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REPORT | *January 2019*

# The future of talent in Malaysia 2035



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The CIPD is the professional body for HR and people development. The not-for-profit organisation champions better work and working lives and has been setting the benchmark for excellence in people and organisation development for more than 100 years. It has 150,000 members across the world, provides thought leadership through independent research on the world of work, and offers professional training and accreditation for those working in HR and learning and development.

The HRDF is an organisation under the Malaysian Human Resources Ministry established in 1993. The HRDF's mandate is to catalyse the development of a competent local workforce that will contribute to Malaysia's vision of becoming a high-income economy by 2020. Through high-skilled training certification programmes and initiatives, the HRDF has provided a one-stop centre for human resource development (HRD) solutions to Malaysia to ensure the creation and growth of quality local talent. For more information, please visit [www.hrdf.com.my](http://www.hrdf.com.my)

## Report

# The future of talent in Malaysia 2035

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## Acknowledgements

The CIPD wishes to thank the following:

- the Delphi experts for their generosity in sharing their thoughts and expertise over the rounds of the data collection between February and October 2018 (see section 11 for experts' biographies)
- the team at the HRDF, in particular Mr Wong Chan Wai, Mr Muhammad Lutfi bin Abdul Hamid and Ms Shereen Tan for drawing up the expert panel list
- all those who participated in the scenario-building workshop in September 2018, where we first explored scenarios using the drivers and trends from the study.

This report was written by Dr Wilson Wong and Ms Rachel Day.

## 1 Foreword from the CIPD

The CIPD is proud to be in Malaysia to support the professionalisation of the people profession, and to help develop business leaders who are strategic, critical thinkers able to navigate the complex and ever uncertain world of work. We are delighted to partner with the HRDF, and in particular on this important research report exploring the future of talent and human capital development.

The report draws on the knowledge and experience of many experts and agencies in Malaysia to explore drivers shaping the future skills and talent needs, and the management and development opportunities in Malaysia 2035. By systematically testing possible future scenarios arising from the current approaches to human capital management, the report allows for the comparison of current assumptions about what works in talent management and development set against the context of possible futures. By revealing biases and potential blind spots when we make decisions, the research hopes to stimulate individuals, organisations, policy-makers and societal groups to reflect on their current paradigms, the quality of strategic choices, and their preparedness for what the future might hold.

This report is for thinkers, decision-makers, the next generation of leaders, and all those who feel it is their responsibility to build a better future, not just for themselves, but for others, and ultimately for society. While the purpose of this research was to describe the future of talent in Malaysia, it also reminds us how our choices today are inextricably connected to the wider changing world. In our interconnected, interdependent economies and societies, most decisions will have longer-term, sometimes unanticipated, consequences for our communities, the environment, and the generations to come. As leaders, we have a responsibility not only to respond to short-term needs to keep our businesses profitable, but we have to be able to also take the longer-term view, to build sustainable and responsible businesses, and to help build for a better future.

The findings crucially provide a space to learn and reflect on what could be, rather than restating solutions that were effective in the past. I hope its insights illuminate and provoke fresh conversations about the future of talent and the foundations all of us must lay for a bright future for all in Malaysia.

**Peter Cheese**, Chief Executive, CIPD

## 2 Foreword from the HRDF

Tracing our origin to 1993 as Majlis Pembangunan Sumber Manusia, the Human Resources Development Fund (HRDF), or Kumpulan Wang Pembangunan Sumber Manusia, is an agency under the purview of the Ministry of Human Resources Malaysia.

Since our inception, we have evolved from managing a sizeable fund to becoming a one-stop centre for providing novel human capital development solutions to our registered employers and the critical mass of small and medium enterprises in Malaysia.

It is our deepest aspiration to be more than just an advocate of learning and development (L&D) in the country, but also to provide a holistic approach towards developing a competent Malaysian workforce.

We are committed to the national aspiration of increasing the number of local skilled workforce in tandem with the overarching aim of becoming a developed nation and a high-income economy by 2024.

The advent of the Fourth Industrial Revolution (IR 4.0) demands us to rethink how we prepare ourselves for the future. Artificial intelligence (AI), augmented reality, robotics, the Internet of Things (IoT), 3D printing, and drones are rapidly assimilating into our work surroundings. These waves are shifting the notion of what it means to be an employee.

The launch of the National Policy on Industry 4.0, also known as Industry4WRD, by Prime Minister YAB Tun Dr Mahathir Bin Mohamed reiterates Malaysia's commitment to strengthening its ongoing structural reforms to become a developed nation that is equitable, sustainable and inclusive by 2024. While the policy focuses mainly on the transformation of the manufacturing sector, people and talent development are key drivers behind this initiative.

The HRDF will continue to play our role as a critical partner to employers and industry counterparts in enabling our stakeholders to thrive in the digital age.

It is our intention that through this research report, which consists of data-driven insights and analytical findings, Malaysians are able to better respond to the future human capital challenges.

This report suggests four thought-provoking scenarios that could test the resilience of Malaysian talent in the years ahead. I am confident that the content of this report will stimulate thinkers, decision-makers, industry captains, the next generation, and all those who have a role to build a better future for Malaysia.

Finally, together with our strategic partner the CIPD, I would like to express my appreciation to those who have contributed towards this research report.

**Mr Elanjelian Venugopal**, Chief Executive, HRDF

## 3 Abbreviations

ASEAN	Association of Southeast Asian Nations
ADB	Asian Development Bank
ADBI	Asian Development Bank Institute
BNM	Bank Negara Malaysia
CA	content analysis
DOSM	Department of Statistics Malaysia
EPI	Environmental Performance Index
EPF	Employees Provident Fund
FDI	foreign direct investment
GDP	gross domestic product
HRDF	Human Resources Development Fund
ICT	information and communications technology
IMD	International Institute for Management Development
IMF	International Monetary Fund
IoT	Internet of Things
IP	intellectual property
IPCC	Intergovernmental Panel on Climate Change
KRI	Khazanah Research Institute
MP11	11th Malaysia Plan
NEP	New Economic Policy
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for the International Students Assessment
PwC	PricewaterhouseCoopers
STEM	science, technology, engineering and mathematics
STPM	Sijil Tinggi Persekolahan Malaysia (Malaysian Higher School Certificate)
TVET	technical and vocational education and training
UNESCO	United Nations Educational, Scientific and Cultural Organization

### GLOSSARY

**Bumiputera (or Bumiputra)** is a Malaysian term to describe Malays and other indigenous peoples of Southeast Asia, that is, the Malay world, used similarly as in Indonesia and Brunei. (source Wikipedia)

## 4 Introduction

In its 60 years of post-independence history, Malaysia has undergone a profound transformation in the composition of its economy from a largely agrarian and extractive economy. Vision 2020 applied an industrialisation model via heavy industries, manufacturing and the first wave of information and communications technology (ICT) to turn it into a major trading nation. There was the creation of the Multimedia Super Corridor and semiconductor factories – a legacy of which is the huge contribution of semiconductors, electronics and other ICT hardware to Malaysia's exports today.

The waves of technological advancement from agriculture to electronics, manufacturing and services have led to increased prosperity, productivity and new jobs. These transitions required vision, an appetite and understanding of the risk-rewards and proper execution. Understanding, anticipating and preparing for the effects of the current and upcoming political, social, economic, environmental, ethical and technological drivers are therefore critical for Malaysia's continued success.

The expert panel assembled for the futures study recognised many of the drivers shaping the future of work and that Malaysia would not be immune to them, and in fact had to prepare for these in order to remain a globally relevant economy. One recurring reference in the expert data was to the Fourth Industrial Revolution.

Global demographic and socioeconomic drivers of change contributing to the Fourth Industrial Revolution highlighted by the World Economic Forum (2016) include: the changing workplace, the reorganisation of work relations to engender employees, contractors and consultants on virtual teams and the technology and desire of many more people to work remotely; the growing middle class in emerging markets; the impact of climate change, natural resource constraints and decarbonisation/greener models of development; rising or at least persistent and intractable geopolitical risks; growing consumer concerns and activism on ethical and privacy issues; the rapid ageing of the population in more developed regions and rapid population growth in emerging countries; the rise of women's power and aspirations all over the world; urbanisation and the rise of mega-cities.

On the technological drivers, the Fourth Industrial Revolution will also see: increased maturity in mobile technology and cloud technology; advances in computing power and big data; new sources of energy; the exponential growth of things connected to the Internet (the Internet of Things, IoT); the ubiquity of the sharing economy and peer-to-peer business models; advanced robotics and autonomous vehicles; the increasing accuracy and usefulness of machine learning and artificial intelligence (AI); additive manufacturing and 3D printing; and advanced materials, biotechnology and genomics.

While any and all of the above interacting can deliver prosperity and higher standards of living, these necessarily also pose challenges to individuals, governments and societies. These challenges will require knowledge, skills and ways of working together and disrupt what we know as familiar, all requiring a purposeful re-imagining of the human capital required for a successful twenty-first-century economy.

This futures report draws on expert inputs, secondary data and many other studies affecting human capital development. The hypothetical scenarios using expert input and trend data provide an opportunity to explore potential challenges and opportunities in relation to building Malaysia's stock of human capital. Some of the implications of

these alternative futures are discussed in the subsequent chapters, but it is important to reiterate that none are designed as predictions. Different drivers have been dialled up or down to showcase how important it is to think beyond what is already present to what could be.

We hope the alternative futures explored in this study will stimulate, provoke and provide a call to action that builds strong foundations for the quality and relevance of Malaysia's human capital in the future.

## 5 The drivers impacting the future of Malaysia's talent base

This section distils and elaborates on the drivers and trends identified by the panel experts that impact on the quality and quantity of future talent<sup>1</sup> in Malaysia. Essentially a synthesis of the expert inputs, what is reported is what they considered as principal drivers shaping Malaysia's talent quality and quantity.

From the analysis, the following four broad themes emerged: education, skills deficit, cheap foreign labour, and brain drain.

### Education

Experts are concerned about the state of Malaysia's education system and the quality of the talent it produces. They broadly describe a system in decline, with lower-quality standards, curriculum, teaching and skills mismatched to industry needs.

*'Erosion of English standards over the years caused by the lack of trained teachers, infrastructure, and teaching standards.'*

*'Students acquire knowledge in the form of "givens" and unquestionable assumptions. The long-term impact of these methods of education is that students no longer naturally explore possible alternatives to any given situation – thus it is bound to have a bearing on the level of creativity and innovation of our human capital.'*

For our panellists, political changes to the curriculum have demonstrated a marked deterioration in English language skills, critical thinking and problem-solving. Historically education in Malaysia has been taught in both Bahasa Malaysia and English, flip-flopping between the two, depending on political agendas. Since 2012, appealing to nationalist sentiment, the national language Bahasa Malaysia has been used to teach science and mathematics in schools and, according to our experts, with negative results.

*'We keep hearing that most graduates do not possess good writing and speaking skills in English. We have encountered such graduates. ... It boils down to our education system in primary and secondary schools where, in the past few years,*

<sup>1</sup> Talent as a construct was not investigated in this study. For a discussion of the construct, we drew on the previous CIPD study *The Future of Talent in Singapore 2030*. A concise definition of talent can be found here: [www.cipd.asia/knowledge/reports/future-talent-singapore](http://www.cipd.asia/knowledge/reports/future-talent-singapore).

*there has been a flip-flop of decisions by the government switching from English to Bahasa and vice versa for subjects like science & maths ... if the flip-flopping of policy continues, there will not be consistency and the problem will not be resolved.'*

*'The quality of student and teacher competency in English needs to be prioritized. ... This is important because of the internationalization of tertiary education in Malaysia with the use of English as the language of instruction to attract foreign students and to meet international standards. This will ensure that Malaysian students do not become disadvantaged within their own country in English proficiency and comprehension capabilities.'*

There is a broad consensus amongst the panellists that the main purpose of Malaysia's education system is to produce talent that can make direct contributions and drive the economy forward. But according to our experts, there is a mismatch between Malaysia's educated talent and the requirements of employers. Some experts stated:

*'English is the "lingua franca" of the scientific community. ... Delays in translating knowledge into other languages will result in outdated information; and the local scientific community will be unable to keep pace with major innovation trends. These will have a major impact on the underlying structure of the Malaysian economy, as Malaysian firms will be over-reliant on foreign firms for knowledge and technology – local firms will be users of technology and not pace-setters in leading new innovations. In the long run, this will impact Malaysia's competitiveness.'*

*'Thousands of Malaysian graduates are churned out from local universities every year equipped with very poor command of the English language. Therefore, they are unable to keep current with the rapidly changing knowledge in the fields of science, engineering, technology, etc. Students with low levels of English comprehension are unwilling to pursue knowledge beyond what is taught in the curriculum or lectures. Intuitively, Malaysia produces inferior quality of graduates on a per capita basis compared with neighbouring countries like Singapore and Thailand.'*

The experts broadly agreed that lower-quality education directly reduces the quality of talent and threatens Malaysia's ability to progress, innovate and globally compete. This situation ensures Malaysia's continuing status as 'follower/user' and not sector leader or innovator.

### Education – race quotas

Some of the experts also described the impact of race affirmative/race quota policies and described them as preventing many 'good' students from being able to study their first-choice subjects (for further details refer to Chapter 6 on the New Economic Policy, or NEP). Equal and open access to quality education and skills training fit for Malaysia's labour force is the issue. Experts describe the impact of such NEP policies as also reducing the quality of the available talent pool:

*'The best students do not get access to the best universities and to the courses of their choices. Many students opt for second or third best choices and sometimes have to settle for courses completely outside their choices. It would not be far-fetched that over-zealous implementation of affirmative policies has seen many high-value human capital potential driven to work instead of continuing their education.'*

Unequal education access incentivises or 'pushes' families who can afford it to send their children to be educated in neighbouring countries such as Singapore, where education access is based on merit rather than ethnic quotas. Malaysia's restrictive access to quality public education is therefore in direct competition with Singapore's open education system, thus providing a major driver to Malaysia's constant brain drain.

*'Those whose parents can afford to send their children overseas to further their studies are most unlikely to return to Malaysia after completing their studies. Their parents feel that their children have no future in their own motherland as opportunities for work and promotion are hardly available.'*

*'The curriculum in our tertiary institutions is not keeping pace with rapid changes taking place in industry. Very few universities have robust industry–university curriculum or research programmes that meet the needs of industry. The problem is further exacerbated by major brain drain of the talent to other more developed economies. So, the stock of talent to meet the needs of an innovation-driven economy is scarce. Hence, there is over-reliance on foreign talent, which is expensive and raises the cost of operations. Many of the local talent leave for overseas for better career opportunities and remuneration.'*

### Education – conflicting view disputing race-based quotas

There was a minority view from one expert who questioned the existence of race-based quotas. Given the number of references to the NEP in the responses, we felt it necessary to include this for completeness:

*‘Do we have such policies in the first place? Based on RACE? I believe the MERIT system implemented currently might need to be updated/explained further to ... I think this is more of the issue of managing perceptions on the policies in place.’*

While there will be different admission criteria for university applicants, this comment highlights the different ethnic perspectives on Malaysia’s NEP and its application.

### Education – science, technology, engineering and maths (STEM) decline

There is broad consensus amongst our experts that quality of education directly influences the quality and creation of talent. The defining characteristics of high-income nations are that they produce and attract quality human capital that can innovate and utilise technology advancements for sustained growth. Therefore, generating high-quality talent is central for Malaysia to achieve high-income status. A labour force that is educated, creative and innovative is the foundation for economic growth (World Bank 2015). Education quality outputs act as drivers for maintaining the status quo and contributing to deteriorating or increasing the quality of future talent.

*‘Malaysia faces a worrying trend in that the number of students opting for science in stream at Form 4 has been steadily decreasing. This inadvertently results in lower enrolment into STEM-related fields of studies at the tertiary levels. ... Correspondingly, industries will not have sufficient talent to fill technical posts, either to sustain ongoing operations or to fuel growth.’*

*‘Unless a greater awareness is built up among parents, students, academics, TVET providers and government about the importance of specialized talent for jobs requiring STEM, the workforce cannot be said to be ready to meet the Industry 4.0 challenge. But more pertinently, it may not even meet the Industry 3.0 requirements.’*

The marked decline in the quantity, quality and uptake of STEM subjects is another concern for our experts. STEM is viewed as key for Malaysia to be able to compete in the world economy and adapt to future economic drivers and technological advancements. The skills required for STEM can facilitate problem-solving and the current workforce has raised the increased need for STEM-related skills and knowledge.

### Skills deficit

Experts generally described low opinions of graduate skills, such as: language skills (English, Chinese), critical thinking/analysis and STEM skills. Some experts highlighted a disconnection between the education syllabus and actual skills required for industry, thus creating talent skill gaps. Of note they did not specify industry skills beyond the general, that is, critical thinking, analysis and IT. The syllabus is not in sync with the demands of industry. Statistics, mathematics, and computing/IT-based skills are not taught in sufficient depth to be useful to both the student and industry. For our experts, the education syllabus and standards have been dumbed down in order to make up the number of graduates.

