TWELFTH MALAYSIA PLAN, 2021–2025

***Keluarga Malaysia* - Prosperous, Inclusive and Sustainable**

Unit Perancang Ekonomi
Jabatan Perdana Menteri

25 October 2021

35TH IDEAXCHANGE OF ACADEMY OF SCIENCES MALAYSIA

"Building A Resilient Nation: STI as the enabler of the 12th Malaysia Plan"

TWELFTH MALAYSIA PLAN, 2021–2025

- The Twelfth Malaysia Plan is to achieve a **prosperous, inclusive and sustainable Malaysia**
- The first half of Wawasan Kemakmuran Bersama 2030
- Outlines measures to reset the economic growth in light of the challenges brought by the COVID-19 pandemics
- Lays the foundation to position Malaysia as a high-tech and high-income nation by the end of this decade
- The last reform in *Pelan Pemulihan Negara*

9 MAIN FOCUSES

FOCUS 01
Spur Economic Growth

FOCUS 02
Strengthen Growth Catalyst

FOCUS 03
Improve the Wellbeing of Keluarga Malaysia

FOCUS 04
Enhance Safety & Public Order

FOCUS 05
Eradicate Absolute Poverty & Reduce Income Gap

FOCUS 06
Empower the Bumiputera & Keluarga Malaysia Agenda

FOCUS 07
Boost the Development of Sabah, Sarawak & Other Less Developed States

FOCUS 08
Accelerate Green Growth

FOCUS 09
Improve Public Service Delivery & Ensure Effective Implementation of Policies

Themes and Policy Enablers

3 Themes

- Resetting the Economy
- Strengthening Security, Wellbeing and Inclusivity
- Advancing Sustainability

4 Policy Enablers

- Developing Future Talents
- Accelerating Technology Adoption and Innovation
- Enhancing Connectivity and Transport Infrastructure
- Strengthening the Public Service

TWELFTH MALAYSIA PLAN, 2021–2025

14 GAME CHANGERS

I
Imperatives for Reform and Transformation

II
Catalysing Strategic and High Impact Industries to Boost Economic Growth

III
Transforming Micro, Small and Medium Enterprises as the New Driver of Growth

IV
Enhancing National Security and Unity for Nation-Building

V
Revitalising the Healthcare System in Ensuring a Healthy and Productive Nation

VI
Transforming the Approach in Eradicating Hardcore Poverty

VII
Multiplying Growth in Less Developed States especially Sabah and Sarawak to Reduce Development Gap

VIII
Embracing the Circular Economy

IX
Accelerating Adoption of Integrated Water Resources Management

X
Improving TVET Ecosystem to Produce Future-Ready Talent

XI
Enhancing Digital Connectivity for Inclusive Development

XII
Aligning Research and Development towards Commercialisation, Wealth Generation and Economic Growth

XIII
Transforming the Logistics Ecosystem for Greater Efficiency

XIV
Transforming the Public Service through the Whole-of-Government Approach

Prosperous, Inclusive and Sustainable Malaysia

Game Changer (GC) I: Imperatives for Reform and Transformation

Chapter 1: Strengthening Macroeconomic Fundamentals

Theme

1. Resetting the economy

- **Chapter 2: Restoring Growth Momentum**
- **Chapter 3: Propelling Growth of Strategic and High Impact Industries as Well as MSMEs**
  - GC II: Catalysing Strategic and High Impact Industries to Boost Economic Growth
  - **GC III:** Transforming MSMEs as the New Driver of Growth

2. Strengthening security, wellbeing and inclusivity

- **Chapter 4: Enhancing Defence, Security, Wellbeing and Unity**
  - **GC IV:** Enhancing National Security and Unity for Nation-Building
  - **GC V:** Revitalising the Healthcare System in Ensuring a Healthy and Productive Nation
- **Chapter 5: Addressing Poverty and Building an Inclusive Society**
  - **GC VI:** Transforming the Approach in Eradicating Hardcore Poverty
- **Chapter 6: Improving Regional Balance and Inclusion**
- **Chapter 7: Enhancing Socioeconomic Development in Sabah and Sarawak**
  - **GC VII:** Multiplying Growth in Less Developed States especially Sabah and Sarawak to Reduce Development Gap

3. Advancing sustainability

- **Chapter 8: Advancing Green Growth for Sustainability and Resilience**
  - **GC VIII:** Embracing the Circular Economy
- **Chapter 9: Enhancing Energy Sustainability and Transforming the Water Sector**
  - **GC IX:** Accelerating Adoption of Integrated Water Resources Management

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Policy Enablers

DEVELOPING FUTURE TALENT

Chapter 10: Developing Future Talent

- **GC X:** Improving TVET Ecosystem to Produce Future-Ready Talent

ACCELERATING TECHNOLOGY ADOPTION AND INNOVATION

Chapter 11: Enhancing Efficiency of Transport and Logistics Infrastructure

- **GC XI:** Enhancing Digital Connectivity for Inclusive Development
- **GC XII:** Aligning Research and Development towards Commercialisation, Wealth Generation and Economic Growth

