



2021-2022
IN REVIEW

COVER RATIONALE

The Samanea saman tree, commonly known as the rain tree or "pokok hujan-hujan" and "pokok pukul lima" in the Malay language, is well-loved for its iconic umbrella-shaped crown. Since being introduced to Malaysia in 1876, the rain tree has transformed Malaysian cities into lush urban landscapes.

The tree also has the remarkable ability to thrive in extremely harsh environments. Its extensive root system allows it to survive droughts while providing stability during floods and storms. Additionally, the rain tree can flourish in nutrient-poor soils due to its symbiotic relationship with rhizobia bacteria, which supply essential nitrogen nutrients.

Just as the rain tree's canopy provides benefit and beauty, Bioeconomy Corporation's initiatives have contributed towards stimulating Malaysian bioeconomy growth. And in the same way the rain tree is resilient thanks to its extensive root system, Bioeconomy Corporation's deep roots in innovation, adaptability, and sustainability has made them resilient in the harsh market environments triggered by COVID-19 during 2021-2022.



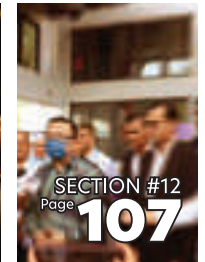
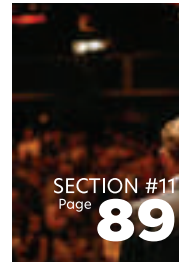
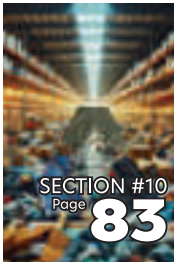
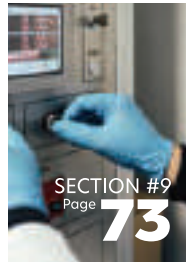
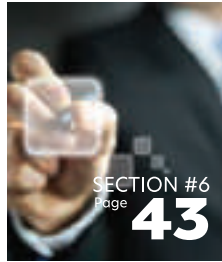
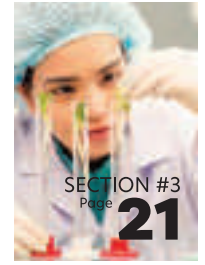
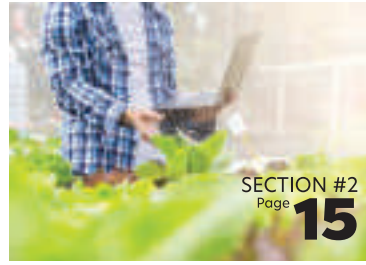


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SECTION

01

PAVING THE ROAD TOWARDS A BIOINNOVATION NATION

Leveraging the power of biotechnology to stimulate economic development, improve the quality of life, and become a global leader in bioinnovation





Photo by Azrul Hardi

“As a result, our efforts have enabled the commercialisation of home-grown bio-based products that have made their mark on the global stage. But this is just the beginning.”

CHAIRMAN’S MESSAGE



The first National Biotechnology Policy 2005-2020 (NBP) was a significant milestone. With the recent launch of the renewed National Biotechnology Policy 2.0 (NBP 2.0) in September 2022, the Malaysian government has reaffirmed its commitment to harnessing the potential of our nation's rich bio-based resources.

At Bioeconomy Corporation, we take immense pride in being one of the key players supporting these pivotal government initiatives. As an agency for bio-based economic development, our role makes us the driving force behind a robust support ecosystem encompassing businesses, regulatory aspects, and technical support for the bioindustry.

As a result, our efforts have enabled the commercialisation of home-grown bio-based products that have made their mark on the global stage. But this is just the beginning. The future holds even more promise as we witness innovation sprouting from our local bioeconomy, poised to lead the world as a bioinnovation leader.

So, let's embark on this exciting journey towards a brighter bioinnovation future for Malaysia, where we will not only ride the wave of global biotechnology growth but also steer it in a direction that benefits the Malaysian economy and the wellbeing of our people.



YBhg Dato' Dr. Lee Boon Chye
Chairman





Photo by Azrul Hardi

“At Bioeconomy Corporation, we’ve always been driven by the responsibility of fulfilling our mandate under the government’s NBP.”

CEO’S MESSAGE



At Bioeconomy Corporation, we've always been driven by the responsibility of fulfilling our mandate under the government's NBP.

Amidst the unprecedented challenges of 2021-2022, this mandate took on a higher significance. It transformed into a resounding call to action, urging us not only to demonstrate resilience but also to fortify a collaborative network within the nation's bioeconomy—a robust sharing economy capable of weathering any storm.

These years presented us with a unique set of obstacles and uncertainties caused by the ongoing global pandemic, economic fluctuations, political instability, and shifts in market dynamics. Additionally, Bioeconomy Corporation transitioned from under the purview of the Ministry of Agriculture and Food Industries (MAFI) to under the Ministry of Science, Technology and Innovation (MOSTI) at the end of 2022. With these significant external and internal shifts, our resilience, adaptability, and commitment was put to the test. I am profoundly proud to say that our team rose to the occasion.

One of the pivotal factors contributing to our success is our team's agility, creativity, and commitment to ensure we remain the pillar of support for all bio-based entrepreneurs, bioinnovation research institutes, partners, and clients, including our BioNexus Status companies, of which 236 were facilitated by end of 2022. Only by doing so can we become the backbone of the nation's biotechnology sharing economy.

A prime example of how we continuously strive to nurture a resilient sharing economy is by conceiving and executing our new Bio-based Accelerator programme (BBA) in 2021. The programme was crafted for start-ups and existing bio-based companies with immense growth.

Through BBA, we aim to provide them with vital resources and facilitation, empowering them to strengthen their presence in the local and global markets and ultimately meet the standards for eventual BioNexus Status qualification. By the end of 2022, Bioeconomy Corporation had nurtured 83 BBA companies.

To ensure a sustainable talent pipeline for industry growth post the pandemic, Bioeconomy Corporation actively reinforces the bioeconomy workforce through the BioAgrotech & BioPharmaceutical Employability and Entrepreneurship Specialised Training programme (BeST 2.0). This programme is designed to enhance the employability of the graduate and unemployed by equipping them with specialised skills and knowledge of real life industry-work experience which also accelerate the growth employment in the biotechnology sector.

In addition, an equity funding programme, Agro-based Venture Fund (AGVF) was also launched in 2021 that provides an alternative funding for the biotechnology and bio-based industries through strategic equity investment for recovery, expansion and innovation in building resilience. In essence, Bioeconomy Corporation is dedicated to continuously enhancing its facilitation ecosystem for biotechnology and bio-based enterprises. We are always improving and refining this comprehensive ecosystem, which encompasses vital support, training, and advisory services covering aspects such as product development, certification, shared laboratories, market access, regulatory compliance, intellectual property, and immigration.

These efforts are designed to ensure the holistic development of the industries' value chain, in line with the evolving landscape of technological advancements and market demands.

As we look ahead with the revitalised NBP 2.0 and draw upon our experience, expertise, and available resources, Bioeconomy Corporation will continue to cultivate adaptability and resilience in our commitment to spearhead the transformation of Malaysia into a high-tech bio-innovation nation.



Encik Mohd Khairul Fidzal Abdul Razak
Chief Executive Officer





STEERING THE ADVANCEMENT OF BIOTECHNOLOGY IN MALAYSIA

National Biotechnology Policy 2005-2020

In 2005, the Malaysian government unveiled the NBP, setting forth a 15-year roadmap to position biotechnology as a pivotal driver of economic development.

The NBP unfolded in three distinct phases: Phase 1, spanning from 2005 to 2010, focused on building capacities; Phase 2, from 2011 to 2015, transitioned from scientific advancements to business applications; and Phase 3, from 2016 to 2020, aimed at establishing a global biotechnology presence.

To drive the growth and development of the biotechnology industry in Malaysia, the NBP established the Bioeconomy International Advisory Panel (Bio-IAP). The Bio-IAP membership consists of a combination of relevant strategic sectors in biotechnology development in Malaysia. Our inception as Malaysian Biotechnology Corporation (BiotechCorp) was created to serve the Bio-IAP as its Permanent Secretariat.

Our role then evolved to our present state as Malaysian Bioeconomy Development Corporation (Bioeconomy Corporation), an evolution aligned with the government's shift in focus from developing biotechnology to building a sustainable and sharing economy. Since then, we have worked hand-in-hand with MOSTI and other relevant ministries and agencies in a concerted effort to cultivate a comprehensive bioinnovation ecosystem under the guidelines of the NBP.



“This pioneering initiative positioned Malaysia as the first ASEAN nation and the second Asian country, after China, to embark on a comprehensive strategy for bioeconomy development.”

In particular, Bioeconomy Corporation has played a key role in catalysing a robust support ecosystem across business, regulatory, and technical dimensions within the bioindustry. The BioNexus Status network, operating under the aegis of Bioeconomy Corporation, has consistently demonstrated its effectiveness, underpinning numerous triumphant business models for the global commercialisation of innovative bio-based products.

TOWARDS A HIGH-TECH BIOINNOVATION NATION WITH THE NATIONAL BIOTECHNOLOGY POLICY 2.0

Setting higher sights to attain global leadership in bioinnovation

The NBP has effectively established the framework for advancing biotechnology in Malaysia. Building upon this foundation and with the goal of achieving global leadership in bioinnovation, the Malaysian government initiated the NBP 2.0.

National Biotechnology Policy 2.0

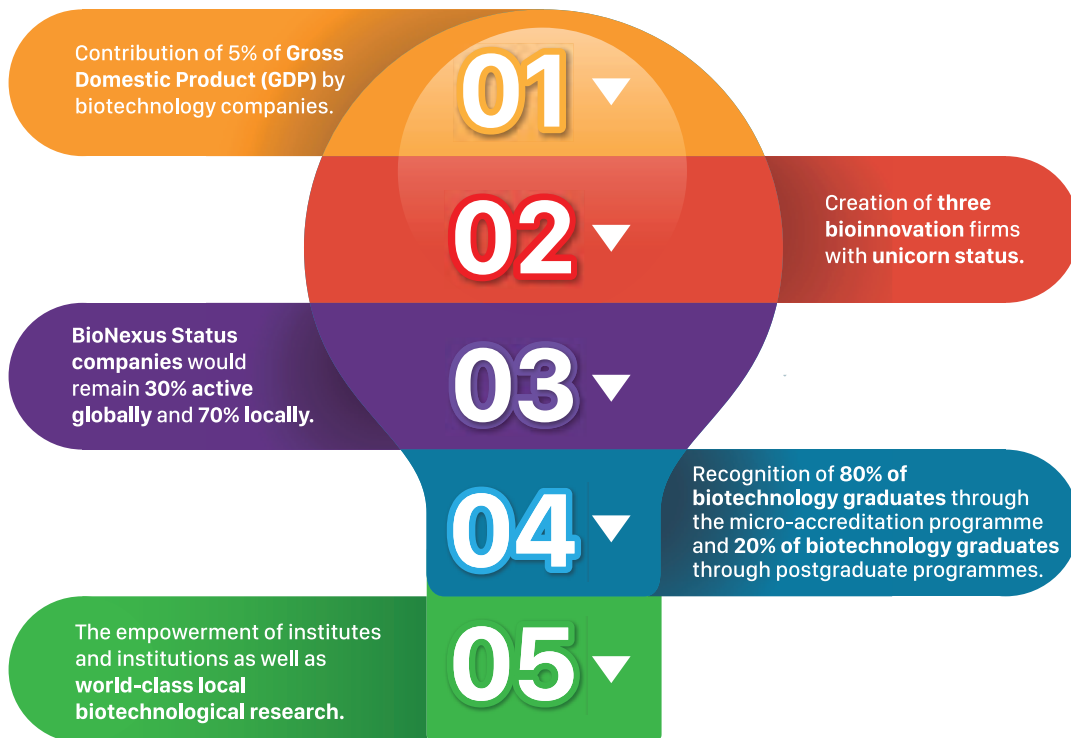
The NBP 2.0 is a continuation of the NBP. Through local biotechnology solutions, the policy is set to strengthen the existing biotechnology ecosystem and be the catalyst in resolving national challenges regarding food security and managing pandemics and climate change crises.

As biotechnology is an important component in bioinnovation to drive national development, the industry must be developed with other emerging technologies in the context of the Fourth Industrial Revolution. Considering these factors, the NBP 2.0 has been formulated to be implemented until 2030.

The overall vision of NBP 2.0 is aligned with the goals outlined by MOSTI, which is to transform Malaysia from a technology-user country to a high-technology country

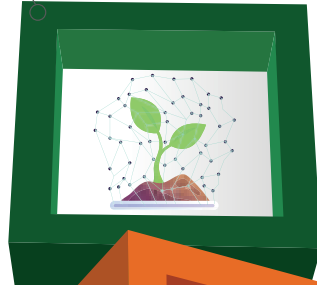
by 2030. NBP 2.0 will be the driving force that sets the momentum to achieve MOSTI's goal by aiming to achieve the following five policy targets.

5 Policy Targets of the NBP 2.0



The policy covers five core strategies to achieve these targets. Relevant to Bioeconomy Corporation is the NBP 2.0's Core Strategy 5, which consists of three main thrusts aligned with the relevant action framework and direction plans related to biotechnology.

THRUST 1
Agricultural Biotechnology
& Food Security



THRUST 2
Healthcare & Wellbeing



THRUST 3
Biotechnology in
Industrialisation &
Circular Economy



**The 3 Main Thrusts of Core Strategy 5,
NBP 2.0**

**SEIZING THE BOOMING
BIOTECHNOLOGY SECTOR**

The global biotechnology market has experienced a remarkable ascent, reaching a value of USD 752.88 billion in 2020, and is anticipated to sustain an impressive annual growth rate of 15.83% from 2021 through 2028.

The five policy targets of the NBP 2.0 showcase the government's strong commitment to leverage the growing biotechnology sector and position Malaysia as a formidable global biotechnology hub on the

global stage. Other opportunities within Malaysia's biotechnology sector that give our nation an advantage in the field include:

1. Mature agri-commodity sector.
2. Generic drug market.
3. Robust infrastructure.
4. Abundance of natural resources.
5. Robust facilitative legal framework.
6. Strong foundation in social innovation.

THE BRIDGE TO PROPEL BIOINNOVATION

Bioeconomy Corporation's core focus areas and resources are strategically aligned with the three primary thrusts of the NBP 2.0's Core Strategy 5, which are:

1. Agricultural Biotechnology & Food Security

Our AgBiotech subdivision is fully committed to promoting and advancing agricultural biotechnology to enhance food security locally and globally.

2. Healthcare & Wellbeing

Our Healthcare Bio subdivision primarily focuses on facilitating the development and commercialisation of biotechnological solutions that improve healthcare outcomes and enhance overall wellbeing.

3. Biotechnology in Industrialisation & Circular Economy

Our Industrial Biotechnology subdivision focuses on initiatives leveraging biotechnological processes and integrating biotechnology into industries. The subdivision also champions circular economic principles through bioinnovation.

This strategic alignment between Bioeconomy Corporation and the key thrusts of NBP 2.0 underscores the organisation's essential role in driving the successful implementation of the policy.

During 2021-2022, amidst the unprecedented global challenges of the pandemic and economic fluctuations, Bioeconomy Corporation displayed the resilience needed to assume the pivotal role as the bridge connecting the legacy of the NBP with the aspirations of NBP 2.0.

This report showcases the programmes and initiatives we undertook and the substantial impact they created to support the objectives of NBP 2.0 and propel the nation towards becoming a high-tech bioinnovation nation on the international stage.



SECTION

02

THRUST 1:

AGRICULTURAL BIOTECHNOLOGY & FOOD SECURITY

Pairing Malaysia's abundant biodiversity with advanced biotechnology solutions to end all forms of malnutrition and hunger



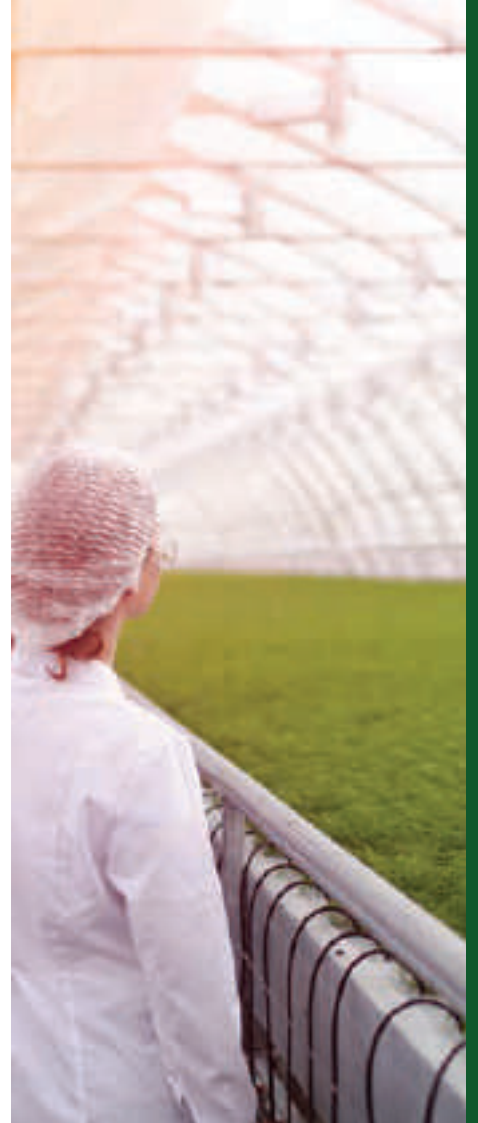
THE FUTURE OF FOOD SECURITY

It is every human's right to have reliable access to nutritious food. Yet, according to the 2022 edition of The State of Food Security and Nutrition in the World report by the United Nations (UN), around 2.3 billion people worldwide were moderately or severely food insecure in 2021.

Following the COVID-19 pandemic, Malaysia ranked 41st on the Global Security Food Index (GSFI). This means Malaysia has a heavy reliance on imports for essential food products. With an agricultural productivity of 45% of the average among high income countries, there is an urgent need for Malaysia's agricultural sector to undergo a holistic transformation that ensures improved food security.

Furthermore, it is estimated that agricultural production needs to grow nearly 70% globally and by at least 100% in developing countries by 2050 to keep pace with population growth and shifting diets. Therefore, a business-as-usual approach will not be sufficient and innovative solutions are urgently needed to transform this sector.

Agricultural biotechnology, with its potential to enhance crop yields, improve resistance to pests and diseases, and increase the nutritional value of food, offers a promising avenue to bolster food security worldwide.



“There is an urgent need for Malaysia’s agricultural sector to undergo a holistic transformation that ensures improved food security.”

MAIN THRUST 1: FLAGSHIP PROGRAMMES 1 & 2

The first main thrust of Core Strategy 5 under the NBP 2.0 is Agricultural Biotechnology & Food Security. This thrust is aligned with the United Nation's Sustainable Development Goals to promote sustainable agriculture and end all forms of malnutrition by 2030.

To achieve this goal, the NBP 2.0 has outlined the first two flagship programmes under Main Thrust 1 of Core Strategy 5.

- **Flagship Programme 1: Sustainable Production System**

A sustainable production system for food security that leverages the nation's abundant biodiversity using advanced biotechnology.