*‘Employers prefer staff who can analyse information objectively and make reasoned judgement to solve problems and overcome challenges daily at work. Exploring new ideas to create new processes, goods or services would empower organisations to be more productive and competitive. As such, critical thinking and innovation are crucial to forge ahead or be left behind. But these qualities are grossly lacking for students who learned by rote or are spoon-fed. Passing objective tests gave them a false sense of confidence as superficial knowledge could not be applied at work. Comprehension is poor when assignments are completed through cut and paste.’*

*‘Graduates from Malaysian institutions are finding it difficult to secure meaningful, sustainable employment opportunities in Malaysia. Many then resort to more entrepreneurial pursuits such as becoming Uber/Grab drivers and also selling food and so on. While these are alternative income sources, they are by no means sustainable. This seems to be a trend across all sectors of study.’*

Graduate unemployment figures are later detailed in Chapter 6 of this report and add further support to the experts’ observations in which present-day graduate skills are out of step with industry needs.

### Skills deficit – training

Experts also highlighted issues with access to specialised talent and training. That is, Malaysia’s human capital did not possess the skills required. Consequently, foreign specialised talent was drafted in to train sectors.

*‘Digital talents are hard to find and we don’t have good enough vendors to train our employees in the newest digital trends. We often end up having to fly in experts from, e.g. Vodafone, Singapore, the US, etc, to make sure our employees acquire the skills of tomorrow instead of learning the skills of yesterday from local vendors. The implication it’s having*

*on us is that we are reliable [sic] on foreign talents. And the foreign talents are too highly paid and it isn't a long-term solution.'*

Other experts highlighted employers' reluctance to invest in training their staff because of a profit maximisation mentality:

*'Employers need to value good work and reward their staff accordingly; the mentality of maximizing profit at the expense of quality and ethics will make it hard to narrow the deficit.'*

*'The learning culture in Malaysia's organisation is bent towards productivity rather than speciality or specialisation. ... Talent is being brought in from different organisations with huge pay cheques but not internally developed as this cuts out learning costs, which must be creating results over a span of time. ... A company grows with human capital and talent can be nurtured within the organisation. Within 20–30 years most SMEs (small to medium enterprises) will be a dead organisation if this is maintained.'*

Experts suggest education and industry take a short-term view. They only focus on meeting current labour needs and filling the current skills gap with foreign labour instead of investing in and developing local Malaysian talent. To expand the economy, meet industry needs and reduce reliance on foreign talent, it is clear from our experts that closer links between education and industry are required to reduce skills gaps. Merit-based assessment methods should also be incorporated to drive up skill quality. All accept that the availability of a skilled workforce will affect Malaysia's capability to reach high-income status goals.

### **Cheap foreign labour reliance**

The reliance by businesses on cheap unskilled foreign labour places Malaysia's high-income nation status dreams at risk. Experts are concerned that easy access and reliance on cheap foreign labour affects employers' capital investment in their businesses, for example applying newer technology, automation and up-skilling of their workforce.

*'Instead of upgrading local workers to do the job better and at a high skill level, many firms are taking shortcuts by taking low-cost foreign workers to increase profit. This in turn impedes productivity growth and undermines the creation of skilled job opportunities.'*

*'Companies have been hiring foreign nationals as a stop-gap measure. However, this is driving up their costs of operations. The overall imbalance between supply and demand is also driving wages up.'*

*‘The persistence of labour-intensive practices in large sectors of the economy may be a reflection of the ready availability of cheaper imported labour. ... This has implications for Malaysia’s global competitiveness. The reliance on cheaper labour instead of increased automation, greater use of robotics and data management and mining impacts Malaysia’s ambition to be a developed country, productivity and long-term competitiveness.’*

Businesses and industry that are dependent on cheap foreign labour to plug their labour force skills gaps are trapped in short-term solutions. Cost-suppression approaches are considered unsustainable as this does not secure their future or expand the economy. Cheap foreign labour reliance is a factor that maintains the status quo and contributes to deteriorating the workforce talent.

### **Brain drain**

For our panel experts, brain drain was also a factor impacting Malaysia’s talent. Malaysia experiences high levels of talent brain drain, which is a symptom of a multitude of underpinning drivers. For example, having the developed economy of Singapore next door means that the ‘grass-is-greener’ pull factor is a constant and significant challenge for Malaysia when attempting to retain and attract domestic and foreign talent. Some of the experts maintained that the pull factor starts at the foreign place of study.

*‘A Hays study shows 84% of Malaysian jobseekers are willing to pack up and leave for an overseas job just so that their lives would be better. A World Bank study shows 72% of those Malaysians who have migrated do so for career opportunities. In 2013, almost half of all the high-skilled Malaysians who moved overseas went across the causeway, to Singapore. The rest went to Australia, the UK, the US, and Canada – they tend to return to where they studied.’*

*‘Malaysia has seen a steady and growing trend of skilled local talent migration to overseas countries. This trend is largely visible and obvious in border territories like Iskandar Malaysia in Johor, where an estimated one third of the available local Malaysian labour force in general are deployed in Singapore. These numbers are even more worrying considering the number of high skilled talent only comprises of 20% of the total workforce in the region. ... The larger salaries offered in Singapore for similar jobs are 20% higher than those offered in Malaysia .... and slow progression of career growth are key reasons why sourcing and attracting high-skill talent is a continuous challenge in this region.’*

Other panellists also mentioned Malaysia’s NEP as a push factor:

*‘Since the implementation of the New Economic Policy in the 1970s, the skewed employment opportunities have driven the younger generations to seek for more equitable employment opportunities in other countries – principally in Singapore, the UK, the USA, Canada and Australia.’*

According to the World Bank 2011 report, brain drain is a symptom and not a problem itself. It is the outcome of underlying factors in which individuals respond to push (disincentives) and pull (incentives) decision factors. Wage factors weigh highly as a driver with approximately 200,000 daily commuters from Malaysia to Singapore (Lim 2018). Our expert panel highlighted their concerns for brain drain but, as already highlighted, diaspora is not a driver, rather a symptom of underlying factors. Hence, participant brain drain concerns were not included in the previous section. The experts suggest that by updating its inclusive policies (for example, removal of race-based quotas), Malaysia can tackle the push factors fuelling the brain drain.

In the final round, experts also provided details of the milestones Malaysia needed to achieve to ensure its talent was ready for 2035. Again, we wish to emphasise that these timelines are merely indicative and predictive. The main purpose is to highlight the prerequisites or hygiene factors for developing and attracting human capital. The top four milestones panellists identified were:

Medium-term milestones (2018–2025)	Long-term milestones (2025–2035)
<ul style="list-style-type: none"> <li>internationally recognised Malaysian qualifications</li> </ul>	<ul style="list-style-type: none"> <li>60% of students study STEM subjects</li> </ul>
<ul style="list-style-type: none"> <li>curriculum reform, including critical thinking and problem-solving skills</li> </ul>	<ul style="list-style-type: none"> <li>higher living standards</li> </ul>
<ul style="list-style-type: none"> <li>abolition of NEP race policy practices</li> </ul>	<ul style="list-style-type: none"> <li>curriculum reform including communication skills</li> </ul>
<ul style="list-style-type: none"> <li>meritocracy in the public sector</li> </ul>	<ul style="list-style-type: none"> <li>regulated flexible working rights</li> </ul>

## 6 Other trends and drivers

In order to understand the broad themes in Chapter 5, it is necessary to consider Malaysia’s background context in terms of policies and trends. In this chapter we briefly discuss some of the pertinent policies and trends impacting the themes.

### New Economic Policy

The New Economic Policy (NEP) began in 1970 following the May 1969 election race riots and was in force for the next 20 years (Jomo 2005). The National Development Policy (NDP) followed. Despite the NDP’s emphasis on achieving rapid growth, the widespread perception was that the NDP maintained the NEP’s focus on restructuring/redistributing wealth according to race. According to Jomo (2004, p iii), the NEP’s purpose was to ‘create conditions of national unity by reducing interethnic resentment due to socioeconomic disparities’. The NEP is, directly and indirectly, referenced in all of the experts’ themes of education, economic structure and brain drain.

The NEP benefits the majority of Malaysia's population – Bumiputera – that is, on the grounds that they account for the bulk of the disadvantaged (Thillainathan and Cheong 2016). The NEP is implemented via public expenditure and impacts policies and programmes from education to employment and asset allocation and ownership. Those classified as Bumiputera are given special privileges as determined by the Constitution, which includes extra assistance in starting businesses, mandatory discounts for real estate and a quota system based on racial distribution for education opportunities (Jomo 2005, Thillainathan and Cheong 2016). Those classified as non-Bumiputera are excluded from the advantages under the NEP.

Measurement of the NEP's target achievements has been subject to dispute and exacerbated by the lack of transparency on socioeconomic data, as these were deemed sensitive (Jomo 2005). Additionally, the NEP has evolved and changed since its inception, making impact analysis difficult (Thillainathan and Cheong 2016). In practice, NEP policies are controversial and viewed as pro-Bumiputera, serving the largest indigenous ethnic community (Jomo 2004, 2005, Thillainathan and Cheong 2016). While there is little doubt that specific socioeconomic targets of the NEP have been largely achieved, it is not clear that such achievement has led to national unity (Jomo 2004, 2005, Thillainathan and Cheong 2016). A discussion of the NEP, however, is beyond the scope of this report. Refer to Jomo (2004, 2005) and Thillainathan and Cheong (2016) for further details.

In the following section we examine trends identified by the panellists in greater detail, as well as other trends we consider pertinent to the development of scenarios.

### **Demographics – increasing ageing population, declining growth rates**

Malaysia's population currently stands at 31.7 million (World Economic Forum 2017). However, average annual population growth rates have been declining. Recorded figures show growth rates declined in 2014 from 1.6% to 1.2% in 2017 (DOSM 2018). Declining growth rates are a cause for concern, as the availability of a future talent pool gets smaller, Malaysia will need to find ways of attracting the talent it requires in order to sustain its high-income nation status. Based on the 2010 census, Malaysia's population comprises 92% Malaysian citizens and 8.2% non-citizens. Of these, ethnic population breakdowns are reported as follows: 67.4% are Bumiputera, followed by Chinese (24.6%), Indians (7.3%) and others (0.7%) (DOSM 2011).

### **Employment – gender differences, lower-educated female participation rates**

Since 1980, Malaysia's participation in the workforce has been on an upward trend, gaining annual net employment creation. Malaysia's labour force increased 2% to nearly 15 million in 2017 and unemployment rates remained the same as 2016 at 3.4% (DOSM 2017). Most Malaysians work full-time (97%), of which the majority are semi-skilled (62%), followed by skilled (23.5%) and low-skilled (14.5 %) (DOSM 2017). The employment breakdown by sector indicated over half of Malaysia's workforce is employed in services (54.9%), followed by manufacturing (24.3%), construction (14.8%), agriculture (5.1%) and mining and quarrying (0.9%) (DOSM 2017). Men's labour force participation rate is higher (77.7%) than women's (53%) (DOSM 2017). Women's labour force participation rates remain lower than men and this has been a long-standing trend; however, the gap has narrowed, as 2017 figures demonstrate (see Figure 1).

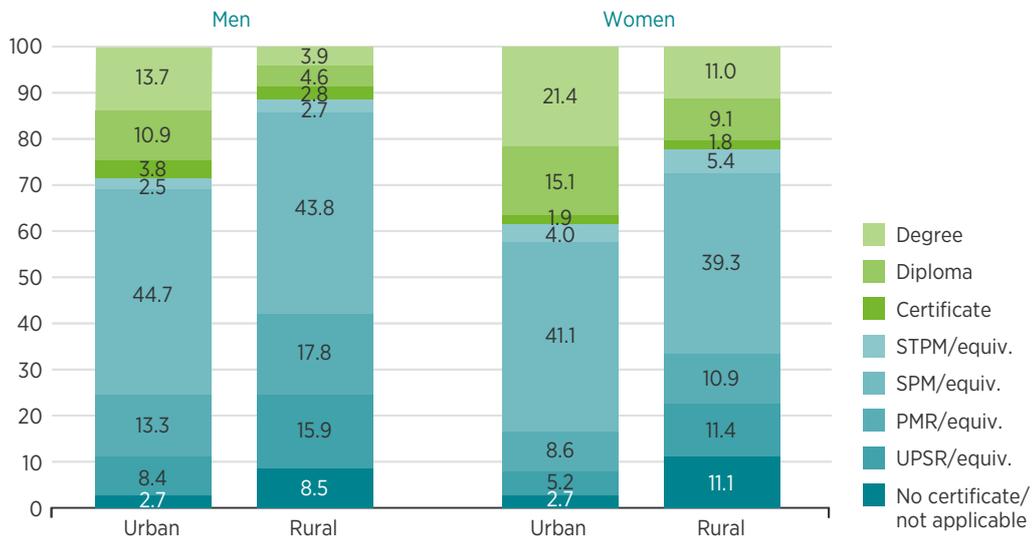
**Figure 1: Labour force participation rate, by gender, 1995–2017 (%)**



Source: KRI (2018, p78)

Figure 2 illustrates the education profile of Malaysia’s labour force by gender and location. Urban areas remain highly educated compared with those in rural locations. Women, however, have a higher proportion of the STPM qualification (Sijil Tinggi Persekolahan Malaysia; in English, the Malaysian Higher School Certificate) or Secondary 2 compared with men in both urban and rural areas.

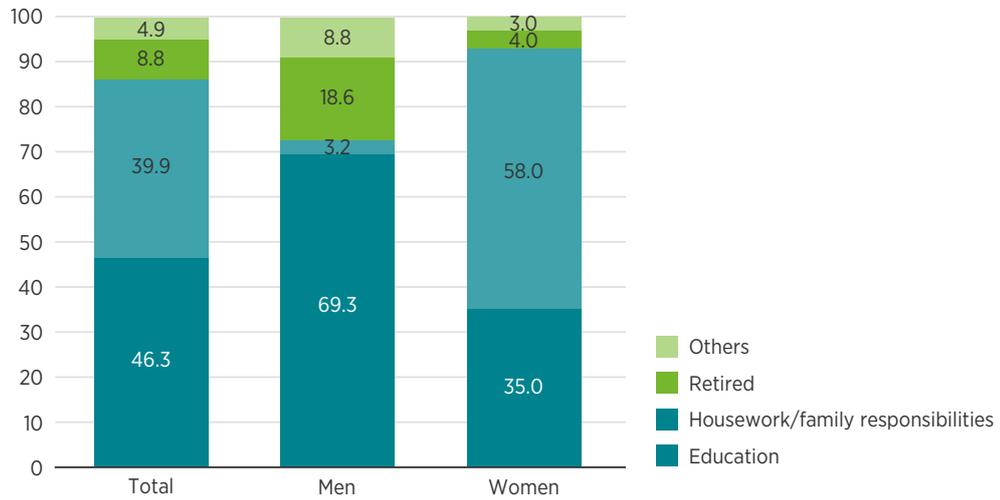
**Figure 2: Malaysian labour force education profile, by gender and urban/rural, 2017 (%)**



Source: KRI (2018, p87)

As can be seen from Figure 3, notable but predictable declining participation trends occur when women start families (typically, around age 30; they pick up again around age 40 – see KRI (2018) for further details). Explanations for this trend are depicted in Figure 3; women shoulder a disproportionate share of housework and caring duties.

**Figure 3: Population outside the labour force, by gender and reasons for not seeking work, 2017 (%)**



Number of persons ('000)



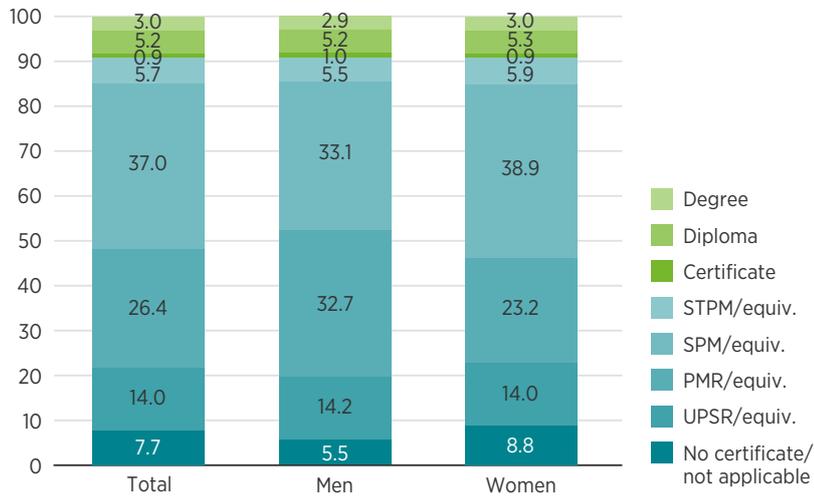
Source: KRI (2018, p94)

Notes:

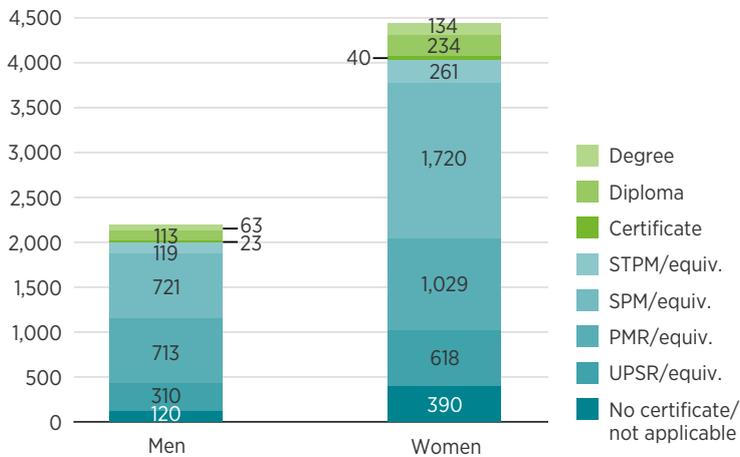
- (1) 'Education' includes those in education and those planning to pursue further education.
- (2) 'Others' include those disabled and those uninterested.

