Innovation Malaysia: Towards Higher Quality Growth in a Post-Pandemic Future

Introduction

The year 2020 was a challenging period for the global and the Malaysian economy. In an effort to manage the COVID-19 pandemic, the Government implemented various forms of movement control orders (MCO), restricting mobility and economic activity. Consequently, both private consumption and private investment declined sharply. The synchronised deployment of fiscal, monetary and financial policies helped to cushion the overall adverse impact on growth.

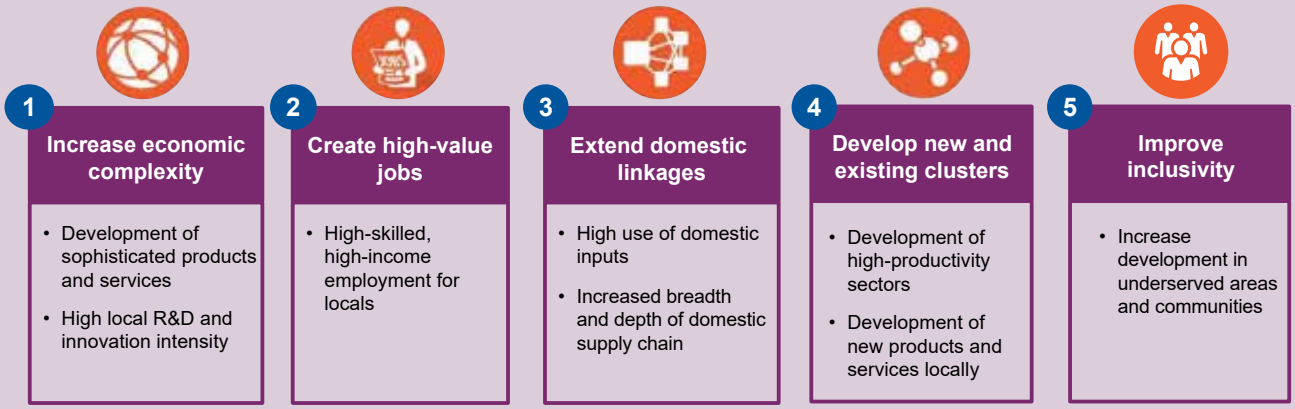
A recovery from the depth of the pandemic is now underway with continued targeted support from the Government. Alongside this recovery, it is an opportune time to recalibrate the country's aspirations in order to face new challenges and seize new growth opportunities. This box article discusses (i) the imperatives for quality investment and innovation-led growth; and (ii) potential reforms aimed at fostering these investments.

Quality Investment and Innovation-led Growth

Within the context of the economy's unique experience, Malaysia is adopting the National Investment Aspirations (NIAs)[1], a forward-looking national policy aimed at attracting the right investments, building innovation capacity and increasing both productivity and growth (Diagram 1).

Some promising steps have been taken by the Government. Notably in Budget 2021, higher development expenditure has been allocated to fund high value-added technology as well as research and development (R&D) in sectors such as aerospace and electronics. In addition, Bank Negara Malaysia has also established the High Tech Facility-National Investment Aspirations (HTF-NIA) to provide financing support to high technology and innovative SMEs to remain competitive in the global supply chain[2].

Diagram 1: The Five National Investment Aspirations



Source: World Bank and Bank Negara Malaysia

[1] For more information, please refer to BNM's EMR 2019 Box Article titled "Securing Future Growth through Quality Investments" at https://www.bnm.gov.my/o/annual-report/html/files/emr2019_en_box1.pdf

[2] Details of the HTF-NIA facility can be found at https://www.bnm.gov.my/o/covid-19/FAQ-HTF-ENG.pdf