- **Flagship Programme 2: Food Ecosystem**

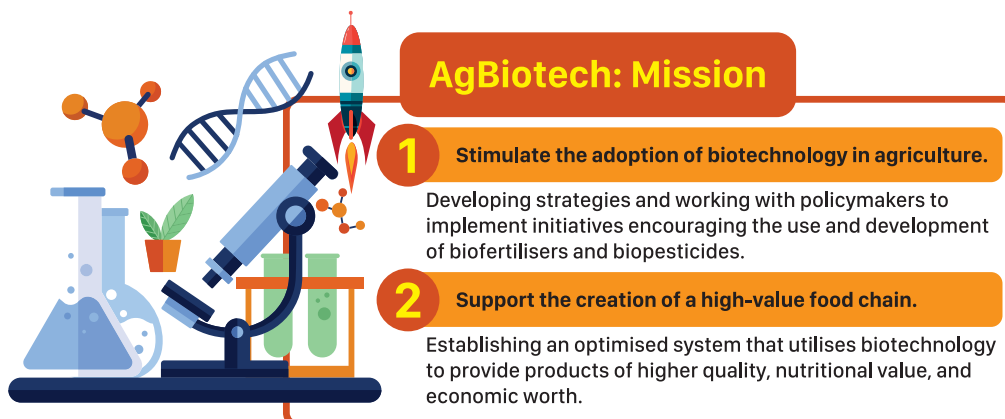
Building a food ecosystem for the future with high-value products using the latest cutting-edge biotechnology.

AgBiotech, a subdivision under the Industry Development Division, is poised to play a pivotal role in realising the objectives outlined in Flagship Programmes 1 and 2.

AGBIOTECH: OVERVIEW

AgBiotech is a one-stop centre for Malaysia's biotechnology and bio-based industries in the agricultural sector to get the support, facilitation, and investment advice they need to propel their business forward and create impact.

With a vision to become a leader in facilitating and developing biotechnology and bio-based initiatives in this country, the AgBiotech subdivision works with various stakeholders to create a bioeconomy that's both cutting-edge and sustainable by prioritising two strategies in its mission.



By facilitating, nurturing, and creating a conducive environment and ecosystem for biotechnology and bio-based industries within the agricultural sector, the AgBiotech subdivision is pivotal for relevant businesses to accelerate their growth.

As a result of this growth, AgBiotech has concurrently and actively promoted domestic direct investment (DDI) and foreign direct investment (FDI). These investments further propel innovation, employment opportunities, and economic prosperity for the agricultural sector.

Within this sector, AgBiotech directs its efforts into the following four focus areas of the bioeconomy:



AgBiotech: 4 Focus Areas



Crop Biotechnology

- Planting materials
- Crop nutrition/enhancers
- Crop protection
- Emerging areas



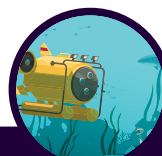
Natural Product Discovery

- Cosmeceuticals
- Nutraceuticals
- Functional ingredients
- Botanical extracts
- Food/functional food
- Dietary supplement



Livestock Biotechnology


- Breeding and nucleus farms
- Animal feed and nutrition
- Animal health diagnostics and biologics
- Remediation of animal waste
- Emerging areas



Aquaculture and Marine Biotechnology

- Aquaculture breeding and cultivation
- Aquaculture feed and nutrition
- Aquaculture health diagnostics and biologics

AgBiotech: Key Projects in 2021-2022



Supporting a Sustainable Production System

Companies Supported

- Delst Bioscience Sdn. Bhd.
- Rimba Tissue Culture Sdn. Bhd.
- Agro Yuli Sdn. Bhd.
- Genomic Biopharma Sdn. Bhd.
- G To G Bio Sdn. Bhd.

Projects Supported

Biotechnology R&D	Commercialisation utilising biotechnology
<ul style="list-style-type: none"> • Producing elite, high-quality saplings of selected varieties/hybrids using plant tissue culture techniques. 	<ul style="list-style-type: none"> • Developing mass production of elite, high-quality saplings for timber/forestry, agriculture, commercial forest plantation, and enrichment forest plantation. • Plant extracts and their derived products. • Microbial-based biofertilisers. • Animal stem cells for pet treatment.

Challenges Addressed

- Four companies setting up or commencing operations faced challenges finalising their business proposal due to the COVID-19 impact. Through multiple engagements, AgBiotech guided them to complete their BioNexus Status application.
- One company faced additional competition from China and needed the facilitation of importation permits. Through multiple engagements with stakeholders, AgBiotech facilitated and guided the company to broaden its market and commercialisation efforts.

Total New Investment

RM17,610,000

Community Benefits

Employment (including knowledge workers).



Creating a High-Value Ecosystem

Companies Supported

- Ritamix Sdn. Bhd.
- Glyken Bio Products Sdn. Bhd.
- One Meds Sdn. Bhd.
- Nexus BioVenture Sdn. Bhd.

Projects Supported

Commercialisation utilising biotechnology

- Animal feed ingredients.
- Edible bird nest extract.
- Functional food, functional beverages, and health supplements that utilise microbial fermentation.
- Functional ingredients from botanical extracts.
- Tiger milk mushrooms and other medicinal mushrooms produced with biochemical analysis for health supplements.

Challenges Addressed

- Two companies setting up or commencing operations faced challenges finalising their business proposal due to the COVID-19 impact. Through multiple engagements, AgBiotech guided them to complete their BioNexus Status application.
- One company showed potential to gain an advantage for its immune and respiratory health products during the pandemic. AgBiotech broadened the company's market and commercialisation efforts through multiple engagements with potential stakeholders.

Total New Investment

RM90,657,104

Community Benefits

Employment (including knowledge workers).



SECTION

03

THRUST 2:
HEALTHCARE & WELLBEING
BIOTECHNOLOGY

Pioneering bioinnovations that pave the way
for equitable and extended healthcare



IMPROVING LONGEVITY AND QUALITY OF THE GOLDEN YEARS

Improving longevity and quality of life is a paramount global concern, as millions still lack access to adequate healthcare.

According to a World Health Statistics report by the World Health Organization (WHO), healthcare inequalities persist in 2022, with disadvantaged populations having lower levels of access to health and related services yet higher levels of exposure to health risks.

However, healthcare inequality is not the sole challenge in the quest for improved longevity and quality of life. The ageing population in many countries presents new challenges related to geriatric health, chronic disease management, and maintaining a high quality of life in one's later years.

Biotechnology and bioinnovation in healthcare are pivotal in addressing healthcare access and quality. By improving medical devices, diagnostic tools, and pharmaceuticals, bioinnovations can reduce healthcare costs while enhancing the effectiveness of healthcare interventions that can contribute to longer, healthier lives for all.

MAIN THRUST 2: FLAGSHIP PROGRAMMES 3 & 4

Healthcare & Wellbeing Biotechnology is the second main thrust of Core Strategy 5 under the NBP 2.0. This thrust aspires to revolutionise the healthcare sector by harnessing the potential of biotechnology to enhance medical treatments and improve healthcare delivery for the masses.

To achieve this goal, the NBP 2.0 has outlined the third and fourth flagship programmes under Main Thrust 2 of Core Strategy 5.

- **Flagship Programme 3: Halal Botanical Medicines & High-Value Natural Remedies**

Developing evidence-based, halal therapeutics and natural remedies by using biotechnology and Artificial Intelligence (AI) to discover new therapeutic compounds.

- **Flagship Programme 4: Biologics, Omics Technology & Targeted Therapies**

Enhancing precision and personalised medicine, as well as enhancing gene and cell therapy to improve preventive health, diagnostics, and treatment.

Healthcare Bio, a subdivision under the Industry Development Division, is well-positioned to take a central role in achieving the goals outlined in Flagship Programmes 3 and 4.

HEALTHCARE BIO: OVERVIEW

Healthcare Bio is a one-stop centre for Malaysia's biotechnology and bio-based industries in the healthcare and wellness sector to get the support, facilitation, and investment advice they need to propel their business forward and create impact.

With a vision to lead the way for bioinnovation within the healthcare sector, the Healthcare Bio subdivision works with various stakeholders to create a bioeconomy at the forefront of innovation and environmental sustainability. This vision is guided by two key objectives central to its mission.



Healthcare Bio: Mission

- 1 Ensure the wellbeing of the people.**
Utilising the latest innovative and safe treatments, drugs, and devices to ensure the wellbeing of the people.
- 2 Leading the way for bioinnovation in healthcare.**
To be a leader in facilitating and developing biotechnology and bio-based initiatives that directly contribute to the wellbeing of the people.

The graphic features a blue pill bottle with a white cross on a red background, set against a green leaf-like shape. The text is presented in a clean, modern font with numbered points.

The Healthcare Bio subdivision plays a crucial role in the healthcare sector by fostering an environment and ecosystem conducive to the growth of biotechnology and bio-based industries.

Through this role, Healthcare Bio actively fosters DDI and FDI, driving innovation, job creation, and economic prosperity in the healthcare sector.

Within this sector, Healthcare Bio directs its efforts into the following six focus areas of the bioeconomy:

Healthcare Bio: 6 Focus Areas



Contract Research Services (CRO)

- Pre-clinical testing lab services
- Clinical research organisations
- Discovery and development services
- Bioinformatics/healthcare
- Proprietary technologies providers



Contract Research & Manufacturing Services (CRAMS)

- Provision of contractual R&D services
- Internal R&D
- Biomanufacturing
- Primary manufacturing
- Secondary manufacturing



Biopharmaceuticals & Pharmaceuticals

- Biopharmaceuticals - Innovator biologics
- Biopharmaceuticals - Biosimilars and biobetters
- Pharmaceuticals - New chemical entities (NCE)
- Pharmaceuticals - Generics
- Vaccines



Medical Devices, Biosensors & In Vitro Diagnostics

- Medical devices
- In vitro diagnostics
- Biosensors



Stem Cell, Cellular Medicine & Cellular and Gene Therapy Products (CGTP)

- Biomaterials
- Cell-based technology
- Biomolecules
- Biomechanical aspects of design
- Tissue engineering and related support informatics



Biocosmeceuticals, Wellness & Pharmanutrition

- Biocosmeceuticals
- Phytomedicine
- Botanical drugs
- Wellness and pharmanutrition

Healthcare Bio: Key Projects in 2021-2022

Developing Halal Botanical Medicines & High-Value Natural Remedies

Companies Supported

- My Miracle Sdn. Bhd.



Projects Supported: Commercialisation Utilising Biotechnology

- Postbiotics and microbial-based health supplements produced through microbial fermentation processes.

Challenges Addressed

- The company had commenced operations and was facing challenges finalising its business proposal due to the COVID-19 impact. Through multiple engagements, Healthcare Bio guided them to complete their BioNexus Status application.

Total new investment: RM19,554,500

- Employment (including knowledge workers).
- Access to high-value medicines and natural remedies.

Healthcare Bio: Key Projects in 2021-2022

Developing Biologics, Omics Technology & Targeted Therapies

Companies Supported

- Ming Medical Sdn. Bhd.
- MyGenome Sdn. Bhd.
- Eman Biodiscoveries Sdn. Bhd.
- Beike 23 Century International Stem Cell Laboratory Sdn. Bhd.
- AGTC Genomics Sdn. Bhd.

Projects Supported



Biotechnology R&D

- Discovery, research, and development of new drugs and angiogenesis-based medicine.
- Management of pre-clinical and clinical trials.



Commercialisation Utilising Biotechnology

- Culturing mesenchymal stem cells and related products.
- Culturing natural killer cells.
- Isolation of exosomes.
- Genomic services solutions using Next Generation Sequencing (NGS), Digital Gene Platform, Microarray, Real-time & Standard PCR.
- Precision medicine.
- Bioinformatics and other related services.

Challenges Addressed

- Five companies setting up or commencing operations faced challenges finalising their business proposal due to the COVID-19 impact. Through multiple engagements, Healthcare Bio guided them to complete their BioNexus Status application.

Total New Investment: RM84,093,730

- Employment (including knowledge workers).
- Improved diagnostics and therapies to combat disease.



SECTION

04

THRUST 3:

BIOTECHNOLOGY IN INDUSTRIALISATION & CIRCULAR ECONOMY

Combatting environmental impact with innovative biotechnology solutions to forge a sustainable, circular economy



SHAPING A GREENER TOMORROW

Industrialisation has significantly impacted the environment over the past few centuries. While it has led to unprecedented economic growth and improved living standards for many, it has also brought about widespread environmental degradation and climate change.

There is an urgent need for a more sustainable approach to replace the traditional linear industrial model, which follows a “take-make-dispose” approach. The call for a circular economy as the solution is centred on reducing, reusing, and recycling resources to keep materials and products in use for as long as possible.

Transitioning to a circular economy is not just essential for safeguarding the environment. It is also important for a sustainable and prosperous future, for if our resources continue depleting at the current rate, we risk compromising the wellbeing of future generations.

Biotechnology plays a pivotal role in industrialisation processes, acting as a crucial driver in the shift towards a circular economy. This is chiefly attributed to its ability to transform production methods, making them more environmentally friendly, adaptable, and in harmony with nature, all while maintaining operational efficiency.

MAIN THRUST 3: FLAGSHIP PROGRAMME 5

The third main thrust of Core Strategy 5 under the NBP 2.0 is Biotechnology in Industrialisation & Circular Economy. This thrust aspires to create a paradigm shift in how we approach economic growth, resource utilisation, and sustainability within the industrial sector.

Achieving this shift requires a concerted effort from stakeholders at various levels. With regards to Malaysia's bioeconomy, the NBP 2.0 has outlined the fifth flagship programme under Main Thrust 3 of Core Strategy 5.

- **Flagship Programme 5: Industrial Biotechnology for a Circular Economy**

Leveraging bioinnovations such as bioremediation, biomimicry, biofeedstocks, and biochemistry to create a circular economy and drive sustainable development.

Industrial Biotechnology, a subdivision under the Industry Development Division, is strategically positioned to assume a key role in accomplishing the goals set forth in Flagship Programme 5.

This includes actively promoting the development of bioproducts sourced from renewable materials to significantly reduce carbon footprint and emissions. Additionally, Industrial Biotechnology is dedicated to creating high-value goods derived from waste materials from the palm oil industry and other agricultural sectors.

INDUSTRIAL BIOTECHNOLOGY: OVERVIEW

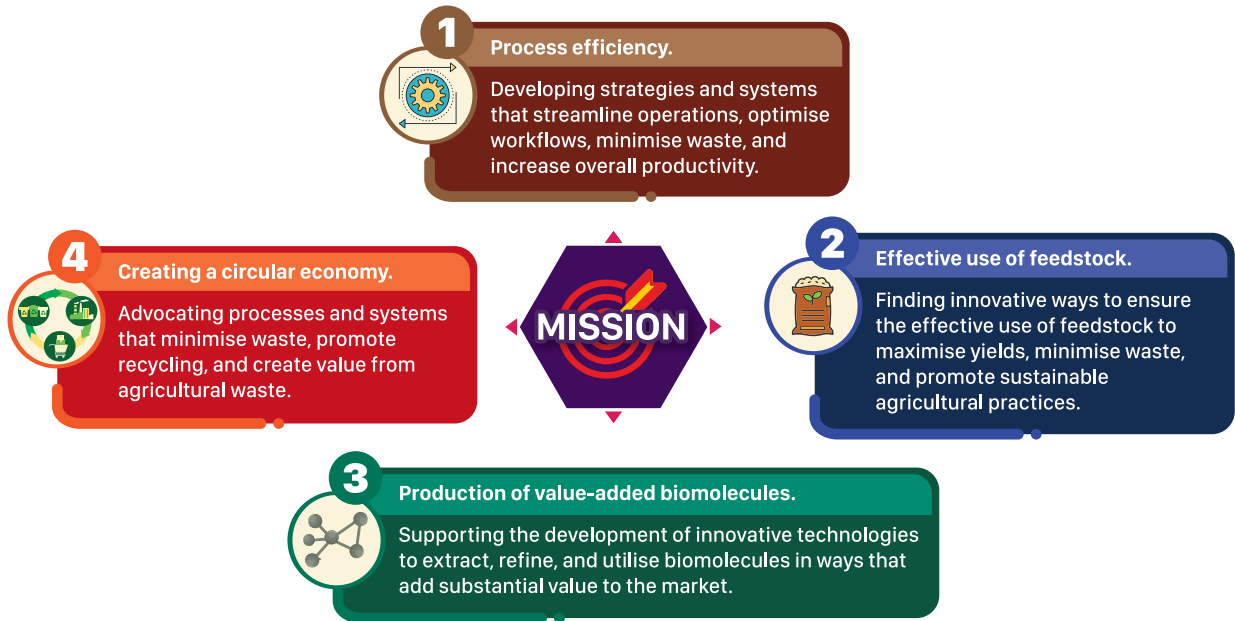
Industrial Biotechnology fosters and nurtures the biotechnology and bio-based industries, especially in the industrial biotechnology sector, by providing the necessary support, facilitation, and investment guidance to drive their businesses forward and make a meaningful impact.

The overarching vision of the Industrial Biotechnology subdivision is to foster an advanced and sustainable bioeconomy through collaboration with diverse stakeholders. This vision is underpinned by four core objectives that serve as the cornerstone of its mission.

Industrial Biotechnology is instrumental in facilitating and nurturing sustainable practices in the industrial sector of the nation's biotechnology and bio-based industries.

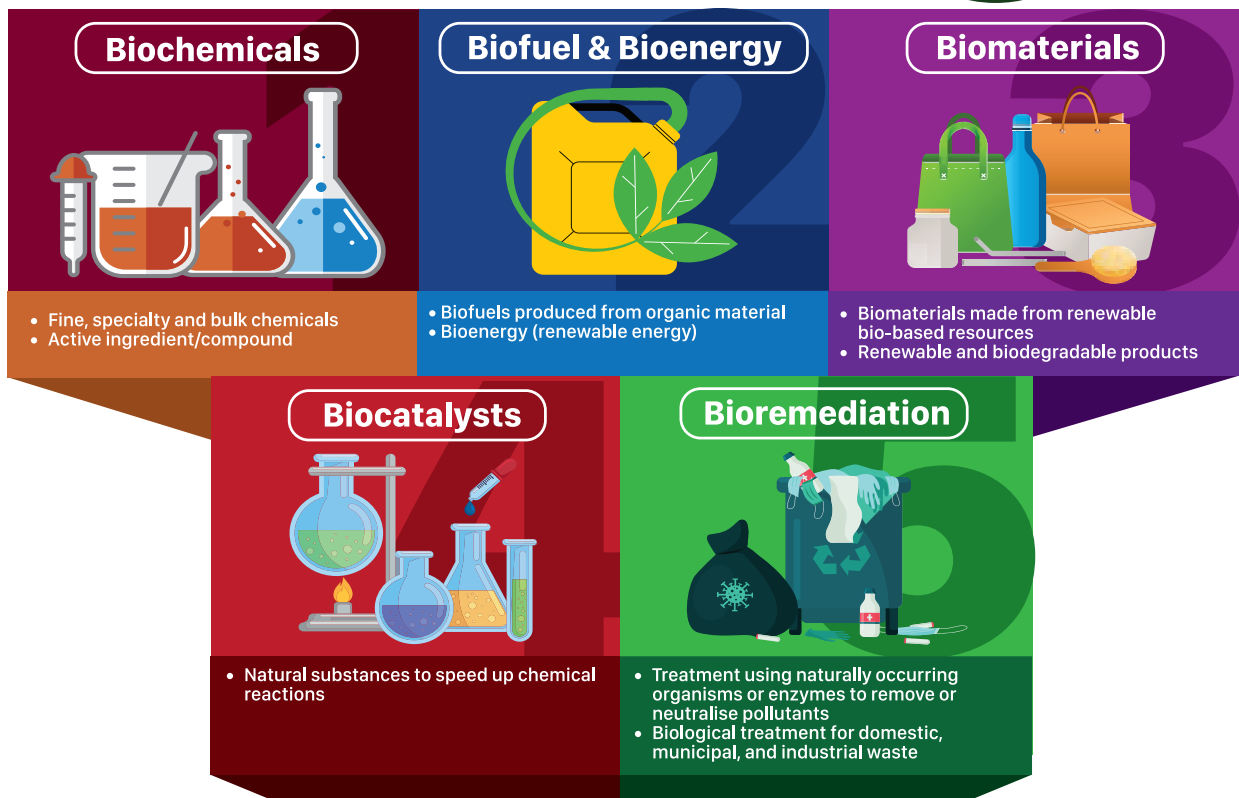
By creating a conducive environment that accelerates the growth of businesses in this domain, Industrial Biotechnology actively attracts DDI and FDI. This, in turn, propels innovation, job creation, and economic prosperity in the industry sector.