Worryingly, most women outside the workforce are mainly educated or in education (see Figures 4 and 5) and are of prime working age (for example, 25–54). Such gender differences suggest cultural norms of labour division, which may be barriers to female labour force participation.

**Figure 4: Education profile of population outside labour force, by gender, 2017 (%)**

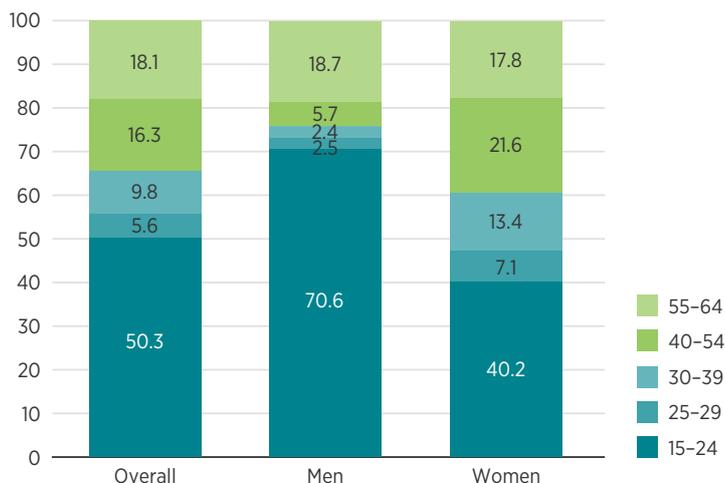


Number of persons ('000)

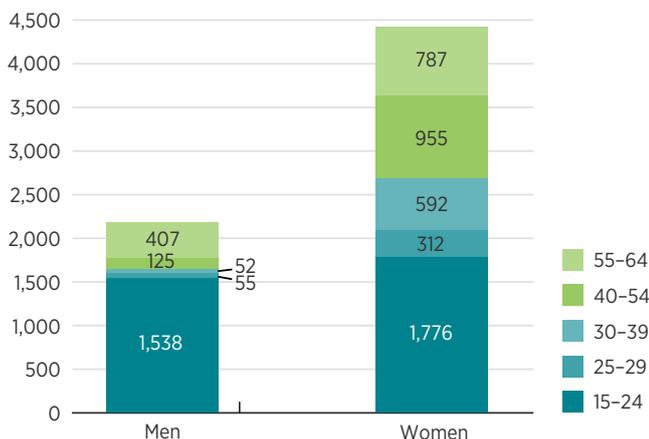


Source: KRI (2018, p92)

Figure 5: Age profile of population outside labour force, by gender, 2017 (%)



Number of persons ('000)

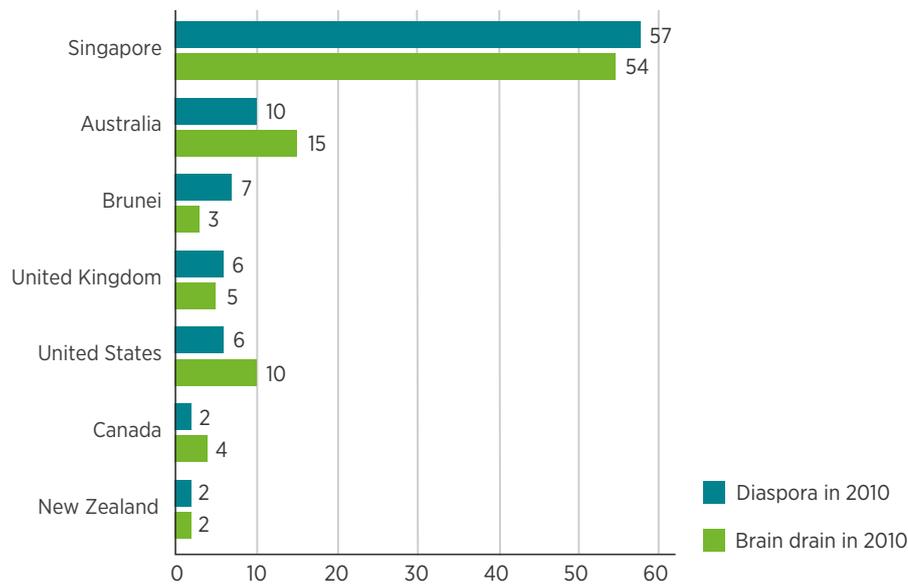


Source: KRI (2018, p93)

However, cultural norms are not the complete picture. Are issues such as inflexible working practices, limited availability of professional flexible employment posts, and access to quality affordable child care also barriers impacting female workforce participation? Until such barriers are understood, educated women outside the workforce will remain an untapped talent pool resource (see KRI 2018 for further details) and, with a declining quality talent pool, this is a resource Malaysia cannot afford to lose.

**Brain drain - geographically concentrated, ethnically skewed**

Malaysia’s brain drain is large and increasing, geographically concentrated and ethnically skewed (Jomo 2005, World Bank 2011). The World Bank (2011) estimated that, in 2010, Malaysian figures reached approximately 1 million. The brain drain is concentrated in a few countries, with Singapore attracting more than half of Malaysia’s migrant talent. Many are skilled, and ethnic Chinese Malaysians account for nearly 90% of Malaysia’s brain drain (World Bank 2011). The proximity of neighbouring Singapore, its cultural similarities, meritocratic approach to talent and open economy make migration attractive (see Figure 6).

**Figure 6: Malaysia's diaspora and brain drain, 2010 (%)**

Source: World Bank (2011, p15)

Considering that non-Bumiputeras comprise the majority of Malaysia's brain drain, discontent with NEP race policies are a key push factor (World Bank 2011). Other notable push factors include: differences in earning potential; career prospects; quality of education concerns; and improved quality of life relative to overseas locations. Further, brain drain is not alleviated by compensating inflows, since migration into Malaysia is mainly low-skilled, with some 60% with primary education or less (World Bank 2015). Additionally, the number of high-skilled expatriates has fallen by a quarter since 2004 (World Bank 2015). Universities continue to churn out graduates, alleviating the erosion in the number of tertiary-educated remaining in Malaysia. However, Malaysia's widespread skill shortages continue to point to significant quality issues in the domestic human capital stock.

### **Immigration - highly bureaucratic, fragmented system not linked to skill shortages**

PwC (2017) reported Malaysia's immigration management system is highly fragmented. Considering there are over ten different ministries and sub-departments involved in immigrant labour approvals, their conclusion is unsurprising. Currently, no single work permit covers work rights for the whole of Malaysia. Therefore, deploying a foreign employee across the territories is challenging and burdensome for businesses.

The MP11 (11th Malaysia Plan, Government of Malaysia 2015) emphasises effective migration management as key to achieving high-income nation status. The World Bank (2015) reported Malaysia's immigration does not reflect its labour shortage. Malaysia's fragmented immigration management system has resulted in difficulties with monitoring (for example data capture), duplication, control and law enforcement (World Bank 2015). Immigration flows are managed by semi-static quotas (rarely change) and levies uncorrelated to market conditions. Consequently, immigrant labour approvals do not truly reflect Malaysia's labour shortages and demands.

### **Immigration – reliance on cheap, foreign, low-skilled labour**

Malaysia has one of the largest migrant stocks and migrant ratio to total population in East Asia and the Pacific (World Bank 2015). Approximately 1.7 million migrant workers with legal documentation were employed in Malaysia during 2017 (IMF 2018). When figures incorporate undocumented migrants, estimates increase to a total of 3–4 million migrants working in Malaysia, of which almost three-quarters are low- and semi-skilled talent. Most of the foreign labour stock comes from Indonesia, followed by Nepal, Myanmar and Bangladesh (ILO 2016, IMF 2018). Immigrant workers are one of the primary sources of labour most commonly used in labour-intensive low-skill sectors, for example manufacturing (37%), agriculture (29%) and construction (ADB 2014).

A prerequisite of achieving high-income and developed nation status is the progression to a high-productivity high-income workforce. Currently, there is a broad reliance on low-cost production models that lean heavily on low-skill wages to maintain business margins. Furthermore, easy access to cheap, foreign, low-skilled labour discourages firms to invest in technology and transform operations (BNM 2018). The BNM (2018) report highlighted Malaysia would benefit from moving its economy away from cost-suppression dependencies as a source of competitive strength to one that competes on its quality labour force with technical talent and products.

### **Education – declining quality**

Education data supports the concerns of our expert panellists. Malaysia has demonstrated declining education outcomes in terms of quality (World Bank 2018), ability (science, reading and mathematics PISA scores) and inequality (UNESCO 2014). Quality-adjusted figures for schooling years indicated that despite Malaysians receiving 12 years of schooling, only 9 years contribute to actual educational achievement (World Bank 2018). Focusing on Malaysia's 2012 PISA results,<sup>2</sup> scores were below the global OECD country average (Malaysia's reported scores were as follows: 421 in mathematics, 398 in reading, and 420 in science, and are equivalent to the mean scores for Brazil, Colombia, Miranda in Venezuela, Montenegro, Thailand, and Trinidad and Tobago). Compared with 2009 results, Malaysia improved in reading (414) and maths (404), but worsened in science (422). In 2003, 90% of pupils passed the minimum benchmark; however, in 2011, only half of the poorest boys managed to reach the benchmark. Students went from being similar average performers to the US to declining to the level of those in Botswana (OECD 2014).

Graduate employability has been a rising concern for Malaysia (BNM 2016). Reporting on the key findings from the Ministry of Education's Graduate Tracer Study, 24% of 2015 graduates were unemployed (BNM 2016 p102). The BNM (2016) highlights a multitude of reasons, including: readiness of graduates to work in the world of work, insufficient job creation, skills gap (see also Lim 2018). Of note, employers continue to cite graduate skills gap concerns, such as industrial training experience, communication skills, and TVET skills (BNM 2016).

The OECD (2016) report recommended improvements to the relevance and quality of tertiary technical, vocational and education training (TVET) skills. Education is a driver impacting Malaysia's talent, as declining standards create talent pool deficits.

Talent pool deficits are detrimental to maintaining sustained economy growth. With declining education standards and a shrinking talent pool, can Malaysia's high-income status goals be sustained in the long term?

<sup>2</sup> Malaysia's 2015 PISA returns were below the required 80% benchmark, and therefore excluded from the OECD's final 2015 report. Despite upward improvements, Malaysia's 51% returns were advised to be interpreted with caution. Refer to OECD (2016) for further details.

## Economy

Over the past three decades, Malaysia's economy and labour market has undergone significant changes. Malaysia's labour market has urbanised, unemployment rates have remained stable and employment has kept pace with labour supply – all against a backdrop of slowing population growth and increased reliance on foreign labour (IMF 2018). World Bank Group (2017) computer simulations based on per capita income have indicated that Malaysia will achieve high-income status between 2020 and 2024.

In the aftermath of the 1990 Asian financial crisis, investment rates dropped, productivity growth slowed and comparative advantage based on low labour costs has dwindled as the economy matured (OECD 2016). The ratio of household debt to GDP in Malaysia has been decreasing but remains high at 67.1% (BNM 2018).

International recommendations indicated Malaysia will need to shift from labour-intensive business models to more innovation productivity gains, new skill investment, automation, innovation and technology to achieve and sustain high-income status (OECD 2016, World Bank 2017).

### National debt increase

In 2017, Malaysia's Federal Government debt stood at 50.8% of GDP; statutory debt guarantees increased over 2 percentage points from to 17.6% in 2017 (World Bank Group 2018). External debt in Malaysia averaged MYR235,594.44 million from 1990 until 2018, reaching an all-time high of MYR936,489 million in the second quarter of 2018 (Trading Economics 2018a).

### Foreign direct investment declining

Foreign direct investment into Malaysia has been declining; in the second quarter of 2018 it slumped to MYR2.84 billion from MYR11.98 billion in the previous period. In 2017, foreign direct investment into the country came in at MYR41.04 billion, below MYR47.03 billion in 2016 and reaching a record low of MYR2,843 million in the second quarter of 2018 (Trading Economics 2018b).

Increasing national debt and declining FDI will affect Malaysia's ability to invest in improving the quality of its education and training.

### World ranking competitiveness

Since 2014, Malaysia's overall competitive rankings declined; however, in 2018, a slight 2-point improvement gain from 24 to 22 was achieved (IMD 2018). Compared with Singapore, Malaysia consistently lags behind – Singapore maintains its world ranking position of third for overall competitiveness and thus remains a serious competitor for talent located right on Malaysia's doorstep. Malaysia has followed downward ranking trends for infrastructure, business efficiency and digital competitiveness (IMD 2018) since 2014. However, for economic performance, downward trends were reversed and surpassed 2014's rank to eighth position (see Table 1). Notable weaknesses are in the following factors: technology – starting a business, Internet bandwidth; future-readiness – Internet retailing, e-government and software piracy. Malaysia's notable strengths were in knowledge factors such as women with degrees. (See IMD 2018 digital competitiveness report for further details.)

**Table 1: World competitiveness digital rankings – overall and factors**

Overall and factors	2014	2015	2016	2017	2018
<b>Overall</b>	15	21	24	24	27
<b>Knowledge</b>	19	25	22	17	17
<b>Technology</b>	8	14	16	18	22
<b>Future-readiness</b>	23	27	28	27	29

Source: IMD (2018)

### Environmental Performance Index

The 2018 Environmental Performance Index (EPI) ranks 180 countries on 24 performance indicators across ten categories covering environmental health and ecosystem vitality. These metrics provide a gauge at a national scale of how close countries are to established environmental policy goals. (For further details, see Wendling et al 2018.) EPI data reveals a global tension between two fundamental dimensions of sustainable development: (1) environmental health, which rises with economic growth and prosperity; and (2) ecosystem vitality, which comes under strain from industrialisation and urbanisation. Malaysia ranks 75 out of 180 countries, and seventh in Asia (behind Japan, Taiwan, Singapore, Brunei, South Korea, Mongolia, and Sri Lanka).

### Sustainable Development Goals

Malaysia has aligned the United Nations Agenda 2030 and incorporated its Sustainable Development Goals (SDGs) within the MP11. In 2018, Malaysia ranked 55 out of 156 countries and achieved an index score of 70. Worldwide comparisons indicate Malaysia is one rank lower than China compared with its neighbours, Malaysia ranks second within ASEAN – Singapore claims the top rank (for further details, refer to Sachs et al 2018). Upward trends are reported on the following SDGs: no poverty (SDG1), clean energy (SDG7), work and economic growth (SDG8), and industry innovation and infrastructure (SDG9). However, downward trends are reported on climate action (SDG13). Of note, Malaysia has experienced significant deforestation over the past five years, reflecting ineffective policies.

Of concern, the 2018 SDG report indicated that no country is on track to achieve all goals by 2030. The US and Russia are noted as having taken the least action towards implementing SDG goals. Failing to reach climate change targets results in greater climate threats, for example, increasingly severe droughts, floods, and super storms. Such threats directly impact the depletion of natural resources that millions rely on for food security, livelihood and well-being. Nations cannot safeguard their long-term futures without addressing climate change.

### Summary

With increases in life expectancies and declining birth rates, Malaysia is fast becoming an ageing country (KRI 2018). To offset slowing population growth and talent deficits, Malaysia would do well to look at the following:

- Increase female labour force participation by looking at care management systems and flexible working practices (KRI 2018).
- Maintain equality and remove NEP policies to stem brain drain flow rates and improve quality and standards in education, as declining education standards and race-based policies encourage non-Bumiputera from an early age to seek higher quality education and career opportunities outside Malaysia.
- Streamline fragmented bureaucratic immigration processes so that targeted skilled labour can support Malaysia's advancing economy (World Bank 2012, IMF 2018).
- Shift labour-intensive models to more innovation productivity gains and new skills investment.

## 7 2035 scenarios

In this section, we present four scenarios set in 2035 Malaysia.

Scenarios are short stories designed to include plausible but potentially extreme developments in order to stimulate discussions on current assumptions of the future, and to provide alternative trajectories to the standard, linear three- to five-year strategic planning approach. A scenario is not a prediction and no one scenario is likely to play out in its entirety.

We have selected some drivers, established their direction or underpinning assumptions, investigated trend data to support and test the chosen drivers and the underpinning assumptions about them and synthesised several mini scenarios for which three were selected, in addition to the one representing the status quo. Following each scenario, we raise some of the implications arising from each scenario.

In Scenario 1, 'Groundhog day', we have created a baseline scenario where 2035 is recognisably a projection of the present. The principal strategy for competitiveness and economic growth is reliant on labour cost arbitrage (cheaper foreign labour) and lower operating costs.

In Scenario 2, 'Cog in the wheel', the main drivers are economic (high fiscal stress) and technology advances and increased skilled talent.

In Scenario 3, 'The elephant in the room', the focus is on technology and socio-political drivers for greater equality.

Scenario 4, 'Nature's revenge', explores the regional and national impact of environmental degradation, the impact of climate change and the socio-political responses.

Scenario 1

## Groundhog day



This baseline scenario assumes no major disruptions and uses trend data and recognised drivers.

### Economic drivers and trends

Malaysia achieves high-income nation status in 2025. The country's gross national income (GNI) per capita has passed the high-income threshold of \$12,056 (MYR 50,172). As an open economy, Malaysia remains highly dependent on the global supply chain, which has subjected the country to many successive crises, for example, volatile global markets, shifting advanced economic monetary policy expectations and ASEAN regional disasters resulting in increasing exchange rate pressures and uncontrolled capital outflows.