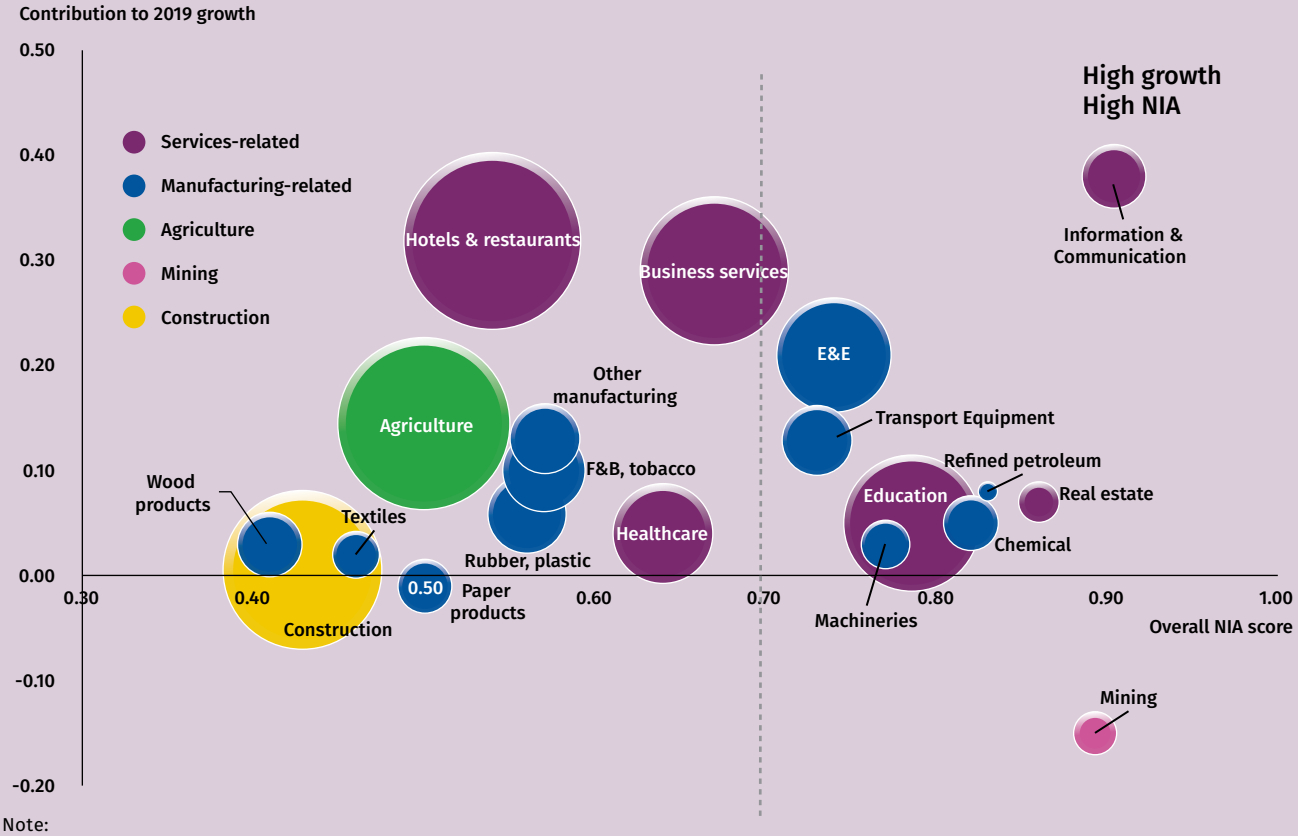
Identifying the Right Activities

Moving beyond a sectoral focus, Malaysia needs to invest in activities and acquire knowledge and capabilities that increases sophistication and income levels over time. This can be undertaken by (i) strengthening activities that meet the NIAs; (ii) diversifying into more complex products and (iii) employing a mission-based investment approach (see Sub Box on Mission-based Investment Approach) that harnesses cross-industrial contributions towards a single economic objective.

i) Quality investments in activities that meet the NIAs

Building on the overarching focus on quality investments outlined under the NIAs, investments need to be targeted more toward knowledge-intensive and tech-intensive activities. These include information and communication technology (ICT), manufacturing of E&E products, chemical-related products, renewable energy, refined petroleum, machineries and transport equipment (Chart 1). Notably, downstream chemical and ICT industries demonstrated not only high NIA scores, but also significant industrial linkages that generate greater spillovers to the wider economy (Chart 2). Investments should aim to facilitate the "functional upgrading" of Malaysia's business proposition in global value chains, in particular by deepening the contribution from business services activities, including R&D, design and development and engineering services.