INDUSTRIAL BIOTECHNOLOGY



Within this sector, Industrial Biotechnology directs its efforts into the following five focus areas of the bioeconomy:

INDUSTRIAL BIOTECHNOLOGY **5** FOCUS AREAS



Industrial Biotechnology: Key Projects in 2021-2022

Developing Industrial Biotechnology for a Circular Economy


Initiatives & Policies Supported

- Selangor Biotech Action Plan 2021-2030 (SBAP)
- Bio-Based Accelerator (BBA) Programme
- MoU with Malaysian Productivity Corporation (MPC) on BBA training collaboration
- BBA Programme official launch
- NBP 2.0 official launch
- The Dasar Agro Komoditi Negara 2021-2030


Companies Supported

- Pure Asia Ingredients Sdn. Bhd.
- Eco Premium Packaging (M) Sdn. Bhd.
- EMRO Malaysia Sdn. Bhd.

Projects Supported



Biotechnology R&D
Research collaboration potential with UTM Skudai to develop microbial products.



Commercialisation Utilising Biotechnology

- Food ingredients utilising enzymatic processes.
- Biodegradable products utilising enzymatic processes.
- Microbial products for various applications.

Challenges Addressed

- Two companies faced challenges maintaining commencement timelines due to COVID-19. Industrial Biotechnology's support helped them to achieve BioNexus Status in January and February 2021.
- One company faced challenges finalising their business proposal due to the COVID-19 impact. Through multiple engagements, Industrial Biotechnology guided them to complete their BioNexus Status application and achieve BioNexus Status in April 2021.

Total New Investment: RM266,210,000

- Employment: 52 (including knowledge workers).
- Solutions towards a sustainable environment.



SECTION

05

FACTS & FIGURES: INDUSTRY DEVELOPMENT

Key achievements of the Industry Development Division in
AgBiotech, Healthcare Bio, and Industrial Biotechnology



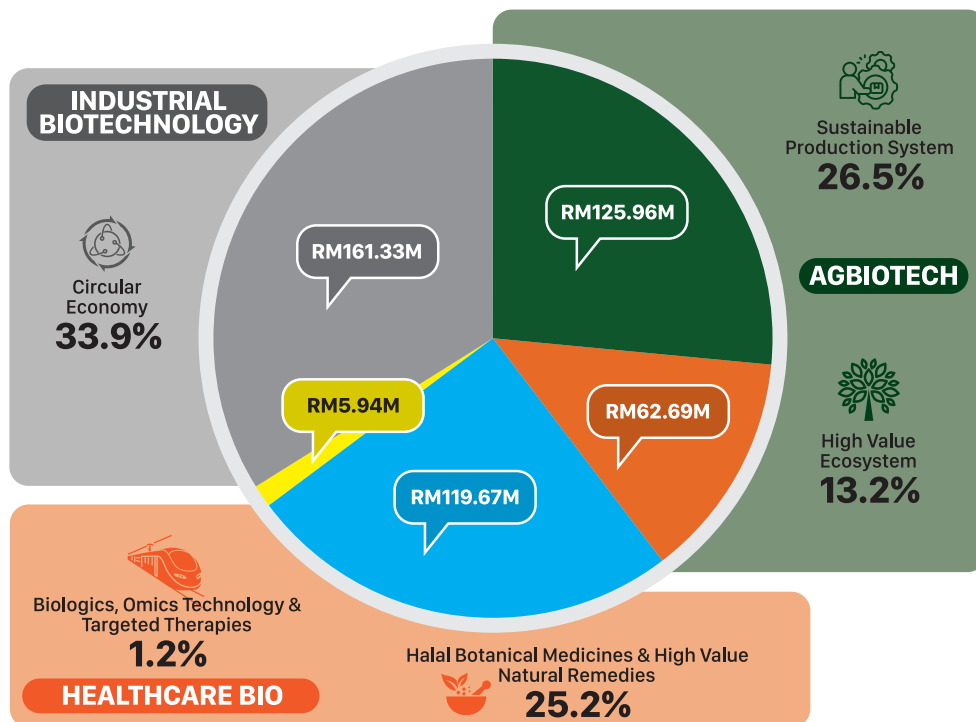
APPROVED INVESTMENTS

The Industry Development Division (IDD) of Bioeconomy Corporation is at the forefront of driving both DDI and FDI for the subdivisions under its purview: AgBiotech, Healthcare Bio, and Industrial Biotechnology.

By fostering these investments, the IDD catalyses innovation and generates substantial employment opportunities, contributing significantly to the robust economic growth and prosperity within the bioeconomy and circular economy sectors.

In 2021-2022, the IDD raised a total of RM475.59 million in approved investments that support the flagship programmes as outlined by Core Strategy 5 of the NBP 2.0, broken down as follows:

Summary of IDD Approved Investments in 2021-2022



AgBiotech Approved Investments in 2021-2022

Approved investments attained for IDD's AgBiotech division in 2021-2022 totalled RM188.65 million. These investments were made across five focus areas within AgBiotech, broken down as follows:

AgBiotech Focus Area	Approved Investments in BioNexus Status Companies and BBA Programme (2021-2022)			Grand Total (2021-2022)
	BioNexus Status	BBA	Sub-total (BioNexus Status + BBA)	
Crop biotechnology	RM13,480,000	RM21,208,950	RM34,688,950	RM188,654,972
Natural Product Discovery	RM60,552,063	RM1,140,000	RM61,692,063	
Livestock Biotechnology	RM34,235,041	RM55,650,000	RM89,885,041	
Aquaculture	NIL	RM1,388,918	RM1,388,918	
Functional Food	NIL	RM1,000,000	RM1,000,000	

Healthcare Bio Approved Investments in 2021-2022

Approved investments attained for IDD's Healthcare Bio division in 2021-2022 totalled RM125.61 million. These investments were made across seven focus areas within Healthcare Bio, broken down as follows:

Healthcare Bio Focus Area	Approved Investments in BioNexus Status Companies and BBA Programme (2021-2022)			Grand Total (2021-2022)
	BioNexus Status	BBA	Sub-total (BioNexus Status + BBA)	
Contract Research Services (CRO)	RM21,500,000	RM13,119,930	RM34,619,930	RM125,611,260
Biopharmaceuticals and Pharmaceuticals	RM19,554,500	RM500,000	RM20,054,500	
Stem Cell, Cellular Medicine, and Cellular and Gene Therapy Products (CGTP)	RM62,593,730	RM1,600,000	RM64,193,730	
Pharma Nutrition	NIL	RM3,093,000	RM3,093,000	
Contract Research and Manufacturing Services (CRAMS)	NIL	RM2,750,100	RM2,750,100	
Biocosmeceuticals	NIL	RM100,000	RM100,000	
Medical Device	NIL	RM800,000	RM800,000	

Industrial Biotechnology Approved Investments in 2021-2022

Approved investments attained for IDD's Industrial Biotechnology division in 2021-2022 totalled RM161.33 million. These investments were made across six focus areas within Industrial Biotechnology, broken down as follows:

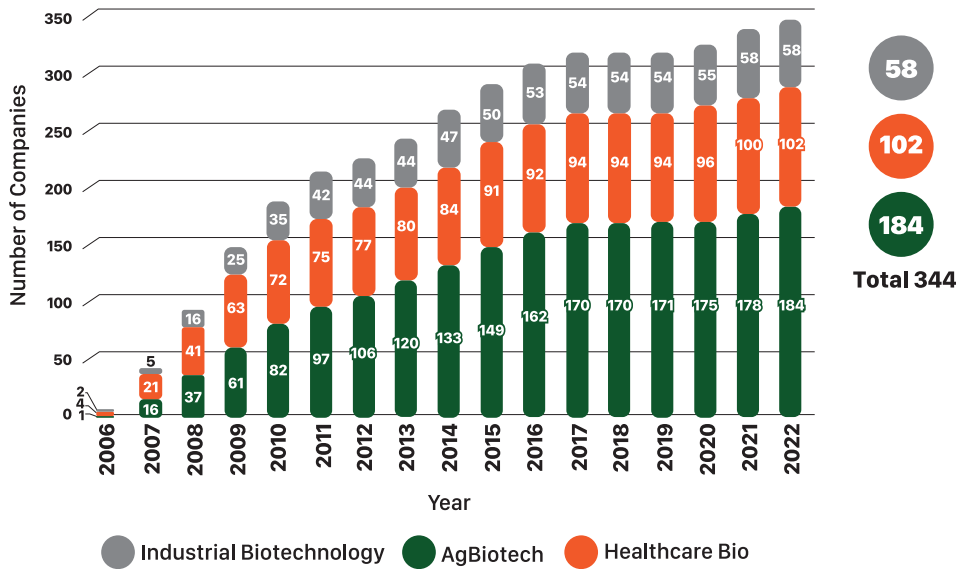
Industrial Biotechnology: Focus Area	Approved Investments in BioNexus Status Companies and BBA Programme (2021-2022)			Grand Total (2021-2022)
	BioNexus Status	BBA	Sub-total	
Biochemicals	RM139,936,670	RM51,000	RM139,987,670	RM161,327,997
Biomaterials	RM7,300,000	RM300,000	RM7,600,000	
Biocatalysts	RM1,000,000	NIL	RM1,000,000	
Bioremediation	NIL	RM5,400,000	RM5,400,000	
Biofuel/Bioenergy	NIL	RM2,600,000	RM2,600,000	
Fine, Bulk & Specialty Chemical	NIL	RM4,740,327	RM4,740,327	

BIONEXUS STATUS COMPANIES

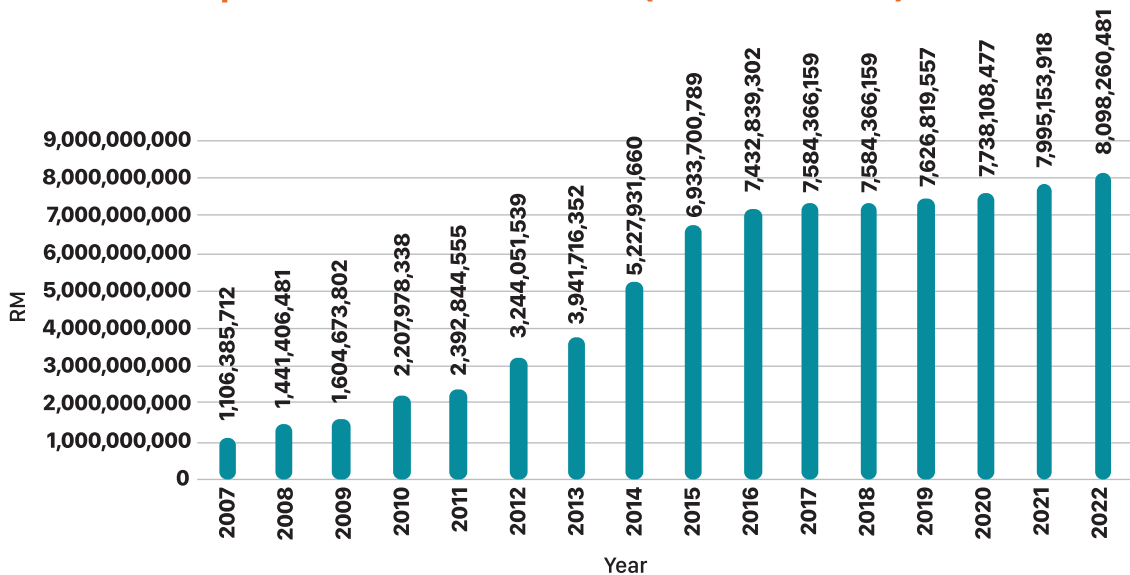
BioNexus is a special status awarded to qualified international and Malaysian biotechnology companies. The status bestows fiscal incentives, grants, and other guarantees to assist growth. This status is awarded to qualified companies undertaking biotechnology activities.

This section looks at the key achievements of BioNexus Status companies in 2021-2022, as well as since the inception of the status in 2007.

BioNexus Status Companies Approved in 2007-2022 (Cumulative)

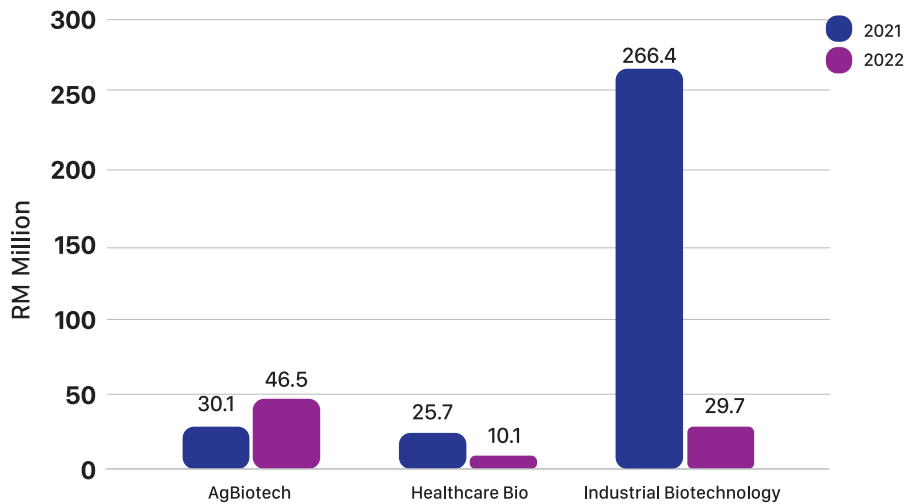


Approved Investments for BioNexus Status Companies in 2007-2022 (Cumulative)

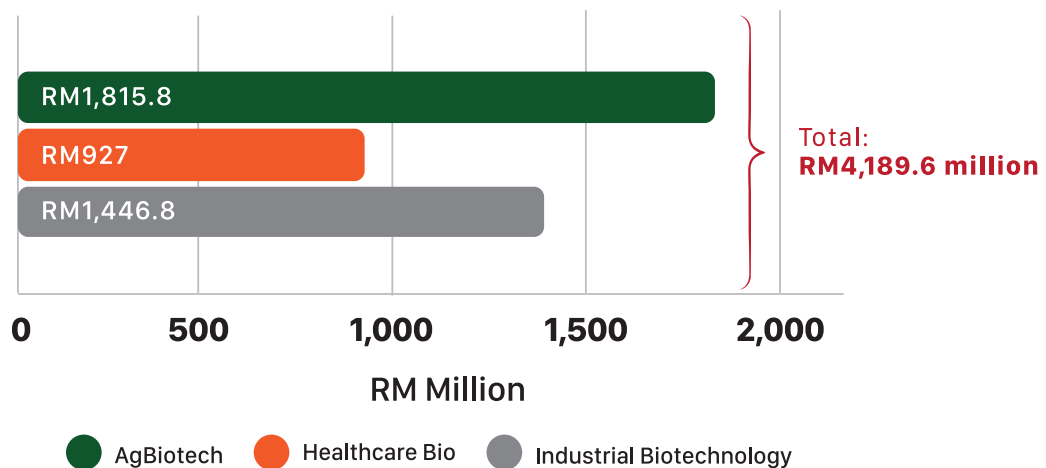


Realised Investments for BioNexus Status Companies in 2021-2022

A total of RM322.20 million and RM86.3 million in realised investments were achieved in 2021 and 2022, respectively. The breakdown of realised investments by industry is as follows:



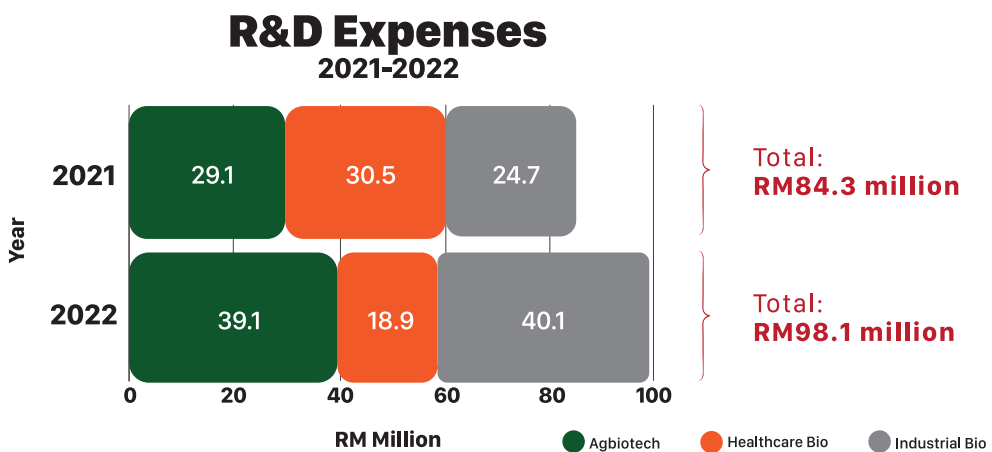
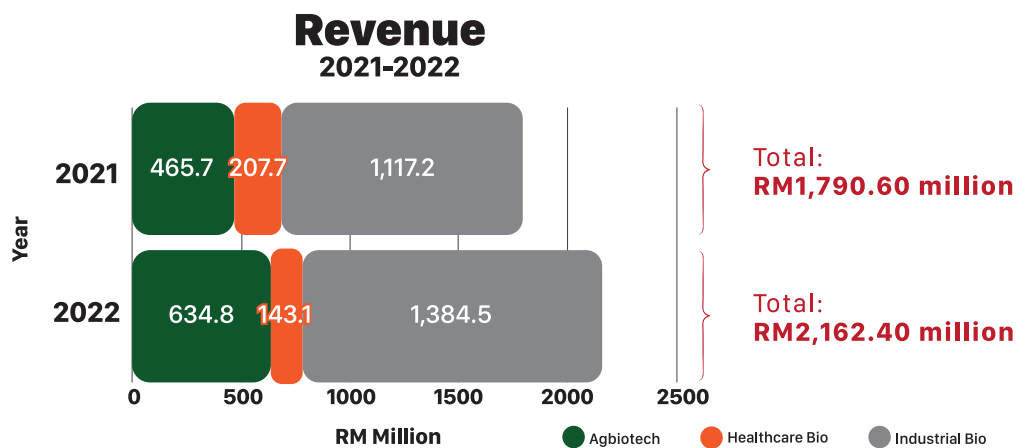
Total Realised Investments for BioNexus Status Companies (2007-2022)



Revenue and R&D Expenses for BioNexus Status Companies in 2021-2022

In 2021, BioNexus Status companies generated a total revenue of RM1,790.60 million, while R&D expenses incurred totalled RM84.3 million.

In 2022, BioNexus Status companies generated a total revenue of RM2,162.40 million, while R&D expenses incurred totalled RM98.1 million.



The breakdown of revenue and R&D expenses are as follows:

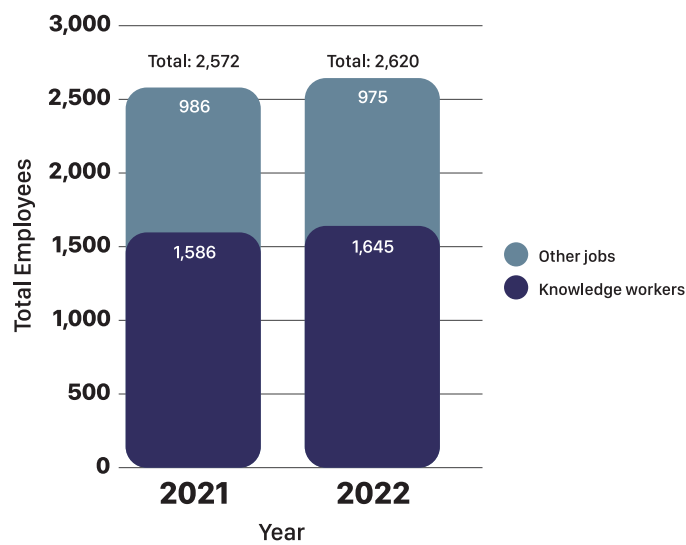
In 2022, while the number of companies was almost 7% fewer than the previous year, the revenue generated saw a significant increase of 21% from 2021.