Steady streams of foreign direct investment (FDI) from China enables China to increase its economic influence over Malaysia, without commitments to reciprocal market access. The Government has reversed an election promise in 2018 and reintroduced the goods and services tax to contain the steadily growing government debt (MYR900 billion in 2025). Over 15% of Malaysia's revenue is going to debt servicing. Continued reliance on oil and gas revenues in a rapidly decarbonising global energy landscape has also increased Malaysia's exposure, both to petroleum price and exchange rate risks. The income gap in Malaysia between urban and rural citizens continues to widen.

### Political drivers and trends

Malaysia's affirmative action policies and race quotas remain. Bumiputeras retain their special privileges and the brain drain of skilled ethnic minorities to Singapore is unabated.

Malaysia continues to employ 'lowest cost' strategies as competitive advantages, thereby increasing reliance on cheap, imported, low-skilled labour to maintain business margins. Immigration systems remain highly fragmented and bureaucratic, disconnected from economic demand. Malaysia therefore has labour shortages and increased skills gaps.

Malaysia's PISA scores stagnate, reflecting the two-tier education system – one operating on quotas, and the other on merit. Increasing terrorist insurgency has been met with better intelligence collaborations within ASEAN and allies.

## Social drivers and trends

Female workforce participation rates have narrowed but remain lower than males. Women continue to leave the workforce to shoulder the unequal burden of caring and domestic duties.

Malaysia's population is predominantly urban and increasingly diverse. Despite professing a faith, urban citizens are increasingly secular in their outlook. Increased tensions between the urban and the traditionalist rural are the main drivers shaping public debates. There remains a politically active and vocal minority asserting religious values on an increasingly diverse population. Widening income gaps between urban and rural increase negative sentiment surrounding inequality amongst Bumiputeras.

Malaysia's increasingly ageing population results in increased withdrawals from the Employees Provident Fund and a higher pension burden on the Government. The older population are a significant political force, organising to lobby for policies favouring those who have contributed over a lifetime of work but are no longer economically active.

## Implications

### State

- Because of market volatility and increasing competitiveness, as well as nationalistic policies within the region, Malaysia struggles to maintain its high-income nation status and continues to borrow to fund its fiscal deficit.
- With human capital participation in the economy sub-optimal, due in part to the continued brain drain and lower female workforce participation rates, the dependence on foreign workers continues, which sometimes includes cloud labour, for example Mechanical Turk. This also impacts Malaysia's fiscal position and balance of payments as outward remittances grow.
- The state (for example, the HRDF, TVET programmes) continues to lead the policy interventions to improve the quality and relevance of skills in the economy. However, an outdated curriculum in state schools, the middle classes opting for overseas education, and ineffective, bureaucratic immigration policies ensure talent is mismatched to Malaysia's needs.

### Society

- The socio-political policies, positive discrimination, and socioeconomic divides have resulted in less inter-group interaction across society. The increase in these social tribes has lowered communal trust and increased tensions between the various communities. Vocal minorities asserting their 'rights' in an increasingly diverse population add to the tensions. Debates on xenophobia, gender equality, ageism, diversity and inclusion generally are regularly aired.

### Organisations

- SMEs do not invest in technology or train their talent because of continued reliance on imported cheap foreign labour. SMEs find it increasingly difficult to maintain competitiveness and sustain profit margins.
- As larger companies in manufacturing and technology sectors increase automation and invest in productivity initiatives, there will be areas of acute skills shortages.
- Organisations lag behind neighbouring countries in the adoption of flexible working practices. Women continue to leave the workforce to fulfil increasing caring burdens.

### Individual

- Malaysia's race-based quota policies continue to drive ethnic Malaysians to seek opportunities elsewhere. Neighbouring Singapore's open talent immigration policy remains an attractive pull factor, thus Malaysians will continue to see Singapore as their first and even final port of call.
- Major centres of economic activity such as Shanghai and Singapore will be magnets for talent, especially in finance, professional services and advanced manufacturing.

## Scenario 2

**Cog in the wheel**

Here the main drivers are economic relevance in the regional supply chains, technological advances and increased skilled talent.

**Economic**

For the past 15 years, Malaysia has been caught in the trade war between the major economic blocs. There has been a wholesale global retreat by Western multinational companies from cross-border integration. Western protectionism accelerated ASEAN market integration in the last 15 years. There is robust intra-ASEAN trade and with regional partners China, Japan, India and Korea – significantly more important than trade with the EU or the US.

Malaysia's long tradition of labour cost arbitrage is increasingly bypassed in favour of more localised manufacturing in other ASEAN countries, where cheaper labour, shorter product cycles and personalisation is important. Countries such as Indonesia, the Philippines and Thailand, each with their own growing consumer base, are becoming globally fashionable and attracting considerable FDI investment.

China, in developing its own higher value products and services, has invested heavily in building both infrastructure and supply chains that knot the entire region together.

Malaysian SMEs have responded in two ways. Some have moved their labour-intensive industries to other ASEAN countries, taking advantage of the abundant younger and cheaper labour. Others have invested heavily in technology and now participate in technology value chains across the region. More agile organisations use cloud labour based outside Malaysia to plug specific skills and intermittent demands.

Government budget concerns have resulted in fiscal consolidation and the introduction of additional direct and indirect taxes. Personal indebtedness and public debt servicing has risen to 18% of GDP. While this level of debt is sustainable in the short term, this is also limiting policy options.

## Technology

In response to the challenges of Industry 4.0, Malaysia has focused on global digital competitiveness. Malaysia has addressed Internet bandwidth and coverage, and ease of starting a tech business. However, cyber-security issues and digital piracy (for example software and data) are deterrents for investors. There is a Ministry of Innovation and Enterprise, a one-stop shop providing end-to-end support on intellectual property protections, market intelligence, business mentoring, partnerships, research, immigration and financing.

Neighbouring countries have also invested heavily in next-generation digital infrastructure. Malaysia's strength is in hardware prototyping and bespoke manufacturing. Global firms, especially from China, Japan, Taiwan and Singapore, draw on decades of successful innovation in bespoke components and additive manufacturing, mostly located in Penang. Khazanah, Malaysia's sovereign fund, is also an active investor.

Gradually, key global corporations in chemicals, biotechnology and advanced materials have established research units in Malaysia, attracted by business-friendly immigration policies, tax holidays and growing synergies with existing manufacturing strengths.

The public education system has been radically overhauled. English is the lingua franca. While private education (and Singapore) is still favoured by middle-class parents, technology investments, pedagogical innovation and a growing cadre of digitally savvy teachers have raised standards in urban elite schools. There is more emphasis on understanding data, assessing evidence and using these to improve students' ability to be more discerning of (mis)information.

## Implications

### State

The policy successes were the ICT infrastructure investments, the overhaul of public education and the pro enterprise and innovation ministry. In combination, this has maintained Malaysia's attraction for investors and inventors. Buoyed by success in ICT and limited sectors such as palm oil innovation, Malaysia tries to develop more research and development ecosystems in robotics, cyber-security and pharmacopeia (trading on indigenous flora and fauna) but is hampered by the supply of technical experts.

There is now more attention to cyber-security and intellectual property (IP) issues as these are impeding greater inward investment.

### Society

The ubiquity of artificial intelligence embedded in products and services has been embraced by Malaysians. Ethical considerations around personal data use and ownership, while regulated, have not been debated widely until a couple of high-profile breaches. Algorithms incorporated into systems are perceived to be at odds with the social engineering policies of the state. Calls for better enforcement and accountability of public and private databases are now shrill, but limited by the lack of technically competent investigators. There is a growing debate about privacy, and the corrosive effect of misinformation on trust in public institutions and 'official' news channels. Most citizens seek information from a range of web-based international channels.

The influx of other ASEAN citizens and the movement of citizens raises some communal tensions but also presents opportunities to deal with some prejudices, that is, race, religion and gender roles. The urban-rural divide in attitudes is evident across the region.

### **Organisations**

The access to ASEAN talent, enhanced national infrastructure, focused educational reform, coupled with the success of Malaysia's prototyping prowess, have ensured steady FDI. This has also encouraged many professional support services to invest in smart machines, increasing the quality and speed of these services for both corporates and start-ups alike. These organisations are also an integral part of the prototyping process and many have gone on to support and adopt these technologies. They are heavy investors in their human resource development. Lower cost of doing business in Malaysia is considered positively.

### **Individual**

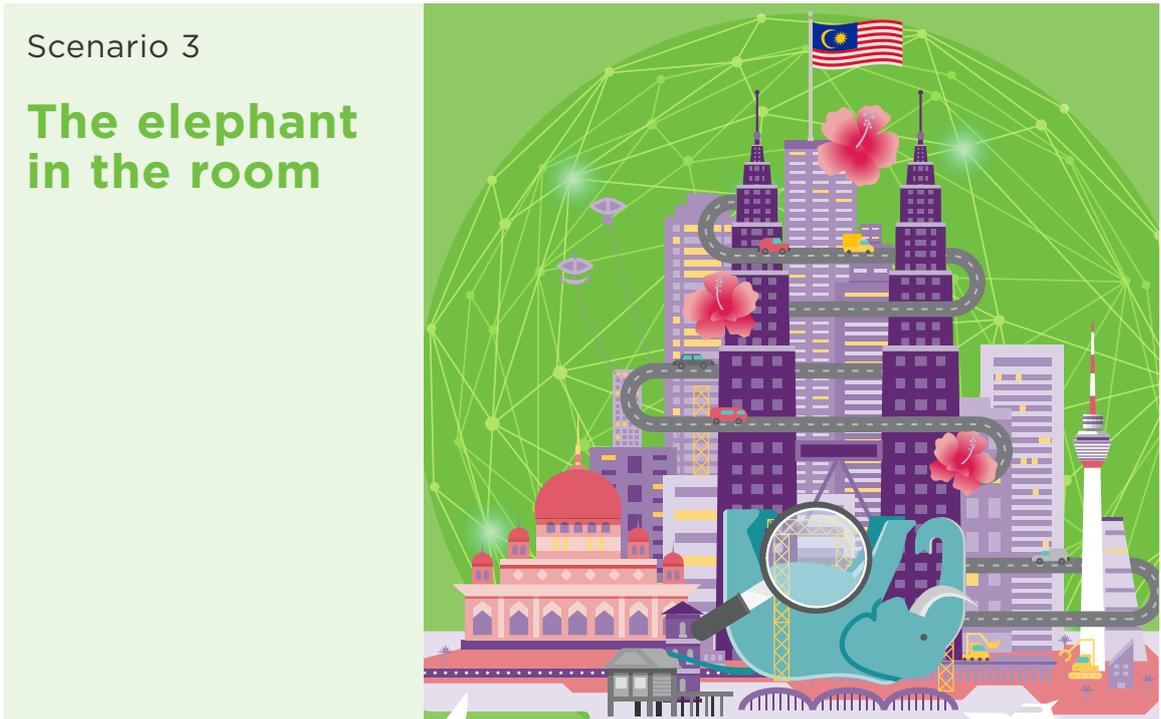
Singapore is the destination of choice, having implemented a technology-driven development strategy in 2020, and this has consolidated the brain drain of young talent.

The brain drain of young talent has slowed. The successful sectors have created a critical mass of talent, at least for now. The test is whether these start-ups can continue to remain as they grow and seek fresh funding and expertise.

The rising tax burden and living costs (for example private education and health) is affecting the middle classes. This is a push factor for professionals to relocate to higher-paying/lower-tax jurisdictions.

The correlation between Malaysians' tertiary studies (location of study) and emigration remains strong. Singapore's cultural familiarity and proximity makes it an attractive destination for professionals and specialists. Sustained policy interventions have seen many multinationals locating their Asian research hubs to the city-state.

## Scenario 3

**The elephant in the room**

Main drivers – technology and socio-political

**Technology**

Agile organisations recruit specialists on a contingent basis using sophisticated gig platforms. These platforms use profiling instruments to assure a good match with specified needs. Most workers' performance and well-being are monitored. Data collected is analysed via algorithms which provide real-time feedback on individual, team and organisation productivity. The detailed profiling of workers enables performance-related measures to be calibrated. HR-bots quickly locate any skills or knowledge gaps and rectify these in short order. It also allows for objective conversations about under-performance, enabling these to be evidence-based. These performance statistics are published in the interests of fairness and, as the argument goes, workers may take remedial action to improve their performance scores.

All multinational companies use these performance matrices and enforce these globally – subject to local minimum wage requirements. Tech companies long exempted from Bumiputera quotas for equity and staff have spurred all the MNCs to demand a level playing field. The Government agrees to these demands. These quickly apply also to Malaysian companies, who argue that they cannot be disadvantaged. Only the public sector retains the NEP.

**Socio-political**

Technology has also shaped more emphasis on data literacy in schools and consequently more discernment of (mis)information. This has catalysed the national conversation on the relevance, utility and cost of the NEP. There has been a fierce debate nationally, exposing the lack of reliable public measures of the policy's effectiveness and more reliance on and trust in academic analysis. A lot of heat from 'fake news' has also made this a fractious debate, but public scepticism of state propaganda has resulted in an independence of views in the largely urban population.

As the society ages and family sizes shrink, juggling child and elder-care responsibilities, coupled with changing attitudes towards work, has placed a premium on flexibility. Forty per cent of the workforce are 'giggers', including many seasoned professionals

The transparent publication of performance data, the rewards and the perception that public sector workers are Tier 2 talent ensures a steady exodus of good state employees to the rest of the economy. The state struggles to maintain the NEP's policy of race quotas when new applicants grow increasingly scarce.

The gap in public-private productivity ensures that the socioeconomic gap continues to grow. Subsidies and a generous social safety net only entrench the culture of entitlement and dependency. This evolves to a social safety net that focuses on poverty eradication and capability development ('learning to fish') – essentially echoing the spirit of the NEP at its inception.

The fault lines are socioeconomic, between the urban and rural Bumiputeras. Women, who make up a large proportion of public sector workers, favour abolition for the sake of fairness to the next generation. A ten-year transition period is agreed, together with changes to the constitution.

To encourage international giggers, Malaysia has introduced special immigration permits for highly skilled workers with an international clientele and support organisations who use cloud labour. Malaysia's decent digital infrastructure and connectedness attracts a consistent inflow of a few thousand specialists and professionals from around the world.

By 2035, very few policies on race-based affirmative action remain in force. The socioeconomic gaps have been contained because of the high level of public debate and transparency of the changes. The elephant in the room affecting the retention and attraction of talent is acknowledged. There is increased trust in the leadership of the Government of the day for having managed the debates maturely, and better communal dialogue.

## **Implications**

### **State**

The ten-year transition period for the phasing out of the NEP gives a sense of urgency to the opportunities the state can provide. The interventions have clear outcomes for independence of the recipients and firms are expected to open up apprenticeships and entry-level jobs to those who require work-readiness support. These measures appear to be positive discrimination by another name, but the assurance is that these are time limited.

Managing the widening socioeconomic divide becomes difficult as one of the main policy levers is being phased out. While this makes the public finances more sustainable, with the broad consensus that this is a good thing for Malaysia, there are often calls to reverse the policy. This ten-year journey has seen opportunistic slips and compromises so that Malaysia still maintains some vestiges of the NEP after the transition period. By agreement with all the stakeholders, this is limited to the rural areas, where self-sufficiency is made difficult by rapid urbanisation and the paucity of good opportunities.

### **Society**

There is concern about the widening socioeconomic gaps as workers in the private sector, especially the boom industries, get paid many times more than Tier 2 and public sector workers. Progressive taxation is recalibrated to ensure some redistribution.

A national debate on what is 'fair' and a burgeoning national debt burden raises questions about the sustainability and return on investment of maintaining positive discrimination. Tensions are no longer primarily ethnically driven but are intra-Bumiputera along socioeconomic lines. Bumiputeras part of the global diaspora of senior executives are also actively calling for the programme to be phased out, arguing that the law of diminishing returns made this policy change long overdue.

The threat of a widening social divide remains but now the focus is socioeconomic fairness for all: urban/rural; men/women; Bumiputera/non-Bumiputera; Malaysians/other ASEAN nationals; young/old. While interest groups and community leaders are clamouring to be heard, all recognise that this is a momentous change, marking a maturation of the politics of Malaysia.

Society must re-establish its inter-communal relationships after so many years of suspicion, and the new compact requires a considerable amount of trust in the institutions as well as its leaders. There are tensions and there are always angry words being traded, but the leadership, having committed to the process, is keen to nail their project to the mast and follow through.

### **Organisation**

The evidence-based approach to worker performance makes clear who is less productive. The labour market is highly competitive, with the best workers and specialists paid regionally competitive packages.

Many women do well in the performance metrics and organisations actively promote flexible working and generous maternity and paternity terms to retain talent.

Companies are now more agile, engaging a ready pool of talent from across the region (including Malaysia) for time-limited gigs.