ENHANCING CONNECTIVITY AND TRANSPORT INFRASTRUCTURE

Chapter 12: Boosting Digitalisation and Advanced Technology

- **GC XIII:** Transforming the Logistics Ecosystem for Greater Efficiency

STRENGTHENING THE PUBLIC SERVICE

Chapter 13: Strengthening Public Sector Service Delivery

- **GC XIV:** Transforming the Public Service through the Whole-of-Government Approach

CHAPTER 3

PROPELLING GROWTH OF STRATEGIC AND HIGH IMPACT INDUSTRIES AS WELL AS MICRO, SMALL AND MEDIUM ENTERPRISES

Chapter 3: Propelling Growth of Strategic and High Impact Industries as Well as Micro, Small And Medium Enterprises

Priority Area A

Accelerating the Development of Strategic and High Impact Industries

Strategy A1
Boosting Electrical and Electronics Industry in Moving up the Value Chain

Strategy A2
Enhancing Competitiveness of Global Services

Strategy A3
Establishing a Sustainable Aerospace Industry

Strategy A4
Maximising the Potential of the Creative Industry

Strategy A5
Re-energising the Tourism Industry

Strategy A6
Fostering Competitiveness of Inclusive Halal Industry

Strategy A7
Intensifying Smart Farming Activities

Strategy A8
Realising the Potential of Biomass Industry

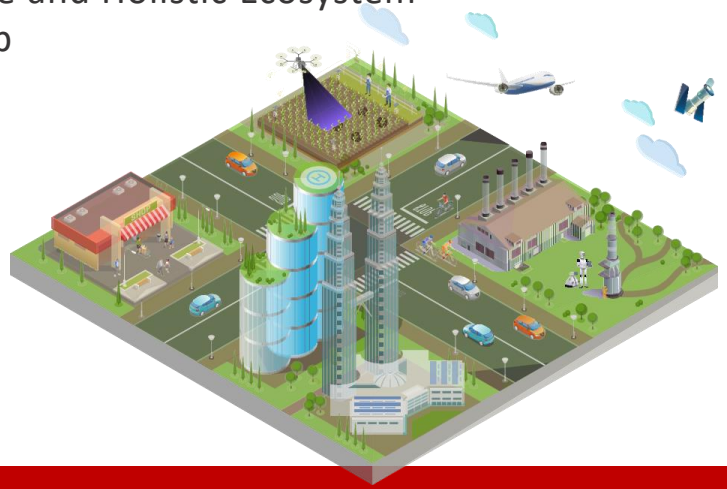
Priority Area B

Boosting Capabilities of Entrepreneurs and Enterprises

Strategy B1
Creating Innovative and Sustainable Entrepreneurs

Strategy B2
Promoting Inclusive Participation through Micro, Small and Medium Enterprises, Cooperatives and Agriculture-Based Associations

Strategy B3
Creating a Conducive and Holistic Ecosystem for Entrepreneurship



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Issues on E&E industry

Shortage of skilled talent, especially for top-end design engineers and researchers

Easy access to low-skilled foreign workers has discouraged the E&E industry from innovating and investing in automation

The E&E industry faces several **challenges** in maintaining growth and competitiveness globally.....

Lack of local R&D activities

E&E is mainly focused on back-end manufacturing activities, which are low in value-added, capital intensity and technology complexity

E&E PERFORMANCE AND GLOBAL OUTLOOK

E&E GDP Share (Total Manufacturing)	% of Total Mfg. Exports	% of Total Exports
2018 –4.8% 2019–4.4%	2019 –44.7% 2020- 43.3%	2019 –RM 372.2 bil (37.8% 2020 –RM RM386.1bil (39.4%)

Total Implemented Investment in E&E	Total Employment
2020- RM1.944 billion DDI – RM122 million FDI – RM 1,822 million	2020 – more than 19,000 new job opportunities

- Full Range of E&E Ecosystem & Cluster (Semiconductor, Solar, LED)
- Intensity in R&D activities. (R&D Centre) and Centre of Excellence (CoE)
- Top Export Contributor for Manufacturing (Trade Surplus)

GLOBAL OUTLOOK

Semiconductor CAGR (2021 - 2028)
8.6% *(Business Insights)*

LED CAGR (2018 - 2024)
15.9% *(Allied Market Research)*

Solar CAGR (2016 - 2022)
24.2% *(Allied Market Research)*

Source: MIDA

E&E INDUSTRY GOVERNMENT'S ASSISTANCES

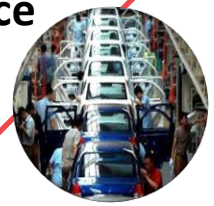
Incentives for Manufacturing Sector Including E&E Industry

