

Malaysia spearheads BIOECONOMY Initiatives

Malaysia is strategically positioned to make the country a much-sought-after hub of Bioeconomy. In 2020, it completed the final phase of the National Biotechnology Policy (NBP), and is betting on its bioeconomy sector to drive a robust economic recovery through programmes and initiatives of Bioeconomy Corporation. As a regional leader in this sector, being the second country in Asia and the first country in South East Asia to announce a national bioeconomy initiative, Malaysia has already set the ball rolling. Moreover, in line with the National Recovery Plan, it has also framed a Bioeconomy blueprint to address pandemic challenges and to boost various sectors that are crucial to the economy. The country is poised to globalise bioentrepreneurship by bestowing fiscal incentives and grants through special BioNexus Status, effectively making it a major global player to reckon with, in the bioeconomy space.



KEMENTERIAN PERTANIAN
DAN INDUSTRI MAKANAN



In the year 2005, the Malaysian Government launched the National Biotechnology Policy (NBP) with the theme 'Biotechnology for wealth creation and social well-being' to advance the development of three economic sectors like agriculture, healthcare and bioindustrial manufacturing. The initiative was the first national bioeconomy initiative in the Association of Southeast Asian Nations (ASEAN) and second in Asia after China. There are nine 'thrusts' of the National Biotechnology Policy aiming to nurture an empowering life science ecosystem in academia, R&D and commerce communities for stimulating the bio-based sectors. These trusts cover core research, product development, human capital development (BioAcademy), financial infrastructure, legal and regulatory framework, and strategic progress in association with the national support system.

Recognising the significance of biotechnology and its implications as a key strategic drivers to propel the country's social and economic development, NBP was executed over three phases: Phase I for Capacity Building (2005-2010), Phase II on Science to Business (2011-2015) and Phase III to develop Global Business (2016-2020). 'Malaysian Bioeconomy Development Corporation (Bioeconomy Corp)' acts as a lead agency responsible for the coordinated implementation of the NBP trusts. The initiative is supported by the scientific, academic and business communities in the country enabling the growth of the ecosystem.

Bioeconomy Corp has aligned its initiatives and efforts to leverage the forces to advance Malaysia's national growth strategy. With the completion of the final phase of the NBP in 2020, Bioeconomy Corp is expanding its goals to reach global businesses. It has developed many international and local biotechnology companies in Malaysia with the BioNexus status, which is an accreditation given to international and Malaysian bio-based companies that qualify them for fiscal incentives, grants and guarantees administered by Bioeconomy Corporation.

In June 2021, Bioeconomy Corp announced its commitment and support to the National Recovery Plan various initiatives and programmes complement the plan's Phase IV strategy of returning the country to near normalcy by the end of 2021, following the effects of the COVID-19 pandemic.

Bioeconomy Corporation's Chief Executive Officer, Mohd Khairul Fidzal Abdul Razak said "We have the Bioeconomy Blueprint that establishes the direction of Malaysia's bioeconomy development moving forward while addressing challenges and identifying activities that will provide a much-needed boost to the country once economic sectors gradually open according to the National Recovery Plan".

BIONEXUS STATUS COMPANIES - 252

(AS OF OCTOBER 7, 2021)

• Agbiotech	-	142
• Healthcare	-	68
• Industrial	-	42
• Approved Investments	-	RM6.7 Billion

"Human capital-based programmes like Biokerjaya @ My Future Agro under the PENJANA initiative as well as BioAgrotech & BioPharmaceutical Employability and Entrepreneurship Specialised Training (BeST 2.0) provide employment opportunities during this challenging period. It is projected that 800 high value jobs will be created and 400 individuals will be trained through these programmes by the end of 2021. Our Bio-based Accelerator Programme (BBA) offers guidance and nurturing activities for bio-based startups and SMEs to scale up their businesses to become resilient in this economic climate", said Mohd Khairul Fidzal Abdul Razak describing Bioeconomy Blueprint, as part of National Recovery Plan.