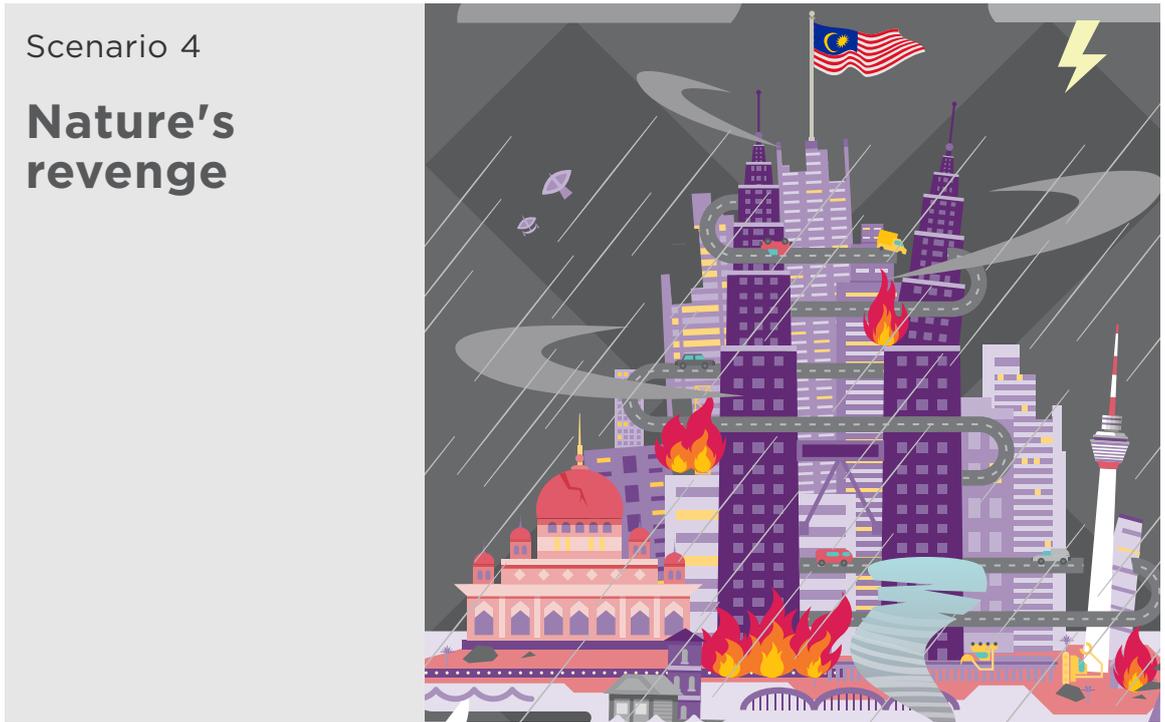
Managers are now focusing on quality and timeliness of outputs instead of inputs. These ad hoc project teams with flexible work arrangements have also improved labour force participation for women and older workers.

The end of the NEP provides a sea-change for many organisations and their cultures. The quality (or lack) of leadership means some organisations thrive and others struggle with the new merit-based (labour) marketplace.

### **Individual**

The effect on the brain drain takes time as the trust has been eroded over many generations. Nevertheless, as opportunities grow and good jobs abound, more and more Malaysians stay, bound by strong family ties and the ease of setting up businesses now that red tape and the mandatory regulatory weight of Bumiputera equity quotas are no longer enforced.

## Scenario 4

**Nature's revenge**

Main drivers – technology and socio-political

The main drivers are a regional crisis sparked by environmental degradation and the socio-political responses. The scenario has drawn on the IPCC's work in general and the special report *Global Warming of 1.5C* (IPCC 2018) in particular.

**Environment**

The climate change tipping point has been exceeded and global temperature increases will soon reach +2°C. While all ASEAN countries signed up to the Paris Accord, inaction in southeast Asia coupled with India and China has wiped out gains from energy efficiency and emission reductions elsewhere in the world. Malaysia and Indonesia are particularly culpable with their deforestation for palm oil plantations.

In the past 20 years, energy demand has grown about 65%. Coal has been the fastest growing source of energy, accounting for about half of the additional energy demands. Countries in southeast Asia are squabbling over water rights and cross-border air pollution. This has led to tensions and conflict.

Natural hazards (for example flooding, wildfires, typhoons) are more severe and frequent. Long coastlines and heavily populated low-lying areas suffer enforced migration from these 'natural' disasters.

Malaysia now receives large numbers of environmental refugees. The displacement of millions to insecure futures leads to greater ethnic and nationalistic tensions. The ensuing refugee crisis makes resource monitoring extremely difficult and countries are unable to safeguard their own resources against illegal extraction. There is more illegal logging, smuggling and lawlessness, especially in rural areas.

**Economic**

The ADB (2015) estimates that if no action is taken to address climate change, the region may lose up to 11% of gross domestic product (GDP) by 2100. Governments are under pressure to act quickly or risk giving up improvements in living standards.

Decarbonisation has made Malaysia's oil and gas reserves less valuable. Malaysia begins to aggressively pursue renewables for energy needs. The crisis has increased spending on defence, border security and policing.

### **Political**

The ASEAN ambition of a common market is postponed because of conflict over natural resource sharing, for example water. Malaysia's leaders seek to unite the country by prioritising sustainable development and a social agenda that more 'fairly' distributes the wealth, resources and opportunities within the country and across generations. The country takes the long view and adopts scenario planning to explore alternative futures and attendant risks.

### **Implications**

#### **State**

The need to react to the ecological crisis has blown a hole in the public finances and the fiscal stress is considerable. There has been sustained criticism of the Government for its lack of preparedness and decades of complacency in relation to climate and environmental issues. It is struggling to respond across the country and is seeking support from Japan, Singapore and Australia.

The need to increase spending on national security exacerbates Malaysia's borrowings and crowds out spending on other productive sectors. The Government is in a constant state of crisis management and reaction.

#### **Society**

The citizenry is far more sensitive and aware of the impact of their actions and many are activists fighting development that has a long-term impact on the next generations. There is also greater respect for the non-governmental organisations (NGOs) who have been monitoring and warning of the impact of unsustainable growth policies pursued by successive governments here and elsewhere in southeast Asia.

#### **Organisations**

Organisations are far more alert to the pressures of consumers and stakeholders about their responsibility for the ecological calamity. Many of the larger organisations have been actively reducing their carbon footprint and building the resilience of their businesses to climate change. The single-use plastic industry is largely decimated, but other sectors such as bio-fuels and paper are booming as new uses are developed for more innovative applications of scarce resources. The crisis has forced many companies to re-engineer and rebuild, while many others have closed permanently.

#### **Individual**

The focus on sustainability has destroyed many of the more polluting jobs and opened up new technical jobs. There are more jobs in education, data monitoring, cradle-to-cradle manufacturing and design work. Malaysia becomes part of a global network of countries that provide environmental expertise to other less developed countries. Malaysia's forte is in tropical ecologies.

## 8 Agency and its implications on Malaysia ambitions

In this chapter, we present our reflections on the implications of the scenarios outlined in Chapter 7.

The four scenarios provide alternative futures where particular drivers have been foregrounded. What is also clear is that the agency of the state, actors in society, organisational leaders and individuals can also choose different ways of framing the situations described and influence the outcome quite dramatically.

The future of Malaysia's talent is consequently also a function of choices made by different actors at important key points in the journey to 2035. Oftentimes we go with the crowd and settle for the security of the majority. Sometimes we vote with a minority interest because we feel that is the right thing to do on a point of principle or because the price for that decision is too high for the state, the organisation or the group/community with which we identify. We may challenge the assumptions made in the situation and/or work from a different paradigm. The ability to reflect on one's position and critically assess how one's interests and biases are weighted in any decision is a sign of one's 'maturity'. Given that the focus of this study is also on the quality of talent, it would seem apt to examine how maturity of the main actors can influence perception of the truth and consequently decisions and outcomes.

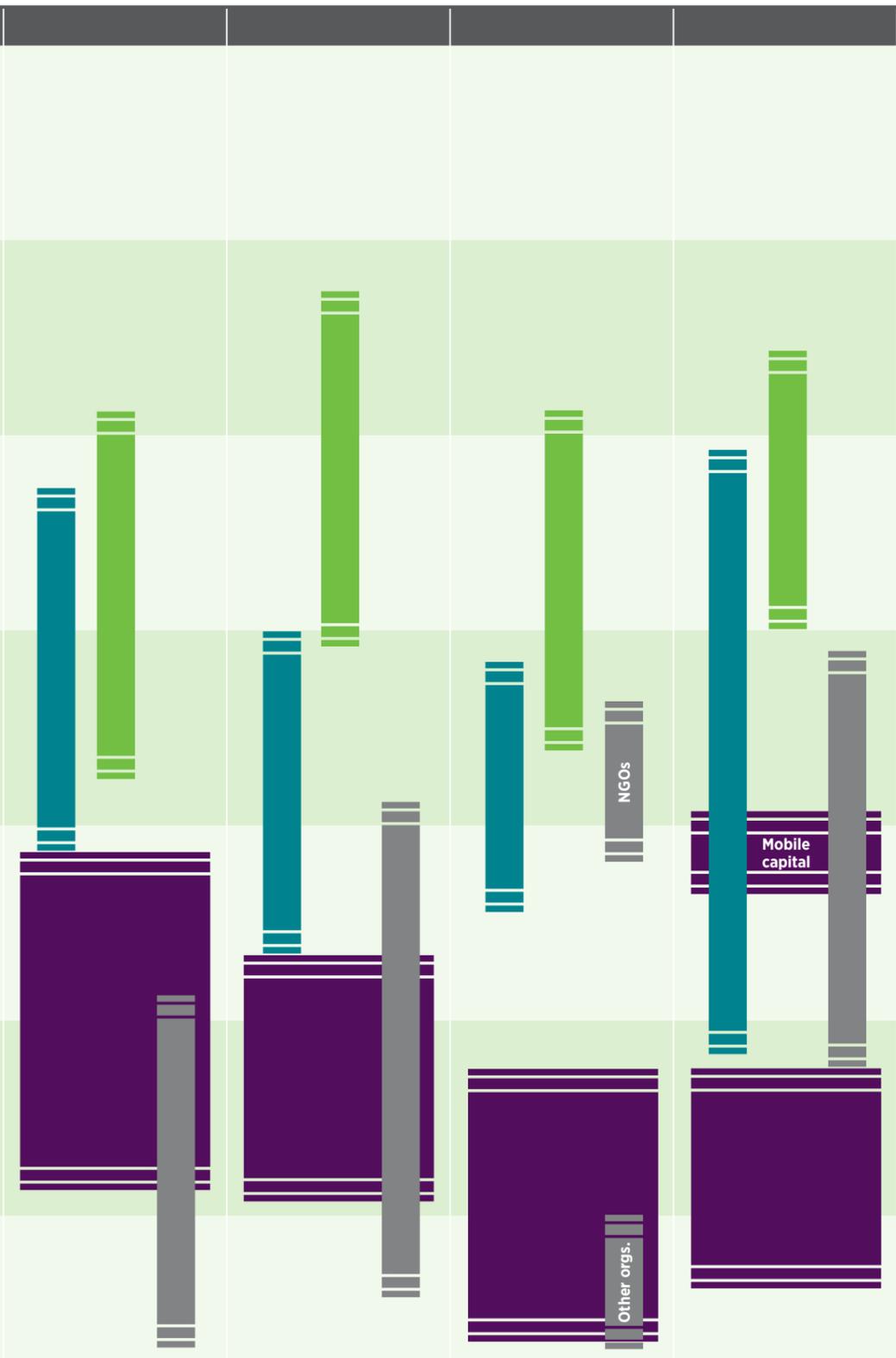
In Table 2, the four actors – the state, society, the organisation and the individual – make very different choices at each level of maturity. At Level 1, the object is survival and maintaining the bare minimum. At the individual level, it's having some skill or ability that you can trade. At Level 2, there is an attempt at creating and maintaining order/some minimum standards. At Level 3, where the outcome may require not merely a transaction but a form of mutual interest to achieve a shared outcome, what is desirable is to develop common cause and shared identities. At Level 4, there is a drive to find out more, develop and improve. At Level 5, we see a more creative application of knowledge. The environment here enables actors to make fresh connections, derive alternative perspectives, gain new insights and innovate. There is an element of being able to make mistakes. Failure is merely deferred success and does not carry any stigma. At Level 6, embracing complexity and accepting difference are the principal features. It is at this level that a perspective shift from 'us and them' to 'we' begins. At Level 7, the actors have a grasp of the systems in play, a strong sense of who they are, and the values and vision to make a difference. It is a magnanimity and an expansiveness to see beyond what is within one's own space.

Each actor can operate at any level and simultaneously at different levels of maturity depending on their reaction to the issue(s) and situation under consideration. Sometimes it is also a matter of prudence, given the limitations of those around you at the point that decision or action must be made. The main features of the maturity model are outlined at each level in Table 2, providing an illustration of what operating within that paradigm would look like. There is a deliberate focus on people – their paradigms and their development – in the illustrations used throughout.



Table 2: Maturity model describing choices by: state, society, organisation and individuals

Level of maturity	State**	Society*	Organisation*	Individual*					
<b>LEVEL 7 Visionary.</b> Sees issues holistically and grapples with principles, identity and what will make a difference. Systemic approach.	Leads on global issues for the long-term good of all. An exemplar of principled, inclusive governance. Willing to take tough decisions, while also forgiving of fallibility.	Able to enact and live by espoused principles, especially when defending the rights, interests or dignity of others.	Assumes leadership in making long-term, difficult, sometimes immediately costly decisions for the long-term benefit of the whole.	Weighs up choices using ethical principles for the whole/'greater good' beyond the needs of oneself. Mastery of important externalities.	L7				
<b>LEVEL 6 From 'me' to 'we'.</b> Appreciates complexity of values and ethics. Accepts and respects difference and diversity.	Sees oneself as a force for good. Appreciates the interests and cultures of other nations.	Able to rise above sectarian interests and finds common ground on which to build stronger bonds without dismissing difference.	Sees oneself and behaves as an integral part of society.	Sees oneself as part of something bigger and appreciates the validity of the other's view. Appreciates and understands risks well.	L6				
<b>LEVEL 5 Interconnectedness.</b> Joins the dots. Innovates. Able to identify patterns and make connections to achieve goals in a new way.	Applies innovative and creative approaches to address issues of the day. Human capital is one key resource to better, fulfilling lives for citizens.	Able to engage conceptually (vs. 'I am the measure of all knowledge/truths'). Creative, questioning and able to tackle sacred cows. High trust.	Openess to trying new thinking and ways of working. Takes risks. Failure does not result in censure. Confident.	Makes new connections and creates something new. Beginning to think 'outside the box'.	L5				
<b>LEVEL 4 Learning and developing.</b> Belief in progress and one's agency to effect change.	Sees integrated development of human capital (education, skills, industrial master plan, and so on) strategically as national interest priorities.	Values learning of all kinds. The development of individual potential for own sake is important.	Nurtures a culture of learning both individually and corporately. Learning and development is encouraged and supported.	Aware of the need to develop potential and is constantly learning.	L4				
<b>LEVEL 3 Belonging.</b> Establishing interconnections that foster group identity.	Has developed a national identity/mythology which all are encouraged to embrace.	Shows some respect and tolerance of the 'other'. Embraces difference and bestows rights on minorities within comfort levels.	Supports social networks and communities reinforced by common values, functions, interests, and so on	Has ability to analyse situation and adapt response to achieve prescribed outcome.	L3				
<b>LEVEL 2 Order.</b> Planning and processes in place to ensure consistency but not always rigorous or disciplined.	Has functioning administration delivering public goods and infrastructure.	Establishes common rules of engagement and recognised authorities to lead and arbitrate.	Seeks consistency and predictability by setting up policies and procedures.	Able to apply those skills and knowledge under direction.	L2				
<b>LEVEL 1 Survival.</b> No systems. Ad hoc, uncertain, dynamic and reactive.	Ensures that there are the bare necessities. Subsistence.	Caters to basic needs. Some security. Basic freedoms to go about one's life.	Has basic administration to run a business. Adjusts where and when necessary.	Has knowledge and skill for the task at hand.	L1				



\*Acknowledging that the extent to which each unit of analysis has agency or holds a position on any issue is subject to context, and the influence of others.

### **Implication 1: Groundhog day**

This is the baseline scenario. The assumption is that some of the trends and the actors operate at Levels 3 to 4. Here the actors are seeking an advantage over the other with the aim of addressing immediate or imminent issues.

The state seeks to preserve the status quo and draws the nation together by identifying some bogeymen around which the citizenry can direct their ire. Approaches include building narratives around disaster or crisis so that there is a need for severe reactions. The mythologies of national identity, threats to the way of life should sacred cows be tempered (for example policy of positive discrimination), downplaying policy inconsistencies (for example skills shortages vs. encouraging brain drain by downplaying its effect on the economy) are all strategies used by the state to maintain order and national unity at a guttural level around Level 3.

Society largely colludes with the mythologies, amplifying the dangers without critical examination of cause and effect. There is a strong sense of preservation through supporting the status quo. There is a fearfulness of the others – some clearly identified and others unknown – but also not without cause given the experiences of the past. Because so much is left unsaid and unchallenged, there will be large segments of the population who will not engage with the economy, such as women, who will in 2035 be more educated and skilled than 20 years earlier but still choose in large numbers not to stay active in the workforce.

#### **Organisations**

In this scenario, organisations are not especially innovative, maintaining the hierarchy and high-power differences (see Hofstede 1983, 2011) that encourage an obedient, docile workforce. Here organisations are fairly transactional in the environment, not providing leadership on many relevant issues around environment or improved employment relationships. The organisations also accept the costs and inefficiencies of doing business in Malaysia, even if these do not accord with their global values of equity.

