	150–200
Polyunsaturated fatty acid	60 per g	1530
Phycobiliproteins	3.25–17 per mg	12–50

Byproduct Prices and Market Estimations[30] - *Figure 11*

Three Year Sales Forecast

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2024	2025	2026
Biogasoline															
Liters sold	5,130	11,780	15,775	19,460	22,840	25,298	27,560	28,535	31,640	32,473	34,305	35,008	289,750	405,650	567,910
Sale price per unit sold	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.08	$2.15	$2.23
Revenue	$10,650.52	$24,456.75	$32,750.87	$40,401.39	$47,418.70	$52,520.77	$57,218.01	$59,242.23	$65,688.60	$67,416.97	$71,221.47	$72,679.95	$601,666.22	$872,416.01	$1,265,003.22
Biodiesel															
Liters sold	3,078	7,068	9,465	11,676	13,704	15,179	16,536	17,121	18,984	19,484	20,583	21,005	173,850	243,390	340,746
Sale price per unit sold	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.63	$2.72	$2.82
Revenue	$8,094.40	$18,587.13	$24,890.66	$30,705.06	$36,038.21	$39,915.79	$43,485.68	$45,024.09	$49,923.33	$51,236.90	$54,128.32	$55,236.76	$457,266.32	$663,036.17	$961,402.45
Biojet Fuel															
Liters sold	2,052	4,712	6,310	7,784	9,136	10,119	11,024	11,414	12,656	12,989	13,722	14,003	115,900	162,260	227,164
Sale price per unit sold	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.08	$3.19	$3.30
Revenue	$6,315.13	$14,501.42	$19,419.34	$23,955.65	$28,116.50	$31,141.73	$33,926.91	$35,127.16	$38,949.47	$39,974.30	$42,230.14	$43,094.93	$356,752.67	$517,291.38	$750,072.50
Algae Processing Byproducts															
Pounds sold	4,523	10,385	13,907	17,156	20,136	22,302	24,297	25,156	27,894	28,628	30,243	30,863	255,490	352,819	487,227
Sale price per unit sold	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.29	$1.35	$1.42
Revenue	$5,834.16	$13,396.97	$17,940.34	$22,131.16	$25,975.11	$28,769.94	$31,343.00	$32,451.83	$35,983.03	$36,929.81	$39,013.84	$39,812.77	$329,581.95	$477,893.83	$692,946.05
Government Contracts															
Contracts signed	0	0	0	1	1	1	2	2	2	2	2	2	15	20	25
Sale price per unit sold	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies	Varies
Revenue	$0.00	$0.00	$0.00	$7,000.00	$7,000.00	$7,000.00	$8,500.00	$8,500.00	$8,500.00	$8,500.00	$8,500.00	$8,500.00	$72,000	$104,400	$151,380
Total Revenue	**$30,894**	**$70,942**	**$95,001**	**$124,193**	**$144,549**	**$159,348**	**$174,474**	**$180,345**	**$199,044**	**$204,058**	**$215,094**	**$219,324**	**$1,817,267**	**$2,635,037**	**$3,820,804**

Notice: The Three Year Sales Forecast accounts for inflation calculated after each year

[30] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3152439/#:~:text=Algae%20will%20be%20harvested%20and,pond%2C%20rather%20than%20exogenously%20produced

B. Lifetime Values

BioBloom will calculate a Customer Lifetime Value (CLV) for customers to whom it directly sells sustainable biofuels and a Supplier Lifetime Value (SLV) for photobioreactor manufacturers*, mechanical skimmers/nets**, and industrial drones*** that the company pays for algae biomass collection. This process is key for BioBloom to make well-informed decisions about **customer acquisition** and **retention strategies**, as well as **supplier relations**. Understanding these values will help BioBloom enhance its revenue, reduce costs, and operate more efficiently, contributing to its long-term success in the biofuel industry.

Customer Lifetime Value (CLV)					Supplier Lifetime Value (SLV)				
Average Sale Value (ASV) x Frequency Rate (FR) x Projected Customer Lifespan (PCL)					Average Procurement Value (APV) x Frequency Rate (FR) x Projected Supplier Lifespan (PSL)				
Customer	ASV	FR (Per Year)	PCL (Years)	CLV	Supplier	APV	FR (Per Year)	PSL (Years)	SLV
Reliance Petroleum	$73,530	12	10	**$8,823,600**	**H.E.L. Group***	$162,500	1	15	**$2,437,500**
Bharat Petroleum	$36,765	12	10	**$4,411,800**	**CyanoCapture***	$162,500	1	10	**$1,625,00**
Retif	$30,625	12	8	**$2,940,000**	**Weeders Digest****	$6,040	3	10	**$181,200**
Mahindra FES	$32,462	12	8	**$3,116,352**	**Markleen****	$6,040	3	8	**$144,960**
Taoyuan Airport	$26,250	12	5	**$1,575,000**	**Volatus Drones*****	$22,450	2	12	**$538,800**
Goa Airport	$21,962	12	5	**$1,317,721**	**Precision Hawk*****	$22,450	2	8	**$359,200**

Our PCL ranges from 5-10 years because we are considering potential transformations in innovative biofuel practices that may cause uncertainty in the market.

IX. Cost of Structure

A. Customer Acquisition Costs

In total, BioBloom's Year 1 marketing expenses are **$166,088**, resulting in a **Customer Acquisition Cost (CAC) of $27,681.30** *($166,088/6 Potential Identified Customers)*. This results in an average CAC to CLV ratio of **1.1%**, deeming BioBloom's customers incredibly valuable as they have a large volume of sales and revenue contribution to our company. Additionally, BioBloom's marketing efforts will also lead to an inevitable gain in customers, eventually decreasing its long-term CAC cost.