"We also continue to provide business advisory and support to 250 BioNexus Status companies that are active in the agriculture, healthcare bio, and industrial sectors of bioeconomy. As of the fourth quarter of 2020, these companies have achieved \$910.5 million (RM3.78 billion) worth of realised investments and generated revenues worth \$342 million (RM1.42 billion)", he added.

In the fast-paced field of changing technology, supporting discoveries, and innovations in biotechnology are thus key to ensure research is transformed into marketable products which will drive the bioeconomy. Active engagements with various local and foreign investors such as private VCs, corporations, financial institutions and angel investors are increasing the access of funding and business at biotechnology companies and bio-entrepreneurs. With the continual support of the government, stakeholders and investors in Malaysia's bioeconomy agenda, Bioeconomy Corp is strengthening forces to achieve economic, social and sustainable development. Overall, Bioeconomy creates an inclusive ecosystem by accelerating the growth and unlocking value in the bio-based industry across the bioscience, healthcare, bio industrial and agriculture sectors.

Pharma/Biopharma/Biotech/ Medical device industry

Pharma-Biopharma: Malaysia offers a good value proposition for Biopharmaceuticals/ Biogenerics (Biosimilars) companies through investment opportunities. Local and foreign players

MALAYSIAN BIOTECHNOLOGY POLICY FOCUS AREAS

- Agriculture Biotechnology Development
- Healthcare Biotechnology Development
- Industrial Biotechnology Development
- R&D and Technology Acquisition
- Human Capital Development
- Financial Infrastructure Development
- Legislative and Regulatory Framework Development
- Strategic Positioning
- Government Commitment

are engaged in research and development and commercialisation (R&D&C) activities around biopharmaceutical APIs, FDA/EMA cGMP compliant services, protein engineering, genome research and more. Commercialisation of monoclonal antibodies and recombinant proteins are also leading. Foreign investors can hold 100 per cent of the equity in all investments in pharma manufacturing projects, as well as investments in expansion/diversification projects by existing companies.

Medical devices and diagnostics: The government's continuous commitment to attract high technology investment is reflected through a significant growth of Malaysia's medical devices industry over the last few years. In 2020, the industry contributed a total of RM6.1 billion worth of investments through 51 projects approved by Malaysian Investment Development Authority (MIDA). At present, Malaysia comprises over 200 manufacturers producing a broad range of products and equipment for medical, surgical, dental, optical and general health purposes. This has certainly made Malaysia an ideal investment destination, particularly as an outsourcing destination and a medical device manufacturing hub in ASEAN.

On August 17, 2021, MIDA and HSBC Bank Malaysia renewed Memorandum of Understanding (MoU), to attract more global investments into Malaysia and to further facilitate the establishment and expansion of multinational corporations in the country. The strategic public-private partnership will leverage MIDA's marketing and trade exchange initiatives, such as trade and investment missions, while capitalising on HSBC's global presence. Further revitalising and reforming Malaysia's economy during and post-COVID-19 the partnership maximises potential Foreign Direct Investments (FDI) opportunities into Malaysia, particularly in the manufacturing sector, including medical devices industries. HSBC will further channelise cross-border trade and investment assisting MIDA's stakeholders to make well-informed investment decisions while



Mohd Khairul Fidzal Abdul Razak,
Chief Executive Officer, Bioeconomy Corporation

Malaysia - A thriving bioeconomy destination in APAC

Global issues like the COVID-19 pandemic and climate change as well as rapid technology development have opened up important opportunities in the Malaysian bioeconomy.

We have seen a significant boost in the biopharmaceutical business, thanks to the growing world demand for diagnostics, vaccines, medical supplies, and services, as well as personal and healthcare products. Furthermore, the increasing awareness in sustainability has also driven the bio-based business in sectors such as agriculture, healthcare, and industrial, with companies finding alternative, eco-friendly solutions to everyday living, including producing biodegradable packaging, sustainable feed, as well as smart farming.

International players can expect these areas in bioeconomy to continuously thrive in Malaysia, especially with the presence of emerging local startups and early stage SMEs in the biotechnology and bio-based industries. In this matter, Bioeconomy Corporation is nurturing and facilitating them to scale up their growth, encourage technology adoption, and strengthen their business strategies through the Bio-based Accelerator Programme (BBA). We also have plenty of local talents, knowledge workers, biological resources, tax incentives, and strong government support through Bioeconomy Corporation to cement Malaysia's position in the global bioeconomy.