TAX INCENTIVES

1. General activities
   - Pioneer Status (PS)
   - Investment Tax Allowance (ITA)
2. High Technology
3. Strategic Projects
4. Automation Capital Allowance (ACA)
5. PENJANA

GRANT/LOAN

1. Domestic Investment Strategic Fund (DISF) - RM1 billion
2. High Impact Fund (HIF) – RM900 million
3. RM1 billion Fund under Special Incentive Package to Support R&D Investments in E&E and Aerospace Industries



E&E Performance and Targets

Performance

RM70.6 billion — 2016

RM86.1 billion — 2020

Electrical and Electronics Contribution to GDP

Targets

RM120 billion — 2025

Contribution of Electrical and Electronics Industry to GDP

RM495 billion — 2025

Export Value of Electrical and Electronics Products

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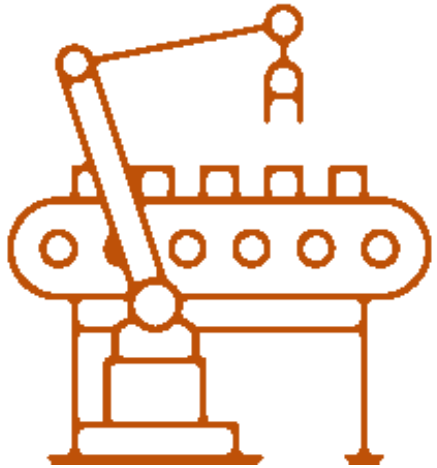
Strategies to Boost E&E Industry

i. Strengthening the Electrical and Electronics Industry Ecosystem for Higher Value Chain

- A national E&E roadmap will be formulated
- The roles of relevant organisations will be enhanced
- Incentives for the E&E industry will be restructured

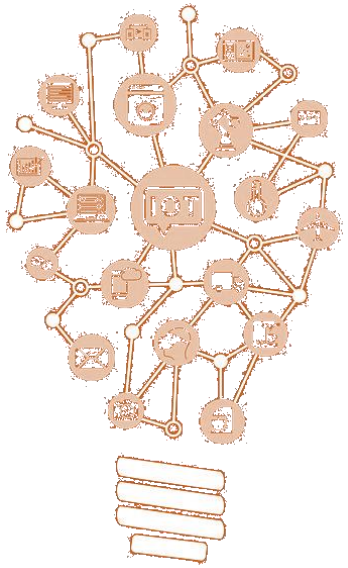


ii. Promoting High Adoption of Technology

- Utilisation of greater automation and advanced technology
- The implementation of the Lighthouse Project will be intensified
- Accelerate 4IR technology adoption and innovation through 4IR business platform

Strategies to Boost E&E Industry

iii. Uplifting the Development of Talent and Capability



- Micro-credentials programmes will be expanded based on the Triple Helix model
- Talent development in line with the National 4IR policy framework
- Employees will be upskilled and reskilled
- A dedicated centre will be identified
- Enrolment in science, technology, engineering and mathematics (STEM) education programmes will be increased
- Programmes in public universities will be aligned with industry requirements.

Strategies to Boost E&E Industry

iv. Enhancing Research and Development as well as Design and Development

- Focus on D&D activities, particularly in integrated circuits (IC), IC packaging, embedded systems
- R&D grants and incentives will be reviewed to cater to advanced technology push and market pull activities
- End-to-end R&D activities will be promoted
- Research institutions and centres of excellence will be streamlined to reduce redundancy
- Dedicated technology and innovation centres will be established to drive technology development, accelerate innovation and technology transfer

12MP POLICY ENABLERS

- Chapter 10: Developing Future Talent
- Chapter 11: Accelerating Technology Adaption and Innovation
- Chapter 12: Enhancing Connectivity and Transport Infrastructure
- Chapter 13: Strengthening the Public Service