CAC Costs: Industry Trade Shows					
Trade Show	Registration Fee	Booth Expenses	Travel and Hotel Expenses	Subtotal Cost	Total Cost
Autocare Expo 2024 (India)	$1,475	$14,800	$2,950	$19,225	**$130,340 Trade Shows Cost in Year 1**
Automechanika Kuala Lumpur (Malaysia)	$1,600	$18,000	$4,500	$24,100	
AgriTech India 2024	$1,230	$14,750	$3,100	$19,080	
Agri Asia (India)	$1,365	$14,500	$3,200	$19,065	
Air Expo (India)	$1,420	$15,200	$3,250	$19,870	
Japan International Aerospace Exhibition	$2,000	$20,000	$7,000	$29,000	

Industry Trade Shows: To market itself in person to its customers, BioBloom will attend many industry-specific trade shows, where it can showcase its services and network with potential clients. Furthermore, BioBloom will bring its client-based sales team and sales managers to provide **consultative** services to its clients, working closely with them to optimize our mutual success. These sales managers will be responsible for client meetings and other **engagement strategies** to gain customers for BioBloom. In addition, costs associated with, for example, sales managers taking potential clients out to lunch, are accounted for in miscellaneous costs *(Section X. Detailed Financials)*.

CAC Costs: Digital Marketing						
Media Type	Development Fees	# of Monthly Ads	CPM (Cost per 1000 Impressions)	Estimated # of Impressions	Subtotal Cost	Total Cost
LinkedIn Adv.	$500	10	$5.24	1,200,000	$6,288	**$18,078 Digital Marketing Cost in Year 1**
Google Ads	$300	20	$2.00	1,920,000	$3,840	
Programmatic Adv.	$400	25	$1.50	4,500,000	$6,750	

Digital Marketing: As India continues to rapidly digitize, BioBloom sees digital marketing as a necessity. Advertising on LinkedIn will allow the company to connect with **professionals** in the fuel industry. Likewise, with a combination of Google Ads and Programmatic Advertising, BioBloom can encourage India's public to switch to our biofuel. We will also develop a website as a supplementary marketing channel.

CAC Costs: Physical Marketing					
Method	Development Fees	# of Media	Price per Media	Subtotal Cost	Total Cost
Billboards	$550	10	$1,550	$15,550	**$17,670 Physical Marketing Cost in Year 1**
Flyers	$120	20,000	$0.10	$2,120	

Physical Marketing: Moreover, we recognize that India is still a developing country, and many Indian citizens do not actively use technology. Thus, to access all reaches of the population, BioBloom will purchase compelling billboards that encourage everyday people to purchase our biofuel from partnered gas stations. In addition, our flyers will be passed out to those who purchase normal gasoline, in hopes of informing them of the benefits of biofuel and ultimately causing them to purchase our gasoline the next time they go to the pump.

B. Distribution Costs

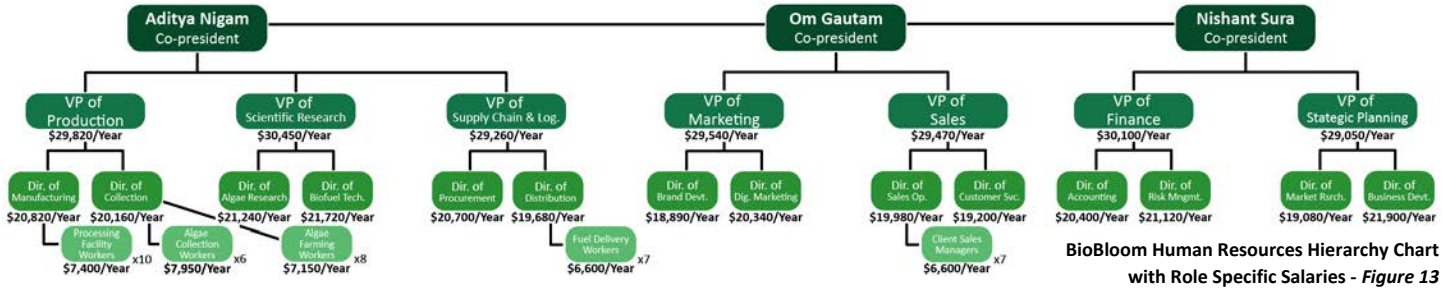
Distribution Expenses	Reliance Petrolium	Bharat Petroleum	Retif	Mahindra FES	Taoyuan Airport	Goa Airport	Total Cost
Handling/10,000L	$300	$300	$300	$300	$300	$300	**$41,153.90 Distribution Cost in Year 1**
Storage/10,000L	$100	$100	$100	$100	$100	$100	
Trucking and Freight Cost/10,000L	$234.50	$247.00	---	$255.50	---	$245.00	
Cargo Ship Cost/10,000L	---	---	$575.00	---	$464.00	---	
Total Cost/10,000L	$634.50	$647.00	$975.00	$655.5	$864.00	$645.00	
Annual Distribution Cost (Liters Sold)	**$10,111.55**	**$10,310.75**	**$8,475.19**	**$5,697.94**	**$3,755.16**	**$2,803.33**	

Shipping route to Goa Airport from BioBloom operational center - *Figure 12*

BioBloom's distribution costs entail all costs associated with delivering our refined biofuel to customers. As our distribution methods vary for domestic and international customers, we will be dividing our distribution expenses into four main categories: **handling, storage, freight and trucking costs (domestic), and cargo ship fees (international)**. These expenses will be calculated per 10,000 liters of biofuel, as each of our containers will have a capacity of 10,000 L. For domestic customers, trucking, packing, and other small miscellaneous fees are accounted for in these expenses, while overseas transport, customs, and logistical fees are factored in for international customers. The distribution cost is variable and is dependent on how many liters of biofuel are sold each month. **Figure 12** shows a theoretical shipping route to one of BioBloom's identified potentional customers.