#### **Individuals**

Because of Malaysia's full employment situation and pro-Bumiputera policies, many have a sense of entitlement to employment while others follow tried and tested pathways to greener pastures abroad. These individuals are driven by professional achievement evidenced by considerably higher rewards and the opportunity to benchmark their employability in a variety of market conditions. The attraction of Singapore is its cultural compatibility, proximity and talent-friendly policies. Malaysians are also drawn to other English-speaking destinations offering high-quality tertiary education and the opportunity to remain in those economies thereafter. Those seeking greener pastures are operating at Level 4 and those who feel entitled or dependent on the pro policies operate at Levels 2 to 3.

While 'groundhog day' has the comfort of the familiar, the world of Vision 2020 – when Malaysia first articulated its ambition to be a developed country – is very different from 2035. The rise of a multipolar world, with China a major world power, ubiquitous data collection and mining, automation, an ageing population and changing priorities and pressures around work-life balance will limit the effect of centrist policy interventions. The democratisation of information and the diffusion of government power in favour of wider partnerships (for example ASEAN) will affect the choices available. The baseline data used in this scenario suggests that Malaysia is in a fortunate position to arrive as a high-income nation, but it will take more and more focus to maintain the momentum towards higher and higher income per capita as other nations raise their game.

## **Implication 2: Cog in the wheel**

In this scenario, we explore Malaysia's response to a world where politics and technology provide Malaysia an opportunity to be part of this multipolar world by integrating its economy to regional supply chains with strategic investments and painful readjustments to its education system. The focus is on building enough human capital to attract foreign direct investment and to remain relevant to an Industry 4.0 world. Industry 4.0 requires a paradigm shift from the mechanistic models of input-output towards an economy of potential abundance, with data and data analytics to derive value and anticipate markets.

### **The state**

As a major trading nation with a strong manufacturing tradition in electronic components facing a protectionist trading environment and nationalistic political climate, it is imperative that Malaysia navigates these international forces carefully to stay relevant.

To meet Malaysia's ambition of joining and staying a high-income country, policy must support investments that keep Malaysia integrated into the higher-level global supply chain of products and services. The resources to invest in the next generation of digital infrastructure and a focus on business-friendliness through an innovation and enterprise ministry supports a Level 4 intervention. There is clear understanding of the components for remaining ahead of the competitors and where policy levers can make a difference. Presently, at 22 out of 63 countries (IMD 2018) in the global competitiveness index, down from 12 out of 63 in 2014, Malaysia needs to work harder, to be on a level pegging with its competitors. A major destination of Malaysian talent, Singapore, has consistently ranked between third and fourth since 2014.

The default reaction to the situation in this scenario is mainly at Levels 3 and 4, which look at incrementally building or reforming the national infrastructure for human capital development via staged central planning, when what is needed, in addition, is some smart, tactical responses at Level 5. In this scenario, what is foregrounded is the mobility of talent and tensions of needing to be closer to the user while capitalising on the value of specialist ecosystems. In this scenario, we explore a Malaysian success story in migrating long-established leadership in mass-producing electronic components to a centre for the design and prototyping of next-generation electronic components. This is offered as a glimpse of Malaysia's potential for higher-value work and the imperative to replicate this story across the economy.

What is clear is that Malaysia cannot go it alone. Malaysia has to be extremely disciplined in building up competitive advantages in a range of niche high-value areas and to build an ecosystem around these that deepens the culture of experimentation, research and innovation – areas in which the state plays a crucial role.

### **Society**

Malaysia is a society that prizes education and educational credentials. In this scenario, we explore the impact of technology and global power shifts on learning and development imperatives for Malaysians to thrive in an Industry 4.0 world. Here, we anticipate that the pressures for a more digitally applied curriculum, a hands-on, discovery-style pedagogy and a dynamic cadre of technologically savvy teachers will be intense. While Malaysia does not have the resources to equip every state institution, the societal pressure for educational reform and a step-change in quality will be intense. The evidence is the number of middle-class parents who will act by registering their children in private and overseas institutions. This should be read as a vote of no confidence in the current public education approaches.

It is no accident that society would place such a premium on education. It is traditionally the ticket to social mobility and, to Malaysia's cost, global mobility of talent. This scenario offers two key areas where policy must succeed – in raising the overall quality of state educational institutions and in building the next wave of globally successful sectors in order to retain the brightest and the best.

This transition to higher economic value added requires more focused investment and retention of human capital. Here, we anticipate higher and broader taxation for the country to fund those educational reforms. It is also to build the next generation of digital infrastructure upon which wealth-creation in the digital knowledge economy relies.

The other question is the reputation of the state in translating additional tax revenue into better public services. There will be a lot of scrutiny by the citizenry and support for policies depend on trust and accountability. The current crackdown on corruption and spending excesses by the incoming 2018 government, if sustained, should win the support of the population. It is too early yet to tell.

The other factor that will weigh in on society is the economic and political reality that Malaysia has a superpower on its own doorstep – China. That will have a cultural and economic pull on societal choices on race relations, migration, trade, investment, education, the environment, and so on. It is noted that one of the peculiarities of Malaysia's state education system is that the language of instruction is divided along the main ethnic groups in the country. That offers a pool of fluent Mandarin speakers for opportunities presented by this new economic superpower. The question is whether there is the maturity to operate at Level 6, where the different parties are able to rise above sectarian interests and build common ground for the long-term prosperity of Malaysia.

### **Organisations**

Here we see (regional) multinationals investing in Malaysia as many Western firms roll back from decades of cross-border integration of supply chains. We also see the demise of SMEs in Malaysia, who are finding it difficult to maintain competitive advantage using lower-cost labour unless they relocate closer to the cheap labour. This is a positive and necessary development for Malaysia to move up the value-added ladder. What is key for organisations to invest is the availability of high-quality human capital, a business-friendly environment and well-developed knowledge ecosystems. Should the reform of education and the business-friendly ecosystem come together well, Malaysia should remain at least regionally relevant. Firms are expected to operate mainly at Levels 3 and 4, focusing on making a success of available opportunities. The lack of genuine Malaysian multinationals limits the leverage for higher levels of maturity to be enacted.

### **Individuals**

This scenario offers Malaysians the opportunity to operate at Level 5. Many of the start-ups and prototyping outfits in Penang will be led by entrepreneurs who are constantly thinking outside the box, looking to make alliances and partnerships. They may be serial entrepreneurs or interested in building an empire. Either way, they will be lobbying for policy innovation, greater talent mobility and market access. Governments would do well to heed their calls in building the next generation of policy initiatives to encourage more innovation and inward flows of talent and investment.

The scenario offers some options to slow down the outflow of talent. Individuals mostly responding at Level 3 will be, quite rationally, seeking the best return on their parents' investment in their (private) education. The tried and tested routes for Malaysia's brain drain are unlikely to be stemmed until Malaysia addresses some of the push factors around quotas

and replace these with more merit-based policies. The educational reform will help as more students return to high-quality merit-based state educational institutions. There is a high correlation between overseas education and a preference not to return, so by encouraging a generation to stay in state schools, the hope is that the outflow of talent will slow – a necessary precursor to Malaysia’s ability to remain, convincingly, a developed country.

### **Implication 3: The elephant in the room**

This scenario focuses on a very competitive future where productivity imperatives create a data-driven economy applied in everything from investments and leadership capability to recruitment and selection. This is augmented by a global push for greater socioeconomic fairness by competing groups made possible by the flood of data and performance metrics. The key drivers here are naked transparency from the myriad metrics used to measure human capital and their application to governance, rights and resource allocation decisions.

The technologies that have matured to support a thriving gig economy, where firms hire specialists for projects for fixed terms, include detailed assessments and candidate profiling, ensuring a decent fit between the highly skilled specialists and the specifications of the task. Outcomes rather than inputs and processes are what matter and organisations have to reform to manage these sometimes transient and sometimes very lasting configurations of talent.

In many organisations, the flood of human capital metrics and individual assessment data is both a godsend and a curse. These data streams have made performance management obsolete as individuals and their teams have access to data, enabling issues to be remedied quickly and early on. The corollary of this level of performance transparency is a very competitive, driven work culture where everyone essentially knows the relative performance of each colleague.

For organisations that are focused on innovation rather than productivity alone, operating at Level 4-5 will bring out the best ideas and efforts by their staff. The metrics are regarded as development opportunities and/or point managers to where the worker is most likely to thrive. Experimentation includes building different teams forming diverse configurations, in the search for insights and ideas.

For organisations at Level 3 and below, the data will be seen in traditional talent identification terms – who is a high potential, who should be let go or transferred, and so on? Whether the metrics lead to greater learning and development and consequently better human capital depends on the culture and approach of the firm. Where properly understood, this data-driven world offers organisations the chance to get to know their potential workforce in far more detail and more objectively than was possible a mere ten years earlier. Agile working takes on a new and profitable meaning for many organisations.

For society and the state, this level of performance transparency is uncomfortable. For decades, performance measurement was at best a dark art bound by politics, favouritism and whether a candidate ‘fit the team’. With ubiquitous use of performance metrics automatically and painlessly collected by an array of sensors, the question of positive discrimination on ethnic lines then raises questions about fairness, given that we can actually see the per capita value added per worker.

What becomes evident in the data is that the performance divide is not along ethnic lines but along socioeconomic and urban–rural lines. In a highly competitive environment, the defensibility of a policy intervention made in 1970 in the 2020s is widely debated. By 2025, in the interest of forging a new national compact unifying all the communities, a ten-year transition to phase out ethnic privilege was agreed.

While this was driven by the intense competition for talent and the global marketplace, the new compact requires both society and the state to operate at maturity Level 6. There must be a willingness to see beyond sectarian interests and to see that many perspectives can hold truth, while also recognising that any radical shift or inaction can bring both grave risks and opportunities.

For many individuals, the abolition of positive discrimination would mark a tectonic shift in the politics of the country. If there is enough confidence in the proper execution of that promise to phase out this 60-year-old policy and sufficient institutional trust so that the will to fundamentally change the social compact in Malaysia between state and citizen is delivered, there will be, we believe – all things being equal – the stemming of the brain drain. Malaysia will benefit enormously from the global wealth of expertise from the Malaysian diaspora if their knowledge and skills are constructively applied. This requires individuals to operate at maturity Levels 5–6.

#### **Implication 4: Nature's revenge**

Environmental drivers and political reactions shape this scenario. It is an exploration of Malaysia in 2035, where short-term needs have ridden rough-shod over climate change concerns and environmental degradation. This scenario is not a rebuke of Malaysia's response to a global crisis; it merely highlights a real and imminent threat to humanity and the lack of political will in many countries to take this seriously – it addresses an issue that is long in coming, imprecise and affects the global commons. It is an issue that requires all countries and actors to rise above their immediate sectarian demands and to think about the consequences of not seeking and finding common cause for generations to come.

The scenario draws on credible trend data drawn from a variety of sources and assumes that there is little societal and political will to reverse these trends on energy consumption, growth in coal, population growth and continued expansion of human settlements in vulnerable coastal regions coupled with continued degradation of the environment (for example, mass deforestation). Clearly the state is in a position to influence the outcome, but the perilous state of public finances and the promise of more revenue from extractive and polluting industries is too difficult to resist. Thinking around environmental concerns and sustainable development is at best at Level 4. There is no consideration of the needs or welfare of future generations, merely on the present.

In 2018, the Natural Resources and Environment Ministry (NRE), leading debates and education around environmental citizenship, was abolished. Years of deforestation for palm oil plantations, lack of enforcement over marine pollution and lack of a sustainable development vision have shown Malaysia's pledges to be hollow. The state is operating at best at Level 3, but in terms of environmental protections at Level 2. Only with the onset of regional devastation do the countries of ASEAN come together to rebuild. Only after delivering public services at Level 2 to devastated regions do the leaders finally work together at Level 3 to attempt to remedy a problem created from years of de-prioritisation, ignorance and inaction.

Many organisations are also culpable, having benefited from years of natural resource extraction and profiting from pollution and waste. Malaysia, with its rich biodiversity and diverse ecosystems, has suffered under the onslaught of short-term extractive schemes and corruption. These include both Malaysian and foreign-owned companies. The cost of species extinction and to the long-term health of the population is incalculable. These would operate at Level 1 – giving little or no consideration other than to their bottom lines.

Many other organisations, especially NGOs, have worked hard to highlight the costs of neglecting the environment. These organisations operate at Levels 3–4. Their role became much more difficult after the abolition of the NRE, but undeterred, they launched campaigns to win battle after battle. One of the successes was banning the importation of plastic waste, but the lack of local enforcement meant that Malaysia continued to be a major plastics polluter in the South China Sea for most of the 2020s. These have decimated island resorts, where sightings of turtles have been replaced with floating shopping bags.

Society in the intervening years has witnessed the effects of climate change – more extreme weather, natural disasters becoming more intense and frequent, and pressures on clean water and air. The pressure from the public has grown as government action has declined.

Over the years, the different environmental groups have collaborated and developed considerable trust. They are able to operate at Level 3 and 4.

Individuals are also affected by environmental factors. Climate change has shaved off more than 10% of potential economic growth. Quality of life has declined with more pollution. Many individuals are now motivated to challenge sacred cows paraded by the Government and companies about the need to prioritise economic development over sustainability. The level of awareness about human activities is growing, and not just in the cities, but in the rural areas as well, where the resilience to natural disasters and availability of emergency services is lower. The individuals operate at Level 3, with some exceptions at Level 4.

In all four scenarios, there is an assumption that the state retains considerable levers for influencing investment and resource allocation decisions, in particular on issues around human capital development. While that is likely to be the case, this is not the only possible trajectory. Citizens have technologies to access, communicate and exchange (mis) information. The ability of these (mis)information flows to form public opinion about social inequalities, migration, public values and public services delivery is already influencing power relations in societies and could lead to new forms of democracy and governance. Trust and accountability towards governments is declining in many parts of the world. It is outside the scope of this study to explore the future of government. The authors wish to signal that this is a dimension to the question of Talent 2035 that warrants further investigation.

## 9 Discussion of recurring themes

In this report, we consulted over 40 experts in Malaysia on issues around human capital faced by Malaysia. Many of the issues were urgent and current. From the inputs, the dominant impression was that Malaysia had pressing present-day issues that needed to be addressed before it could move on. There appeared to be very little room to think ahead to anticipate potential issues in the future. The experts reflected much of the literature – short term, tactical and more concerned about effect rather than disentangling causes.

What is also interesting is that there is considerable agreement on what matters: the unpreparedness for Industry 4.0; the inadequacies of the state education system; short-termism and operational planning cycles that are siloed; the unsustainable brain drain; apparent lack of coherence in policies; the effects of ethnic discrimination policies; and acute skills shortages across the economy.

While the scope of a futures study is not to investigate all these systems but to trust the experts and the process to distil the main drivers, aspects of these issues are explored in the synthetic scenarios when drawing out macro drivers and the maturity of decision-makers in shaping alternative outcomes.

In this chapter, we examine some of the themes recurring in all the scenarios.

### **The changing world power configuration**

China's sheer size and population makes it a clear strategic rival to the US. China's influence has grown along with its economy, as the US and Europe turn inward following a debilitating financial crisis a decade ago. China's belt and road initiative to link Europe, southeast Asia and Africa overland. 'Made in China 2025', and its investments in strategic deep-sea ports and facilities in east Asia and the Indian Ocean mark China's determination to protect what it considers is in its back yard. With the US retreating from the global stage and the Trans-Pacific Partnership, the signs are clear that China will wield considerable influence in southeast Asia.

China poses strategic considerations around defence (both physical and virtual) and international relations for Malaysia. In a region with relatively modest economies (save Japan), nations will all be jostling for good relations with the world's second largest economy. The countries within ASEAN will seek national advantage with this power vis-à-vis the US and Europe. Malaysia, with its more developed economy and a significant Mandarin-speaking minority, could translate into fresh opportunities for trade if bilateral relations are managed well. China's ascendancy could also offer another attractive destination for Malaysian talent.

According to Chong (2018) at Bloomberg, China has US\$34 billion in infrastructure projects under way in Malaysia. In 2017, Malaysia was China's second largest trading partner in ASEAN, with total trade worth US\$92.4 billion, exporting US\$54.4 billion, or 18% of Malaysia's total shipments. China's FDI has grown 700% in the last decade, totalling nearly MYR9.9 billion in 2017. A total of 2.28 million Chinese tourists visited Malaysia last year, contributing significantly to the total MYR82.1 billion tourism receipts last year. Some US\$2.4 billion has been invested in property by Chinese investors (Chong 2018).

There are several potential responses. Malaysia has started renegotiating the infrastructure projects already signed with China in an attempt to contain Malaysia's high debt ratio. But there is also a security issue around sovereignty and over-weighted ownership of strategic assets in the country. There is also the potential of developing the ASEAN common market as a counter-weight as well as Malaysia's membership of the Trans-Pacific Partnership, an FTP with countries encircling the Pacific.

Given Malaysia's size and regional dependencies and significant ethnic Chinese population, the shifting global power is an issue that will invariably play an important part in shaping the Malaysia of 2035.

### **Technology**

In the last decade, the world has been introduced to the power of data and data analytics. By connecting a hitherto unrealised resource (for example a spare room; an under-utilised car; a skill/talent) to a market lubricated by GPS, e-payment systems and the seduction of instant gratification, whole businesses have emerged where the resource (that is, curated, connected data) is not used up when consumed – unlike land or capital.