This surge in revenue was predominantly driven by the industrial biotechnology sector, indicating a highly promising trajectory for the future. This robust performance underscores industrial biotechnology's growing importance and potential in contributing to the bioeconomic landscape.

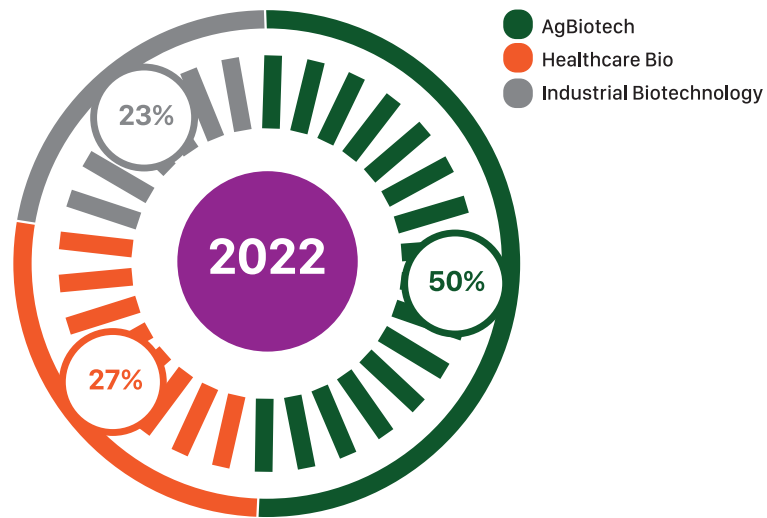
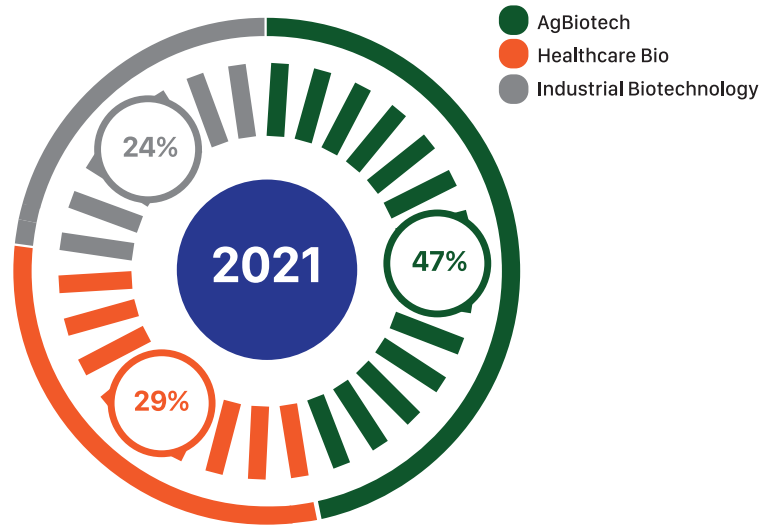
JOB OPPORTUNITIES IN BIONEXUS STATUS COMPANIES

In 2021-2022, BioNexus Status companies employed 5,192 people.

Total Employees within BioNexus Status Companies in 2021-2022



Employees within BioNexus Status Companies by Industry in 2021-2022

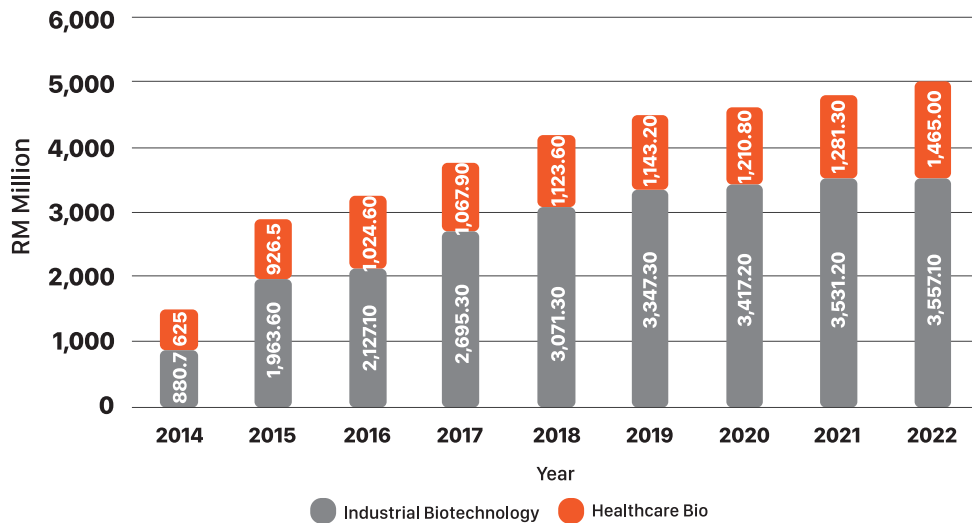


HIGH-IMPACT PROJECTS

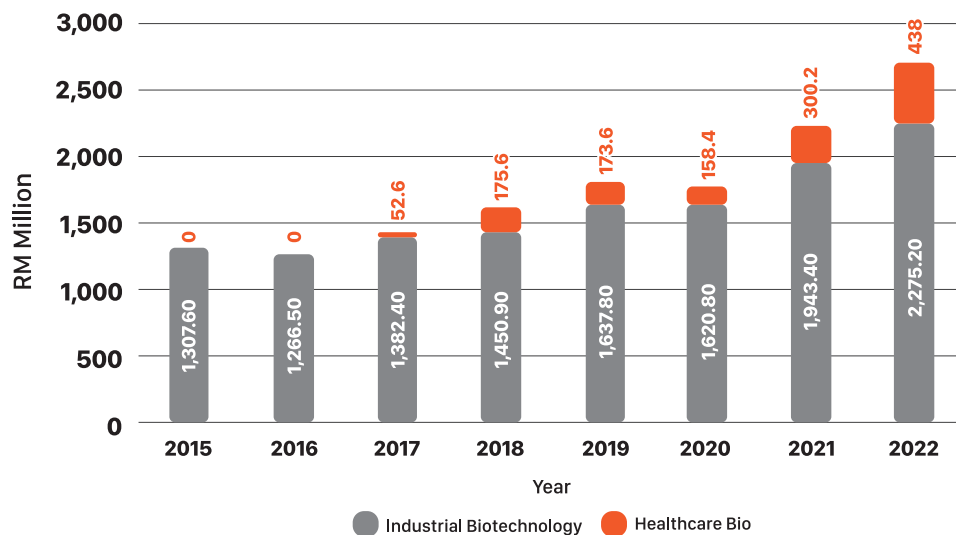
In addition to supporting BioNexus Status companies, Bioeconomy Corporation also facilitates high-impact FDI bioeconomy projects in the Industrial Biotechnology and Healthcare Bio sectors, including Biocon's integrated manufacturing and R&D facility for insulin in Malaysia, one of the largest in Asia.

These high-impact projects recorded a total realised investment of RM4.9 billion (cumulative) in 2022, while the total revenue reached RM2.7 billion for the same year.

Realised Investments for High-Impact Projects



Revenue for High-Impact Projects



SECTION

06

DEVELOPING THE MARKET

Expanding the bioeconomy to reach a 5%
contribution to the GDP



BUILDING A STRONGER BIOECONOMY

The world faces several challenges, including climate change, resource scarcity, and population growth. Building a stronger bioeconomy offers a way to address these challenges by providing sustainable solutions for food, energy, materials, and chemicals.

By channelling resources, expertise, and innovation, Bioeconomy Corporation has organised numerous programmes to help biotechnology companies improve their products and build a stronger bioeconomy in Malaysia.

These programmes are:

1. Halal Boost Programme
2. Product Development Programme
3. Market Access & Business Support (MABS)

These efforts also support the first policy target of the NBP 2.0, which is to attain a 5% contribution to the GDP by biotechnology companies.

Moving toward this goal also contributes to the policy's second target of creating three bioinnovation firms with unicorn status.

MARKET ACCESS & BUSINESS SUPPORT (MABS)

The MABS department helps Malaysian bio-based businesses access targeted markets, expand their market reach, and build business connections by:

- a. Promoting Malaysian bio-based products & services.
- b. Connecting the right products to the right markets and the right buyers.

MABS achieves this through customised facilitation and assistance, smart and strategic partnerships, inter-organisational collaborations, as well as education and awareness programmes.

In 2021, MABS successfully led or participated in four innovative programmes:

1. Smart Farming Project: Edible Showcase Garden

An Edible Showcase Garden featuring hydroponic and fertigation systems raised public awareness of indoor farming systems.

2. Market Access Networking

An engagement with GK Asia Sdn. Bhd. which is a key supplier and operator for over 500 MyNews and CU Mart outlets to supply bio-based products at their stores.

3. Digital Market Access Networking

An engagement with LUVE Mobile Livestream Shoppertainment to explore digital market access for bio-based products and brand owners facilitated under Bioeconomy Corporation.

4. Expo 2020 Dubai: Road to Dubai

Part of a more extensive engagement with MAFI for the Road to Dubai promotion activity.

In 2022, MABS successfully led or participated in five innovative programmes:

1. 17th Malaysian International Branding Showcase

A collaboration with MAFI that showcased bio-based products and brands facilitated under Bioeconomy Corporation and promoted business networking.

2. Expo 2020 Dubai

An international event with 192 country pavilions, where Malaysia showcased its natural biodiversity, range of bio-based products, and product development and manufacturing capabilities to casual and trade visitors.

3. BioPintar Smart Indoor Farming

A programme under MAFI that promoted smart indoor farming technologies to the general public.

4. Digital Market Access Partnership (D-MAP)

A collaboration with two digital market access partners that increased bio-based products exposure and helped brands become more knowledgeable of digital market spaces.

5. Digital Market Access Workshop

A one-day workshop introducing bio-based companies to digital market access and route-to-market strategies.

MABS

Key Achievements: 2021-2022

Benefits for the Public

- Connected the public with local and sustainable fresh produce.
- Raised awareness of Malaysia's natural biodiversity in the Middle East.
- Showcased Malaysia's bio-based innovations and biodiversity at an international trade show event.
- Promoted Malaysia as a destination for tourism and bio-based products to the international audience in Dubai.
- Raised awareness of smart indoor farming technologies.
- Educated consumers on how bio-based products can improve their quality of life.

Benefits for BioNexus Status & Bio-Based Accelerator Companies

- Provided an entry point to become hotel suppliers of fresh produce.
- Bio-based products were exposed to Middle Eastern buyers and importers.
- Exposure to potential markets in Central East Asia and other business matching opportunities.
- Access to engagements and networking with potential buyers and importers in the Middle East.
- Agropreneurs can apply for smart indoor farming loans from Agrobank's *Program Modernisasi Rantai Nilai Agromakanan (PMRNA)*.
- Leverage MDEC's Digital Malaysia incentives and market their products via selected digital market platforms to increase exposure and revenue.

MABS

Growth Strategies

Challenges

- Strict requirements for bio-based products in certain countries were not a match for the brands under market access networking.
- Budget constraints and marketing cost concerns limited the fulfilment of all aspects of digital market access collaboration.
- Potential business engagements with buyers from China were affected by COVID-19 lockdowns in China.
- Limited market intelligence on market demand in Dubai/UAE made product and segment targeting challenging.
- Cultural differences hindered attracting buyers, who preferred familiar products with strong demand and selling propositions.
- Tangible resistance towards embracing digital market access, with many preferring the traditional retail route to access the market.

Action Plans

- To pivot the market access strategy for bio-based products and identify low-barrier entry markets as potential leads for bio-based products.
- To partner with MDEC's Digital Malaysia programme for a more efficient way for brand owners to access the digital market.
- To develop more targeted programmes, such as trade missions with MATRADE.
- To engage MATRADE and MAFI to improve promoting market entry into any given country.
- To collaborate with MATRADE and MAFI on targeted business matching and networking using their market intelligence.
- To create a bio-based company portfolio of digital market access success stories for others to follow.

MABS: MOVING FORWARD

To maintain its momentum in boosting market access for the bioeconomy to reach a 5% GDP contribution, Bioeconomy Corporation plans to enhance and expand access to these programmes and services. Future plans include:

1. Develop more structured market access programmes through trade missions, pitch sessions, and local business matching programmes.
2. Promote BIO-ESG as a pathway to market access through road shows, workshops, and certification programmes.
3. Partner with smart indoor farming players to penetrate the international market for farm produce and set up modular farms in Malaysia.



SECTION

07

**GLOBAL IMPACT WITH
LOCAL ROOTS**

Empowering BioNexus Status companies
to succeed globally and locally

A PATH TO LOCAL PROSPERITY AND GLOBAL SUCCESS

To transform the country into a leading global hub for bioinnovation, Bioeconomy Corporation is pivotal in administering the BioNexus Status programme under the NBP 2.0. The programme incentivises companies to pursue high-value biotechnology and life sciences activities that strengthen the country's bioeconomy.

Bioeconomy Corporation also offers a variety of programmes and support mechanisms to help biotechnology companies attain and maintain BioNexus Status, as well as supporting agro-based and bio-based companies to grow and thrive in the local and international markets.

The initiatives and departments committed to this path are:

1. BioNexus Status
2. BBA Programme
3. Funding Advisory
4. Tax Advisory

These efforts support several policy targets of the NBP 2.0, primarily the first and third targets.

The first target is to achieve a 5% GDP contribution from biotechnology companies. The third target is to nurture 30% of BioNexus Status companies to the global market and support the remaining 70% to be active locally.

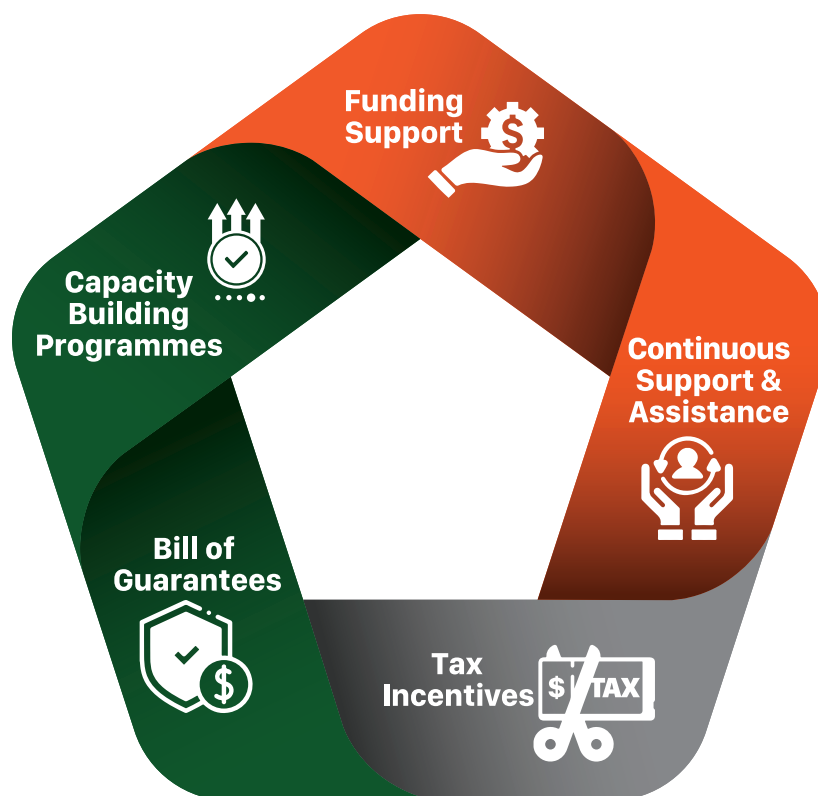
Moving toward these goals also contributes to the policy's second target of creating three bioinnovation firms with unicorn status.

BIONEXUS STATUS: OVERVIEW

BioNexus is a special status awarded by the Malaysian Government through Bioeconomy Corporation to qualified international and Malaysian biotechnology companies.

Companies that attain BioNexus Status are granted various benefits and incentives, including tax incentives and other guarantees to assist growth and catalyse competitiveness.

BIONEXUS STATUS BENEFITS



Apart from the overall benefits and support, BioNexus Status companies are assured a list of privileges as stipulated in the BioNexus Status Bill of Guarantees:

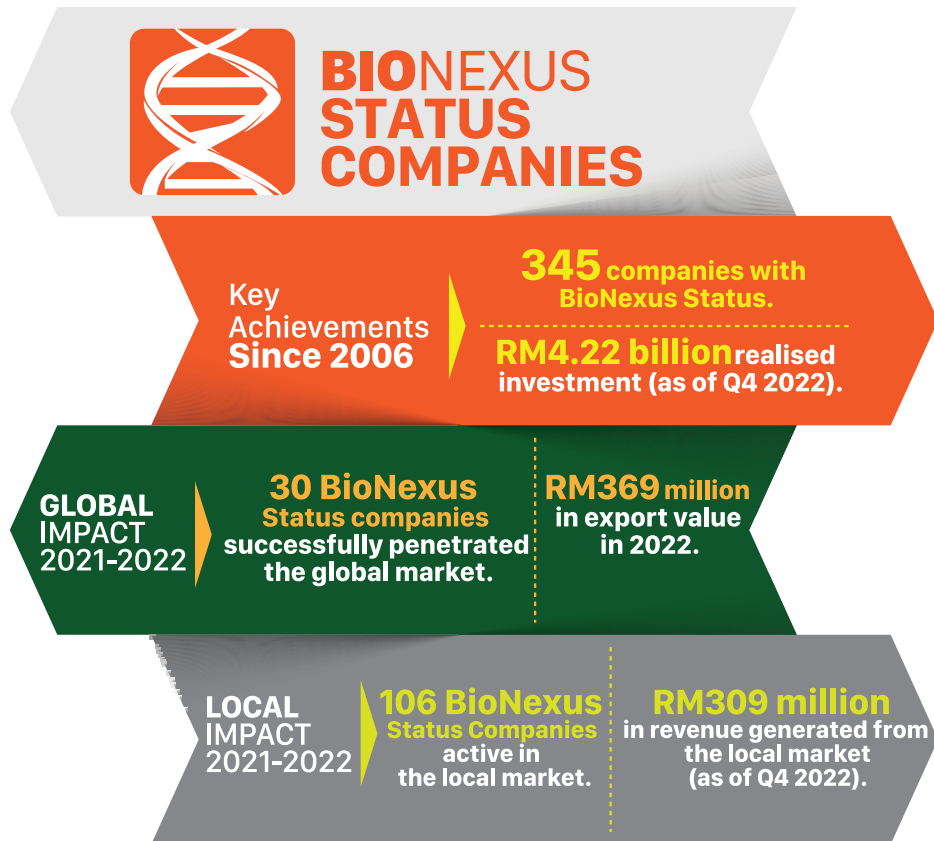
- i. Freedom of ownership;
- ii. Freedom to source funds globally subject to prevailing Government policies;
- iii. Freedom to bring in knowledge workers subject to prevailing Government's policies;
- iv. Eligibility for BioNexus Status incentives;
- v. Facilitation of international accreditation and standards; and
- vi. Access to BioNexus Partners Programme for shared laboratories and other related facilities.

BIONEXUS STATUS: TRAINING EVENTS

BioNexus Status Companies Briefing

The BioNexus Status Companies Briefing is a refresher session held twice a year to help BioNexus Status companies understand their vital terms and conditions, navigate the application process for concessionary tax rates, and learn about the services offered by Bioeconomy Corporation to support their growth.