Chart 1: Sectoral Contribution to Growth, NIA Scores and Share of Employment



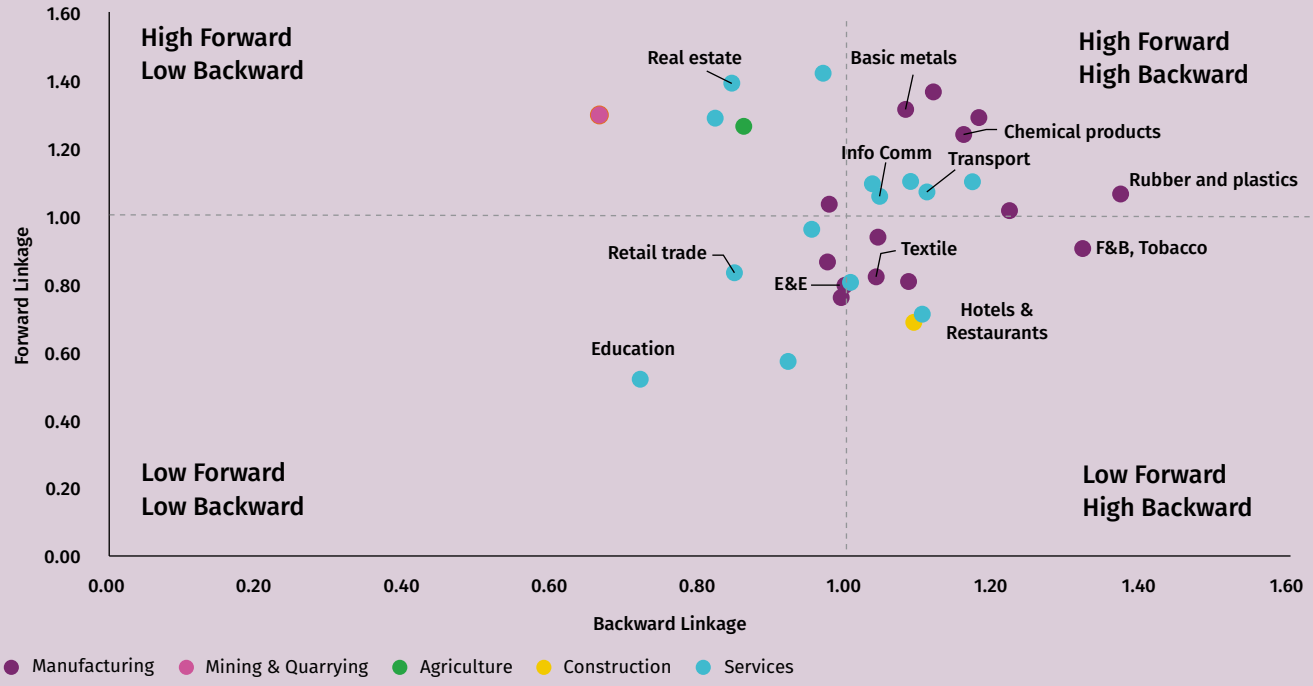
Note:

1. Size of bubble denotes share of employment in 2019.
2. Subsectors with NIA score of 0.7 and above are considered as high performing subsectors, with highest propensity to innovate, involved complex products and have relatively high productivity levels.
3. Within subsectors with NIA scores below 0.7, there are activities that by themselves have NIA scores above 0.7. Examples include 'hospital, medical and dental activities' in healthcare and 'scientific and R&D activities' in business services.

* The NIA score is computed using 10 indicators for the 5 NIA aspects of increasing economic complexity, creating high-value jobs, extending domestic linkages, improving inclusivity as well as developing new and existing clusters.

Source: Department of Statistics, Malaysia, Asian Development Bank and Staff calculation*

Chart 2: Sectoral Forward and Backward Linkages



Manufacturing Mining & Quarrying Agriculture Construction Services

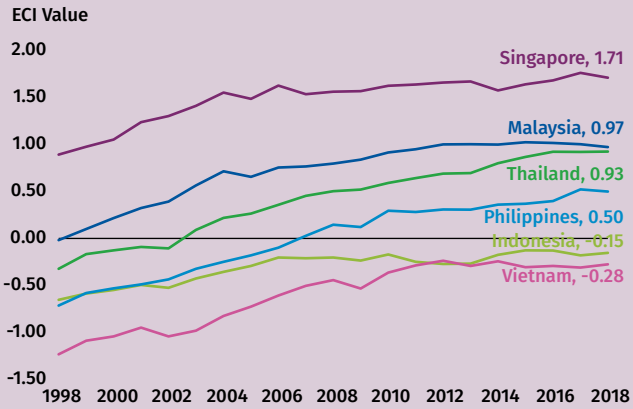
* The Forward and Backward linkages are derived from the Input-Output analysis using data by Asian Development Bank (2018)

Source: Department of Statistics, Malaysia, Asian Development Bank and Staff calculation*

ii) Diversifying into More Complex Products

One of the NIAs calls for Malaysia to continue to expand its product mix and deepen its product complexity. The Malaysian economy has improved over the past 20 years in terms of economic complexity, ranking 26th in 2018 (1998: 52nd) with an Economic Complexity Index (ECI) of 0.97, though the value has been broadly unchanged in recent years (Chart 3).

Chart 3: Regional Comparison on Economic Complexity Index (ECI)



Source: Observatory of Economic Complexity. MIT (2018)

For Malaysia, there are ample opportunities to strengthen its ECI further, given its existing exports strength and capabilities. The Atlas of Economic Complexity outlines many potential growth opportunities. Malaysia could adopt a balanced growth strategy[3] by focusing on (i) exploiting 'low hanging fruits' from existing know-hows and production capabilities established over the years; and (ii) concurrently taking 'long jumps' by encouraging domestic firms to upgrade their technological capabilities and venture into areas that develop new competitive advantages (Table 1). While this is typically a high-risk strategy, it can be more rewarding in the long-run as it deepens Malaysia's contribution within global supply chains and advances partnerships with leading academia and industry leaders for knowledge diffusion.