C. Human Resources Costs

To make BioBloom's mission possible, the company has created a comprehensively organized human resources hierarchy system to run the company's day to day operations. For the first three years in business, the three presidents will **not** receive a salary to save on costs. The total payroll for **Vice Presidents** is **$207,690,** the total payroll for **Directors** is **$285,230,** and the total payroll for **Workers** is **$249,100**. Though specific role salaries may seem insufficient based on American standards, BioBloom's salaries are extremely generous based on industry standards in the Indian economy. Additionally, BioBloom prides itself in promoting a positive work culture that promotes employee wellbeing, happiness, and efficiency. For payroll benefits, full-time employees (VPs and Directors) have **12%** for *Provident Fund* and **4.75%** for *Employee State Insurance*; part-time employees (Workers) have **6%** for *Provident Fund* and **4.75%** for *Employee State Insurance*. In **Figure 13**, you may see role specific salaries. Combining all these factors, our total Human Resources cost is **$851,362**.



BioBloom Human Resources Hierarchy Chart with Role Specific Salaries - *Figure 13*

D. Costs of Sales

Cost of Sales: BioBloom's cost of sales encompasses the collection of stock and direct overhead. Our **collection of stock** involves acquiring algae biomass from two primary collection channels: vertical farming and algal bloom cleanup. The table on the right illustrates the varying acquisition costs for each channel. As vertical farming will require the purchasing of photobioreactors, the cost will be relatively high when compared to algal bloom cleanups, which require simpler machinery such as drones and mechanical skimmers. Additionally, extra costs and shipping fees associated with the collection of biomass headed for our processing facility are included in **direct overhead**. BioBloom estimates this to be $104.89 per Mt, representing **11.94%** of the profit per metric ton.

Cost of Sales				
Collection Method	**Portion of Collection**	**Acquisition per 1 Mt of algae**	**Profit per 1 Mt of algae**	**Profit Margin**
Vertical Farming	60%	$455.60	$878.45	48.13%
Algal Bloom Cleanup	40%	$230.00	$878.45	73.82%
Subtotal	**100%**	**$365.36**	**$878.45**	**61.00%**
Direct Overhead	--	$104.89	$878.45	88.06%
Total	**--**	**$447.69**	**$878.45**	**49.04%**
Total Cost of Sales: $640,527 (1,159 Mt of algae processed in Year 1)				

Gross Profit Margin (GPM): GPM is a statistic used to evaluate the financial health and profitability of our company, determining the **percentage** of remaining revenue after subtracting the sales cost. This data on the next page displays each revenue stream and its contribution to BioBloom's overall profitability, allowing us to identify areas where our prices should be adjusted or costs should be reduced to improve our GPM. Tracking our GPM is **critical** to the sustainability and success of BioBloom.

Gross Profit Margin				
Revenue Stream	**Total Revenue**	**Cost of Sales**	**Gross Profit**	**GPM**
Direct Sales	$1,415,685	$640,527	$896,812	63.35%
Byproduct Utilization	$329,582	$0	$329,582	100%
Government Contracts	$72,000	$0	$72,000	100%
Total	**$1,817,267**	**$640,527**	**$1,298,394**	**71.45%**

E. Additional Costs

Utility & Lease Expenses: BioBloom's processing facility will utilize 15,000 kWh ($677.25) and 8,500 therms ($175.39) in energy costs per month. Additionally, these costs are subject to variation directly correlating to our production capacity at 860 kWh per Mt. With other calculated utility expenses such as our water bill, BioBloom's total Year 1 utility cost will be **$47,656**. The company also plans to lease this facility for its first three years in business, paying $1.436 per sqft per year, giving us a monthly lease cost of **$9,039** and yearly of **$108,468**.

Tax, Interest, and Depreciation: Being a **Private Limited Company**, BioBloom will only pay **15% tax** on net income before being affected by interest, depreciation, and amortization. Experiencing a net loss in 2024, the tax balance becomes deductible and carries over into 2025. We will pay a decreasing interest rate on our loan of **$1,575,000**. Utilizing the **Double Decline Balancing Method**, depreciation will be calculated on all of our depreciable equipment (assuming a 10% declining rate on all vehicles and machinery).

Capital Expenditures					
Non-equipment	**Unit**	**Price per Unit**	**Total Year 1 Cost**	**Subtotals**	**Total**
Permits and Licenses	Count 8	$9181	$73,450	Non-equipment Subtotal: $253,112	$1,046,049 Capital Expenditure Cost Year 1
Land for vertical farm	2 acres	$8,890	$17,780		
Facility Lease & Modification	75,540 sqft	$2.143	$161,882		
Equipment	**Unit**	**Price per Unit**	**Total Year 1 Cost**		
Algae Processing Equipment	4 Machine Groups	Varies	$320,000	Equipment Subtotal: $792,937	
Bioacoustic Drones	Count 6	$11,750	$70,500		
Mechanical Skimmers	Count 2	$59,499	$118,998		
Vertical Farming Containers	Count 10	$17,500	$175,000		
Company Vehicles	Count 2	$54,219	$108,439		