The briefing was conducted twice in 2022, on 30 March and 14 December.



BIONEXUS STATUS: MOVING FORWARD

The Ministry of Finance (MOF) extended the application for BioNexus Status and 100% income tax exemption from 1 January 2023 to 31 December 2024.

BBA: OVERVIEW

The BBA is a subdivision under the IDD. It was conceived in 2021 and officially launched on 16 May 2022 by the then MAFI Minister, YB Datuk Seri Dr. Ronald Kiandee.

The programme was created to be a funnel for creating more BioNexus Status companies by facilitating, nurturing, accelerating business growth, and creating a conducive environment and ecosystem for the industries.

BBA acts as a one-stop centre that provides support, facilitation, and advisory services for investment activities in biotechnology and bio-based industries.

BBA: MISSION

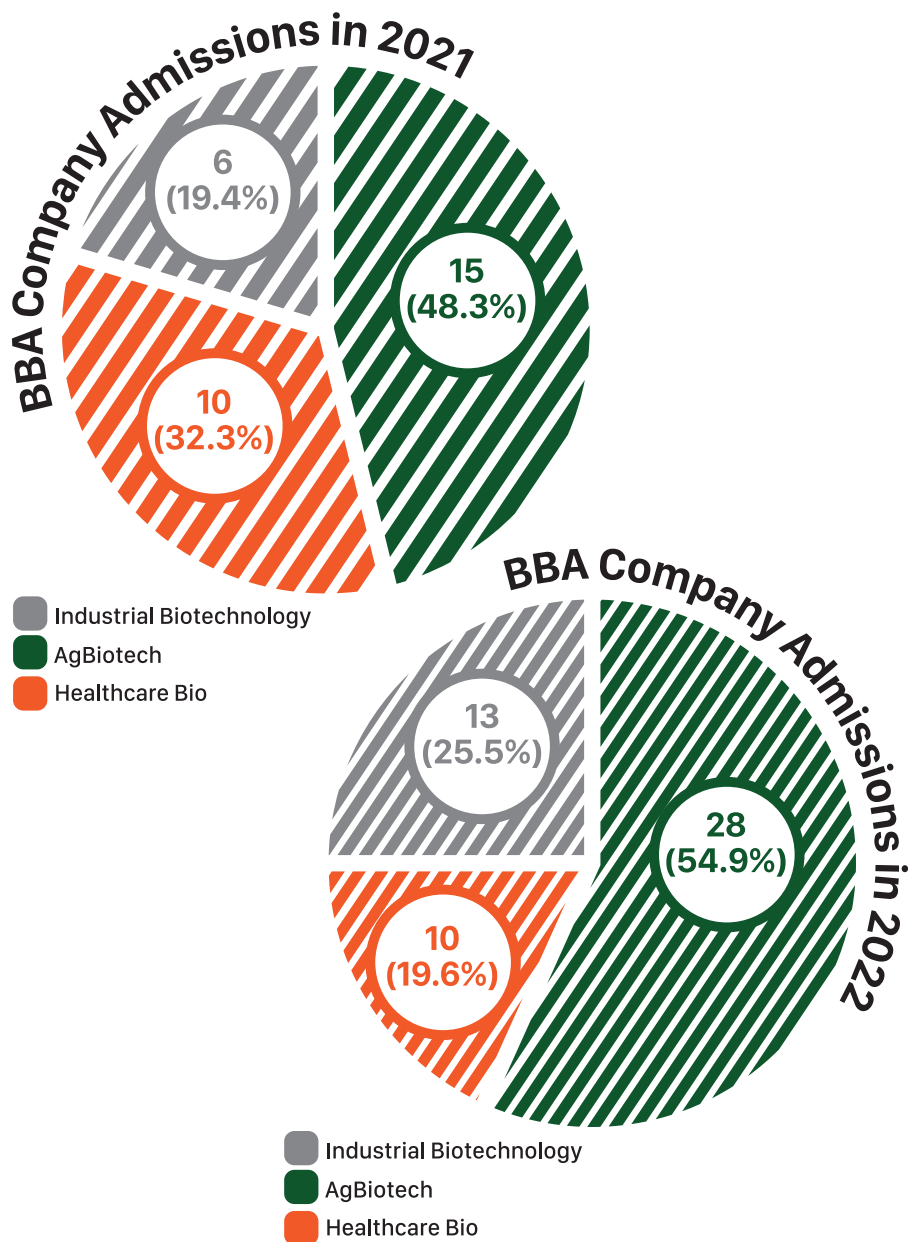
The BBA programme addresses the decline in biotechnology companies receiving BioNexus Status due to stringent criteria. With many promising biotechnology companies missing out on the perks of BioNexus Status, the BBA programme sets out to:

1. Provide assistance and guidance to bio-based companies classified as Micro, Small, and Medium Enterprises (MSMEs).
2. Enable bio-based MSMEs to grow and increase business performance.
3. Guide the growth of bio-based MSMEs to meet the eligibility requirements of BioNexus Status.

BBA: ADMISSION

Upon its conception in 2021, only MSMEs classified as Sdn. Bhd. or Enterprises were accepted for admission into the BBA programme. Later, in 2022, the expansion to include university start-ups or spin-offs was approved to encourage the effective commercialisation of academic R&D products or processes.

A total of 31 companies were approved to join the first batch of the BBA programme in April 2021. In 2022, 51 companies were admitted into the second batch of the BBA programme.



BBA COMPANY ADMISSIONS IN 2021-2022 BY STATE



82 Companies
81 SME Companies
28 Bumi Companies



BBA: PROGRAMME OUTLINE AND KEY RESULTS

PROGRAMME OUTLINE

Objectives

To help bio-based start-ups, micro-businesses, and large companies:

- Become innovative and tech-savvy by facilitating them to infuse science, technology and automation into their business operations.
- Progressively move up the value chain to become more efficient and competitive.

Support

Provide training, guidance, and support that:

- Enhance understanding and awareness of the adoption of technology.
- Enhance understanding of the incorporation of biotechnology processes.
 - Enhance their biotechnology capabilities to obtain BioNexus Status.
 - Accelerate the growth of products/services.
- Increase business acumen, identify gaps, and execute mitigation plans.
- Enhance facilitation between BBA companies and universities, subsidised training, and talent management services.

Key Results

The BBA programme achieved notable milestones within its first six months of operation.

108 bio-based companies

identified and approved for the BBA programme.

50 bio-based companies

participated in enterprise improvement programmes.

10 BBA companies

identified to be granted BioNexus Status.

Projection

RM2 billion total investment value

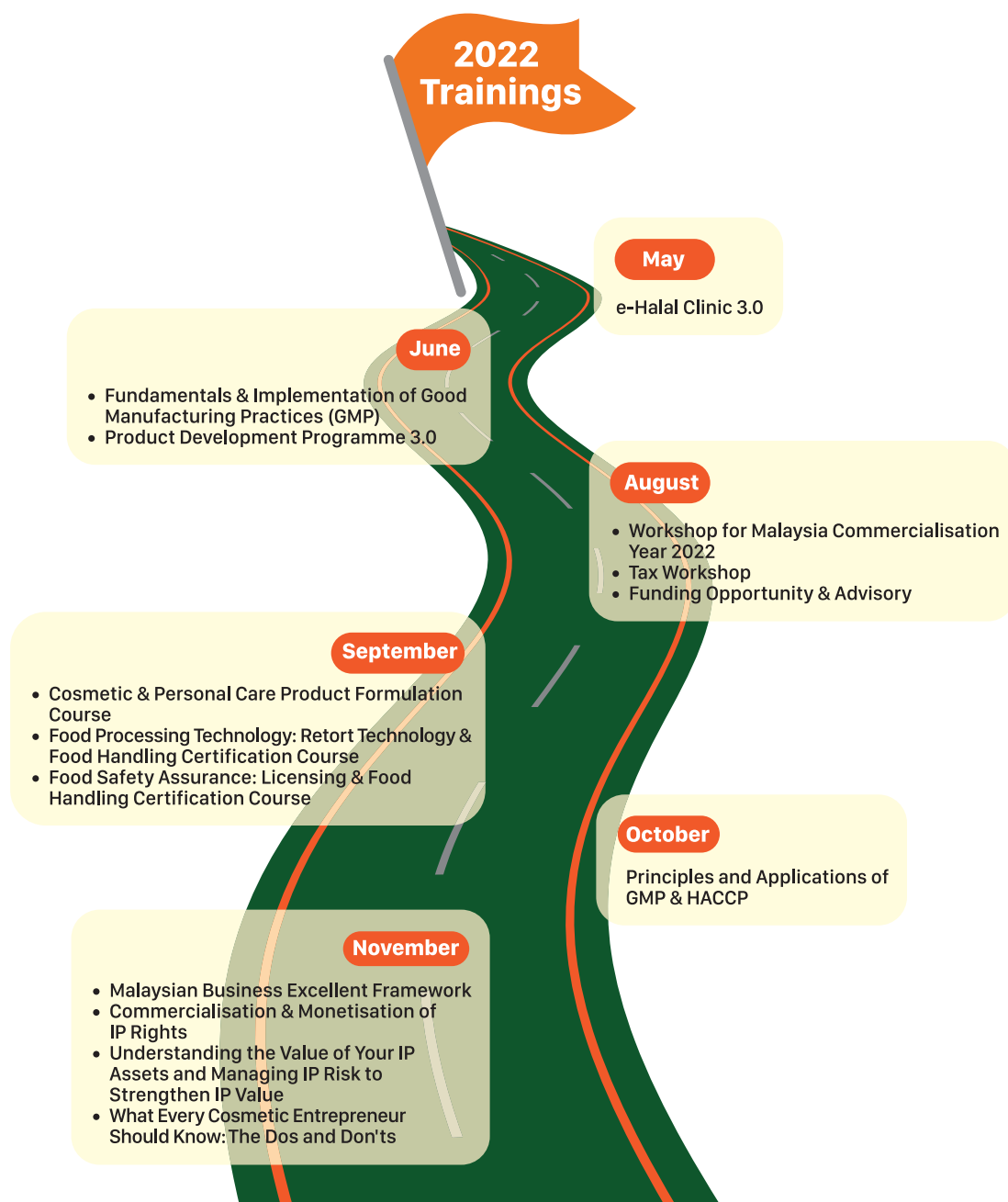
is anticipated to be received by the end of 2025.

RM130 million projected revenue

by BBA companies by 2024.

BBA: KEY EVENTS & TRAININGS





BBA: MOVING FORWARD

To further support bio-based MSMEs in achieving BioNexus Status, Bioeconomy Corporation plans to enhance and expand the BBA programme by:

1. Accepting admissions from university start-ups and spin-offs in the third batch of BBA.
2. Expanding facilitation to include collaboration with other organisations offering further enhancement programmes and initiatives.

3. Creating visibility to highlight the products and services of BBA companies to ministries and their agencies, as well as private entities and traders.
4. Pursuing strategic engagements with industry players to explore potential collaborations, technology, and funding.
5. Facilitating R&D collaboration for new product innovations with research universities and institutions, private entities, and other government organisations.
6. Creating a demand for products and services of BBA companies via strategic engagement with business associations, chambers of commerce, and trade delegations.

Expanding and improving the BBA programme will also enhance Bioeconomy Corporation's role in creating an efficient and productive ecosystem for the development and progression of Malaysia's bio-based economic sector.

FUNDING ADVISORY: OVERVIEW

The Funding Advisory is one of the core elements of the Business Advisory services offered by Bioeconomy Corporation.

This unit helps BioNexus Status, BBA, and bio-based companies to access the funding they need for sustainable growth and success by:

1. Connecting companies with Development Financial Institutions, Commercial Financial Institutions, crowdfunding platforms, and other funding sources.
2. Providing consultation on funding strategies and opportunities.
3. Equipping companies with knowledge and tools tailored to their unique financial requirements and long-term plans.
4. Providing market trend analysis and in-depth research to develop tailored financial strategies for each company.
5. Training programmes to meet the varying needs of each BioNexus Status and BBA company.
6. Workshops and online training in financial literacy aligned with the NBP 2.0.

Funding Advisory 2021-2022

Consultation & Training Programmes

Programmes

- MicroLEAP Malaysia: Looking for Funding - An Introduction to P2P Financing for SMEs.

- Klinik Dana MOSTI.

- Financing for technology start-ups with MDV.
- Financial advisory and advocacy for business growth with HSBC Malaysia.
- "Growing Your Business Beyond Borders" with HYT Cross Borders Sdn. Bhd.

Key Benefits for Companies

- Financial education.
- Understanding of the latest financial regulations and industry trends.
- Financial health screening.
- Guidance on how to stay on track with their financial goals.
- Compliance and regulatory support.
- Guidance and expertise on financial opportunity and matching.

Special Funding: Agri-Food Value Chain Modernisation Programme (PMRNA)

Developed under MAFS in collaboration with Agrobank

Key Benefits

Provides funding for modern technologies, equipment, and infrastructure that:

- Optimise production processes.
- Improve efficiency.
- Promote sustainable practices.

Key Results

- 4 companies approved as a technology solution provider under PMRNA.
- 3 companies successfully obtained loans under PMRNA.

Change Upgrade Product (CUP) Programme

Initiated by MAFS in collaboration with Bioeconomy Corporation

Key Benefits

- Supports small and micro-entrepreneurs.
- Enhances the income of small SMEs with a matching grant of up to RM60,000.

Key Results

- 5 companies successfully became recipients of CUP programme.
- 5 companies received a grant of RM60,000.

FUNDING ADVISORY: MOVING FORWARD

To further support BioNexus Status, BBA, and bio-based companies access the funds they need for sustainable growth and success, the Funding Advisory unit plans to:

1. Provide continuous education to stay updated with the latest financial regulations and industry funds.
2. Improve the value and impact of programmes through pre- and post-training assessments to measure effectiveness.
3. Enhance alignment of training and programmes with the specific objectives of the NBP 2.0.
4. Maintain ongoing collaboration with active financial agencies and funding stakeholders to boost the biotechnology industry.

TAX ADVISORY: OVERVIEW

Another service offered under Business Advisory is Tax Advisory. The services offered by the Tax Advisory unit include:

1. Assisting with tax-related issues by directly liaising with relevant agencies such as:
 - a. Inland Revenue Board Malaysia (IRBM)
 - b. MOF
 - c. Royal Malaysian Customs Department (RMCD)
 - d. Malaysian Investment Development Authority (MIDA)
2. Offering expert guidance to industry players to bolster their business functions and operational endeavours through:
 - a. Shaping policy and framework development.
 - b. Cultivating a comprehensive ecosystem that fosters growth and innovation in the bioeconomy.
3. Conducting tailored training programmes for BioNexus Status, BBA, and bio-based companies to:
 - a. Understand tax incentive-related matters.
 - b. Explore tax-saving opportunities.

Tax Advisory 2021-2022

Consultation & Training Programmes

Programmes

- Tax Advisory Facilitation 2021 for BioNexus Status and BBA companies.
- Tax Advisory Facilitation 2022 for BioNexus Status and BBA companies.
- Tax Workshop 2021 for BioNexus Status and BBA companies.
- Tax Workshop 2022 for BioNexus Status and BBA companies.

Key Benefits for Companies

- Advisory on all aspects of taxation, including direct and indirect taxes for BioNexus Status and BBA companies.
- Advisory on tax incentives for BioNexus Status companies.
- Understanding the SST 2.0 system and its impact on business operations.
- Learning how to comply with SST 2.0.
- Awareness of MIDA's new system updates.
- Understanding of corporate tax, withholding tax, and transfer pricing and their impact on business operations.
- Awareness of IRBM's e-Filing system.

TAX ADVISORY: MOVING FORWARD

To further support BioNexus Status, BBA, and bio-based companies in managing their taxes efficiently, the Tax Advisory unit plans to:

1. Continue providing tax advisory facilitation to BioNexus Status, BBA, and bio-based companies.
2. Continue providing tax advisory facilitation and organising tax workshop programmes for BioNexus Status, BBA, and bio-based companies in collaboration with the relevant tax authorities.

SECTION

08

FOSTERING TALENT DEVELOPMENT

Bridging skill gaps through targeted upskilling
and reskilling efforts



DEVELOPING TOP TALENT

Talent development is identifying and enhancing the skills and knowledge of individuals and organisations. It is essential for the bioeconomy, which is a knowledge-intensive sector that relies on a highly skilled workforce.

To lead talent development and support the growth of BioNexus Status, BBA, and bio-based companies in Malaysia, Bioeconomy Corporation oversees the following departments:

1. BioAcademy
2. Immigration Unit

These departments primarily support the fourth policy target of the NBP 2.0, which aims to recognise 80% of biotechnology graduates through the micro-accreditation programme and 20% of biotechnology graduates through postgraduate programmes.

Moving towards this goal also supports the second policy target of the NBP 2.0, which is to create three bioinnovation firms with unicorn status by ensuring local bio-based companies have a top-tier talent pool for bioinnovation and business growth.

BIOACADEMY: OVERVIEW

BioAcademy acts as the premier facilitator for developing talent and nurturing talent capabilities within the industry. BioAcademy's primary objectives are:

- i. To develop skilled talent and ensure an adequate supply of knowledgeable workers in the industry.
- ii. To facilitate industry talent development and capacity building.
- iii. To develop capabilities across the biotechnology and bio-based industry and to foster a lifelong learning culture.

BIOACADEMY: PROGRAMMES AND DIVISIONS

BioAcademy is divided into four specialised programmes and divisions, each focused on a different aspect of talent development and training:

1. **BeST 2.0 Programme**

The BioAgrotech & BioPharmaceutical Employability and Entrepreneurship Specialised Training (BeST 2.0) is a six-month Place-Train-Hire programme that provides graduates with skills and knowledge of real-life industry work experience at host companies, leading to permanent employment at the end of programme.

2. **BioKerjaya**

BioKerjaya is an online job matching portal that helps job seekers and employers in the biotechnology and bio-based industries connect. The portal makes it easy for job seekers to find opportunities and for employers to find qualified talent.

3. **Training @ BioAcademy**

Training @ BioAcademy focuses on reskilling and upskilling talent in biotechnology and bio-based industries to fill the skill gap, increase efficiency, support bioinnovation, and develop a lifelong learning culture.

4. **SciensationBIO**

SciensationBIO aims to nurture interest in STEM amongst the public and school students through interactive and hands-on learning programmes that raise awareness on how biotechnology and life science are applied in our daily lives.

Due to the pandemic, many of BioAcademy's programmes were conducted online in 2021-2022, limiting some physical training aspects. Public programmes under SciensationBIO were also put on hold.

BeST 2.0 PROGRAMME PROCESSES

1



Pre-Screening

Bioeconomy Corporation pre-screens graduates to undergo a six month Place-Train-Hire internship.

2



Placement

Bio-based host companies select talent from the pre-screened list for job placement in their company.

3



Hands-on Training

Graduates will first undergo soft skills, industry awareness, and technical training.

4



Job Placement

Graduates gain real-world industry technical skills and knowledge through six months of on-the-job training/placement with their host companies.

5



Hire

Based on their performance, graduates will be offered permanent positions in the host companies or other bio-based companies.

BeST 2.0 2021-2022

Key Projects

- First intake: 63 graduates were selected for BeST 2.0 programme and placed in five host companies.
- August-September 2021: Online classroom training.
- October 2021-February 2022: Placement at host companies.
- 2021-2022: On-going site visits and monitoring for at least two years after programme completion.

Key Results

- **93%** of graduates were absorbed as permanent employees in biotechnology and bio-based companies.
- Other participants pursued their postgraduate studies after the programme.

2022 Key Engagements & Results

- BeST 2.0 Engagement Visit and Certificate Giving Session with Economic Planning Unit at Green World Genetics, Gambang, Pahang.
- Joint visit and programme impact/outcome assessment with MAFI Monitoring & Evaluation Branch.

