



BIOTECH GREEN ENTREPRENEURSHIP

"Promotion and Business Management Strategies for Green Biotechnology Businesses"

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1. Introduction

The field of biotechnology has experienced significant growth, offering innovative solutions across various industries.

- Green biotechnology, specifically, focuses on sustainable practices to address environmental conservation and reduce carbon emissions.
- Green biotechnology businesses face unique challenges in promotion and business management, requiring a strong emphasis on sustainability and social impact.
- Europe has excelled in incremental innovation and patent grants, surpassing the United States in areas such as food-related technology and macromolecular chemistry.
- China is also making strides, particularly in environmental technology.
- However, US-based companies dominate key Bio Revolution technologies in terms of patent holdings. In terms of research institutions, China is catching up, with the Chinese Academy of Sciences leading the Nature Index rankings and several top-ranked "young" universities situated in China.

7 key principles for building and scaling successful green businesses:

1. **Lead with game-changing ambition:** Successful green business builders set ambitious goals from the start, aiming to create significant impact and market share within a shorter timeframe. This approach can help companies reach targeted costs faster and drive market-wide shifts towards sustainability.
2. **Secure a cost advantage through scaling:** Understanding the scale break point for cost competitiveness is crucial when building a business around clean technology. Identifying the point at which costs become competitive allows for quicker business viability and adoption of sustainable alternatives.
3. **Sign up captive demand before scaling:** Green business builders often secure commitments from customers or investors before physically scaling their operations. This approach mitigates commercial investment risk and aligns interests with key stakeholders.
4. **Build capacity with parallel scaling:** Parallel scaling involves initiating additional growth waves before completing the first one, using modular and replicable production standards. Lessons learned from each wave are incorporated into subsequent phases, aiding cost management and ambitious deployment timelines.

7 key principles for building and scaling successful green businesses (cont.):

5. **Proactively create business ecosystems:** Building value chains and collaborating with players across the ecosystem is vital for green business builders. This involves securing effective collection, sorting, processing, and demand for sustainable products and infrastructure. Joint feasibility studies, collaboration, and partnerships facilitate the coordinated development of value chains.
6. **Lead on sustainable operations:** Successful green business builders prioritize sustainable operations, setting ambitious targets, driving innovation, and forming partnerships. They focus on minimizing carbon emissions and other environmental impacts, enhancing credibility, and fostering collaboration and innovation.
7. **Dedicate recruiting resources early:** Green business builders prioritize talent acquisition to support rapid scaling. They seek individuals with diverse skill sets, including business model shaping, partnership exploration, financing expertise, customer understanding, brand-building, and operational skills.

2 Promotional options for green biotechnology businesses

Proven efficient promotional strategies for green biotechnology businesses include:

- **Emphasizing Sustainability and Environmental Responsibility:** Highlighting the commitment to sustainability and environmental responsibility in marketing messages and product labeling appeals to environmentally conscious consumers.
- **Leveraging Social Media and Influencer Marketing:** Utilizing social media platforms to share educational content, engage with customers, and partner with influencers who share similar values can positively influence consumer attitudes and purchase intentions.
- **Participating in Industry Events and Conferences:** Attending industry events and conferences allows businesses to showcase their products and services, network with potential customers and partners, and stay up-to-date on industry trends, thereby building brand awareness and establishing thought leadership.
- **Providing Educational Content:** Offering educational content such as blog posts and social media content that explains the science behind green products, their environmental benefits, and how they can solve real-world problems increases consumer awareness and understanding.

However, it's important to tailor these strategies to the specific target audience and industry context for optimal results.

3 Marketing and promotion

This includes identifying target markets, developing advertising and promotional materials, and building relationships with key stakeholders in the industry. Promotion in green biotechnology involves marketing and communicating the benefits of biotech products or services to potential customers, investors, and other stakeholders.

Beneficial scientific aspects:

1. *Environmental benefits*- such as reducing greenhouse gas emissions, improving soil health, or reducing the use of harmful chemicals. Promotion of green biotechnology products can focus on the environmental benefits, backed up by scientific evidence. For example, research has shown that the use of biofuels can reduce greenhouse gas emissions compared to fossil fuels
2. *Health benefits* -plant-based ingredients that can provide nutritional or medicinal benefits. Promotion of these products can focus on the scientific evidence supporting their health benefits. For example, research has shown that plant-based diets can reduce the risk of chronic diseases such as heart disease, diabetes, and cancer.

Beneficial scientific aspects (cont.)

- *Biotechnology research* - Promotion can also focus on the scientific research driving innovation. This can include highlighting specific research projects, collaborations, or breakthroughs that demonstrate the potential of biotechnology to address environmental or health challenges. For example, research in synthetic biology is exploring the use of biological systems to produce new materials or chemicals, with potential applications in sustainable manufacturing.
- *Safety and regulatory compliance – (of the products or processes)* highlighting the rigorous testing and regulatory processes that are in place to ensure the safety and efficacy of biotech products. For example, the US Environmental Protection Agency regulates the use of genetically modified organisms in agriculture to ensure that they are safe for human health and the environment.
- Sources: peer-reviewed journals, government agencies, and academic research institutions.