X. Detailed Financials

A. Projected income and expenses

1. Projected income statements by month for the first year's operation (sales, expenses, profit/loss)

Monthly Income Statement

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2024	2025	2026
Revenue															
Direct Sales	$25,060.05	$57,545.30	$77,060.88	$95,062.10	$111,573.40	$123,578.29	$134,630.60	$139,393.48	$154,561.40	$158,628.16	$167,579.93	$171,011.64	$1,415,685	$2,052,744	$2,976,478
Byproduct Utilization	$5,834.16	$13,396.97	$17,940.34	$22,131.16	$25,975.11	$28,769.94	$31,343.00	$32,451.83	$35,983.03	$36,929.81	$39,013.84	$39,812.77	$329,582	$477,894	$692,946
Government Contracts	$0.00	$0.00	$0.00	$7,000.00	$7,000.00	$7,000.00	$8,500.00	$8,500.00	$8,500.00	$8,500.00	$8,500.00	$8,500.00	$72,000	$104,400	$151,380
Total Revenue	**$30,894**	**$70,942**	**$95,001**	**$124,193**	**$144,549**	**$159,348**	**$174,474**	**$180,345**	**$199,044**	**$204,058**	**$215,094**	**$219,324**	**$1,817,267**	**$2,635,037**	**$3,820,804**
Cost of Sales															
Collection of Stock	$9,186.60	$21,095.15	$28,249.24	$34,848.19	$40,900.96	$45,301.75	$49,353.35	$51,099.34	$56,659.65	$58,150.45	$61,432.02	$62,690.03	$518,967	$700,605	$945,817
Direct Overhead	$2,152.34	$4,942.42	$6,618.56	$8,164.64	$9,582.75	$10,613.82	$11,563.07	$11,972.14	$13,274.88	$13,624.16	$14,393.01	$14,659.15	$121,560	$164,106	$221,543
Total Cost of Sales	**$11,339**	**$26,038**	**$34,868**	**$43,013**	**$50,484**	**$55,916**	**$60,916**	**$63,071**	**$69,935**	**$71,775**	**$75,825**	**$77,349**	**$640,527**	**$864,711**	**$1,167,360**
Gross Profit	$19,555	$44,905	$60,133	$81,180	$94,065	$103,433	$113,557	$117,274	$129,110	$132,283	$139,269	$141,975	$1,176,740	$1,770,326	$2,653,444
Gross Margin	***63.30%***	***63.30%***	***63.30%***	***65.37%***	***65.07%***	***64.91%***	***65.09%***	***65.03%***	***64.86%***	***64.83%***	***64.75%***	***64.73%***	***64.75%***	***67.18%***	***69.45%***
Salary & Wages															
Founders/Owners	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0	$0	$0
Full-Time Employees	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$41,076.70	$492,920	$566,858	$651,887
Part-Time Employees	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$20,758.30	$249,100	$286,465	$329,435
Payroll Costs & Benefits	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$9,111.86	$109,342	$125,743	$144,605
Total Salary & Wages	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$70,947**	**$851,362**	**$979,066**	**$1,125,926**
Operating Expenses															
Marketing	$6,304.00	$7,422.00	$8,851.00	$10,277.00	$11,702.00	$13,128.00	$14,253.00	$15,979.00	$17,405.00	$18,830.00	$20,256.00	$21,681.00	$166,088	$199,306	$239,167
Lease	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$9,039.00	$108,468	$108,468	$108,468
Utility	$1,833.00	$2,222.00	$2,611.00	$2,999.00	$3,388.00	$3,777.00	$4,166.00	$4,555.00	$4,943.00	$5,332.00	$5,721.00	$6,110.00	$47,656	$57,187	$68,625
Insurance	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$1,175.00	$14,100	$16,920	$20,304
Distribution	$1,564.00	$1,903.00	$2,242.00	$2,582.00	$2,921.00	$3,260.00	$3,599.00	$3,938.00	$4,277.00	$4,617.00	$4,956.00	$5,295.00	$41,153	$49,384	$59,260
Legal Fees/Permits	$5,500.00	$5,500.00	$5,500.00	$5,500.00	$5,912.00	$5,912.00	$5,912.00	$5,912.00	$5,912.00	$7,296.67	$7,296.67	$7,296.67	$73,450	$73,450	$73,450
Maintenance	$570.22	$912.36	$1,322.92	$1,852.08	$1,944.68	$2,139.15	$2,224.72	$2,313.71	$2,406.25	$2,502.51	$2,602.60	$1,675.76	$22,467	$26,960	$32,352
R&D	$1,065.60	$1,065.60	$1,065.60	$1,065.60	$3,354.86	$3,354.86	$3,354.86	$3,354.86	$4,756.68	$4,756.68	$4,756.68	$4,756.68	$36,709	$44,051	$52,861
Miscellaneous	$313.29	$501.26	$726.83	$1,076.35	$1,127.24	$1,234.07	$1,298.73	$1,347.62	$1,398.46	$1,451.34	$1,506.34	$1,563.54	$13,545	$16,254	$19,505
Total Operating Expenses	**$27,364**	**$29,740**	**$32,533**	**$35,566**	**$40,564**	**$43,019**	**$45,022**	**$47,614**	**$51,312**	**$55,000**	**$57,309**	**$58,591**	**$523,636**	**$591,980**	**$673,992**
EBITDA	($78,756)	($55,782)	($43,347)	($25,332)	($17,446)	($10,533)	($2,412)	($1,287)	$6,851	$6,336	$11,013	$12,438	($198,258)	$199,280	$853,526
EBITDA Margin	***-254.92%***	***-78.63%***	***-45.63%***	***-20.40%***	***-12.07%***	***-6.61%***	***-1.38%***	***-0.71%***	***3.44%***	***3.11%***	***5.12%***	***5.67%***	***-10.91%***	***7.56%***	***22.34%***

Other Expenses															
Interest	$8,903.73	$8,817.97	$8,731.79	$8,645.19	$8,558.16	$8,470.69	$8,382.80	$8,294.47	$8,205.70	$8,116.49	$8,026.84	$7,936.75	$101,091	$88,049	$74,213
Taxes	(11,813.35)	(8,367.36)	(6,502.02)	(3,799.87)	(2,616.88)	(1,579.99)	(361.80)	(193.08)	1,027.60	950.44	1,651.89	1,865.42	($29,739)	$29,892	$128,029
Depreciation	$1,705.73	$1,690.82	$1,676.04	$1,661.38	$1,646.86	$1,632.46	$1,618.20	$1,604.05	$1,590.03	$1,576.13	$1,562.36	$1,548.69	$19,513	$17,865	$16,092
Amortization	$1,057.56	$1,048.31	$1,039.14	$1,030.06	$1,021.05	$1,012.13	$1,003.28	$994.51	$985.82	$977.20	$968.66	$960.19	$12,098	$11,095.00	$9,998.00
Total Other Expenses	**($146)**	**$3,190**	**$4,945**	**$7,537**	**$8,609**	**$9,535**	**$10,642**	**$10,700**	**$11,809**	**$11,620**	**$12,210**	**$12,311**	**$102,963**	**$146,901**	**$228,332**
Net Income	**($78,609)**	**($58,972)**	**($48,292)**	**($32,869)**	**($26,055)**	**($20,069)**	**($13,054)**	**($11,987)**	**($4,958)**	**($5,284)**	**($1,197)**	**$126**	**($301,220)**	**$52,379**	**$625,194**
Net Income Margin	***-254.45%***	***-83.13%***	***-50.83%***	***-26.47%***	***-18.03%***	***-12.59%***	***-7.48%***	***-6.65%***	***-2.49%***	***-2.59%***	***-0.56%***	***0.06%***	***-16.58%***	***1.99%***	***16.36%***