Table 1: Dual Track Strategy to Accelerate Product Complexity in Malaysia*

Strategy 1: 'Low Hanging Fruits'	How to get there?	Strategy 2: 'Long Jumps'
• Opportunities **closer** to existing know-how • Lower risk as economy already has capacity	→	• Opportunities **further** from existing know-how • Higher risk and require calculated strategy
Examples of product opportunities*		
Liquid crystal devices Apparatus and equipment for photographic laboratories Flat-rolled alloy steel products	**Machinery**	Instruments for physical or chemical analysis Tools for hand working pneumatic, hydraulic motors
Video recording apparatus	**Electronics**	Electric soldering machines
Oxygen-function amino compounds Industrial acids Silicones in primary forms Phenols, phenol alcohol	**Chemicals**	Polyamides Nucleic acids and their salts Orthopaedics Lubricants

* As recommended by the Atlas of Economic Complexity as of 2018

Source: The Atlas of Economic Complexity

Mission-based Investment Approach: Harnessing cross-industrial contributions towards a single economic objective

A 'mission-oriented approach' to organising an investment collaboration network in Malaysia can create a higher economic multiplier than funding for a single technology or sector. It leverages on private sector R&D and investment spending across multiple sectors into new, high growth areas of the economy. This supports the establishment of a constellation of innovative firms across different sectors instead of a single national champion (O'Riain, 2004). The mission-oriented approach is particularly relevant for systemic public policies that draw on frontier knowledge to attain specific goals, or "big science deployed to meet big problems" (Mazzucato, 2018 and Ergas, 1987). Such mission-oriented strategies characterised some of the success observed in countries such as the US, with the iconic NASA space mission to the moon in the late 1960s. This momentous mission required participation by multiple sectors, from semiconductors to advanced materials in the textile industry.

[3] According to Atlas of Economic Complexity by the Growth Lab at Harvard University, a country can diversify into highly complex and gain new product opportunities by implementing a dual growth strategy based on its existing export profile, namely 'low hanging fruits' and 'long jumps'. Under 'low hanging fruits', potential new products are of closest proximity to existing capabilities in the country, and are deemed 'low risk'. 'Long jumps' refer to new products that needs additional competencies and require higher risks.

A mission-oriented approach identifies a specific issue as well as the related solutions to address it. An example of this is the European Commission's mission to address climate change by having 100 carbon neutral cities across the EU by 2030 announced in September 2020 (European Commission, 2020), necessitating new investment across multiple sectors, such as energy, food, transportation and real estate.

There are 5 key characteristics in a mission-based approach (Mazzucato, 2018):

(i) bold and inspirational with wide societal relevance;
(ii) clear timeframe with targeted, measurable and time-bound action;
(iii) ambitious, realistically feasible and incorporates feedback effects between basic and applied research;
(iv) framed to spark multi-disciplinary innovation, across different industrial sectors and different types of actors; and
(v) bottom-up experimentation involving a portfolio of research and innovation projects.

Key US government agencies such as the Defense Advanced Research Project Agency (DARPA) and NASA's Jet Propulsion Laboratory (JPL) were major examples of using a mission-oriented approach in the development of critical technologies prevalent today, such as the Internet, global positioning system (GPS), robotic technology and a global satellite system (Mazzucato, 2015). Recognising this, other countries in recent years, including the UK, Japan, India and China have embedded a mission-oriented approach in their industrial strategy, largely anchored in the overarching goal of creating an innovation ecosystem.

Based on these principles, Malaysia should consider utilising a mission-oriented approach as an investment strategy in innovation by identifying the next 'moon-shot'[4] for frontier technology and innovative activities. Potential frontier technology areas for Malaysia include bioscience technology, neurotechnology, advanced pharmacology, augmented reality, additive manufacturing, artificial intelligence, robotics, battery technology, big data analytics, Internet of Things (IoT), additive manufacturing, and other advance manufacturing systems.[5]

The 3D's of Reforms

Malaysia can emerge stronger in the post-pandemic future by accelerating strategies to address the three D's of supply side reforms: Accelerating **D**igitalisation, Rethinking **D**ownstreaming, and Reducing **D**istortion.