Promotional activity – key points

- Target audience - scientists, policymakers, investors, or consumers. This requires an understanding of the needs and interests of different groups of people who may be interested in green biotechnology.
- Messaging - developing clear and compelling messaging that highlights the benefits of green biotechnology products and services. E.g.: emphasizing the environmental and social benefits, the scientific advances, or the economic opportunities associated with green biotech.
- Channels - trade shows, conferences, social media, webinars, and advertising. Choose the appropriate channels based on their target audience and the goals of the promotion.
- Partnerships - partnering with a nonprofit organization that shares the same values and goals can help increase visibility and credibility for a green biotech company.
- Metrics - measure the effectiveness of promotional activities in order to determine the return on investment (ROI) and make informed decisions about future promotions. Metrics may include website traffic, social media engagement, sales leads generated, or customer feedback.

4 Sales and distribution

- developing relationships with distributors and retailers, managing inventory levels, and ensuring that products are delivered on time and in good condition.
- KEY ASPECTS:
 1. Supply chain management – time and cost-eff.- managing the production, transportation, and storage of biological materials or products.
 2. Product quality and safety- involves implementing robust quality control measures and complying with relevant regulations and standards. EG.: testing for contaminants or verifying the authenticity of plant-based ingredients.
 3. Market research - developing relationships with distributors and retailers requires an understanding of the market demand for green biotechnology products. The science of market research involves gathering and analyzing data on consumer preferences, market trends, and competition.

4 Sales and distribution (cont)

- KEY ASPECTS (cont):
 4. Consumer education - can involve communicating the environmental or health benefits of green biotechnology products, backed up by scientific evidence. For example, retailers may need to explain the benefits of biodegradable packaging materials or the health benefits of plant-based ingredients.
 5. Financial management - Business management in green biotechnology also involves managing the financial aspects of the company, including budgeting, forecasting, and cash flow management. This requires a deep understanding of financial analysis and accounting principles.

5 Operations management

- involves managing the various processes and activities involved in the production of biotech products or services, while ensuring sustainability and environmental stewardship/

KEY ASPECTS:

- Bioprocessing
- It is a key aspect of operations management in green biotechnology. This involves the use of biological systems, such as microbes or plant cells, to produce valuable products, such as biofuels, food ingredients, or pharmaceuticals. Bioprocessing requires careful control of the environmental conditions, such as temperature, pH, and nutrient availability, to optimize the production process.
- Fermentation
- It is a specific type of bioprocessing that involves the use of microorganisms, such as bacteria or fungi, to produce products such as ethanol or enzymes. The science of fermentation involves understanding the metabolic pathways of the microorganisms and optimizing the process conditions, such as temperature, pH, and agitation, to maximize product yield and quality.

5 Operations management

- Bioreactors
- Bioreactors are essential tools for operations management in green biotechnology. These are vessels that provide a controlled environment for the growth and production of microorganisms or plant cells. Bioreactors can vary in size from laboratory-scale to industrial-scale and can be designed to optimize specific aspects of the bioprocessing operation, such as oxygen transfer, mixing, or temperature control.
- Biodegradation
- Biodegradation is a process by which microorganisms break down and consume organic compounds, such as pollutants or waste materials. Operations management in green biotechnology can involve the use of biodegradation to clean up contaminated sites or to treat industrial waste. The science of biodegradation involves understanding the metabolic pathways of the microorganisms involved and optimizing the environmental conditions to promote their growth and activity.
- Regulatory compliance
- Green biotechnology companies need to comply with various regulatory requirements, including environmental regulations and safety standards. Effective business management involves ensuring that the company is in compliance with these regulations and taking steps to mitigate any risks or hazards.

6 Business management features of green biotech companies

No	Key aspect	Description
1	Strategic planning	<i>Effective business management in green biotechnology starts with strategic planning. This involves setting goals and objectives for the company, identifying potential opportunities and threats in the market, and developing a plan for how to achieve success.</i>
2	Financial management	<i>Green biotechnology companies need to effectively manage their finances to ensure that they have the resources they need to achieve their goals. This may involve budgeting, forecasting, managing cash flow, and securing funding from investors or other sources.</i>
3	Intellectual property management	<i>It is critical to the success of green biotechnology companies, as it protects their inventions and discoveries. Effective business management involves managing the company's intellectual property portfolio, including obtaining patents and trademarks and negotiating licensing agreements.</i>
4	Operations management	<i>Green biotechnology companies need to manage their operations effectively to ensure that products are produced efficiently and to high quality standards. This may involve managing supply chains, logistics, and production processes.</i>
5	Regulatory compliance	<i>Green biotechnology companies need to comply with various regulations related to environmental impact, safety, and intellectual property. Effective business management involves staying up-to-date with relevant regulations and taking steps to ensure compliance.</i>
6	Human resources management	<i>The success of green biotechnology companies depends on the skills and expertise of their employees. Effective business management involves recruiting, training, and retaining talented staff, as well as managing employee benefits and compensation.</i>

Strategic planning

S



STRENGTHS

- What does your company do better than others in a similar field?
- What is its Unique Selling Proposition?
- What do people in your market see as its strengths?