2. Projected cash flow by month for the first year's operation

Year 1 Cash Flow Statement

$1,800,000 from funding	Month 0	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2024	2025	2026
Beginning Cash Balance	$1,800,000.00	$1,019,724.00	$923,778.32	$847,384.12	$781,584.12	$642,529.04	$598,792.11	$560,954.17	$530,042.45	$411,518.69	$388,525.84	$365,207.52	$345,797.16	$1,800,000.00	$239,629.34	$45,536.06
Operating Activities																
Revenues	$0.00	$30,894.21	$70,942.27	$95,001.21	$124,193.26	$144,548.51	$159,348.22	$174,473.60	$180,345.30	$199,044.43	$204,057.97	$215,093.77	$219,324.41	$1,817,267.16	$2,635,037	$3,820,804
Change in A/R	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$1,750.00	$1,750.00	$13,000.00	$22,500.00
Change in A/P	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	($1,150.00)	($1,150.00)	($2,300)	($4,600)
Change in Inventory (Cost of Sales)	$0.00	($11,339)	($26,038)	($34,868)	($43,013)	($50,484)	($55,916)	($60,916)	($63,071)	($69,935)	($71,775)	($75,825)	($77,349)	($640,527)	($864,711)	($1,167,360)
Salaries & Wages	$0.00	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($70,946.86)	($851,362.32)	($979,066)	($1,125,926)
Operating Expenses	$0.00	($27,364)	($29,740)	($32,533)	($35,566)	($40,564)	($43,019)	($45,022)	($47,614)	($51,312)	($55,000)	($57,309)	($58,591)	($523,636)	($591,980)	($673,992)
Depreciation and Amortization	$0.00	($2,763.29)	($2,739.13)	($2,715.18)	($2,691.44)	($2,667.91)	($2,644.60)	($2,621.48)	($2,598.57)	($2,575.85)	($2,553.33)	($2,531.02)	($2,508.89)	($31,610.68)	($28,960.00)	($26,090.00)
Taxes	$0.00	$11,813.35	$8,367.36	$6,502.02	$3,799.87	$2,616.88	$1,579.99	$361.80	$193.08	($1,027.60)	($950.44)	($1,651.89)	($1,865.42)	$29,739.00	($29,892)	($128,029)
Total Operating Activities	**$0.00**	**($69,705.63)**	**($50,154.15)**	**($39,559.95)**	**($24,224.04)**	**($17,496.87)**	**($11,597.90)**	**($4,671.67)**	**($3,692.71)**	**$3,247.21**	**$2,832.52**	**$6,829.69**	**$8,663.24**	**($199,530.27)**	**$151,128.32**	**$717,307.14**
Investing Activities																
Capital Expenditures (CapEx)	($780,276.00)	$0.00	$0.00	$0.00	($88,591.00)	$0.00	$0.00	$0.00	($88,591.00)	$0.00	$0.00	$0.00	($88,591.00)	($1,046,049.00)	($30,341.00)	($95,792.00)
Total Investing Activities	**($780,276.00)**	**$0.00**	**$0.00**	**$0.00**	**($88,591.00)**	**$0.00**	**$0.00**	**$0.00**	**($88,591.00)**	**$0.00**	**$0.00**	**$0.00**	**($88,591.00)**	**($1,046,049.00)**	**($30,341.00)**	**($95,792.00)**
Financing Activities																
Increase in Equity/Grant Finance	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$16,783
Change in Debt	$0.00	($17,336.32)	($17,422.08)	($17,508.26)	($17,594.86)	($17,681.89)	($17,769.36)	($17,857.25)	($17,945.58)	($18,034.35)	($18,034.35)	($18,213.21)	($18,303.30)	($213,700.81)	($226,831.23)	($240,667.92)
Interest Payments	$0.00	($8,903.73)	($8,817.97)	($8,731.79)	($8,645.19)	($8,558.16)	($8,470.69)	($8,382.80)	($8,294.47)	($8,205.70)	($8,116.49)	($8,026.84)	($7,936.75)	($101,090.58)	($88,049.37)	($74,212.68)
Total Financing Activities	**$0.00**	**($26,240.05)**	**($26,240.05)**	**($26,240.05)**	**($26,240.05)**	**($26,240.05)**	**($26,240.05)**	**($26,240.05)**	**($26,240.05)**	**($26,240.05)**	**($26,150.84)**	**($26,240.05)**	**($26,240.05)**	**($314,791.39)**	**($314,880.60)**	**($298,097.60)**
Cash Flow	**($780,276.00)**	**($95,945.68)**	**($76,394.20)**	**($65,800.00)**	**($139,055.09)**	**($43,736.92)**	**($37,837.95)**	**($30,911.72)**	**($118,523.76)**	**($22,992.84)**	**($23,318.32)**	**($19,410.36)**	**($106,167.81)**	**($1,560,370.66)**	**($194,093.28)**	**$323,417.54**
Ending Cash Balance	**$1,019,724.00**	**$923,778.32**	**$847,384.12**	**$781,584.12**	**$642,529.04**	**$598,792.11**	**$560,954.17**	**$530,042.45**	**$411,518.69**	**$388,525.84**	**$365,207.52**	**$345,797.16**	**$239,629.34**	**$239,629.34**	**$45,536.06**	**$368,953.60**