In the next two decades, there will be more and more such data markets using near costless data collected by sensors built into the fabric of our lived environment. Individuals can self-diagnose and use data feedback loops to maintain their well-being; employers can monitor their workforce regardless of location and function, gaining detailed profiles of their strengths and their flaws when assessing their fit and performance; governments can have high-quality data about their citizenry, their movements, networks and broadcasts; physicians rely on intelligent bots to scour infinite databases and read your genome to support diagnosis and treatment.

No one, not even someone on a desert island, will be immune from digitisation as everything is captured in databases – all to be reconfigured to yield new insight and business models. The shift to the gig economy is only possible with the analytics behind the digital platforms (see Lim 2018). Information and communication technologies are potentially the most transformative general purpose technology to date – and Malaysia once stole a march with its audacious vision for the Multimedia Super Corridor.

Focusing on the question of talent, machine learning is the breakthrough that will change not only the world of work but the way we live and play. The ability of machines to refine its approach and improve its outcomes as it analyses more and more data for fresh patterns will generate infinite uses. Artificial intelligence algorithms now outperform humans in speech recognition, face recognition, chess, reading MRI scans for certain cancers, credit fraud – within clearly defined domains. Cyber-security is an area that poses huge risks in this shift towards a data-driven economy, but also offers opportunities for growth.

Technology as a driver is inconvertible. The question remains where Malaysia's focus and ambitions lie. In the scenarios, we explore one where Malaysia takes a lead innovating in prototyping electronics hardware and on another Malaysia plays the more familiar role of being part of a global value chain controlled by international MNCs. The shift away from the paradigm of short-term profit from cost arbitrage to medium-term investment in technology to support the development of higher value-added human capital is important to attract and retain talent.

How Malaysia responds to the challenges and opportunities presented by myriad technologies in the next two decades will also depend heavily on the quality and quantity of its human capital. This is now a key investor consideration, as Dyson's locating of its electric car facility in Singapore attests. The quality of Singapore's human capital will have been a key consideration.

### **Fairness**

As the economies in the region adapt to the worlds of Industry 4.0, Malaysia will have to face transitions that will impact many workers. Old jobs will be destroyed by automation and other productivity-enhancing technologies, while new ones may require skills and knowledge in short supply in Malaysia.

There is also the ethnically determined affirmative action social compact forged in the aftermath of the civil disorder in 1969. The arguments for a national programme based on wealth redistribution by ethnicity will have to be defended in the light of a citizenry who is more educated and considerably wealthier than their forebears. As a higher-income country that is fiscally stressed, the question of whether this is the best approach to containing socioeconomic gaps should reflect a maturing polity who'll redefine these issues with new frames and solutions. We explore this in 'The elephant in the room'.

In facing up to these dislocations and transitions, the question of fairness will be explored. In 'Nature's revenge', the fairness question focuses on who bears the cost of environmental degradation impacting the lives of every citizen. Given that the extractive industries such as logging and oil have benefited government and big business by billions of dollars, why should the citizen now then pay for more flood defences, water/air purifiers and face masks? And what about the diminished environment we leave to the next generation? Where is the burden-sharing across generations?

In 'New cog', Malaysia remains a rule-taker by being part of value chains set up by others. Although Malaysia has moved up the economic value-added rankings, Malaysia is still subject to decisions taken elsewhere by large corporates.

As Malaysia's society and economy adapts to the new power configurations, there will be questions about what is fair. What is a fair compact between society and the state, between communities and among nations? Ensuring intergenerational fairness will become more important as Malaysia's population ages.

### **Talent quotient**

A key dimension to Malaysia's talent landscape in 2035 is its 'talent quotient', or attractiveness to talent internationally and 'stickiness' for local talent. With an estimated 1 million working overseas (World Bank 2011), the cumulative human capital they possess and the loss to the Malaysian economy is considerable. There have been modest attempts to invite Malaysian talent to return by TalentCorp (2018), but these are really a drop in the ocean. One of the failures of Malaysia is the failure to consider this a national human capital crisis.

In the IMD World Talent Ranking 2017, Malaysia scores 28 out of 63. This is a composite of three factors – investment and development; appeal; and readiness – all of which have faced downward trends since 2015. This suggests that whatever policies are in place to attract, develop and retain talent are not working well.

Further, Malaysia is also failing to increase economic participation rates for segments of its population – for example, female labour force participation (KRI 2018). This is irrational given that women are on average better educated in Malaysia and suffer from full employment and acute skills shortages. Another segment, young entrants, are disadvantaged by, inter alia, unhelpful stereotyping (Lim 2018), being choosy about jobs, and having unrealistic expectations of compensation and benefits. This situation can only get worse. Given increases in people's life expectancies and declining birth rates, Malaysia is fast becoming an ageing country (KRI 2018).

To mediate and offset slowing population growth and talent skill shortages, Malaysia could look at both cultural norms affecting the retention of women and policies that affect both retention and re-entry of women to the workforce after extended breaks. Efforts to redress the gender participation imbalance and increasing women's participation in the workforce need to examine care management systems and flexible working practices (KRI 2018). Such policies supporting greater flexibility in employment coupled with campaigns for more progressive social norms for more diverse workforces should also attract and retain more older workers.

Turning the dial on Malaysia's attractiveness for talent will also require attention on the ethnic brain drain by reducing the pervasiveness of NEP quotas, a focus on efficiency by reducing departmental duplication and bureaucracy, implementing targeted skill shortage immigration, and improving the provision of high-quality education (STEM) (World Bank 2012, IMF 2018, Lim 2018). One area that can be dealt with by the Government is to streamline fragmented bureaucratic immigration processes and have a coherent approach towards targeted skilled labour (World Bank 2012, IMF 2018).

Malaysia offers many advantages to talent – it has modern infrastructure, is well connected, has a business-friendly environment and is located in a fast-growing region. It could amplify its attractiveness by looking at issues that are important to professionals – environmental/green issues, social justice, opportunities for those with talent to contribute (for example attracting retired professionals to be economically active). Building the Malaysia 'brand' as a talent destination may be a helpful catalyst in streamlining policies supporting talent.

### Education reform

In preparing Malaysia’s human capital for the challenges of the future, it is no longer enough to teach our children the basics of reading, writing and arithmetic. In a world where data is plentiful and ubiquitous, the key skills are the ability to locate good data, verify the veracity of the data and weigh the significance of that evidence in light of the issues or questions posed. In an age awash with post-truth and post-trust attitudes, pedagogical approaches to improve the quality of debate and discussion are important for the next generation (Daniel and Uvalic-Trumbic 2017).

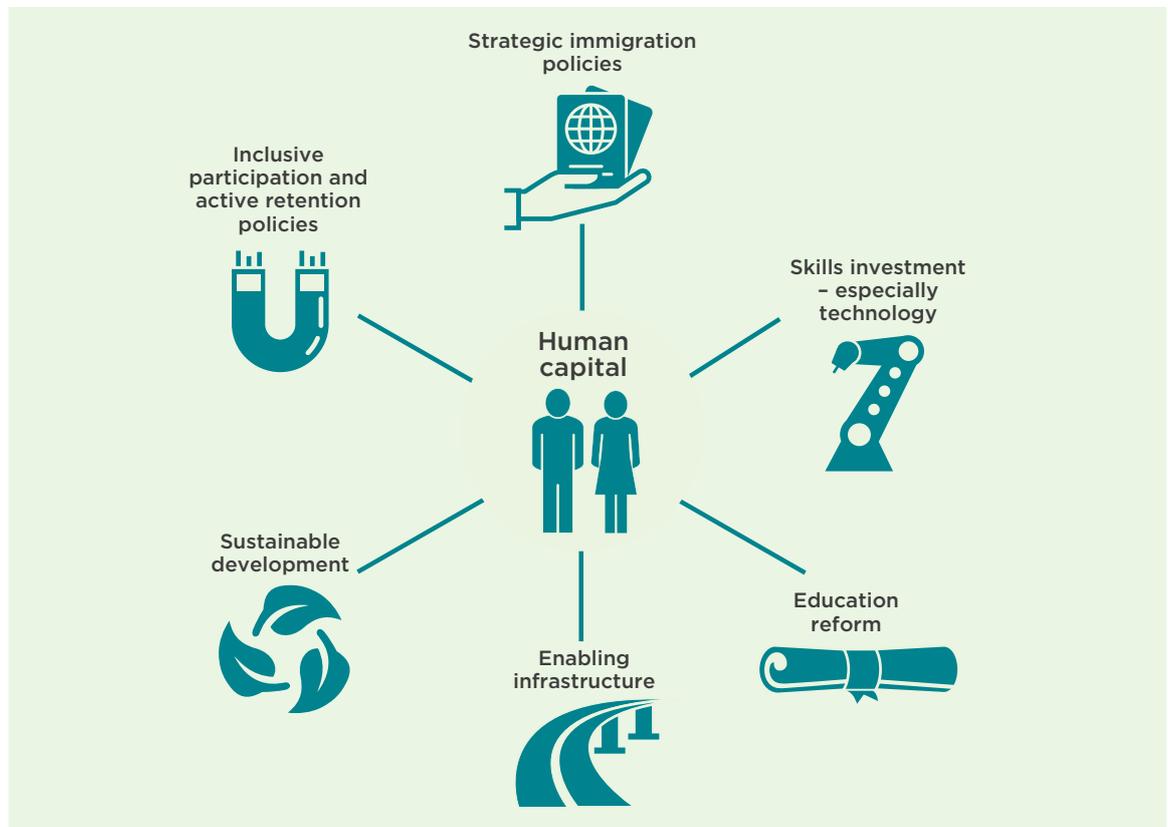
The Delphi experts spoke about the importance of critical thinking as a life skill and the fact that Malaysia’s state education system is woefully out of date. Parents’ lack of confidence in the state education system is reflected in the growing numbers seeking alternatives – alternatives that add to the exodus of talent from Malaysia.

According to the World Economic Forum’s *Future of Jobs* report (2016), the two key skills for future employability are social skills and numeracy, with a heavy dose of ‘learnability’ – or the ability and willingness to learn new things to stay employable (see Lim 2018).

The British Council study *Culture at Work* (2013) also emphasised the value placed on building social capital in the new world of borderless, diverse workplaces. It offers important points for reflection in offering a holistic approach to talent and skills development.

In summary, based upon the above, some fundamentals Malaysia could build and focus on in developing the quality and quantity of human capital are depicted in Figure 7.

**Figure 7: The human capital fundamentals Malaysia could focus on**



There are many themes that could have been explored further in relation to the human capital questions in the four scenarios, but these are the ones we felt warranted the attention of Malaysia’s leaders and decision-makers.

## 10 Methodology

*The Future of Talent in Malaysia 2035* uses the Delphi technique (Helmer 1967), trend analysis and scenario-building (Kahne 2012, Schwartz 1996, 2011). These future methodologies are used regularly by organisations and state agencies for strategic planning, risk management, and leadership development (for further details see Glenn and Gordon 2009). These methodologies provide a 'scaffold' for managers to explore alternative futures and issues beyond the daily grind.

**Delphi technique** – where a panel of experts with heterogeneous domain knowledge relevant to the issue of talent is interrogated iteratively within a defined timeframe. The aim is to achieve a broad consensus on the main drivers affecting and shaping the issue. In this study after the initial questionnaire, there were two further iterations.

**Trend analysis** – involves analysing and projecting past trends into anticipated futures. The CIPD publishes a series called *Megatrends*, which looks at trends that shape work, the workplace and the workforce generally.

**Scenario-building** – scenarios are internally consistent alternative takes on a particular point in the future. In this study, the Delphi drivers and a selection of trends were synthetically assembled into four scenarios: one baseline, and three alternatives. Noteworthy, these scenarios are not 'predictions'; rather they serve to shift thinking beyond 'what is' to 'what if'.

### Headline Delphi questions in *The Future of Talent in Malaysia 2035*

Q1. What are the significant factors affecting talent in Malaysia in the short and medium term?

Q2. What drivers impact both the quality and quantity of future talent in Malaysia?

### Participant selection

The CIPD provided the HRDF with criteria for expert panel selection. Essentially participants had to come from a range of industries and sectors, be recognised experts in their domain and have a vested interest in Malaysia's long-term success. The HRDF was responsible for identifying and verifying sourced experts based on the criteria provided.

### Data coding

Transcripts were coded using content analysis (CA) (Weber 1990). CA is a research methodology in which the content of text data is interpreted through a systematic classification process of identifying patterns and themes. Key themes were identified and listed and descriptive labels were attached. Text data is summarised into categories/themes alongside a quantitative numeric value (see Krippendorff 2012 for further details). In rounds 2 and 3, experts were probed further to expand driver details that determine expert panel consensus and discord. Academics and professionals from diverse backgrounds were invited. Forty-one experts participated. The roll call of all participating experts and their brief biographies are presented in Chapter 11 – Experts' biographies.

## 11 Experts' biographies

**Ahmad Khairuddin bin Sha'aban**, *Technical Advisor, Klang Hock Plastic Industries Sdn Bhd*. Mr. Ahmad Khairuddin previously worked with Petronas Chemical Group (PCG) also in the same role providing support for RAPID projects (technical and marketing plans, competitive product updates and so on). He has an extensive background in the plastic industry with more than 30 years of experience in product and application development of various polymers in the Asia-pacific Region. He has been delivering numerous training sessions, seminars and papers throughout the region and the focus has been mainly on micro, macro, megatrends and sustainability of the industry.

**Sujata Albert**, *General Manager of the Malaysian Plastics Manufacturers Association (MPMA)*. Sujata Albert has been in the position since 2014. Her education background is in Economics. Sujata has more than 20 years of experience in the plastics industry association. Her forte is in the area of training and development for the Malaysian plastics industry. She was instrumental in developing the MPMA Technology Roadmap for the plastics industry in 2017. She has also successfully executed several initiatives for the plastics industry, in particular, the MPMA Talent Development Programme and First Step to Injection Moulding 4.0. She is currently working on a career pathway roadmap for the plastics industry with emphasis on upskilling the industry in terms of human capital.

**Asri bin Abdul Rahman**, *Deputy Director General (Operational), Department of Labour Peninsular Malaysia*.

Mr. Asri holds a bachelor's degree in public administration from the Universiti Utara Malaysia (UUM). Previously he was the Director of Institute of Labour Market Information and Analysis (ILMIA), an organisation that provides the analysis of labour market trends and emerging human capital issues in the country.

**Sharala Axryd**, *Founder, The Center of Applied Data Science*

Sharala is leading the data-driven business transformation and driving the benchmark for data science education in the ASEAN region, with over 15 years of experience in the telecommunications field. A thought leader in the data science space, she is a highly sought-after speaker for conferences with topics ranging from analytics to women in STEM. Award-winner of the EY Woman Entrepreneur of the Year 2017 Malaysia and among the Digerati 50 by Digital News Asia (DNA), she is the founder of the Center of Applied Data Science (CADS), ASEAN's first and only one-stop platform and centre of excellence for data science. She was part of the team that brought in the Data Incubator (an American-based data science centre) to Malaysia, launched ASEAN's first data science accelerator programme in 2016, and spearheaded an initiative with the Harvard Business School in Boston to support Malaysia's national agenda to be the hub for big data analytics (BDA).

**Azlinda Abdul Ghani**, *Senior Executive, Suruhanjaya Perkhidmatan Air Negara (SPAN)*.

Azlinda holds a bachelor degree in chemical engineering from Universiti Teknologi Malaysia (UTM). She is a member of Board of Engineers Malaysia (BEM) and the Institution of Engineers Malaysia (IEM). She has been working in the water industry for more than 22 years which include experience in managing water treatment plants through technical research as to improve quality of water. She is also a technical instructor in the field. She has been involved in the development of the National Occupational Skills Standards (NOSS) for the water treatment plant and distribution system.

**Chiam Heng Keng, Professor**, *President Early Childhood Care Council (ECCE)*. Professor Heng Keng is Malaysia's Representative (for Children) to the ASEAN Commission on the Promotion and Protection of the Rights of Women and Children (ACWC) and the Champion for the EPP1 Ramping Up Early Child Care and Education, an initiative under the Economic Transformation Programme (ETP), and the founding President of the Early Child Care and Education Council. She sits on the National Advisory and Consultant Council for Children and the National Council for Coordination the Protection of Children

**Moses Choo**, *Executive Director, Development Organization for the Blind in Malaysia*.

Mr. Choo was born visually impaired but has vast experience in the use of products related to ICT. Prior to joining the National Council for the Blind, he was the admin manager for Total Corporate Compliance Sdn. Bhd., presently known as the Tricor group of companies. In 2002, he joined the National Council for the Blind, Malaysia as an Executive Officer of the Blind Professional Assistance Unit. Within four years, he assumed the post of assistant executive director. In January of 2014, he was appointed the executive director. He hopes to be able to bring in solutions to help solve the barriers faced by the blind people of Malaysia.

**Ezalman Reeza Hadenan**, *Head, Marketing and Sales Capability, Petronas Chemicals Marketing*.

Mr. Ezalman graduated with a degree in Accounting and an MBA specialising in Strategic Management. In his 20-year career with Petronas, he has led portfolios in downstream retail and marketing businesses, managed investor relations for a Petronas public listed company, and overseas strategic planning in the Sudan, Africa. His experience covering both functional and commercial roles in an MNC organisation has contributed to his current position in leading organisational design, and talent and capability management. Being a certified competency based interviewer, he has also helped Petronas recruit its future leaders from around the world

**Firdaos Rosli**, *Director of Economics, Trade and Regional Integration (ETRI), the Institute of Strategic and International Studies (ISIS) Malaysia*.