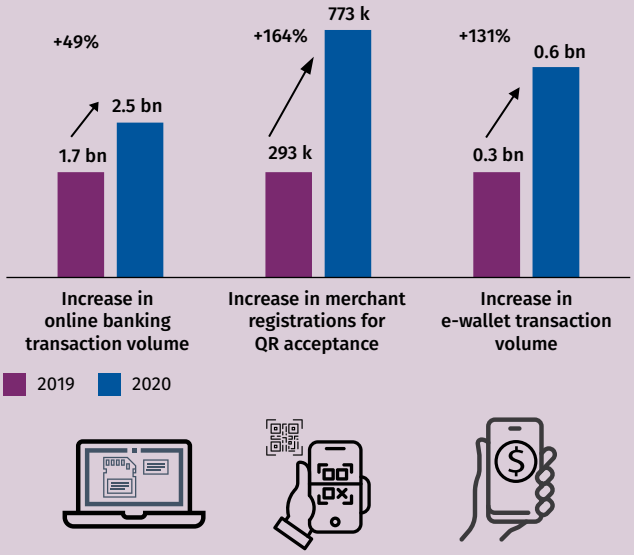
Reform 1

Accelerating Digitalisation: Embracing Digitalisation Nationwide

Over the years, Malaysia has been accelerating its digital adoption, being ranked as one of the top 20 countries in terms of digital skills (WEF, 2019), with digital-related activities accounting for a 19% share to GDP as of 2019 (DOSM, 2020). The growing momentum of digitalisation seen in 2020 amid the COVID-19 pandemic has lent further support to the economy, with Malaysia ranked as the fourth largest market in South East Asia (SEA) for e-commerce penetration[6]. More individuals and businesses are now embracing digital solutions to future-proof their businesses. For instance, the number of merchants who signed up for e-commerce and QR payments had more than doubled compared to the previous year (Chart 4).

[4] YAB PM's speech to the Youth Economic Forum 2021 (March 2021)
[5] Eligible activities under BNM High Tech Facility-National Investment Aspiration (HTF-NIA). Please see https://www.bnm.gov.my/-/establishment-of-rm1-billion-high-tech-facility-national-investment-aspirations-htf-nia-1
[6] JP Morgan eCommerce Payment Trends: Malaysia (2020)

Chart 4: Rising Use of Digital Solutions in Malaysia



Source: Bank Negara Malaysia

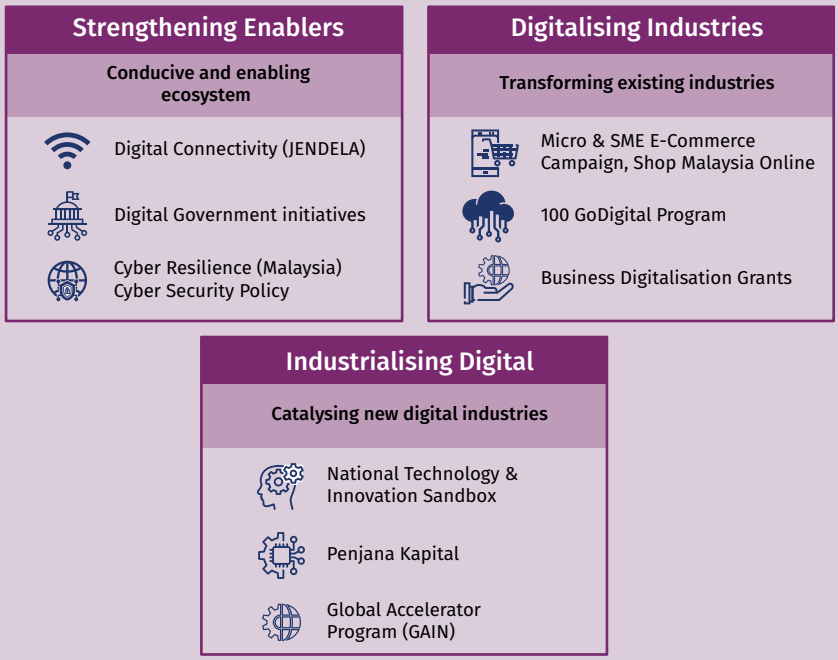
Moving forward, the Government and the private sector will continue to intensify efforts to catalyse nationwide digital transformation and strengthen its competitive position regionally, as stated in the 'MyDigital' Digital Economy Blueprint launched in February 2021. The Blueprint includes various measures to drive Malaysia towards become a digitally-driven high-income nation, accelerate the roll-out of key ecosystem enablers, digitalise existing industries and develop new digital industries as future growth drivers of the economy as Malaysia transitions to the Fourth Industrial Revolution (4IR). The latter includes industries built around frontier technologies, biotechnology solutions to rising healthcare needs, as well as greening the economy to better manage climate change risks.

The Blueprint, covering the period between 2021 and 2030, leverages on the momentum of digital growth. It outlines a three-pronged strategy, namely (i) accelerating the deployment of critical digital enablers; (ii) digitalising existing industries to raise productivity and unlock new strategic growth engines; and (iii) industrialising digital sectors as a key growth driver of Malaysia's economy (Diagram 2).

Execution of the 'MyDigital' plan is key in ensuring the effective rollout and implementation of digital enablers. These include digital connectivity of a nationwide fibre network and 5G as outlined under the National Digital Network (Jalinan Digital Negara or JENDELA), digital government initiatives such as a national digital ID database system, as well as a strong data governance framework supported by the implementation of a national cybersecurity policy. 5G connectivity, with an initial rollout by the end of 2021, ensures data acceleration, with greater volume, higher speed, low latency and high reliability required to meet the demands of modern life. The National Digital ID (NDI) database, to be rolled out in 2025, would accelerate the acceptance of digital signatures and electronic ID for secured authentication and seamless delivery of public services. This is in addition to e-Know Your Customer (e-KYC) usage by financial institutions as well as Government social services schemes for the lower-income population.