3. Projected balance sheet, end of first year

Balance Sheet	**2024**
Assets	
Cash	$239,630
Accounts Receivable	$1,750
Prepaid expenses	$83,000
Ending Inventory	$74,500
Total current assets	**$398,880**
Property & Equipment	$883,558
Long-Term Assets	$239,657
Total Assets	**$1,522,095**
Liabilities	
Accounts Payable	$1,150
Accrued expenses	$32,563
Unearned revenue	$14,284
Total current liabilities	**$47,997**
Long-term debt	$1,586,299
Other long-term liabilities	$35,283
Total Liabilities	**$1,669,579**
Shareholder's Equity	
Equity Capital	($154,484)
Retained Earnings	$7,000
Shareholder's Equity	**($147,484)**
Total Liabilities & Equity	**$1,522,095**

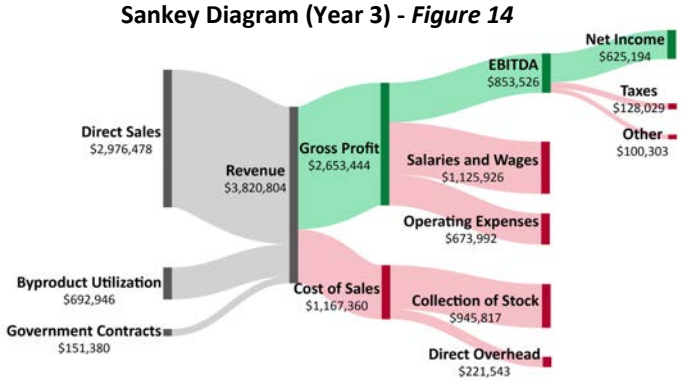
4. Projected three-year plan

1. In our first year, BioBloom will tackle the foundational phase of its operation, focusing on establishing facilities and purchasing machinery, which will lead to a **negative net income**. The aim during this period is to secure a larger number and variety of contracts. Likewise, marketing efforts will be intensified to maintain and grow the customer base, setting the stage for expansion.

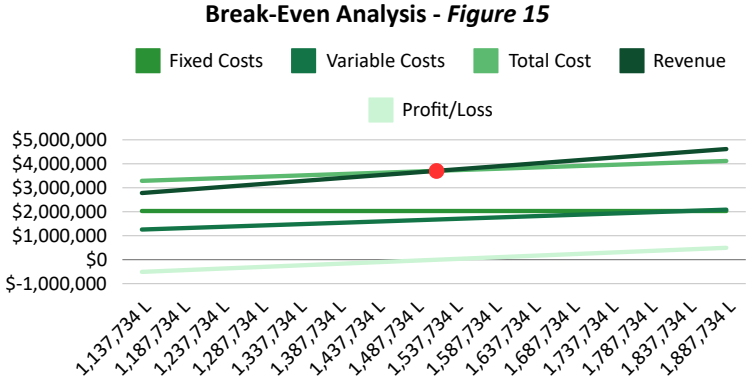
2. The second year will see BioBloom enhancing its operations and market position. Strategic partnerships with leading biofuel suppliers and technology investments will be key. These actions, alongside leveraging **government contracts** to cut transportation costs, aim to **improve operational efficiency** and gross profit margins. Ultimately, BioBloom's overall focus remains on growth and moving towards profitability.

3. By Year 3, BioBloom anticipates significant financial growth as operational efficiencies improve and market reach expands, leading to **profitability**. This shift towards sustainability is supported by financial projections and a Year 3 Sankey Diagram **(Figure 14)**, highlighting a decreased expense-to-revenue ratio. Additionally, as seen in our break-even analysis **(Figure 15)**, BioBloom will need to sell **1,516,980** liters of biofuel to make selling fuel profitable, predicted to be reached at the beginning of Year 4. However, combining our other two revenue streams, BioBloom will reach overall profitability in **Year 3**.

Sankey Diagram (Year 3) - *Figure 14*



Break-Even Analysis - *Figure 15*



5. A brief narrative description of the planned growth of the proposed business, including financial resources and need

As previously described in *Section I. Executive Summary*, BioBloom plans its growth to be laid out in four phases, each marked by distinct financial challenges and periods of growth in revenue, net income margins, and more.

Phase 1 (2024-2025)

BioBloom's first phase will last for its first year in business, marking a negative net income of **-$301,220** and a net income margin of **-16.58**%. Engaging in continuous expansion and operational buildup in this phase, BioBloom expects a first year revenue of **$1,817,267** and an ending cash balance of **$239,629.34**.

Phase 2 (2025-2027)

BioBloom's second phase brings in a positive net income of **$52,379** and a net income margin of **1.99%** in Year 2, along with a net income of **$625,194** and a margin of **16.36%** in Year 3. This phase is characterized by BioBloom's turn to **profitability**, as initial capital expenditure costs no longer push back revenue generated.

Phase 3 (2027-2029)

With the expansion of BioBloom's operations to **Mulki, Karnataka** (Malabar Coast) in Phase 3, the company's direct sales revenue stream will become lifetime profitable. BioBloom's commitment to **corporate social responsibility** will aid in its mission to generate public trust and market favorability.

Phase 4 (2029+)

Finally, the company's final phase of its start up involves the investment of profits into exploring **other channels** of expanding the company, while also **rediverting** funds to rural Indian communities in an effort to turn the country's poorest away from unclean sources of fuel. Our net income margin will also remain stable at a profit.