Attracting investments

One of the main support services that Bioeconomy Corporation provides is nurturing companies with the BioNexus Status, an award given by the Malaysian government to qualified biotechnology and bio-based companies in the healthcare, agriculture, and industrial sectors. These companies enjoy fiscal incentives, facilitation, and other guarantees from Bioeconomy Corporation to assist their growth.

BioNexus Status companies continue to be the fuel that drives the growth and success of bioeconomy in Malaysia. Despite the COVID-19 pandemic, 250

BioNexus Status companies recorded total realised investments worth over \$964 million (RM4 billion) in the second quarter of 2021, which is a nine per cent increase compared to the second quarter of 2020 (\$892 million/RM3.7 billion). Out of these, \$361 million (RM1.5 billion) were recorded as foreign direct investments (FDIs) in the second quarter of 2021, which is a 71 per cent increase compared to the same period in 2020 (\$215 million /RM891.8 million). There was also a seven per cent increase of knowledge worker employment among the BioNexus Status companies in the second quarter of 2021 (over 1,700 knowledge workers) compared to the same quarter of 2020 (over 1,600 knowledge workers), most notably in the agriculture biotech (AgBiotech) sector. This shows the need for knowledge workers in critical sectors like AgBiotech, which plays an important role in addressing food security and production in the face of crises such as COVID-19.

Besides BioNexus Status companies, Bioeconomy Corporation also facilitates high impact FDI bioeconomy projects in the BioIndustrial and Healthcare Bio sectors, including Biocon's integrated manufacturing and R&D facility for insulin in Malaysia, one of the largest in Asia. These projects recorded a total of \$1.1 billion (RM4.7 billion) realised investments as of 2020. This is a testament to the resilience, competitiveness, and strength of the BioNexus Status companies and high impact projects in attracting FDIs and providing job opportunities in these challenging times.

National Bioeconomy Blueprint 2021-2031

Bioeconomy Corporation is in the midst of finalising the National Bioeconomy Blueprint, which will serve as a foundation for further growth and opportunities in Malaysia's bioeconomy from 2021 until 2030. With this blueprint in place, industry players - including those from the public and private sectors as well as local and international players – can expect new strategic directions and action plans that include identifying emerging sectors and technologies to further grow their business in Malaysia's bioeconomy. This is aligned with the Malaysian government's policies and vision to embrace new technologies, provide more diverse job opportunities, and address pressing issues and challenges to drive the country's economic growth.

Through the blueprint, we are not just seeking to grow bioeconomy in Malaysia - we wish to see its benefits spread out and reach other parts of the globe. We look forward to cooperating with more global partners to explore untapped value-added bio-based and biotechnology activities that can bring significant impact to economic, social, and environmental development around the world." **BS**

"Malaysia's National Investment Aspirations (NIA) framework to entice higher quality investments, particularly in the areas of technology and innovation. Malaysia is, and will continue to be, a strategic business partner to businesses within ASEAN and beyond. We boast of a robust pool of talent and a well-diversified economy resting on the back of strong economic fundamentals. Moreover, Malaysia's established local supply chain that is well-integrated into the global value chain, supported by a strong and matured local engineering support industry, are an undeniable pull factor for investors seeking to expand their production capacity efficiently and with ease."



Arham Abdul Rahman, CEO, MIDA

conducting their businesses across global markets.

Biotechnology: There are over 20 agencies and research institutes under the Ministry of Science, Technology and Innovation (MOSTI) that deal with biotechnology. The National Institute of Biotechnology (NIBM) leads, coordinates and implements the national biotechnology agenda through research, development, innovation and commercialisation activities.