Policy Enablers

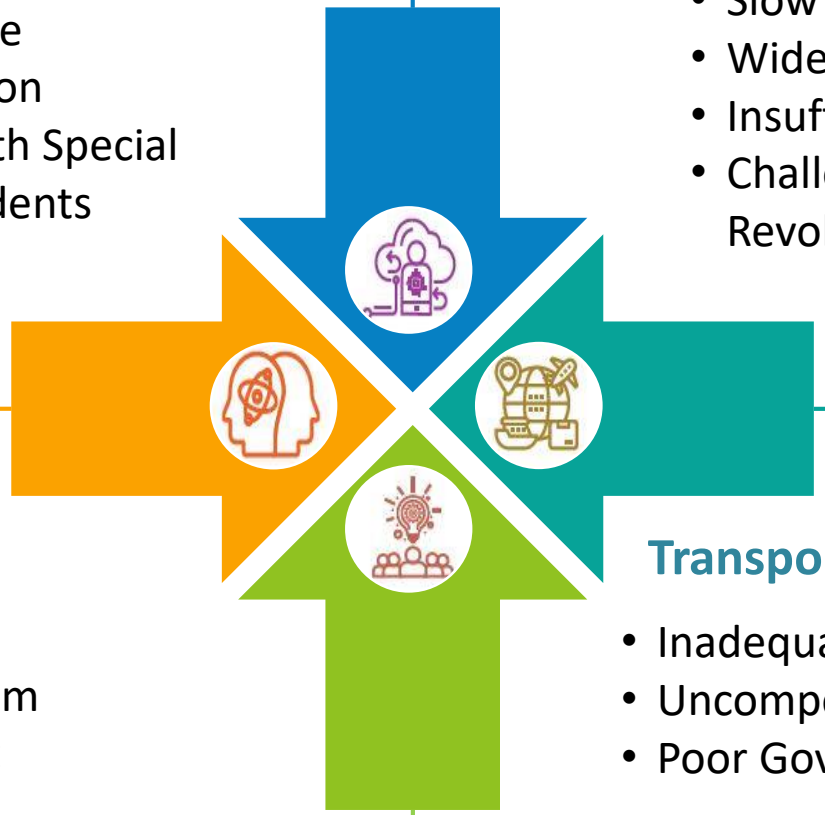
Issues and Challenges

1 Human Capital

- Inequality in Compensation and Labour Participation
- Inefficient Labour Market
- Labour Displacement due to the Covid-19 Pandemic
- Low Student Outcomes
- Lack of Coordination and Governance
- Uncondusive Ecosystem for Innovation
- Limited Accessibility for Students with Special Education Needs and Orang Asli Students

2 Widening Of The Digital Divide

- Slow Growth of Digital Economy
- Widening Digital Divide
- Insufficient Investment in R&D&C&I
- Challenges in Adopting the Fourth Industrial Revolution Technologies



3 Transport And Logistics Industry

- Inadequate First- and Last-Mile Connectivity
- Uncompetitive Transport and Logistics Industry
- Poor Governance in Transport and Logistics

4 Public Sector

- Challenges in Talent Development
- Challenges in Governance Ecosystem
- Challenges in Project Management

Policy Enablers

Chapter 10: Developing Future Talent

40%

2025

Compensation of Employees to GDP

55%

2025

Intake of SPM Leavers or Equivalent into TVET Programmes

86.7%

2025

Graduate Employability in Higher Education and Public TVET Institutions

Chapter 11: Boosting Digitalisation and Advanced Technology

25.5%

2025

Contribution of Digital Economy to GDP

10.5%

2025

Contribution of eCommerce to GDP

2.5%

2025

Gross Expenditure on R&D (GERD) to GDP

TOP 20

2025

Ranking in the Global Innovation Index

Target

Pemangkin Dasar

Chapter 12: Enhancing Efficiency of Transport and Logistics Infrastructure

5%

2025

Annual Growth of Public Transport Ridership in GKL/KV

National Warehouse Regulation

2025

Introduction of National Warehouse Regulation

Top 30

2025

Ranking in the World Bank Logistics Performance Index

Chapter 13: Strengthening Public Sector Service Delivery

80%

2025

End-to-End Online Federal Government Services

90%

2025

Local Authorities Achieve 4-Star Ranking

Top 30

2025

Ranking in the Corruption Perceptions Index

-3.5% to -3.0%

2025

Percentage of Fiscal Balance to GDP

○ Target

Chapter 10: Developing Future Talent

Realigning the Labour Market for Inclusive and Sustainable Growth

- Promoting Equitable Compensation of Employees and Labour Participation
- Strengthening the Labour Market Support System

Developing Future-Ready Talent

- Raising the Quality of Education
- Strengthening Governance
- Leveraging Emerging Technology
- Ensuring Equitable Learning Outcomes
- Addressing Overlap in TVET Governance

Chapter 11: Boosting Digitalisation and Advanced Technology

Advancing Digital Economy

- Providing an Enabling Environment for the Growth of the Digital Economy
- Strengthening Provision of Digital Infrastructure and Services
- Developing Future-ready Digital Talent
- Positioning Malaysia as the ASEAN Digital Centre

Mainstreaming Digitalisation for Inclusive Development

- Expanding Digitalisation
- Improving Digital Governance for Inclusive Digitalisation

Accelerating Research, Development, Commercialisation and Innovation

- Strengthening Capacity and Capability in Research, Development, Commercialisation and Innovation
- Nurturing Quality Science, Technology and Innovation Talenti