W



WEAKNESSES

- What factors lose your company sales?
- What production or sales processes could it improve?
- What do people in your market likely see as its weaknesses?

Strategic planning



OPPORTUNITIES

What interesting business trends are you aware of?

What useful opportunities could come from changes in technology or government policy?



THREATS

What are your competitors doing?
Is changing technology threatening your position?

Do you have bad debt or cash-flow problems?

Strategic planning

S

Specific

State what you'll do
Use action words

M

Measurable

Provide a way to evaluate
Use metrics or data targets

A

Achievable

Within your scope
Possible to accomplish, attainable

R

Relevant

Makes sense within your job function
Improves the business in some way

T

Time-bound

State when you'll get it done
Be specific on date or timeframe

EXAMPLES

- ✓ Increase in turnover by X% in period Y
- ✓ Regional expansion by opening 5 new work points by the end of 2025

MARKETING OBJECTIVES

- ✓ Sales growth of X% for Y period
- ✓ Market share growth to X% for Y period
- ✓ Increase website traffic with... by...
- ✓ Reducing PPC costs up to... by the end of...

QUALITATIVE:

Positioning/Repositioning of a brand/product/service by...
Improving customer attitude towards a brand/product by...

Human resources

- **Talent acquisition:** Recruit individuals with a diverse range of skills and expertise, including scientists, researchers, engineers, and sustainability professionals. Look for candidates who are passionate about environmental issues and have a strong understanding of biotechnology.
- **Training and development:** Provide ongoing training and professional development opportunities to keep employees updated on the latest advancements in green biotechnology. **Sustainability-focused culture:** Foster a culture that values sustainability and environmental responsibility. Incorporate green practices into the workplace, such as recycling programs, energy-efficient measures, and eco-friendly policies. Encourage employees to actively participate in sustainability initiatives.
- **Employee engagement:** Promote engagement and create a positive work environment. Encourage open communication, provide opportunities for feedback and collaboration, and recognize and reward employees' contributions to sustainability efforts.

Human resources (cont.)

- **Performance management:** Implement performance management systems that align with the goals and values of green biotechnology companies. Set clear performance expectations, establish metrics to measure individual and team performance, and provide regular feedback and coaching to help employees achieve their objectives.
- **Leadership development:** Identify and develop future leaders within the organization who can drive the company's sustainability initiatives. Provide mentorship opportunities to nurture the growth of talented individuals.
- **Work-life balance:** Promote work-life balance and employee well-being. Offer flexible work arrangements, promote a healthy work environment, and support initiatives that improve the physical and mental well-being.
- **Diversity and inclusion:** Foster a diverse and inclusive workplace that values different perspectives and experiences.
- **Retention strategies:** Develop strategies to retain top talent in the competitive green biotechnology industry.
- **Succession planning:** for key positions within the company. Implement succession planning strategies to ensure a smooth transition and continuity in leadership.

Regulatory compliance

ISO standards for green biotechnology companies include:

- ISO 9001: Quality Management Systems (QMS) - sets the criteria for a quality management system that helps organizations demonstrate their ability to consistently provide products and services that meet customer requirements. Green biotechnology companies can use this standard to ensure their processes and operations are efficient and meet quality standards.
- ISO 14001: Environmental Management Systems (EMS) - provides a framework for organizations to establish and maintain an effective environmental management system. It helps companies identify and manage environmental impacts, reduce resource consumption, and improve their overall environmental performance. Green biotechnology companies can use this standard to minimize their environmental footprint and demonstrate their commitment to sustainability.
- ISO 45001: Occupational Health and Safety Management Systems (OHSMS) -sets the requirements for an occupational health and safety management system, helping organizations provide a safe and healthy work environment for their employees. Green biotechnology companies can use this standard to identify and control health and safety risks associated with their operations and ensure compliance with relevant regulations.
- ISO 26000: Social Responsibility -provides guidance on social responsibility, helping organizations understand and address their impact on society and stakeholders. Green biotechnology companies can use this standard to enhance their social responsibility practices, including promoting ethical behavior, engaging with communities, and considering social impacts in their decision-making processes.
- ISO 50001: Energy Management Systems (EnMS) - provides a framework for organizations to establish and improve their energy management systems. It helps companies systematically manage energy consumption, reduce greenhouse gas emissions, and enhance energy efficiency. Green biotechnology companies can use this standard to optimize their energy use and contribute to a more sustainable energy future.

7 Conclusions

- Promotion and business management are crucial for green biotechnology businesses.
- They should emphasize sustainability, use social media and influencer marketing, participate in industry events, adopt sustainable practices, develop partnerships, invest in R&D, and ensure safety and compliance.
- Sales and distribution involve managing relationships, ensuring quality and safety, researching demand, educating consumers, and managing finances.
- Operations management focuses on optimization, compliance, and resource management.
- Effective business management requires strategic planning, financial management, intellectual property management, and environmental stewardship

THANK YOU VERY MUCH FOR YOUR ATTENTION!