Firdaos started his career in the accounting and banking sector before moving to the public sector as an assistant director in the Ministry of International Trade and Industry (MITI) Malaysia in 2004. He held various responsibilities in bilateral and regional relations, Asia Pacific Economic Cooperation (APEC), as well as the main secretariat to the Malaysia-US Free Trade Agreement negotiation team. He also served in the Minister's Office as the senior private secretary to the deputy minister of MITI since 2008. He holds a degree in accounting and finance from Lancaster University and a diploma in public administration from the National Institute of Public Administration (INTAN), Malaysia.

**Sam Haggag**, *Country Manager in Malaysia and Indonesia, ManpowerGroup*.

Sam is a chemical engineer by training, with over 20 years of experience in the HR services industry in Europe, the Middle East and Asia. Sam has a wealth of experience and joined the executive committee of the Call Centre Council of Singapore (CCCS) in 1999, became chairman in 2002 and led the formation of the Contact Centre Association of Singapore (CCAS) and remained as Chairman until 2009 when he relocated to Malaysia. Sam is a regular speaker on trends in the changing world of work including trends in talent attraction and retention, how to drive productivity of the workforce and re-skilling talent to meet the demands of rapidly changing work environment. Sam has advised government agencies on re-skilling workforces and establishing long term strategies to address skill shortages.

**Hairuzzaman Sagi**, *Head of HR for upstream, Sime Darby Plantation Berhad.*

Mr. Hairuz has more than 20 years of experience in HR and has done cross functional roles as a generalist in various business establishments, industries and ownerships, including locals, MNCs and public listed corporations in manufacturing, oil and gas, engineering, services, retail and the plantation industry. He was a member of the Malaysian Employers Federation IR panel in 2007-12 and at present is on the panel of the SOCSO Appellate Board, the Industrial Relations Court and is a MAPA council member. He is also a guest speaker and trainer on various HR topics.

**Halim Iskandar bin Mat Yatim**, *Pre-Sales Quality Manager, PROTON Edar Sdn. Bhd.*

Mr. Halim holds a Bachelor of Engineering in mechanical engineering with management from the University of Bradford, United Kingdom. He has wealth of experience in international automotive aftersales arena, whereby he has conducted training in almost all PROTON overseas distributors from countries like Singapore, Brunei, Thailand, Indonesia, Australia, United Kingdom, France, Belgium, Germany, Switzerland, Holland, Ireland, Italy, Austria, Turkey, South Africa, Mauritius, Saudi Arabia, Egypt, Qatar, Bahrain, Kuwait, Oman, Libya, United Arab Emirates, Jordan, Iran, Japan, Taiwan and Chile.

**Datuk Haji Hamzah bin Rahmat**, *Executive Director, Federation of ASEAN Travel Associations (FATA).*

Datuk Haji Hamzah began his career with Singapore Airlines in 1979 and obtained the IATA/UFTAA Diploma in 1981. He then spent four years as the regional sales manager for Saudi Arabian Airlines. Over the course of 40 years, he was deeply involved in the Malaysian Association of Tour and Travel Agents (MATTA). In 2013, he became the president of MATTA and from July 2017 to July 2018, he stepped into the role as the immediate past president. Between 2014 and 2016, he served as the secretary general of the Federation of ASEAN Travel Associations (FATA) and, in 2016, became the association's president. Today, he is a board member at the World Travel Agents Associations Alliance (WTAAA) and World Tourism Alliance (WTA) representing FATA.

**Khatijah Lim Abdullah**, *Associate Professor and Head of Department of Nursing Sciences, Faculty of Medicine, University Malaya.*

Dr. Khatijah obtained her doctorate from the University of Southampton, and her MSc in health management and BSc in nursing studies from the University of Manchester, UK. Her current research interests are in inter-professional education, nursing practice, patient shared decision-making, particularly in non-communicable diseases (NCDs), patient safety and clinical leadership.

**Prakash Krishnamoorthy**, *Relief Head of Business Ecosystem, Iskandar Regional Development Authority (IRDA).*

Mr. Prakash has senior management experience with a solid background in strategic marketing, sales and technical product development, having pursued a career over more than a decade in Asian markets (Malaysia, Singapore and Brunei) as well as markets in North America (Canada & United States). He has varied experience across multiple organisation structures including MNC, GLC, locally owned and offshore.

**Latifah Daud**, *Executive Director, Strategic Human Capital Management and Head of Strategic Human Capital Management, Khazanah Nasional Berhad.*

Latifah joined Khazanah Nasional on April 1, 2015 and was previously director of strategic human capital management at the firm. Prior to joining Khazanah, she served as a senior staffing director for Honeywell Inc., for over seven years. In this role, she helped Honeywell in their strategic expansion in high growth regions covering specific assignments in greater China, India, Japan, Korea, Australia and southeast Asia.

**Chee Sung Lee**, *Advisor, Institute of Labour Market Information and Analysis (ILMIA).*

Chee Sung Lee has been an adviser to ILMIA since 2011. Mr Lee provides support in the analysis of labour market trends and emerging workforce issues which are the critical inputs for government measures to enhance human capital planning and the formulation of effective labour market policies. Mr Lee is also a consultant to the ADB, and works with Bangladesh, Cambodia, Mongolia and Papua New Guinea on financial sector issues. He was executive director of the National Economic Advisory Council, Prime Minister's Office, from 2009-11. Mr Lee retired from the International Monetary Fund (IMF) in May 2009 after 32 years of service. His last assignment was as assistant director in the IMF's Regional Office for Asia and the Pacific (OAP) located in Tokyo, Japan. Mr Lee is a macroeconomist and financial specialist by training. He was educated in the universities of Malaya (Malaysia), Manchester (UK) and Kiel (Germany).

**Nan Phin Lee**, *Chairman, Malaysia National Computer Confederation (MNCC).*

Mr. Lee has more than 28 years of experience in managing projects in various environments; ranging from the government, financial services industry to conglomerates and so on. He is also an Open Source SIG Member of SIRIM/TC4 Committee. He co-founded I-Enterprise Online, specialising in Java-based Internet enabled ORACLE applications development and integration. He is the inventor of Fast Track Integration Methodology and was involved in the Beijing Olympic 2008 Project Management Capability Improvement Program. He is the co-author of 'Foundation IT Project Management' and 'Managing Complex IT Project' seminar. He also lectures on IT programs in higher education institutions.

**Juliana Alut Lim**, *IPEC Bureau Founder, CEO.*

Dr. Lim established IPEC Bureau in 2008 to promote global human capital development sustainability through ISO/IEC17024 and she is actively leading the certification body in the emerging Asia Pacific markets. She actively contributes to the industry regulatory framework and policies for various organisations.

**Lutfi Hamidee Abd. Latif**, *Technical Manager, Malaysian Chambers of Mines (MCOM).*

Mr. Lutfi holds a Bachelor of Science in Geology from University Malaysia Sabah, Malaysia and is a certified professional geologist. He started his career in 2011 as a geologist for a small offsite investigation company. His main tasks are executing what is agreed by the MCOM Council, drafting reports, attending meetings with relevant parties and promoting mining in Malaysia

**Mohd Azlan bin Zaharudin**, *Vice Chief Cluster – Sub cluster of Civil Economy, Institut Tadbir Urus Negara (INTAN).*

Mohd Azlan holds a PhD in entrepreneurship from the University of Nottingham, UK (2017). He has been part of the industry experts under INTAN and has been with the civil service for more than 15 years.

**Monir bin Azzouzi Monir**, *Head of Employee Experience, Maxis Berhad.*

Monir has extensive experience in digital and culture transformation as well as organisational development. Before venturing into HR, he developed his entrepreneurial spirit by starting up departments and companies in and outside the digital world. He's held senior leadership roles in Europe and Asia. In Maxis, Malaysia's leading telecommunications company, he has been leading performance management, organisational development and now employee experience. He played a critical role in transforming Maxis' HR department from a conventional unit to one that adds real value to the business by focusing on digitalisation, employee experience, leadership and preparing people and the organisation for the digital age.

**Muhamed Ali Hajah Mydin**, *Chief Executive Officer, Penang Skills Development Centre (PSDC).*

Muhamed Ali holds a bachelor's degree in electronic engineering from Hanyang University, South Korea, and a master's degree in information technology from Universiti Sains Malaysia (USM). He has more than 22 years of experience in manufacturing, telecommunication systems integration, education, and training. Prior to joining the PSDC, he was the managing director of Mutiara Smart Computing Sdn. Bhd. where he was also the ICT advisor to the prime minister of Kazakhstan. Now at PSDC, Muhamed successfully established the organisation as a Centre of Excellence in Industry 4.0 in the area of precision machining and manufacturing processes. He has also delivered speeches in conferences related to Industry 4.0 locally as well as abroad.

**Chandran Nair**, *Founder and CEO, the Global Institute for Tomorrow (GIFT).*

Chandran Nair is the author of the best-seller *Consumptionomics: Asia's Role in Reshaping Capitalism and Saving the Planet*. For more than a decade he has championed the cause of sustainable development and frequently speaks at the World Economic Forum in Davos and at APEC.

**Mahendhiran S. Nair**, *Professor and Chief Executive Officer, Monash Malaysia R&D Sdn. Bhd. and Vice President (Research & Development), Monash University Malaysia.*

Professor Nair is a Fellow of CPA (Australia) and also a professor of econometrics and business statistics at Monash University Malaysia. In his current role, he has established research collaboration with lead industry associations and industry players to enrich teaching and learning experience of staff and students in the university. He has many years of experience researching and teaching in Canada and the Asia-Pacific region. He currently leads a research team that uses data science methods to study the impact of science, technology and innovation (STI) on socioeconomic development of emerging economies. He has published his research work in leading international journals and presented in high impact conferences and forums.

**Nik Naharuddin Mohd Nasir**, *Head of IHLs Development Talent, Malaysia Digital Economy Corporation (MDEC).*

Mr. Nik Naharuddin holds a Bachelor of Science in engineering from the Columbia University, New York. He has been working in the digital industry for more than 20 years. Prior to his role in MDEC, he managed turnkey projects, specialising in optical fibre supply and installations. Now, he works with various institutions of higher learning (IHLs) towards strategic talent development for the ICT Industry in Malaysia.

**Nora Manaf**, *Chief Human Resource Officer, Maybank Group.*

Nora Manaf has led and shaped strategies to drive human capital objectives across the group to realise Maybank's aspirations. She provides strategic leadership in all aspects of workforce, workplace and performance futurisation for a sustainably performing organisation into the future.

**Noriah Abdul Malek**, *Head of Corporate Industry Services and Employability Centre (CISEC), Polytechnic Port Dickson Negeri Sembilan.*

Dr. Noriah holds a PhD in organisational behaviour from the University of Malaya (UM) (2011). She has served the academic industry for more than 25 years as a lecturer and education director.

**Nur Liyana Bt Noor Affendy**, *Manager, corporate training, Penang Skills Development Centre (PSDC), Malaysia.*

**Cilia Rasasegram**, *Chief Experience Officer, Kindler Employee Experience Sdn. Bhd.*

Ms Cilia Rasasegram is the founder of the Kindler Employee Experience Project, holds an MBA and has more than 19 years of HR experience in Malaysia, Thailand, Philippines, Singapore and Indonesia. Working directly with clients designing HR programmes, she works in partnership with companies to gain the competitive edge required to enhance the employee experience to improve the company's productivity, profitability and sustainability. Cilia Rasasegram has led the employee experience across the whole spectrum including: recruitment, local and overseas acquisitions, listing, integrations projects, on boarding, employer branding, learning and development, internal communications and CSR. Her core industry expertise covers, banking and finance, oil and gas, telecommunications and BPO sectors.

**Roselina bte. Salleh**, *Associate Professor at Universiti Teknologi Malaysia (UTM).*

Professor Salleh is a member of the Soft Computing Research Group (SCRG). She hold the following qualifications in computer science: PhD, MSc, BSc and Diploma from Universiti Teknologi Malaysia.

**Salome Raj**, *Senior Human Resources Manager, Harvey Norman Malaysia.*

Ms. Salome has a track record in formulating and establishing successful initiatives in talent management; compensation and benefits; training and development; and developing human capital metrics. She has done extensive work in developing competency frameworks and establishing key performance indicators for the company's retail business. She is firm believer that competencies, autonomy and camaraderie are critical factors in eliciting employees' engagement and commitment at the workplace. Salome's academic credentials include a bachelor of business administration (entrepreneurship) and master of business administration (strategic management).

**Monsy Siew**, *Executive Director of People, Performance and Culture, KPMG.*

Ms. Monsy Siew graduated with a BSc in business administration from Boston University in the United States. She then worked in marketing related roles at a bank and at an oil and gas multinational before transitioning to a career in HR. She joined KPMG in September 2014 and manages a HR team overseeing talent acquisition and branding, talent management and communication, talent performance and rewards, talent mobility and government relations. Her unique blend of marketing and HR background has put her in good stead to champion the people agenda and help support the leadership team in driving their overall agenda and strategic priorities.

**Jeffrey Sim**, *Head of HR Department, DCH Contract Manufacturing Sdn. Bhd.*

Jeffrey is an experienced HR Professional with over 30 years of local and overseas work experience across different industries including: manufacturing – FMCG, banking, financial services, insurance, automotive, construction and property development. He is a member of the Technical Committee Representative for Human Resource Management under the purview of Standards Malaysia for National Mirror Committee of ISO/TC 260 – Human Resource Management.

**Gurpardeep Singh**, *Vice President of Operations Asia Pacific University of Technology and Innovation (APU).*

Mr. Gupardeep has significant senior management experience involving leadership of diverse teams across a broad range of shared service functions, including IT services, strategic management, infrastructure development and facilities management, education and training management, marketing and business development, financial management, customer service enhancement, risk management and quality systems management. He is also heavily involved in industry-wide advocacy with government agencies as well as international partners.

**Datuk Parmjit A. Singh A/L Meva Singh**, *Chief Executive Officer and Founder, the APIIT Education Group, Asia Pacific University of Technology and Innovation (APU).*

Datuk Parmjit is also the president for Malaysian Association of Private Colleges and University (MAPCU). He is both a visionary and an internationalist. He has been involved in information technology and education and training for more than 23 years. He has sat on many government and industry advisory bodies and his contributions to the IT industry were recognised as far back as 1990 when he was awarded the ‘1990 IT Personality of the Year’. He graduated in the fields of computer science and business and in 1996 was awarded an honorary doctorate in technology from Staffordshire University.

**Kim Shyong Siow**, *Research Fellow, Institute of Microengineering and Nanoelectronics, Universiti Kebangsaan Malaysia.*

Dr. Siow is a member of Electronic and Machinery Support, Institute of Microengineering and Nanoelectronics (IMEN). His research interests are related to joining technologies using sintered silver for power electronics applications and surface modification using plasma technologies for biomaterials, adhesion and microfluidic applications. Before joining IMEN, he has worked as a materials engineer at multi-national companies and the National University of Singapore. He has been a certified Project Management Professional PMP® since 2009 and trainer for project risk management at masters degree level. He holds a PhD in engineering (minerals and materials) from the University of South Australia (2007).

**N. M. Thangaraj**, *President, Malaysian Association of Retail Management.*

Mr Thangaraj has credentials as a management consultant with extensive experience. As a management consultant, he collaborates with the management of organisations to address issues of strategy, conflict management, communication, organisational alignment, performance improvement and innovation. His primary role is to assist organisations in innovating, transforming and connecting their people to organisational strategies. He has held appointments as a short-term expert for an EU funded project in Croatia (on building business capacities); as a consultant on special projects for the Special Unit of Innovation, Prime Minister’s Office Malaysia; lead consultant for an Innovation Lab for Malayan Railways (KTMB) – a Ministry of Finance funded project led by Global Innovation Research Centre.

**Roshan Thiran**, *Founder and CEO, Leaderonomics.*

Roshan has won numerous awards in business, HR and leadership development, including a Global HR award and the Malaysia HR Leader Award. Leaderonomics is a social enterprise dedicated to providing access to leadership development to everyone of all ages in developing nations across Asia Pacific. Roshan currently hosts his own TV show and also writes a few newspaper columns and has his own weekly radio segment. He is a key thought leader in the field of leadership and business and frequently speaks at global conferences.

**Jimmy Ting**, *Chief Executive Officer, Datamicro Sdn. Bhd.,*

Jimmy Ting holds a bachelor of science in electrical and electronics engineering. He has been involved in high technology ICT industry, providing the region with big data mining and business intelligence solutions.

**Kohilan Vallan**, *Head of Retail Collection, Kuwait Finance House.*

For the past 14 years Mr. Vallan has gained a breadth of experience including debt collection. The realisation that this type of work fits well with his methodical and analytical nature has further inspired him to contribute more to the banking industry.

**Zaini Abdul Wahab**, *Director and Principal Consultant at Connecys Sdn. Bhd.*

The company specialises in consultancy and advisory services in energy management system and energy conservation solutions implementation. Mr. Zaini is a registered energy manager (REEM) with the Energy Commission, a certified EnMS expert by United Nations Industrial Development Organization (UNIDO), and an elected committee member in the Malaysia Association of Energy Service Companies (MAESCO) since 2012. He is also a registered consultant with the Asia Development Bank, a facilitator for EE policy workshops by the International Energy Agency, an expert trainer and consultant in Industrial EE improvement for the Malaysian manufacturing sector by UNIDO since 2012 and was a member of the board of judges for the ASEAN Energy Awards 2011.

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Issued: January 2019 Reference: 7789 © CIPD 2019