Contract Research Organisations/ Manufacturing (CRO/CMO): Biopharma industry in Malaysia competitively capitalises generic drug and biosimilar manufacturing in a cost-effective model. Foreign pharmaceutical companies are encouraged to set up facilities in Malaysia to manufacture off-patented drugs. Centers can also conduct Bioavailability and Bioequivalence studies for pharmaceutical products. There are 4 Bioequivalence Centres namely, School of Pharmaceutical Sciences, Info Kinetics Sdn Bhd, Bioxis Sdn Bhd and Borneo Kinetics Sdn Bhd.

The Clinical Research Centre (CRC), comprising a network of 17 centres around the country, acts as a one-stop-centre by providing a single point of contact to access all Ministry of Health hospitals and clinics to conduct clinical trials in Malaysia. These clinical trial centres have linkages to more than 50 general and district hospitals, and more than 100 health clinics as potential sites for clinical trials.

“As the impact of the pandemic continues to be felt across the globe and as businesses look to recover from the universal economic slowdown, HSBC is committed to make Malaysia a preferred destination for investment in Asia. With our international footprint, and access to global key markets, we are glad to collaborate with MIDA on nation-building programmes to capture growth opportunities.”



Stuart Milne, CEO, HSBC Malaysia

Infrastructure support

The prime advantage to manufacturers in Malaysia has been and continues to be the nation's persistent drive to develop and upgrade its infrastructure. Strategically located industrial estates and pharma-bio parks in plug-and-play models with state-of-art facilities are advantageous by offering interconnected hubs, shared laboratory spaces which in turn reduces capital expenditure and promotes logistic conveniences. Over 200 multisectorial industrial estates/parks and 13 Free Industrial Zones (FIZs) are located across the country. FIZs are export processing zones which have been developed to cater to the needs of export-oriented industries such as the pharmaceutical industry. Companies in FIZs are allowed duty free imports of raw materials, components, parts, machinery and equipment directly required in the manufacturing process.

Malaysia has five economic corridors (Northern Corridor Economic Region, East Coast Economic Region, Sabah Development Corridor, Sarawak Corridor of Renewable Energy, and Iskandar Region) out of which three offer infrastructure and logistics support for regional and foreign bioindustry players.

ECONOMIC CORRIDORS

Northern Corridor Economic Region	Kulim Hi-Tech Park (KHTP); For biomedical players Investment: \$46.2 million (RM192 million)
East Coast Economic Region	Kertih Biopolymer Park; For bioindustrial players Investment: \$963.5 million (RM4 billion)
Iskandar Region	Bio-XCell Biotechnology Park; For biopharma and bioindustrial players Investment: \$385.4 million (RM1.6 billion)

Among these Bio-XCell Malaysia Bio-XCell is a premier biotechnology park and ecosystem dedicated to healthcare and industrial biotechnology developed by Malaysian Bio-XCell Sdn. Bhd. Bio-XCell offers a conducive biomanufacturing environment for the development of biologics, pharmaceuticals, and bio-based/green chemicals. Similarly, Technology Park Malaysia at Bukit Jalil, Technology Park at Enstek and Penang Science Park cater to high technology and eco-conscious industries such as biotechnology assisting in production of vaccines and biologicals.

Contribution of BioNexus Status companies

BioNexus Status is a special status awarded to qualified international and Malaysian biotechnology companies that undertake value-added biotechnology and/or life sciences activities. The status bestows fiscal incentives, grants, and other guarantees to assist company growth and accelerate their contribution to grow the overall bioeconomy. In order to encourage bioentrepreneurship among locals and to attract foreign companies, BioNexus status was introduced offering qualifying companies 10 years' tax exemption on statutory income, maintenance of 100 percent company ownership and assistance in the navigation of local procedures.

The BioNexus Evaluation Department (BED) is responsible for evaluating and conducting risk assessment on applications for BioNexus Status and various incentives from biotechnology companies. BED has reviewed its BioNexus Status Framework to ensure consistency with global tax practices aligning with its BioNexus 3.0 which primarily decides BioNexus Status for a company. Malaysia is committed to implement and to adhere to the international taxation standard of Organisation of Economic Cooperation and Development (OECD) Inclusive Framework (IF) on Base Erosion and Profit Shifting (BEPS) Action Plan to execute the BioNexus framework.