Capitalising on Advanced Technology Potential

- Gearing up for the Fourth Industrial Revolution

Chapter 12: Enhancing Efficiency of Transport and Logistics Infrastructure

Ensuring Integrated, Affordable, Reliable and Seamless People Mobility

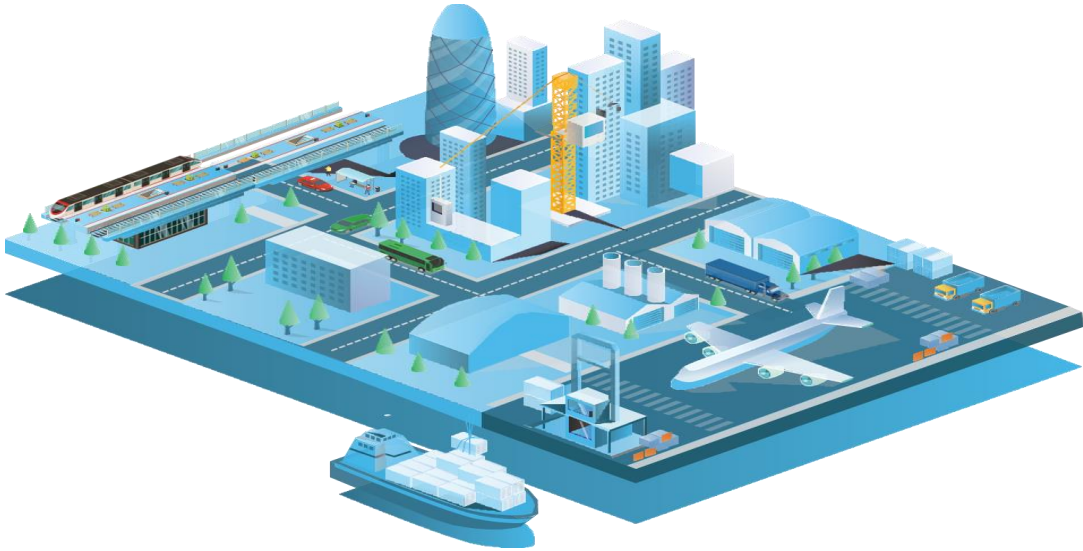
- Improving Overall Accessibility of Public Transport
- Encouraging Behavioural Shift from Private to Public Transport

Driving Transport and Logistics Industry Towards Competitiveness

- Enhancing Efficiency of Services
- Leveraging Digitalisation in Services

Strengthening Institutional and Regulatory Framework

- Improving Governance
- Promoting Green initiatives



Developing High-Performing Civil Service

- Transforming the Public Service
- Developing Future Leaders

Advancing Whole-of-Government Approach

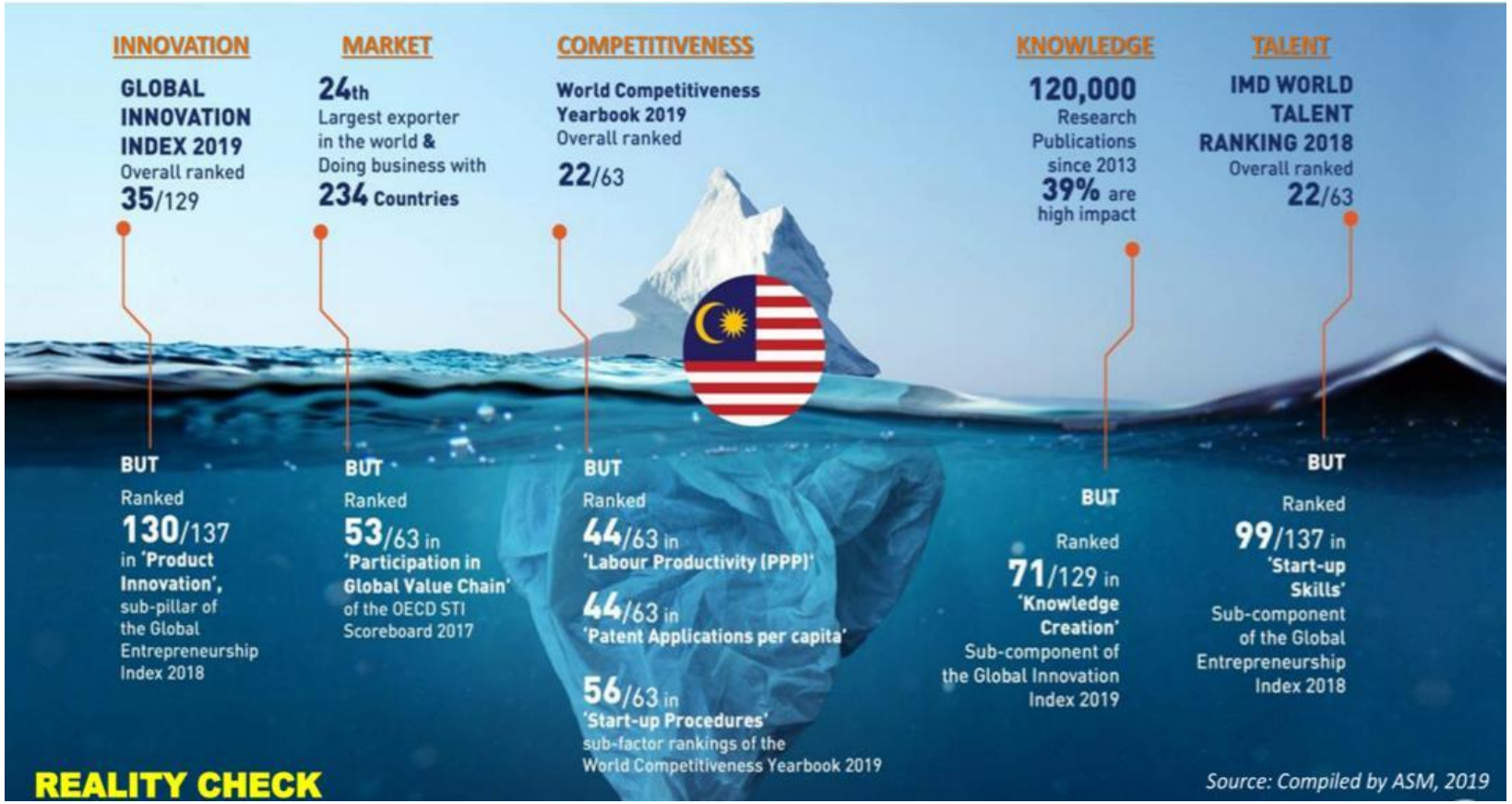
- Improving Government Administration and Operational Efficiency
- Enabling Better Decision-Making and Innovation
- Strengthening Governance Ecosystem