Digitalising existing industries is also essential in sharpening Malaysia's competitive edge, especially in boosting productivity in key sectors. The PENJANA Micro and Small-and-Medium-Sized-Enterprises (MSMEs) E-commerce Campaign launched in June 2020 has successfully on-boarded 45,000 MSMEs in e-commerce

Diagram 2: Accelerating Malaysia's Digital Transformation



Source: "MyDIGITAL" Digital Economy Blueprint, Malaysia Digital Economy Corporation and Bank Negara Malaysia

platforms and helped over 200,000 MSMEs adopt digitalisation solutions. Meanwhile, the Shop for Malaysia Online campaign successfully generated sales of almost RM900 million, and benefitted 213,000 local sellers nationwide as of October 2020[7]. The SME Business Digitalisation Grant and SME Automation and Digitalisation Facility were also made available to businesses to improve digital accessibility to consumers.

A critical area in need of digital transformation is the agriculture sector to boost productivity and enhance the nation's food security. The agriculture sector's value added per worker in Malaysia was only 45 percent of the average among high-income countries. Furthermore, 70% of Malaysian farmers are more than 60 years old[8]. In 2020, Malaysia was ranked 43rd out of 113 countries in the Global Food Security Index[9]. By leveraging on agriculture technology or AgTech through the use of advanced data analytics and drones for nutrient measurement techniques, pest disease control, worker productivity management and land consolidation, agro industries can become more economically efficient. As an example, utilising AgTech in paddy planting can potentially result in the doubling of yields in Malaysia[10]. The digitalisation of key information on competitive pricing, monitored crops, disease prevention tips, and disaster mitigation support could help transform the agriculture sector, improving income, production and market demand.

Malaysia also needs to catalyse new digital industries to unlock new sources of growth and seize the opportunities in the post-pandemic era. Priority should be given to develop home-grown tech champions and position Malaysia as a regional hub for new technology industries. This would leverage on Malaysia's existing strength as the 11th top emerging start-up ecosystem in the world and host to a third of the top 100 Forbes companies[11]. Policy measures that can be considered include supporting technology adopters with emerging technologies and the use of effective public procurement policies to stimulate innovative activities, shape

[7] LAKSANA Report (2020)
[8] World Bank (2019)
[9] Global Food Security Index, Economist Intelligence Unit (2020)
[10] Khazanah Research Institute (2019) and McKinsey (2018)
[11] Global Start-up Ecosystem Report (2020)

transformation of production systems, and foster industrial renewal (Crespi and Guarascio, 2019). For Malaysia, the Government is supporting local emerging tech companies under initiatives such as the National Technology and Innovation Sandbox (NTIS), Penjana Kapital and Global Accelerator Program.

Malaysia should also encourage innovation by strengthening domestic start-ups in developing critical technologies. For example, the pandemic has catalysed opportunities for 'mobility-as-a-service' technology solutions, including autonomous delivery vehicles and multi-modal transportation solutions. The global automotive industry has been increasingly driven by innovative communication-based technologies for autonomous driving, with high value-added sensors such as LiDAR (light detection and ranging), and RFID (radio frequency identification). This encourages synergies between the mobility and semiconductor ecosystems in Malaysia, thereby leveraging on Malaysia's comparative advantages. For a start, the Malaysian Automotive, Robotics and IoT Institute (MARii) has recently established partnerships with domestic start-ups to develop advanced car navigation systems for autonomous vehicles.

A new digital industry where Malaysia already has an ecosystem at present is in digital healthcare solutions. The industry is well positioned to further accelerate the post-pandemic future. These include areas such as emergency response systems, remote healthcare-monitoring, 3D printing, medical diagnostics kits and pandemic intelligence systems. Currently, Malaysia has a leading position, with 30% of global personal protective equipment (PPE)[12] production capacity, the 7th largest global exporter of E&E[13] and the 2nd largest medical devices exporter in ASEAN[14].

Reform 2

Rethinking Downstreaming: Producing Higher Value Add Palm Oil Products

The palm oil industry has contributed significantly to the Malaysian economy, creating jobs and lifting incomes, particularly for those in the rural areas. Nonetheless, more can be done to propel the industry forward towards high value creation and higher productivity.

Upstream palm oil activities in Malaysia face various challenges, including low value add creation, limited land banks for planting, declining competitiveness with neighbouring countries and higher susceptibility to supply disruptions due to climate change. To improve productivity and sustainability in the upstream sector in the post-pandemic era, Malaysia can differentiate its value proposition by playing a leading role in accelerating adoption of sustainable practices through the Roundtable on Sustainable Palm Oil (RSPO) certification for all oil palm plantations. This will enable Malaysia to distinguish itself from its direct competitors and other vegetable oils.