BioNexus companies have shown significant impact in improving biopharmaceuticals, biomedical technology, bio services, and the emerging biosciences and healthcare industry. To date there are 250 BioNexus companies, 70 per cent locally owned and 30 per cent by foreign entities. The USA, Singapore, India, UK, Australia, China, Germany, British Virgin Island, Taiwan, Japan, Italy, South Korea, Brunei, Canada, France, Hong Kong and Belgium are among the countries that own some of the BioNexus status companies in Malaysia.

Bioeconomy Corp has introduced financial incentives for bio-based players, such as the second Biotechnology Commercialisation Fund (BCF 2.0),

revisions of the BioNexus framework (BioNexus 3.0), and to facilitate market access initiatives in association with Government of Malaysia, stakeholders, industry players, clients, and business associates.

BioNexus Tax Incentives allows companies an exemption from import duty and sales tax on imported raw materials/components and machinery and equipment. It also provides 100 per cent allowance of the qualifying capital expenditure incurred within five years, allows an exemption of 70 per cent of statutory income, receives allowance for being a dedicated biotechnology industrial building, receives double deduction on expenditure incurred for R&D, and more such provisions.

Malaysia Bioeconomy Corp is a major contributor to the country's economic growth, benefiting the nation through breakthroughs in healthcare discoveries, bio industrial innovations, bio manufacturing, agricultural productivity, and adoption of sustainable industrial processes.

BioMedical/Healthcare

The Malaysian healthcare bio cluster is progressing with industry players from biopharmaceuticals, medical devices, as well as cellular medicine, precision medicine, Cell and Gene Therapy Product (CGTPs), High potency Active Pharmaceutical Ingredients (HAPIs) and more. Bio industry sector in the country has witnessed a significant periodic growth with multiple strategic partnerships in biopharmaceuticals and biomedical technology sectors.

As part of 4th Industrial Revolution (IR4.0) Malaysia is further transforming the healthcare Bio Industry in key aspects such as manufacturing, supply chain and healthcare delivery. The consortium of biotechnology and healthcare innovation has brought revolutionary growth to emerging bioscience sectors like diagnostics, prevention, and treatment measures, wellness -pharmanutrition and more. The biomedical technology and diagnostics vertical currently contributes the highest revenue compared to other subsectors in Malaysia's healthcare bio cluster.

Malaysia is a great destination for foreign companies to expand their business and manufacturing activities as the cost of operation is competitive and the government offers a wide range of incentives. A range of thriving multidisciplinary domains like drug discovery, biosimilars, genomic medicine, stem cell, regenerative medicines and more in Malaysia are of significance to Foreign Direct Investments (FDI) from global locations.

Biocon, Asia's largest integrated Insulin facility is located at Malaysia's premier Biotechnology Park

BIOECONOMY CORP GOALS AND INITIATIVES

- Achieve objectives of the National Biotechnology Policy (NBP) and Bioeconomy Transformation Programme (BTP) complimenting Malaysia's growth
- Act as the central point in providing support, facilitation and advisory
- Nurture and accelerate growth of Malaysian bio-based companies
- Actively promote foreign direct investments in bio-based industry
- Facilitate funding ecosystem for bio-based industry
- Seeking and securing foreign investments
- Improve the position of bio-based industry by implementing current global strategy
- Promote bio-based companies up the value chain via targeted collaborative programmes
- Development of bio-entrepreneurs
- Creation of bio-based clusters throughout the nation
- Human capital development for bio-based industry
- Addressing regulatory hurdles
- Facilitating access to market
- Act as the commercial arm for bio-based industry and enhance role of promoting local bio-based products
- Position Malaysia as a global/regional Healthcare Bio Hub using the value chain approach
- Coordinate investments and communicate on project implementation by creating conducive healthcare ecosystem
- Promotes and integrates Malaysia's bio-based resources with national and global industrial biotechnology platforms.
- Engages industry players to create awareness, interest, structure partnering, and collaboration to foster new investments.
- Promotes sustainable business operations by providing supporting services
- Nurturing and growing local healthcare bio companies
- Improve the economy with a positive impact on local player's income and welfare with socio-economic programmes.

and Ecosystem, Bio-XCell with the investment of more than \$241 million (RM1 Billion). Being locally manufactured, the biosimilar insulin from Biocon has led to a significant reduction in healthcare costs attributed to diabetes in Malaysia.