Enhancing Budgeting and Project Management

- Reviewing Budgeting Framework and Process
- Improving Effectiveness of Project Implementation

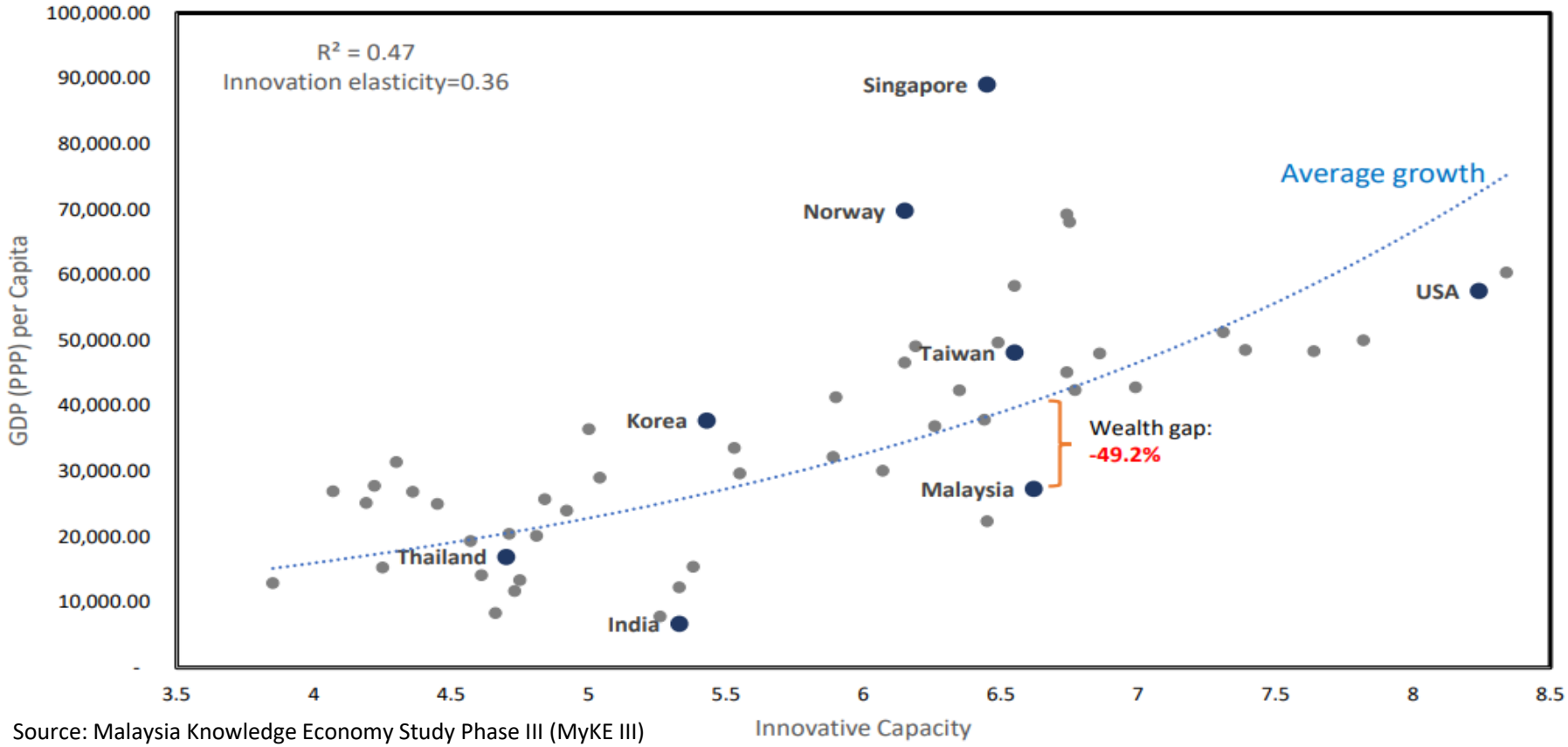
CHAPTER 11
BOOSTING DIGITALISATION AND ANVANCED TECHNOLOGY

Malaysia Global Outlook



- Malaysia's competitiveness is driven by good talent & infrastructure not innovation
- Innovation capacity & skills need to be strengthened to move STI-based enterprise

Relationship between Innovative Capacity & Wealth, 2016



Source: Malaysia Knowledge Economy Study Phase III (MyKE III)

- Based on average growth trend, **increase in innovation will increase wealth at a faster pace**.
- Every 1% increase in innovation increases wealth by 0.36%.