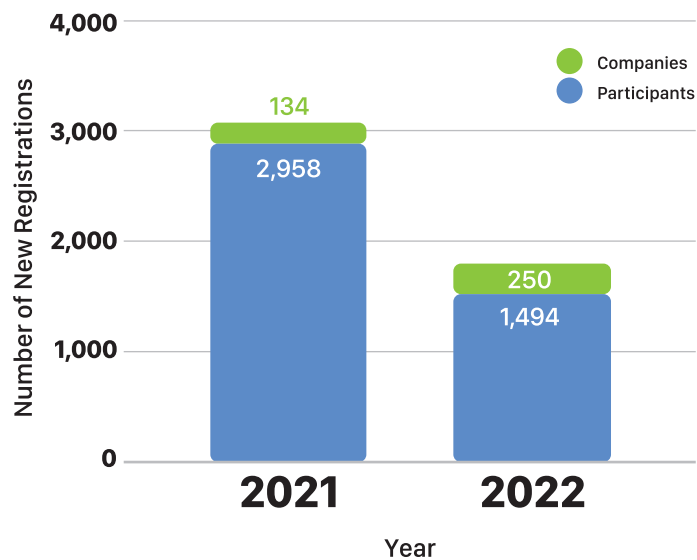
BIOACADEMY: BIOKERJAYA

The BioKerjaya platform (www.biokerjaya.my) facilitates job-matching between graduates and companies in biotechnology and bio-based industries to advance careers and grow the industry.

BioKerjaya's three focus areas are:

1. Agriculture biotechnology and food security
2. Healthcare and wellbeing
3. Biotechnology in industrialisation and circular economy

New Registrations on BioKerjaya Online Platform in 2021-2022



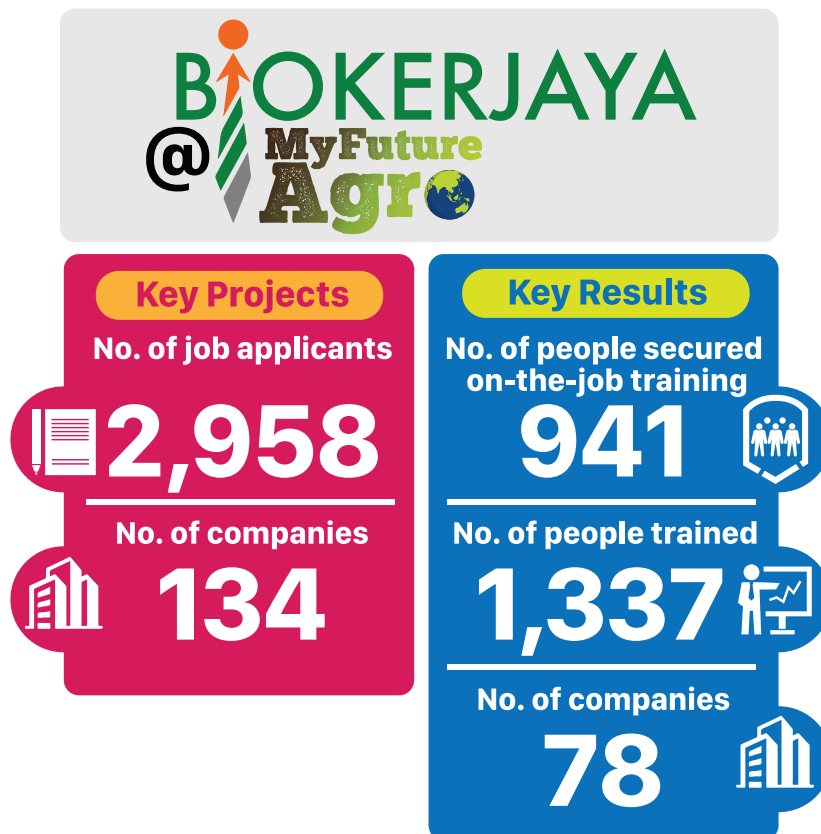
BioKerjaya @ My Future Agro

The global COVID crisis has affected many organisations and individuals. To support Malaysian SMEs and encourage employment, the government has initiated the National Economic Recovery Plan (PENJANA) to help reduce the unemployment rate in Malaysia as well as to assist companies that are recovering post-COVID-19 to restructure, reorganise, and regrow their companies.

Through PENJANA, MAFI has introduced the Workforce Mobility Programme called My Future Agro. Bioeconomy Corporation, as one of the agencies under MAFI, has been selected to carry out this initiative through BioKerjaya @ My Future Agro Programme.

BioKerjaya @ My Future Agro Programme is a hiring incentive scheme for companies to train (on-the-job training) and encourage the workforce to venture into biotechnology, bio-based, agriculture, or agrifood industry. It aims to promote job creation among employers while increasing employment prospects for the unemployed, graduates, school leavers, and retrenched workers as apprentices.

The key results achieved from this initiative are as follows:



BIOACADEMY: BIOCAREER

Bioeconomy Corporation organised a Mini BioCareer in collaboration with Quest International University (QIU). The event was held at QIU in Ipoh, Perak from 7 to 8 October 2022.

The career awareness event:

- Promoted biotechnology and bio-based industries to QIU students and the public.
- Raised awareness on various career opportunities in the industry amongst students.
- Assisted job seekers to improve their career pathway and achieve their career goals.

Over 300 students participated in BioCareer. From this success, Bioeconomy Corporation seeks to create more career fairs in the future in collaboration with bio-based companies, universities, and colleges to help students explore the industry.

BIOACADEMY: TRAINING @ BIOACADEMY

Training @ BioAcademy is a one-stop training and learning hub for the biotechnology and bio-based industries. It aims to develop and nurture competent, adaptable, and industry-driven talents and bio-entrepreneurs to contribute to Malaysia's transformation into a high-tech nation.

Training @ BioAcademy's three focus areas are:

1. Agriculture biotechnology and food security
2. Healthcare and wellbeing
3. Biotechnology in industrialisation and circular economy

In 2021-2022, Training @ BioAcademy assisted and supported biotechnology and bio-based industries by providing training and development that:

- Helps companies achieve organisational goals by improving skills and opportunities.
- Improves job performance of the biotechnology and bio-based workforce.
- Continuously upskill the biotechnology and bio-based workforce with the latest knowledge and updates.

Training @ BioAcademy 2021-2022

Key Projects

- 2021: Soft skills online training.
- 2022: In-person skills training.

Key Results

- 535 participants in 2021.
- 161 participants in 2022.

BIOACADEMY: MOVING FORWARD

To continue building a world-class talent base in biotechnology and bio-based industries, BioAcademy's future plans and initiatives include:

1. Conducting four intakes of BeST 2.0 programmes in 2023, targeting 160 graduates.
2. Promoting BeST 2.0 programmes to universities and bio-based companies, as well as through career fairs and BioCareer events to participants throughout Malaysia.
3. Promoting BioKerjaya and increasing engagement with BioNexus Status, BBA companies, and bio-based companies to continuously grow platform registrations.
4. Designing more training modules on soft and technical skills to further develop industry knowledge and performance.
5. Engaging biotechnology and bio-based companies to participate in the training and development programme.
6. Engaging with universities and colleges to organise school activities for fresh graduates.
7. Conducting the SciansationBIO programme to foster biotechnology interest and awareness in schools through interactive, hands-on activities for both the public and primary/secondary students, emphasising the impact of biotechnology in daily life with the "Biotechnology - Fuel, Feed, Heal the World" concept.

IMMIGRATION SERVICES: OVERVIEW

In addition to nurturing the local talent pool for biotechnology and bio-based industries, Bioeconomy Corporation offers Immigration Services to support and guide companies looking to hire specialised expatriate talent. This can support the bioeconomy by filling in critical skills gaps in the industry, bringing in new knowledge and expertise that can be transferred to the local workforce, and accelerating innovation and growth.

As a core element of Business Advisory, Immigration Services:

1. Acts as a centralised point of contact to approve expatriate posts within the biotechnology and bio-based industries.
2. Provides consultancy and advisory on the employment pass application process, as well as other value-added services to companies within this sector.
3. Helps facilitate a transparent application procedure that adheres to sector regulations and requirements.

IMMIGRATION SERVICES 2021-2022

Key Services	Key Benefits
<ul style="list-style-type: none">● Assist companies in conducting comprehensive reviews and assessments of the required documents for employment pass applications.● Practising due diligence to ensure accuracy, validity, and compliance with all the necessary employment pass requirements.	<ul style="list-style-type: none">● Companies experience a simplified and more efficient process when applying for employment passes, saving time and resources.● Companies minimise the risk of potential delays caused by resubmission or clarification requests.● Processing times for employment pass approvals are significantly reduced.

IMMIGRATION SERVICES: MOVING FORWARD

To continue providing a seamless and satisfactory experience for biotechnology and bio-based companies seeking employment passes, future plans for Immigration Services include:

1. Conducting comprehensive reviews and assessments of required documents.
2. Streamlining the application process to reduce delays and ensure a smooth process.
3. Maintaining high standards of accuracy and compliance to strengthen client relationships.

HIGH VOLTAGE CONTROL

ENABLE
HV ON

0.00 kV

ENABLE
HV ON

0.00 kV

SAFE MODE INACTIVE

SLEEP OFF

0

START

HIGH
VOLTAGE
INJECTOR

NEL



SECTION

09

EMPOWERING BIOINNOVATION

Driving inclusive growth and sustainable development
through bioinnovation and technology

BREAKING NEW GROUND

To maximise the potential of bioinnovation and technology to drive inclusive growth and sustainable development, it is important to invest in research and development while making the latest research and high-technology platforms easily accessible to bio-based companies.

In the effort to support bioinnovation, Bioeconomy Corporation has been at the helm of numerous initiatives and programmes, namely:

1. BioNexus Partners Laboratories (BNP Labs)
2. Regulatory & Intellectual Property (Regulatory & IP)

These initiatives support the fifth policy target of the NBP 2.0, which is empowering institutes, institutions, and world-class local biotechnological research to raise the profile of their research, publishing, and research scientists while developing high-technology platforms for the scientific community.

By empowering bioinnovation, bio-based companies will be better equipped to have a competitive edge that accelerates business growth. This indirectly contributes to the policy's first and second target, which is to respectively attain a 5% contribution to the GDP by biotechnology companies and create three bioinnovation firms with unicorn status.

BNP LABS: OVERVIEW

BNP Labs is a network of key facilities selected by Bioeconomy Corporation to provide industry access to their services, expertise, and facilities.

As of the end of 2022, 42 laboratories have been awarded BNP status. These laboratories are available throughout Malaysia, including at 13 renowned Institutes of Higher Learning (IHLs), three Research Institutes (RIs), three Government-Linked Companies (GLCs), and other commercial service providers.

To ensure the reliability and credibility of data and results, BNP Labs have various international and local accreditations, including:

- ✓ ISO 17025
- ✓ Good Laboratory Practice (GLP)
- ✓ Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC)
- ✓ Hazard Analysis of Critical Control Point (HACCP)
- ✓ Good Manufacturing Practice (GMP)

BNP LABS: FOCUS AREAS

BNP Labs catalyses the advancement of bioinnovation and facilitation of collaborative excellence in bio-based industries.

By empowering the bio-based industry through access to advanced biotechnology facilities and expertise, BNP Labs drives innovation and supports commercialisation for BioNexus Status organisations to succeed locally and globally.



BNP LABS: KEY PROJECTS

Bioeconomy Corporation conducts five key programmes to support bio-based companies:

1. **Certification Programme**

The Certification Programme aims to provide a platform for bio-based entrepreneurs or companies to obtain certifications that can spur company growth. The focus areas for certification include:

- a. Accreditation
- b. Halal
- c. ISO and quality

2. **Halal Boost Programme (HBP)**

HBP is a comprehensive training and facilitation programme to help bio-based and agricultural companies obtain Halal certification. By empowering them with the knowledge to meet the highest standards of compliance for Halal certification, Bioeconomy Corporation helps these companies penetrate a broader, lucrative Halal market.

HBP's primary focus areas include companies in the following sectors:

- a. Cosmetic
- b. Healthcare
- c. Food & beverage
- d. Pharmaceuticals
- e. Original Equipment Manufacturing (OEM)

3. **Product Development Programme (PDP)**

PDP is a strategic initiative to empower small and medium-sized enterprises (SMEs) in the food and non-food sectors. This programme catalyses SMEs to increase revenue growth in local and international markets by improving product quality.

PDP's primary focus areas include companies in the following sectors:

- a. Product formulation and improvement
- b. Lab analysis
- c. Packaging and labelling
- d. Facilitation and consultation

4. **Entrepreneur Uplift Programme (ENT Uplift)**

ENT Uplift is an initiative that strategically connects BNP Labs with bio-based companies as training providers in a series of workshops covering:

- a. Certification
- b. Product technology
- c. Environment, Social, and Governance (ESG)
- d. Market access

This initiative simultaneously increases business activity and revenue for BNP Labs while boosting the human capital and product quality of bio-based companies.

5. **Lab Tested Programme (LTP)**

LTP is an initiative to assist local cosmetic and personal care manufacturers in gaining consumers' confidence in their products and opening their products to a wider market by having their products verified and tested by relevant authorities.

LTP covers the following focus areas:

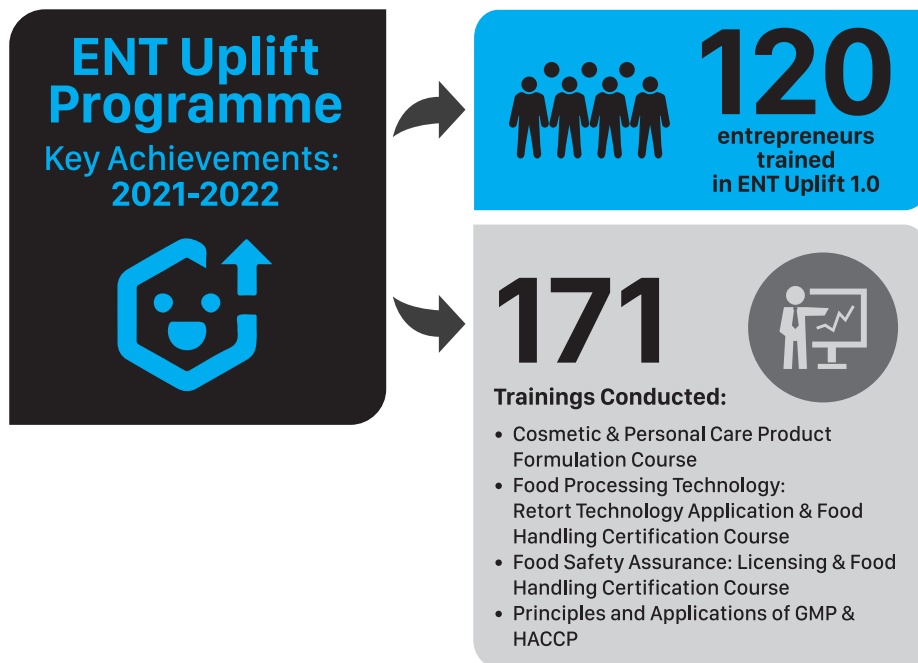
- a. Skincare
- b. Cosmetic
- c. Personal healthcare

This initiative simultaneously benefits BNP Labs by connecting them with cosmetic and personal care manufacturers to increase the number of products registered under LTP.



Due to COVID-19, many of these programmes had to be conducted fully online or in a hybrid format, combining online and in-person components.





BNP LABS: MOVING FORWARD

Bioeconomy Corporation aims to expand its support to BioNexus Status and BBA companies, as well as bio-based entrepreneurs. Plans and initiatives to achieve this include:

1. **Nexus of Expertise (NoE)**

NoE intends to form a group of laboratories that act as a single source of expertise. It will also serve as a platform for BNP Labs to maximise their skills, knowledge, facilities, and equipment through collaboration.

2. **Promotional and outreach programmes**

Bioeconomy Corporation will develop promotional materials, videos, and content to enhance the visibility and recognition of BNP Labs.

3. **Expansion to East Malaysia**

Bioeconomy Corporation will seek to establish new BNP Labs in Sabah and Sarawak to meet the demands of East Malaysia and other states.

4. **BNPKerjaya**

The BNPKerjaya programme aims to help BNP Labs find suitable talent for business growth. The programme involves including BNP Labs as one of the participating companies in the BeST apprenticeship programme.

5. **BNP Townhall**

This annual event strengthens connections within the BNP community of academia, industry, and investors. It is hosted on a rotational basis and provides a platform for exchanging knowledge, fostering collaboration, and building networks.

REGULATORY & INTELLECTUAL PROPERTY (IP): OVERVIEW

Regulatory compliance and IP protection are essential for business success. Regulations promote responsible business practices and alignment with legal standards, while IP safeguards a company's innovations and brand reputation.

Bioeconomy Corporation is vital in empowering bioinnovation in Malaysia by providing advisory and facilitation services, delivering training, and actively developing regulatory and IP frameworks.

The primary focus areas of Bioeconomy Corporation's Regulatory and IP unit encompass:

- Products and services regulatory landscapes
- IP approaches
- Biosafety regulations
- Accreditation requirements
- Access and benefit-sharing matters

Regulatory & IP Key Projects in 2021-2022

Advisory & Facilitation

- Continuous advisory and facilitation services related to regulatory & IP.
- Supports the business functions and operations of companies.

Regulatory

- Framework development for Traditional & Complementary Medicine (T&CM) Blueprint to facilitate a sustainable ecosystem for T&CM industry players.
- Awareness Campaign of T&CM to educate and build public trust to foster knowledge and sharing of best practices within the T&CM industry.

IP

2021 webinar programmes:

- Introduction of IP
- Business Strategy Using IP Formula
- Overview of IP Filing (Malaysia)
- Overview of IP Filing (International)

2022 webinar programmes:

- Commercialisation & Monetisation of IP Rights
- Understanding the Value of Your IP Assets and Managing IP Risks to Strengthen IP Value
- What Every Cosmetic Entrepreneur Should Know The Dos and Don'ts

Stakeholder Engagements

Continuous engagement with the following regulators and agencies to create a holistic ecosystem:

- Traditional and Complementary Medicine (T&CM) Division
- National Pharmaceutical Regulatory Agency (NPRA)
- National Stem Cell Research and Ethics Subcommittee (NSCERT)
- Malaysian Research Ethics Committee (MREC)
- Private Medical Practice Control Section (CKAPS)
- Clinical Research Malaysia (CRM)
- Medical Device Authority (MDA)
- Department of Agriculture (DoA)
- Department of BioSafety
- Intellectual Property Corporation of Malaysia (MyIPO)
- Department of Standards Malaysia (JSM)

REGULATORY & IP: MOVING FORWARD

To create a holistic ecosystem that enables bioinnovation to thrive among Malaysian bio-based companies, the Regulatory & IP unit is committed to developing and implementing the following key strategies and action plans:

Key Strategies:

1. Enhance advisory and facilitation services.
2. Continuous human capital development through training and workshops.
3. Strengthen the presence and commitment to an enabling regulatory and IP framework that promotes global market access, innovation, and commercialisation while ensuring the safety of the public and the environment.
4. Create a holistic ecosystem that fosters partnerships among public and private sectors to support the biotechnology and bio-based industry ecosystem, regulatory framework, market access, and other related services.

Key Action Plans:

1. Integrate business intelligence (BI) and artificial intelligence (AI) into business operations to improve services.
2. Conduct e-learning trainings, workshops, and seminars to educate stakeholders.
3. Continue advocating for the industry's views and concerns to relevant stakeholders.
4. Engage with stakeholders continuously.