B. Proposed plan to meet capital needs

1. Personal and internal sources

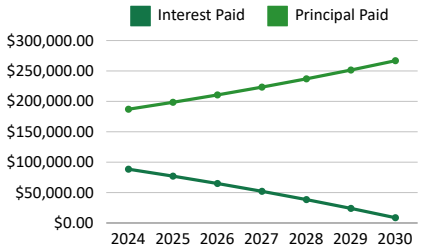
As the co-presidents of BioBloom, Aditya Nigam, Om Gautam, and Nishant Sura will each be investing **$75,000** of their independent savings into the business. These personal funds will be used to support initial operations involving the startup of BioBloom in Gujarat, striving to relieve the pressure of urgent legal fees and other financial expenses before BioBloom secures its bank loan.

2. Earning, short-term and long-term borrowing, long-term equity

BioBloom will be reinvesting 100% of profits back into the business to ensure the success of business operations. It will use these profits to streamline the efficiency of various aspects of the company ranging from biomass collection costs to fuel distribution fees. BioBloom will also use these reinvestments to form initial government relations with India, which will be beneficial when initiating cleanup contracts with the **Swachh Bharat Abhiyan** (Clean India Mission) program. With regards to **equity**, BioBloom will equally distribute its valuation among its 3 founders, each receiving **33.33%**. However, this distribution of equity remains flexible. As BioBloom enters its Phase 3 operations in Karnataka, it will open up to third-party investors and venture capitalists for equity deals. Though these deals would dilute the ownership of BioBloom's three founders, it would provide the company with debt-free cash that can be used to further scale operations and BioBloom's overall network. The specifics of these deals will be up for interpretation and will vary based on market dynamics, projected revenue, and other financial factors. Overall, BioBloom hopes to partner with investors who support our greater mission in India.

3. External Sources

As seen in our cash flow statement, BioBloom is requesting a **$1.575 million loan**, which will be paid back over the span of **7 years** at a **6.1% APR**. Although interest rates are high, this capital will allow BioBloom to jumpstart its operations and acquire essential assets including land, processing equipment, patents, and more. Additionally, by investing in the advancement in research in the algae biofuel sector, BioBloom hopes to penetrate new markets, reaching an increased number of prospective customers. **Figure 16** shows a trend of how BioBloom will repay this loan.



Interest & Principal Paid (7 years) - *Figure 16*

4. Plan to repay borrowed funds or provide return on investment to equity funds

BioBloom's bank loan, its only capital source, will be repaid in a timely manner. With a 7 year loan term, BioBloom will benefit from a lower total interest of **$353,643.74** when compared to a longer-term loan. Our amortization schedule and payment plan can be seen below.

Condensed Amortization Schedule					
Loan Amount	**Interest Rate**	**Loan Term**	**Payment Frequency**	**# of Periods**	**Start Date**
$1,575,000	6.1%	7 years	Monthly	84	Jan 1st, 2024

Payment Plan				
Date	**Beginning Balance**	**Principal Paid**	**Interest Paid**	**Ending Balance**
Dec 31st, 2024	$1,575,000.00	$187,066.29	$88,454.28	$1,387,933.73
Dec 31st, 2025	$1,387,933.73	$198,477.33	$77,043.23	$1,189,456.41
Dec 31st, 2026	$1,189,456.41	$210,584.43	$64,936.09	$978,871.98
Dec 31st, 2027	$978,871.98	$223,430.06	$52,090.44	$755,441.90
Dec 31st, 2028	$755,441.90	$237,059.32	$38,461.22	$518,382.58
Dec 31st, 2029	$518,382.58	$251,519.93	$24,000.60	$266,862.65
Dec 31st, 2030	$266,862.65	$266,862.64	$8,657.88	$0.00
Total	---	**$1,575,000**	**$353,643.74**	**$0.00**

XI. Key Metrics

BioBloom will be regularly monitoring several critical indicators that will give insights into the performance and well-being of its operations as it actively strives to achieve its business objectives. Furthermore, BioBloom can pinpoint development opportunities, streamline processes, and make well-informed decisions about the business by routinely monitoring and evaluating these key metrics.

	Metric	Description	Calculation	Company Goals
Financial	**Revenue**	The total income generated over all of BioBloom's operations	*Total Sales*	Increase the volume of biofuel processed and sold by 30% and the average price of algae-based biofuel by 10% by 2026
	Gross Profit Margin	The proportion of profit after subtracting the cost of goods sold.	*(Gross profit / total revenue) x 100%*	Reduce the cost of sales by 5% within the next year through increased biofuel price
	Operating Profit Margin	The proportion of profit a company makes after paying for variable costs of production	*(Operating profit / total revenue) x 100%*	Improve pricing strategies and overall sales to reduce operating expenses by 10% within the next year
	Return on Investment (ROI)	The profit earned from investments relative to their cost	*(Operating profit / total revenue) x 100%*	Reduce total investment and increase net profit by 10% within the next year through improved efficiency and cost cutting measures
Customer	**Customer Acquisition Cost (CAC)**	The money spent by a company on getting a customer to purchase its products	*Marketing expenses / # of new customers acquired*	Increase the number of new customers acquired by 20% by 2024
	Customer Lifetime Value (CLV)	The total revenue a business can expect from a single customer throughout their business relationship	*Average Sale x # of Transactions x Tenure*	Improve customer loyalty to increase the average customer lifespan value by 5% within the next year
	Customer Satisfaction Score (CSAT)	Measurement of how satisfied customers are with the company's products	*(# of satisfied customers / total # of customers) x 100%*	Reach a minimum of 90% on the CSAT by the end of the year by improving customer service
Industry Specific	**Net Productivity per Hectare (NPPH)**	A measure of the amount of biofuel produced per unit area of land	*Total volume of biofuel produced (liters) / Total land area used (hectares)*	Increase net productivity per hectare by 15% over the next three years by optimizing algae strain selection and improving cultivation techniques
	Avoided CO2-equivalent (CO2-eq) Emissions	A measure of the reduction in greenhouse gas emissions achieved through BioBloom biofuel instead of conventional fossil fuels	*(CO2-eq emissions from fossil fuels - CO2-eq emissions from biofuels) x Volume of biofuel used*	Achieve a cumulative total of 50,000 metric tons of avoided CO2-eq emissions by 2025 through the increased adoption of BioBloom biofuels
	Feedstock Conversion Efficiency (FCE)	A measure of how effectively BioBloom converts raw biomass into biofuel	*(Volume of biofuel produced / Mass of feedstock used) x 100%*	Improve FCE by 25% within two years through process optimization and advanced biotechnological research

XII. Competitive Advantage

To become an industrial leader in the biofuel market, we strive to exceed the work of other companies in the field. Thus, we completed **comprehensive** secondary research to generate the table on the next page which outlines the strengths of BioBloom compared to our primary competitors. BioBloom has **three** main competitive advantages which put us in an excellent position to expand our business, lead the industry, and serve as a role model for all future biofuel initiatives in India.