- **GDP growth Malaysia was significantly lower than its potential output level with a gap of 49.2%**.

Issues & Challenges

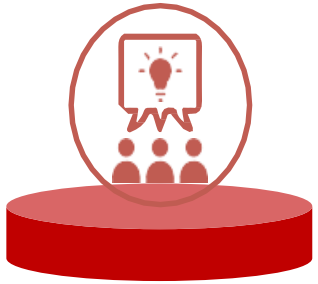
Insufficient Investment in R&D&C&I

Lack of investment
(Public & Private Sectors)

Lack of investment in
high-end R&D

Low commercialisation
& experimental research

Poor coordination
among agencies



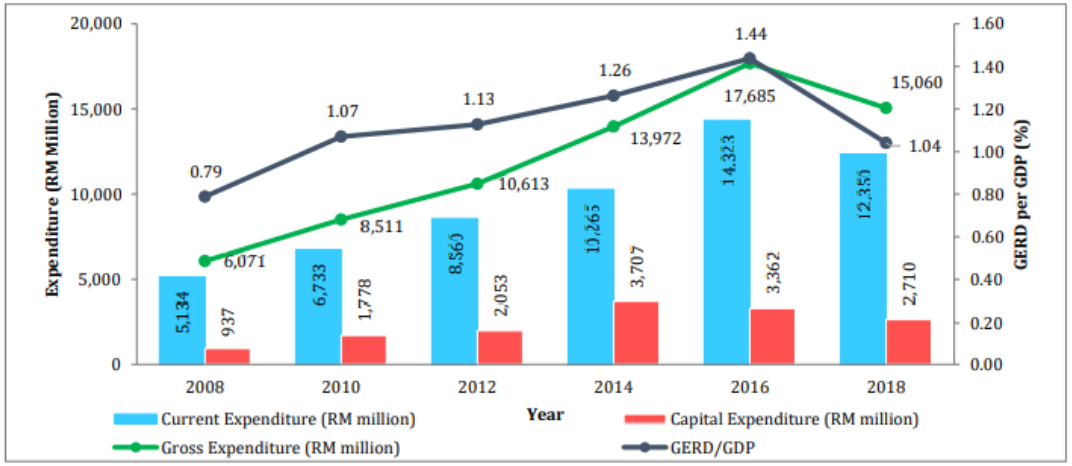
Insufficient STI talent

Global Entrepreneurship Index (GEI):
65th out of 137 countries

Global Innovation Index (GII):
dropped from 32nd position in 2015 to
33rd in 2020

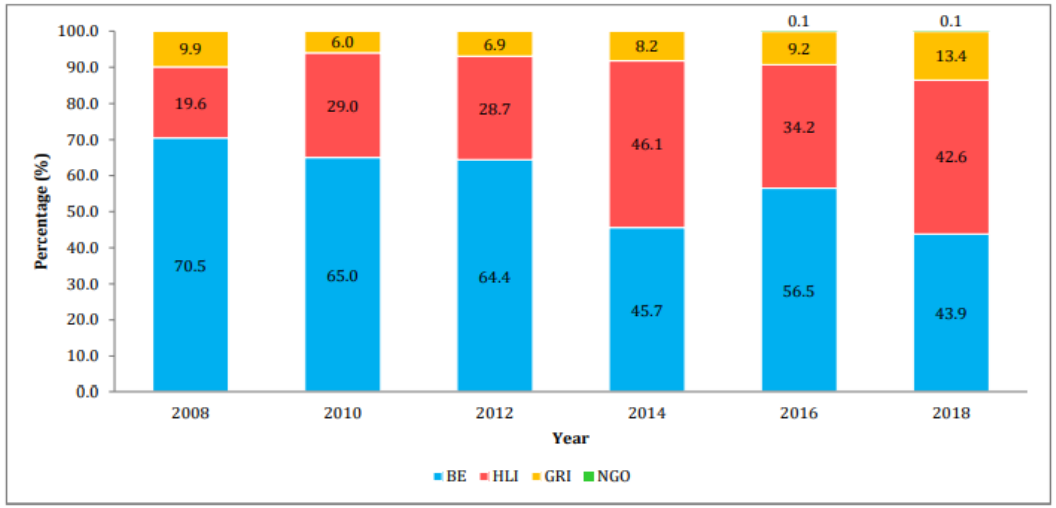
Expenditure for research & development increased but not sufficient enough to drive growth