SECTION

10

CORPORATE SOCIAL RESPONSIBILITY (CSR)

Championing a circular economy within
the biotechnology industry



TOWARDS A SUSTAINABLE FUTURE

As a leader at the forefront of economic, social, and governance (ESG) initiatives for biotechnology and bio-based industries in Malaysia, Bioeconomy Corporation aspires to be an industry example for sustainable practices driven by a circular economy.

With this vision in mind, and with the NBP and NBP 2.0's aspirations for sustainability and a circular economy within the biotechnology industry, Bioeconomy Corporation has been involved with a fabric recycling initiative, Kitar-Kloth, since 2018.

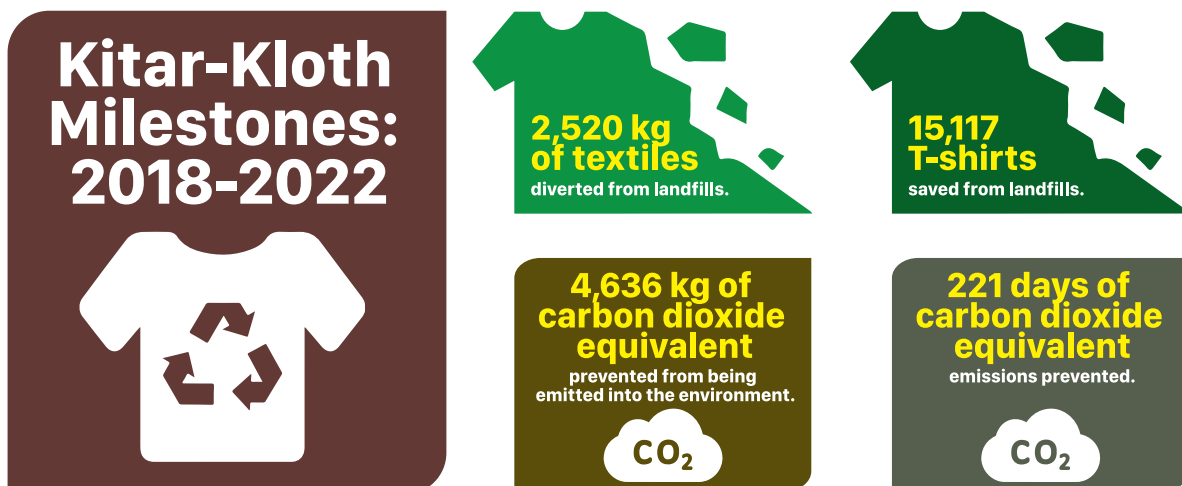
This Corporate Social Responsibility (CSR) initiative has been in collaboration with Kloth Cares, Life Line Clothing Malaysia Sdn. Bhd. (Life Line), and Selangor Youth Community.

KITAR-KLOTH: IMPACT & RESULTS

Kitar-Kloth allows the public to donate any unwanted clothes, umbrellas, shoes, belts, handbags, towels, bedding items, linen, soft toys, and other types of fabrics into the Kitar-Kloth bins at Bioeconomy Corporation's office.

Life Line then collects the donated fabrics for recycling and upcycling. Fabrics in good condition are donated to developing nations like India, Pakistan, and African countries while others are transformed into wiping cloths, car seats, pillow stuffing, and engineered fuel.

Thanks to the support from staff and members of the public, as well as their generous fabric donations to the Kitar-Kloth initiative, Bioeconomy Corporation has achieved significant milestones from 2018-2022.



Source: Certificate of Environmental Impact by Life Line Clothing Malaysia Sdn. Bhd.

CSR: KEY PROJECTS IN 2021-2022

Throughout 2021-2022, Bioeconomy Corporation has also spearheaded educational awareness projects for the public under the Kitar-Kloth CSR initiative. The impact of these projects include:

1. Promoting responsible consumption.
2. Inspiring behaviour change towards sustainable consumption.
3. Encouraging acts of good deeds for sustainable development.
4. Reducing fabric resource consumption.
5. Minimising waste, environmental impact, and environmental pollution.
6. Promoting clean habits.
7. Providing sustainable solutions to discard unused items.
8. Motivating continuous fabric recycling habits.



CSR: MOVING FORWARD

To continue making an impact on sustainability and the circular economy, Bioeconomy Corporation will commit to the following plans and initiatives:

1. Collaborate with Kloth Cares on interactive activities and programmes that engage stakeholders and encourage donations to Kitar-Kloth.
2. Increase visibility of Bioeconomy Corporation as a leader of ESG initiatives for biotechnology and bio-based industries in Malaysia.





Certificate of Environmental Impact

This certificate is awarded to
Malaysian Bioeconomy Development Corporation

For **2,526** kg of textiles diverted from landfill on **10/11/2022**
 You have contributed to avoiding **4,636** kg of carbon dioxide equivalent (CO₂e) being emitted into the environment.*

In Malaysia, an average resident emits 21kg of CO₂e into the atmosphere per day. Your contribution is equivalent to avoiding your emissions for **221** days.

We appreciate your commitment to the environment.

CERTIFIED
 CERTIFICATE NO: **10075**
 ISSUED DATE: **10/11/2022**
 Date: *Wan*

LIFE LINE CLOTHING MALAYSIA SDN BHD



2,520 Weight Collected (KG)	4,636 GHS Avoided (kgCO ₂ e)
389.31 Landfill costs avoided (MYR)	26 No. of full electric bins
154,529 No. of black balloons full of CO ₂	15,117 No. of T-shirts saved from landfill
0.4 No. of garbage trucks full of textiles	221 This collection has contributed to avoiding the average GHS emissions of a Malaysian (21kg of CO ₂ e)

TEXTILE FACTS AROUND THE WORLD

- It takes 70 gallons (267 litres) of water to make a cotton shirt and around 1,000 gallons (3,785 litres) to make a pair of jeans. In comparison to the jeans, that's more than enough water for one person to drink eight glasses per day for two years.
- 85% of all textiles end up in the landfill the equivalent of one garbage truck full of clothes is burned or dumped in a landfill every second. This represents a total of over 370 billion worth of materials every year, which is comparable to the high cost of plastic waste disposal.
- Textiles along with the 2nd largest polluter of water once they remove from the being process is heavily dumped into oceans, streams, and rivers around the globe. And not only that, but while during use enough water to 30.2 million Olympic-sized pools each year. And the fashion industry is also linked to 20% of all industrial water pollution worldwide.
- Textile production releases 2.1 billion tons CO₂ that in 2015, the international Convention of Future (CFC) estimated 8% of all microplastics – tiny pieces of plastic that never biodegrade – found in the ocean came from the laundering of synthetic textiles the pollution. Small microplastics are thought to comprise up to 10% of all plastic pollution in our oceans.

Source: <https://www.environmentalwatch.com/news/2019/06/01/fashion-waste-2019>



LIFE LINE CLOTHING MALAYSIA SDN BHD
 140:1 and ISO 9001:2015
 Issued: 10/11/2022
 Issued by: **ISO 14001**
 No. 10075/2022 (Date of registration)

Dec: 10/11/2022

To: **Malaysian Bioeconomy Development Corporation Sdn Bhd**

It is with great pleasure we have this environmental management certificate as recognition for the carbon footprint reduction made for supporting people & our planet when you choose to be part of our Textile recycling program. This will reduce your carbon footprint to make business activity sustainable in the future generations and our planet's health & survival.

Your sincerely,
[Signature]
 Date: 10/11/2022



SECTION

11

**CALENDAR
OF EVENTS**

2021-2022



2021

MARCH 11 **HALAL BOOST PROGRAMME**

Bioeconomy Corporation Training Room, Kuala Lumpur

Bio-based and agro-based companies received training on the Halal Assurance System (HAS) and Halal Critical Points (HCP) to help them obtain the JAKIM Halal certificate.



Technical Business Development Associate Director of Global Haltech Sdn. Bhd., Encik Azmi Abd Aziz, delivers a keynote during the training session.

2021

APRIL 9 SECRETARY-GENERAL OF MAFI VISIT TO SE AQUATECH SDN. BHD.

Segari, Perak

The Secretary General of MAFI, YBhg Dato' Haslina Abdul Hamid, and Bioeconomy Corporation members visited SE Aquatech's abalone farm to observe its potential in both local and export markets within the aquaculture industry.



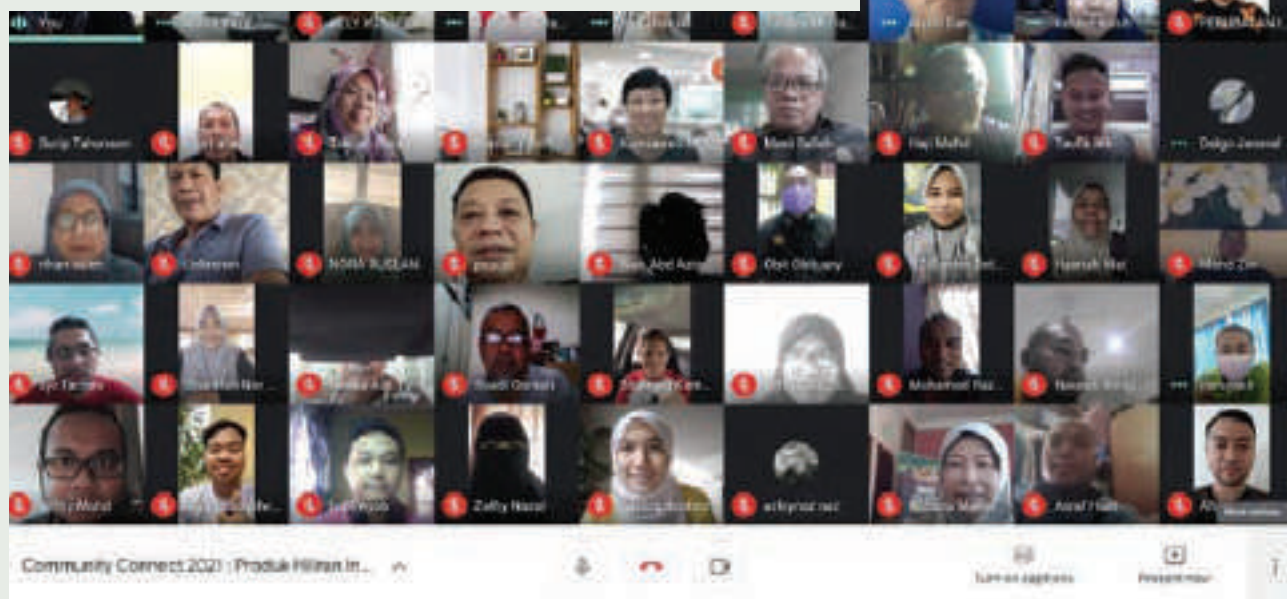
YBhg Dato' Haslina Abdul Hamid (fourth from left) with Bioeconomy Corporation CEO, Encik Mohd Khairul Fidzal Abdul Razak (third from left), and SE Aquatech Sdn. Bhd. representatives at the abalone farm site.

2021

MAY-AUGUST COMMUNITY CONNECT BY BIOECONOMY CORPORATION

Online training sessions via Google Meet

This programme provides a platform for communities impacted by the COVID-19 pandemic and Movement Control Order to learn how to generate extra income, start businesses, and interact with successful entrepreneurs from diverse backgrounds to learn from their experiences.



Community Connect participants learn industry insider tips from successful entrepreneurs.

2021

MARCH 10-12 VIRTUAL 17TH MALAYSIA INTERNATIONAL HALAL SHOWCASE (MIHAS) 2021

Online event

MIHAS is the world's largest international halal exhibition since its inception in 2004. For the first time, MIHAS was organised in a virtual format due to COVID-19, with over 500 virtual booths participating worldwide. Bioeconomy Corporation took part in the virtual exhibition and the Industry Zone session.



SVP of Bioeconomy Corporation's Industry Development Division, Dr. Harcharan Singh, spoke on "Initiatives by Malaysian Bioeconomy Development Corporation on Bioeconomy Ecosystem" at the Industry Zone session.

2021

OCTOBER 8, 5, 22, 29

VIRTUAL INTELLECTUAL PROPERTY (IP)

Online webinar

Bioeconomy Corporation partnered with Adastra to offer an online webinar training on leveraging IP. Delivered every Friday morning during October 2021, participants learned how to maximise the potential of IP assets domestically and internationally.



NOVEMBER 19-21

5TH SELANGOR INTERNATIONAL BUSINESS SUMMIT (SIBS) 2021

Kuala Lumpur Convention Centre, Kuala Lumpur

During SIBS 2021, the Selangor Biotechnology Action Plan (SBAP) 2021-2030 was launched by DYTM Raja Muda Selangor Tengku Amir Shah.

The SBAP 2021-2030, produced by Invest Selangor, Bioeconomy Corporation, UPM, and MABIC, acts as the guiding blueprint to establish Selangor as a prominent regional biotechnology hub.

An SBAP 2021-2030 briefing session was conducted by the Vice President of the Industry Development Division, Bioeconomy Corporation, Datin Aznita Naziz, and the Deputy Dean of the Faculty of Biotechnology and Biomolecular Sciences, UPM, Prof Dr. Hidayah Ariffin.



Raja Muda Selangor, DYTM Tengku Amir Shah, launches SBAP 2021-2030 at SIBS 2021.

2021

DECEMBER 19-21

ASPIRASI KELUARGA MALAYSIA

Kuala Lumpur Convention Centre, Kuala Lumpur

Bioeconomy Corporation participated in the MAFI's pavilion at the exhibition in conjunction with the "100 Hari Aspirasi Keluarga Malaysia".



Then-Prime Minister YAB Dato' Seri Ismail Sabri Yaakob (front row, third from left) inspects a product at the four-day event showcasing the government's initiatives for Malaysian families.

2022

FEBRUARY 10

EXPO DUBAI SHOWCASE AT THE AGROFOOD INDUSTRY DIALOGUE 2022

Ministry of Agriculture and Food Industries (MAFI) Multipurpose Hall, Putrajaya

MAFI's "Road to Expo 2020 Dubai" showcase offered a dynamic preview of its participation in the global event, along with 20 other participating companies.



A company at the 'Road to Dubai' showcase gives visitors a preview of their participation at Expo 2020 Dubai.

2022



FEBRUARY 20-26 EXPO 2020 DUBAI

Dubai, UAE

MAFI was the lead ministry for Week 21: Sustainable Agriculture segment at Expo 2020 Dubai from 20 to 26 February 2022, centred on the concept of “Our Food, Our Future”.

Bioeconomy Corporation was the implementing agency, with participation from 20 exhibiting companies, 11 departments/agencies under MAFI, and Malaysian companies participating virtually.

The Malaysian Ambassador to the United Arab Emirates, Datuk Mohd Tarid Sufian, delivered a speech by then-MAFI Minister YB Datuk Seri Dr. Ronald Kiandee, emphasising Malaysia’s business-friendly environment and economic potential during the Malaysia Pavilion’s Opening Ceremony at Expo 2020 Dubai.

Then-Chairman of Bioeconomy Development, YB Senator Datuk Iskandar Dzulkarnain Abdul Khalid, along with other Malaysian delegates and international visitors, were present in the audience.



(Front row, left to right) Then-Chairman of Bioeconomy Development, YB Senator Datuk Iskandar Dzulkarnain Abdul Khalid; Malaysian Ambassador to the United Arab Emirates, Datuk Mohd Tarid Sufian; and Secretary of Business Development and Investment Division under MAFI, Encik Khalid Ibrahim.



Exchange of Sales Contract & Sales Agreement between Mr. Ramaness Parasuraman (front left), CEO of Free The Seed Sdn. Bhd., a BioNexus Status company, with a representative of BIO4PACK GMBH (front right), a German sustainable packaging company. Witnessed by (back, from left to right) then-Chairman of Bioeconomy Development, YB Senator Datuk Iskandar Dzulkarnain Abdul Khalid; Malaysian Ambassador to the United Arab Emirates, Datuk Mohd Tarid Sufian; and Secretary of Business Development and Investment Division under MAFI, Encik Khalid Ibrahim.



Bioeconomy Corporation’s CEO, Encik Mohd Khairul Fidzal Abdul Razak (second from left); Executive Director from Tamara Nanoetech (M) Sdn. Bhd., Encik Syakur Mohd Suhaimi (third from left); Director General of the Farmers Organisation Board, Dato’ Azulita Salim (third from right) together with MAFI’s representatives at the Sustainable Agriculture Week in Expo 2020 Dubai.

2022

APRIL 1 GREEN WORLD GENETICS

Karak, Pahang

Participants of BeST 2.0 programme immersed themselves in the world of bio-agro at Green World Genetics' farm in Karak, Pahang, during their familiarisation visit and certificate presentation. The event was attended by Datin Zaeidah Mohamad Esa, Director of the Agriculture Division, Economic Planning Unit (EPU), Puan Nora Mohamed, Senior Vice President, Bioeconomy Corporation, Dr. Chua Kim Aik, Chief Executive Officer of Green World Genetics Sdn. Bhd. (GWG), Bioeconomy Corporation and GWG representatives, and the BeST 2.0 trainees.



BeST 2.0 trainees (back row) with representatives from Bioeconomy Corporation. (Front row, left to right) SVP, Bioeconomy Corporation, Puan Nora Mohamed; CEO of GWG, Dr. Chua Kim Aik; Director of the Agriculture Division, EPU, Datin Zaeidah Mohamad Esa; and MAFI representatives.

2022

APRIL 21

GROUNDBREAKING CEREMONY: HOTPACK PACKAGING INDUSTRIES LLC

Gurun Industrial Park, Kedah

Hotpack Packaging Industries LLC, a UAE company, joined forces with BioNexus Status company Free The Seed Sdn. Bhd. to build 10 biodegradable packaging factories over a period of 10 years in Gurun, Kedah. Their investment of RM400 million, through the facilitation of Bioeconomy Corporation, will create hundreds of jobs and solidify Malaysia's position as a regional biodegradable hub.

Then-MAFI Minister YB Datuk Seri Dr. Ronald Kiandee officiated the groundbreaking ceremony. Also present at the ceremony were then-Deputy MAFI Minister II, YB Datuk Dr. Nik Muhammad Zawawi Haji Salleh; Chairman of the Agriculture and Food Industry Committee, Kedah State Exco, YB Encik Azman Nasarudin; then-Chairman of the Industry and Investment Committee, Kedah State Exco, YB Dato' Wira Ku Abd Rahman Ku Ismail; Member of Parliament for Jerai, YB Tuan Ustaz Sabri Aziz; then-Chairman of Bioeconomy Corporation, YB Senator Datuk Iskandar Dzulkarnain Abdul Khalid; CEO of Bioeconomy Corporation, Encik Mohd Khairul Fidzal Abdul Razak; and Senior Management officials from MAFI.



Then-MAFI Minister, YB Datuk Seri Dr. Ronald Kiandee (second row, fourth from left) with then-Deputy MAFI Minister II, YB Datuk Dr. Nik Muhammad Zawawi Haji Salleh (second row, third from left) with samples of the biodegradable packaging to be produced at these factories.



(Left to right): CEO of Bioeconomy Corporation, Encik Mohd Khairul Fidzal Abdul Razak; then-Chairman of Bioeconomy Corporation, YB Senator Datuk Iskandar Dzulkarnain Abdul Khalid; then-MAFI Minister, YB Datuk Seri Dr. Ronald Kiandee; Managing Director of Hotpack Packaging Industries LLC, Mr. Abdul Jebbar P.B.; and CTO & Executive Director of Hotpack Global, Mr. Anvar P.B.

2022

MAY 20-22

MAFI EXHIBITION AND SHOWCASE IN CONJUNCTION WITH THE "JELAJAH ASPIRASI KELUARGA MALAYSIA" PROGRAMME

Sabah International Convention Centre, Kota Kinabalu, Sabah

Bioeconomy Corporation and MAFI participated in the Jelajah Aspirasi Keluarga Malaysia in Sabah, an event organised by SEPADU. A total of 13 MAFI agencies providing services and fresh agricultural products participated at the event.