BioBloom's Competitive Advantage Breakdown				
Category	**BioBloom**	**G-Energetic[31]**	**Technocrats[32]**	**REG Inc[33]**
Innovative and Sustainable Biofuel Production				
Algae-based, minimizing waste and maximizing yield	✓	✗	✗	✗
Sustainable processing mechanism	✓	✓	–	✓
Converting harmful substances into useful biofuels	✓	–	–	–
High-quality final product with reduced emissions	✓	✓	–	–
Strategic Operational and Marketing Advantages				
Effective use of India's year-long algae production	✓	✗	✗	✗
In-house algae production with vertical farming	✓	✗	✗	✗
Targeting untapped rural and coastal areas	✓	✗	✗	✗
Diverse Customer Base (automobile, agri, aviation)	✓	–	–	✓
Socioeconomic and Environmental Impact in Rural India				
Employment opportunities and economic growth	✓	✗	✗	–
Subsidized Biofuel and Byproducts for local farmers	✓	✗	✗	✗
Reduced village reliance on high-emission fuels	✓	✓	✓	–
Biodiversity Conservation and Ecosystem Restoration	✓	–	–	–

Overall, BioBloom's three competitive advantages will work **interdependently** to establish an eco-friendly and profitable business model. Our innovative and sustainable biofuel production ensures an environmentally friendly approach for all facets of operation. Through strategic planning, our operations and marketing maximize returns from each function and position us to expand in the future. Lastly, our commitment to positively impacting rural India rewards us with the opportunity to give back to our community and attract customers who value a selfless attitude. These competitive advantages enable BioBloom to flourish in the growing, **competitive** biofuel industry and play a part in a cleaner future for India.

XIII. Conclusion

BioBloom is poised to **revolutionize** India's biofuel production industry through its sustainable business structure and advanced operational processes. Our dedication to a greener India is supported through our algal bloom cleanup operations and commitment to reduced emissions, highlighting our passion of giving back to the country. Furthermore, supporting our business actively contributes to an environmentally conscious and **sustainable future** for India, backing BioBloom as a financially and socially responsible investment decision.

Key Point	Result
India's Free Market	Empowers BioBloom to conduct business without many restrictions or constraints.
India's Year-Round Algal Bloom Issue	Provides BioBloom with a constant and abundant stream of algae to produce and profit from.
Advanced Collection and Processing Technology	Maximizes the efficiency and outcome of BioBloom's innovative biofuel production process.
Sustainable Business Structure	Fulfills our commitment to environmental protection and markets BioBloom's ethicality to the public eye.

To launch our company, BioBloom is requesting a loan of **$1.575 million**, which will be paid over a span of **7 years** at a **6.10% interest rate**. We will launch all business operations with the help of this investment and have a projected **loss of $301,220 in 2024**. However, BioBloom is positioned to be extremely profitable in the long-term. We will achieve an **annual net income of $52,379 in 2025** and reach a **net profit of $625,194 in 2026**, a testament to BioBloom's growth in the industry. Entering **Phase 3** of the business plan, we will expand to Mulki, Karnataka and the Malabar Coast where we will also experience **further growth** in sales and revenue. However, if considered necessary, we will sell the company to a local biofuel producing competitor as our exit plan since they will be conscious of our operations and effectively make use of our resources and assets. Overall, BioBloom's ultimate objective is to **transform** India's biofuel industry and establish a business that is environmentally beneficial and profitable. Acquiring the requested loan of $1.575 million will place BioBloom in an excellent position to execute its innovative plan and experience significant growth and expansion over time in business.

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XV. Appendix

BioBloom SWOT Analysis

S Strengths

- Innovative biofuel built with algae, offering a sustainable alternative to traditional fuels.
- Strong focus on eco-restoration and ethical business practices to align with sustainability goals.
- Advanced technology for efficient algae harvesting and biofuel production.
- Strategic location in India, leveraging abundant algae and a skilled and youthful workforce.
- Diverse product range: biodiesel, biogasoline, and biojet fuel.
- Potential for high revenue generation from direct sales, byproduct utilization, and government contracts.

W Weaknesses

- High initial setup and operational costs for algae cultivation and processing.
- Dependence on algae availability and potential unpredictability in supply.
- Limited brand recognition and market penetration in the initial stages.
- Potential regulatory challenges and compliance requirements in India.
- Need for continuous innovation to stay ahead in the competitive fuel market.

O Opportunities

- Growing global demand for sustainable and renewable energy sources.
- Potential for expansion into other regions with abundant algae resources.
- Opportunities for partnerships with government and environmental organizations.
- Increasing awareness and demand for eco-friendly products.
- Opportunity to capitalize on government incentives for renewable energy companies.
- Expansion into international markets leveraging India's strategic trade agreements.

T Threats

- Competition from established fossil fuel industries and other renewable energy companies.
- Possible changes in government policies and subsidies affecting the biofuel sector.
- Market fluctuations and economic instability affecting investment and profitability.
- Technological advancements by competitors posing a threat to market position.
- Potential challenges in scaling up operations to meet market demand.
- Risks associated with international trade, including tariffs and regulatory barriers.