Bioeconomy Corporation also works with many stakeholders including MIDA and Northern Corridor Investment Authority to secure projects by

DYNAMIC INVESTMENT DESTINATION

Bioeconomy Corp creates a platform for the private sector to channel and maximise commercial opportunities in bio-based industries. It supports new and established companies in the private sector by facilitating networking opportunities, collaboration with government stakeholders, commercialisation of research and development (R&D), and showcasing new bio-based projects and technologies which raises Malaysia's profile as an investment destination. This will also accelerate the development of local bio-based businesses while creating new jobs and business opportunities.

Bioeconomy Corp programmes create a conducive ecosystem for the growth of globally competitive bio-based players in Malaysia. Inclusion of bio-based companies into the BioNexus Status family attracts more investments, creates revenue and jobs. By the second quarter of 2021, Bioeconomy Corp awarded the BioNexus Status to 250 companies which contributed to Malaysia's economy by \$981 million (RM4 billion) in cumulative realised investments and \$297 million (RM1.2 billion) in revenue.

Bioeconomy Corp strives to drive Domestic Direct Investments (DDI) and Foreign Direct Investment (FDI) for the growth in the bio-based sector by identifying DDI/FDIs, collaborating external and internal stakeholders, including economic corridors and other agencies. Focus is also on funding high growth areas like, biopharmaceuticals, biocompatible medical devices, industrial bioeconomy upstream inputs, biochemicals from renewable resources, biomaterials from renewable resources, high-value bioingredients, high-value food ingredients and high-value horticulture inputs and more.

industry players to produce complex medical devices like **Intraocular lens facility, pacemakers, blood management products, kidney dialysis products** are some among many.

BioIndustry

Bioeconomy Corp is also escalating and improving efforts in achieving sustainable development as part of the 2030 agenda for sustainable development. Malaysia anticipates immense potential in Industrial biotechnology solutions to meet the growing demand for food, feed, fuel, and materials with greener solutions to prevent pollution, conserve resources, and reduce cost, offering a low-carbon future. In line with NBP and BTP, Industrial biotechnology (BioIndustrial) division of Bioeconomy Corp continuously promotes and supports six key focus

REALISED INVESTMENT BY INDUSTRY

Industry Sector	Cumulative Investment (up until Q2, 2021)
Industrial biotechnology (BioIndustrial)	\$340 million (RM1,412 million)
Healthcare Bio	\$218 million (RM904.6 million)
AgBiotech	\$422 million (RM1,753.1 million)
TOTAL	\$981 million (RM4,069.7 million)

REVENUES BY INDUSTRY

Industry Sector	Cumulative Revenue (up until Q2, 2021)
Industrial biotechnology (BioIndustrial)	\$187 million (RM774.9 million)
Healthcare Bio	\$38 million (RM158.2 million)
AgBiotech	\$76 million (RM298.8 million)
TOTAL	\$297 million (RM1,231.9 million)

R&D EXPENSES BY INDUSTRY

Industry Sector	Cumulative Expenses (up until Q2, 2021)
Industrial biotechnology (BioIndustrial)	\$2 million (RM8.3 million)
Healthcare Bio	\$9.4 million (RM39 million)
AgBiotech	\$8.3 million (RM34.8 million)
TOTAL	\$19.7 million (RM82.1 million)

areas of industrial biotechnology, namely, **Bulk/ Fine & Specialty Chemicals; Biofuel; Biomaterials; Bioingredients; Bioremediation; and Biocatalyst** to support growing needs of sustainable solutions in industrial biotechnology.

The Bio-Industrial division is focusing on initiatives to nurture, accelerate and support the development of industrial biotechnology by leveraging Malaysia's natural bio-based resources for the development and commercialisation of value-added innovative products and services. To pursue green growth for sustainability and resilience, the country is adopting industrial biotechnology as a strategic solution to provide renewable energy, reduce carbon emission, and provide environmental protection. **BS**

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