The showcase was officiated by the then-Prime Minister, YAB Dato' Seri Ismail Sabri Yaakob (front row, third from right). Also present were the Chief Minister of Sabah, YAB Datuk Seri Panglima Haji Hajiji Noor (front row, second from right), and the then-Deputy Minister of Works Malaysia, YB Datuk Arthur Joseph Kurup (front row, fourth from right).

2022

JUNE 16

LAUNCH OF THE BBA PROGRAMME

Putrajaya Marriott Hotel, Putrajaya

Bioeconomy Corporation successfully launched the BBA programme, an initiative that provides bio-based start-ups and SMEs with guidance and nurturing activities. The BBA programme was officially launched by the then-Minister of MAFI, YB Datuk Seri Dr. Ronald Kiandee.



Bioeconomy Corporation's CEO, Encik Mohd Khairul Fidzal Abdul Razak (front, second from left) and then Minister of MAFI, YB Datuk Seri Dr. Ronald Kiandee (front, centre), at an exhibition booth.



Bioeconomy Corporation, represented by its CEO, Encik Mohd Khairul Fidzal Abdul Razak (far right), exchanged a MoU with the Malaysian Productivity Corporation (MPC) represented by its Member of the Board of Management, Encik Mohd Yazid Abdul Majid (far left). The agreement marks the collaboration between the two parties to enhance engagement and develop facilitation and nurturing programmes for companies in Malaysia's bio-based industries, including companies under the BBA programme.



Then-Minister of MAFI YB Datuk Seri Dr. Ronald Kiandee presents the Tech Savvy Award to MDT Innovations Sdn. Bhd., an IoT solutions company. The award recognises the company's "Smart Collar" app for automated management of ruminant livestock and feed.

2022

AUGUST 4-14

MALAYSIA AGRICULTURE, HORTICULTURE & AGROTOURISM (MAHA) 2022

MAEPS, Serdang, Selangor

Bioeconomy Corporation was appointed as the implementation agency for the Agrotech Cluster together with Bahagian Pemodenan Pertanian (BPP) MAFI at MAHA 2022. Bioeconomy Corporation showcased 13 exhibitors representing BioNexus Status, BBA, and BioKerjaya companies, as well as BNP Labs.

The event saw the official launch of the M'Ros brand of Malaysian giant freshwater prawn broodstock by BioNexus Status company GK Aqua, as well as a Bentong ginger honey product launch by BBA company Tamara Nanootech. Another significant milestone witnessed during the event was the execution of an MoU worth RM5 million. Both milestones were witnessed by the then-Minister of MAFI, YB Datuk Seri Dr. Ronald Kiandee.



AGRINEXT, a problem-solution narrative session, being conducted at MAHA 2022 between Bioeconomy Corporation's agricultural stakeholders—GK Aqua, Frais Funghi, and Global Agro Asia—and various digital solution providers. SVP of Bioeconomy Corporation, Dr. Harcharan Singh (far right), moderated the session.

2022

SEPTEMBER 12 LAUNCH OF THE NBP 2.0

World Trade Centre, Kuala Lumpur

The NBP 2.0 was launched by the then-Prime Minister YAB Dato' Seri Ismail Sabri Yaakob.

With a focus on agriculture, food security, healthcare, wellbeing, sustainable industries, and a circular economy, the NBP 2.0 steers Malaysia towards becoming a high-tech nation status by 2030.



Panel experts convey the benefits that biotechnology can deliver to local communities.



Then-Prime Minister YAB Dato' Seri Ismail Sabri Yaakob visits the booth of Free The Seed Sdn. Bhd., a BioNexus Status company, during the NBP 2.0 launch.

2022

OCTOBER 6-9

SELANGOR INTERNATIONAL MEDIC (SIE MEDIC) 2022

Kuala Lumpur Convention Centre, Kuala Lumpur

Bioeconomy Corporation participated in SIE Medic for the first time in 2022. Bioeconomy Corporation's participation was represented by the IDD Healthcare Bio division.

OCTOBER 7-8

MINI BIOCAREER

Quest International University (QIU), Ipoh, Perak

Bioeconomy Corporation collaborated with QIU to run a Mini BioCareer event that aimed to promote and enhance understanding of the biotechnology and bio-based industries among QIU students and the public.

The event also showcased various career opportunities in the industry while providing final-year students majoring in biotechnology or life sciences the opportunity to experience the Finishing School Programme and obtain industry insights.



A collaborative agreement exchange between GK Aqua and QIU represented by CEO of GK Aqua Mr. Giva Kuppusamy (second from left) and COO of QIU, Mr. Nicholas Goh (far right) during Mini BioCareer. Also present were SVP of Industry Support Division of Bioeconomy Corporation, Puan Nora Mohamed (second from right) and the Dean of QIU's Faculty of Integrated Life Sciences, Prof. Dr. Vilasini Pillai (far left).



QIU students and visitors at an educational session during Mini Biocareer.

2022

NOVEMBER 19

SIGNING CEREMONY: GLYKEN AND INSTITUTE FOR MEDICAL RESEARCH (IMR)

Institute for Medical Research, Kuala Lumpur

The signing ceremony officiated the partnership between Glyken Bio Products Sdn. Bhd., a BioNexus Status company, and the IMR. The agreement formalised a Research Project agreement on In Vitro Evaluation of Glyken Birdnest Peptides against the severe acute respiratory syndrome Coronavirus 2 (SARS-Cov-2).



The official panel spearheading the signing ceremony. (Left to right) Head of Herbal Medicine Research Centre, IMR, Dr. Ami Fazlin Syed Mohamed; Research Officer of Herbal Medicine Research Centre, Bioassay, Dr. Mohd Ridzuan Mohd Abd Razak; Director of IMR, Dr. Hj. Tahir Aris; CEO of Glyken Bio Products, Mr. Eric Shak; and Bioeconomy Corporation CEO, Encik Mohd Khairul Fidzal Abdul Razak.



Representatives of Bioeconomy Corporation, Glyken Bio Products, and the IMR stand with the official panel after the signing ceremony was officiated.



SECTION
12
IN
THE MEDIA

2021-2022



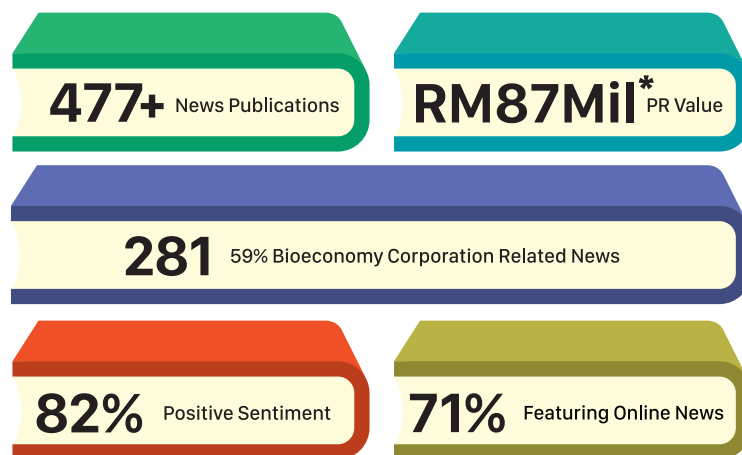
POSITIVE SENTIMENT & IMPACT

Media monitoring agency dataxet:nama reported that from January to December 2022:

1. All news in the media related to Bioeconomy Corporation or the bioeconomy industry mostly have a positive sentiment with proactive execution.
2. 59% of publications around the bioeconomy industry are related to the bioeconomy industry.
3. Top 10 topics involving Bioeconomy Corporation makes up 34% of the entire media coverage on the bio-based industry.

PUBLICATIONS

In 2022, dataxet:nama reports more than 477 publications in the media covering the bioeconomy industry, which averages to around one news daily. Of the publications, 59% were related to Bioeconomy Corporation, establishing Bioeconomy Corporation as a leader in the bioeconomy industry.



**inclusive of local and international coverage*

BIOECONOMY



North East West South Past And Present Event Report **CUTTINGS**

INNOVATION & TECHNOLOGY

DBN 2.0 dapat maklum balas positif komuniti bioteknologi negara

KUALA LUMPUR: Langkah kerajaan melancarkan Dasar Bioteknologi Negara 2.0 (DBN 2.0) mendapat maklum balas yang positif dalam kalangan komuniti bioteknologi negara.

Ketua Pegawai Eksekutif National Institutes of Biotechnology Malaysia (NIBM) Profesor Datuk Dr. Raha Abdul Rahim berkata sewajarnya perhatian dan bimbingan diberikan dalam industri bioteknologi supaya Malaysia istem terpelukang dalam konteks kemajuan negara-negara ASEAN.

"Projek MyGencom yang juga diumumkan Perdana Menteri Datuk Seri Anwar Ibrahim Yaacob adalah amat penting untuk negara dalam meningkatkan perolehan rujuk bagi keperibadikan populasi dan etnik Keluaga Malaysia agar dapat memacu inovasi precision medicine bagi rakyat Malaysia," katanya dalam kenyataan semalam.

Beliau berkata NIBM bersedia memikul tanggungjawab bagi me-

laksanakan projek ini serta semua teras utama DBN 2.0.

Dalam kenyataan sama, Pengerusi Universiti Malaysia Dr. Rafiza Hasnan-Othman berkata pelaksanaan DBN 2.0 menunjukkan komitmen kerajaan yang menyokong sektor ekonomi melibatkan industri bioteknologi.

"Sudah pasti seluruh ekosistem bioteknologi amat penting dengan penancuran DBN 2.0. Lusa lo look forward to" katanya.

Ketua Pegawai Eksekutif Malaysian Bioeconomy Development Corporation Mohd Khairul Fikhal Abdul Razak pula berkata pihaknya percaya DBN 2.0 akan membina nafas baharu kepada industri bioteknologi dan berseaskan bio di Malaysia.

"Beliau berharap dapat bekerjasama rapat dengan semua pihak berkepentingan seperti Kementerian Sains, Teknologi dan Inovasi (MOSTI) bagi menambah baik DiJaminan BioNexus dan memperkukuh pro-

gram Pemecutan Berseaskan Bio (BBB) untuk membentuk ekosistem bioteknologi yang lebih dinamik dan berkembang maju di negara ini.

Ketua Pegawai Eksekutif GK Aqua Sdn Bhd Gina Koppusamy pula berkata syarikat sukakultur bioteknologi serantau BioNexus itu menyahut cabaran untuk mencapai sasaran pada DBN 3.0, selain dengan ketiga-tiga aspek industri bioteknologi, iaitu bioteknologi serta kepentingan penyediaan.

Semalam, Perdana Menteri melancarkan DBN 2.0 yang memberi tumpuan kepada tiga tujuhan utama dalam memperkukuhkan sektor berkaitan sains, iaitu menjadikan Malaysia sebagai negara bioteknologi tinggi menjelang 2030.

Jamail Sabri berkata tiga tujuhan utama itu ialah bioteknologi pertanian dan jaminan makanan; penjagaan kesihatan dan kesejahteraan; serta bioteknologi perindustrian dan ekonomi kitaran. - Bernama



KERAJAAN: Pengerusi sektor perindustrian akan dapat melakukannya ketika di kawasan perindustrian Dabund semalam. Menteri Di Jabatan Perdana Menteri (Kementerian Datuk Seri Modapri Mohamed berkata, pasaran perindustrian di Malaysia bertambah kukuh dengan kadar penganguran rendah, adalah paku ekonomi. Melalui sektor ini, dijangka akan sektor perindustrian semakin meningkat. Muktamadnya dalam industri perindustrian serta para tenaga dalam sektor perindustrian akan pembauran dan perindustrian. - Ratu BERNAMA

Malaysia can become leading regional biodegradable hub through RM400 mil UAE investment, says MAFI

Business | Malaysia

04/04/2022 10:00 AM

Facebook Twitter LinkedIn YouTube



Eight Malaysian companies secure investments worth RM197 mil at Expo 2020 Dubai

KUALA LUMPUR: Eight Malaysian companies today secured over US\$27 million (RM197 million) worth of investment from United Arab Emirates (UAE) based enterprises during the International Agriculture Week at Expo 2020 Dubai, in a bid to spur sustainable agriculture between the two nations.

During the highlight of the week that kicked off Monday (Feb 21) last Friday, the partnerships would help Malaysia to promote and expand its potential in sustainable agriculture by establishing strong engagement and strategies with the UAE, as well as other global players.

Using biotechnology to tackle food security



RECENTLY, Deputy Minister of Science, Technology and Innovation (MOSTI) Datuk Anwar Jusoh Kuzip highlighted that biotechnology can address Malaysia's food security challenges. "20 bioteknologi companies penetrate global market early this year. Arthur", (The Star, March 22).

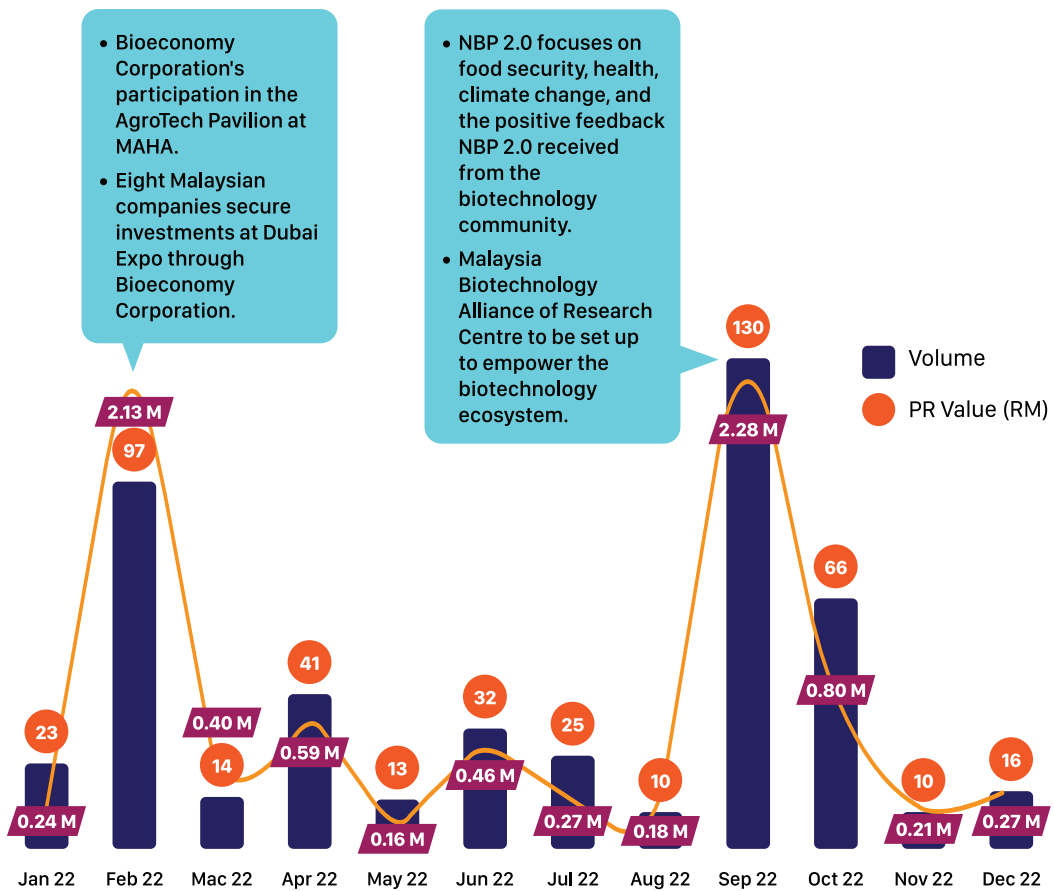
79 pct of BeST 2.0 apprentices secure permanent jobs



KUALA LUMPUR: 79 percent of 58 graduates in 75 percent who participated in the Bio-AgriTech and Bio-Pharmaceutical Career and Entrepreneurship (BeST 2.0) apprenticeship program held by the Malaysian Bioeconomy Development Corporation (Bioeconomy Corporation) managed to secure permanent jobs in the fields of modern agriculture and bio-pharmaceuticals.

2022 TIMELINE

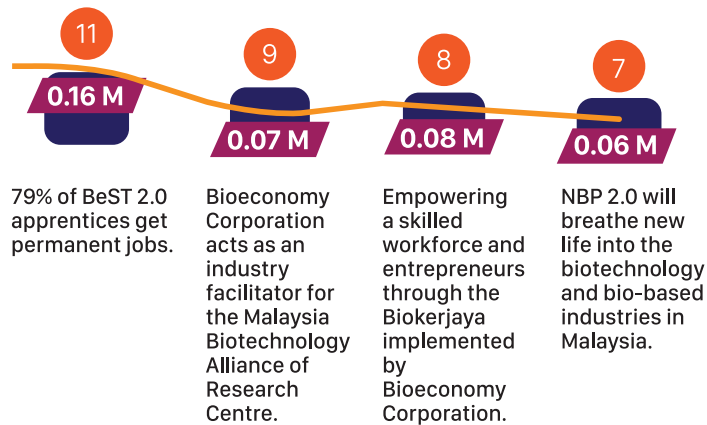
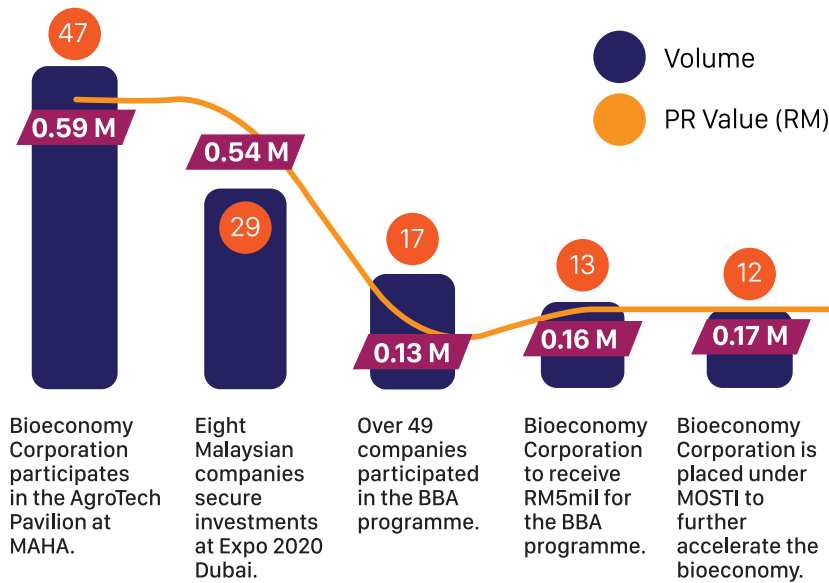
Overall Coverage and Top Topics by Volume in 2022



Source: dataxet:nama

2022 TOP TOPICS

Top 10 topics on Bioeconomy Corporation in the Media



KEY TAKEAWAYS

The media coverage received suggest a strong and positive public perception of Bioeconomy Corporation and its role in the industry. The top topics covered largely include events and programmes that Bioeconomy Corporation successfully participated in or executed.

This has several potential impacts for Bioeconomy Corporation and the bioeconomy, including:

- ✓ Increases awareness for Bioeconomy Corporation.
- ✓ Increases public trust for Bioeconomy Corporation.
- ✓ Boosts awareness on the potential of biotechnology.
- ✓ Improves public perception of the bioeconomy.
- ✓ Boosts confidence in the bioeconomy.
- ✓ Enhances media relations.
- ✓ Establishes Bioeconomy Corporation as a leader in the bioeconomy.
- ✓ Enhances stakeholder engagement.
- ✓ Attracts investors and partners.
- ✓ Boosts interest in Bioeconomy Corporation's initiatives and programmes.



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**Bioeconomy Corporation Media
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