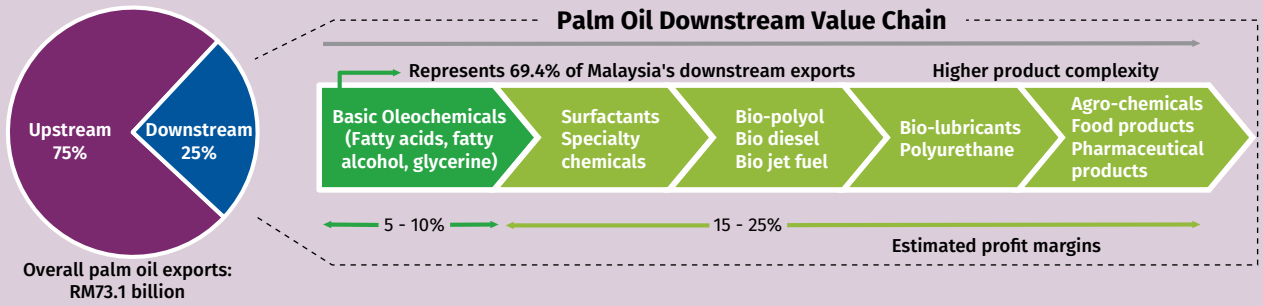
At the same time, advancement in the palm oil downstream segment has been hampered in recent years by the low operating margin amid the over-reliance in basic oleochemicals exports (Diagram 3). Furthermore, the high potential in R&D for the downstream segment in Malaysia has yet to be fully realised, largely due to the high capital outlays and long gestation period required.

To advance the sector, a rethink of downstreaming for palm oil, particularly in increasing quality investment, high value creation and retention within Malaysia, is vital. Adopting higher value downstreaming would accelerate the manufacturing of products with higher product complexity further up the palm oil value chain (Table 2).

[12] UN Comtrade Database (2020)
[13] Malaysia Investment Development Authority (MIDA) (2020)
[14] WITS, World Bank (2019)

Recognising the complementarity to the upstream segment, Malaysia could promote the use of RSPO-certified crude palm oil (CPO) in the higher value downstream segment. This will create greater demand, achieve economies of scale and reduce the price premium compared to non-certified palm oil. By adopting the global certification standards for sustainable palm oil, Malaysia could attract global multinational manufacturers in food and consumer goods to locate their production base in Malaysia and use the RSPO certified domestic palm oil products as inputs. At the same time, these MNCs could tap into the growing consumer demand for sustainable products not only globally but also within the Asian region by being closer to the market. For example, to service the Asia-Pacific region, two major MNC food manufacturers had located their facilities in Negeri Sembilan. One produces halal snacks, while the other centralises its malt beverage manufacturing activities. Both facilities are sourcing only RSPO-certified palm oil in their production, which measures up to the respective MNC's global sustainability policy.

Diagram 3: Downstream Value Chain in Palm Oil



Source: Malaysian Palm Oil Board and Bank Negara Malaysia

Table 2: Product Complexity Index of Selected Palm Oil Products

Selected Palm Oil Products	PCI (2017)	Rank (out of 6218 products)
Upstream		
- Crude palm oil	-2.466	6183
- Refined palm oil	-2.151	6125
Downstream: Basic oleochemicals		
- Fatty acids	-1.270	5449
- Glycerine	-0.088	3523
- Fatty alcohols	+0.042	3260
Downstream: Oleo-derivatives & specialty chemicals		
- Palmitic acid/Methyl ester (Biodiesel)	+0.320	2629
- Polyurethanes	+0.950	1099
- Vitamin E & derivatives	+1.222	621
- Lubricants	+1.651	184

Note: PCI measures the relative knowledge intensity of the product by considering the knowledge intensity of its exporters. The higher the rank, the more complex the product is relative to its exporters

Source: The Observatory of Economic Complexity (2017), MIT

On specialty downstream palm oil products, a venture capital approach could be an efficient method in pooling financial resources and minimising the concentration risks in undertaking R&D activities or investing in R&D start-ups. This can be driven through public-private partnerships in providing lead funding for R&D activities in advanced products such as specialty oleochemicals. The selection of R&D start-ups to receive capital venture financing must undergo thorough assessment of its commercialisation potential.

Additionally, Malaysia can also lead the efforts at environmental sustainability and 'greening the economy' by advancing the 'circular economy' model into the palm oil value chain. A 'circular economy' optimises wastage from palm oil production by recycling it into palm biomass and palm fibre. The latter has been used in construction materials, furniture as well as pulp and paper production, while the former has produced value-added products such as renewable energy pellets and briquettes. While Malaysia has over the years encouraged firms to enhance these activities through various tax incentives and grants, more can be done. This is particularly important given the global imperative on sustainability ahead of the 26th United Nations Climate Change Conference ('COP26') in Glasgow, United Kingdom scheduled in November 2021.

Reform 3

Reducing Distortion: Better allocative efficiencies in attracting quality investments

Malaysia stands to gain from minimising distortions in investment incentives by revamping the existing structure of tax incentives[15] to attract quality activities in line with the NIAs[16]. A timely and effective implementation of the Government's ongoing review on investment incentives[17] would be critical to realise the positive impact from providing a more competitive, transparent and attractive tax incentive framework.

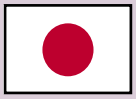
Tailoring investment incentives to key activities under NIAs is important. A more holistic approach that links incentives to specific activities aligned with NIAs would significantly strengthen prospects for attracting quality investment. For example, eligible firms engaging in activities such as cutting-edge R&D and advanced production techniques could receive an extended period for temporary tax incentives. In doing so, firms willing to invest in Malaysia can reduce potential uncertainties. Additionally, introducing an automatic appraisal system for standard, cost-based incentives would encourage greater efficiency and expedite investment decisions by firms.

A more effective tax incentive system will also mitigate the inefficient allocation of resources. This is particularly important as the cost of tax incentives distributed to firms by the Government is revenue forgone that could have been utilised to lower the nation's fiscal deficit or for use in other development projects. Furthermore, providing tax incentives for firms to undertake these quality investments effectively turns the Government into a 'silent and solid' partner in these investments. This reflects the Government's equity in incurring part of the capital expenditure in return for enabling the firms' return to growth[18].

Meanwhile, in the near term, investment promotion agencies (IPAs) throughout the world have taken steps to adapt their focus and engagements with the investment community in response to the crisis (Table 3). Malaysia has also been proactive by facilitating investment applications through the recently launched Project Acceleration and Coordination Unit (PACU). Additionally, it had announced an automatic 12-month extension for implementation of approved manufacturing projects in 2020 and 2021, and created a one stop centre for processing business travellers into Malaysia.

[15] For more information, please see the BNM QB 3Q 2017 Box Article "Rethinking Investment Incentives", available at https://www.bnm.gov.my/documents/20124/770509/p3_ba1.pdf
[16] For more information, please see the BNM EMR 2019 Box Article "Securing Future Growth through Quality Investments", available at https://www.bnm.gov.my/o/annual-report/html/files/emr2019_en_box1.pdf
[17] Feature Article on Tax Reform Committee in Budget 2021. Official website: http://belanjawan2021.treasury.gov.my/index.php/en/
[18] Wen, J. F. (2020). 'Temporary Investment Incentives'.

Table 3: Best Practices by Investment Promotion Agencies during COVID-19

Country	Agency	Actions
Germany 	Germany Trade and Invest	• Developed a special pandemic website to ensure the investment community has up-to-date information on financial support for businesses. • Provided industry-specific updates, highlighting information on sectors where the pandemic has generated increased demand such as digital solutions in education, logistics and health.
Japan 	Japan External Trade Organisation	• Established 'Invest in Japan' hotline and conducted an emergency survey to better gauge the impact of the pandemic on foreign-affiliated companies. • Launched the Digital Transformation Partnership Programme, which fosters open innovation between Japanese and foreign companies to prepare the country for accelerated digitalisation.
India 	Invest India	• Launched comprehensive portal devoted to pandemic-related news and tools targeted at the investment community. • Established dedicated communication lines for pandemic-related investor queries, facilitates strategic collaboration to identify and fill shortages in the supplies required to fight COVID-19, and actively engages key audiences in social media.

Source: *UNCTAD*

Conclusion

The 3D's of supply side reforms will enable Malaysia to emerge stronger in the post-pandemic future, with the right investment strategy and the right activities. Accelerating **D**igitalisation is an essential policy thrust amid the rapid technological changes today and in the coming years. These include sectoral initiatives focused on embracing digitalisation within the consumer-related, agricultural, mobility and healthcare industries. Rethinking **D**ownstream is also vital, particularly for Malaysia's palm oil industry, as higher value add through enhancing product complexity provides new growth opportunities. Finally, Reducing **D**istortion in providing investment incentives by tailoring these incentives to activities under NIAs will result in better allocative efficiencies by attracting quality investments.

A forward-looking pivot toward investment-led growth requires a bold strategy in attracting quality investments centred around innovation and the creation of highly complex products. In the post-pandemic future, these 3D's of reforms can propel Malaysia to attain greater policy adaptability and flexibility to accommodate the rapid shifts in trends. This in turn will provide businesses with an environment that is conducive for dynamism and creativity to capture new growth opportunities. Strong execution and follow through is key to ensure Malaysia achieves the desired goals from these strategies.

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