Gross Expenditure by Type of Cost in R&D, 2008-2018



Source: National Survey of Research and Development (R&D) in Malaysia

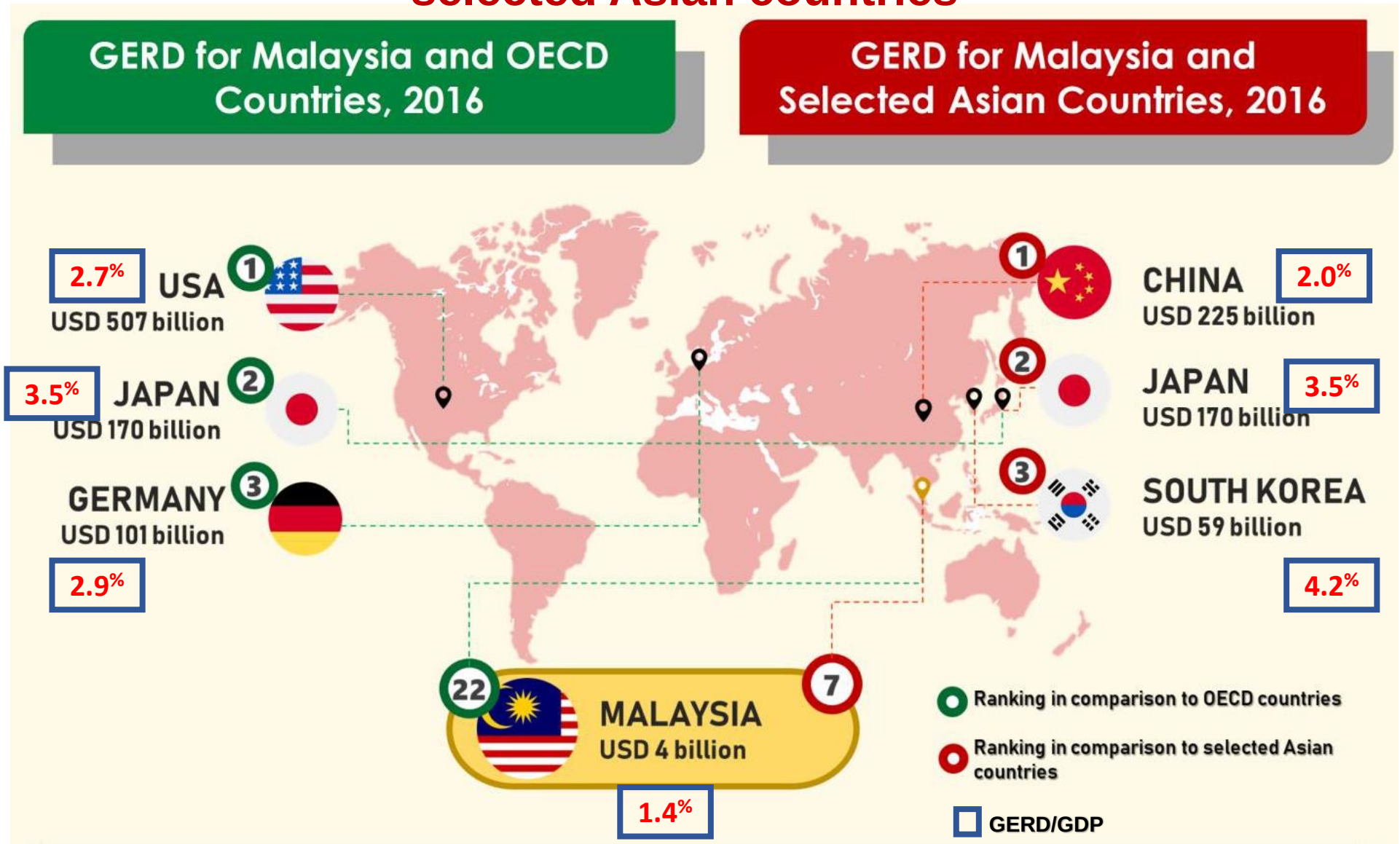
GERD by Sector, 2008-2018 (Percentage)



Source: National Survey of Research and Development (R&D) in Malaysia

- Malaysia's GERD
  - ⬇ from **RM17,685 million** (2016) to **RM15,060 million** (2018)
- GERD/GDP
  - ⬇ from **1.44%** (2016) to **1.04%** (2018)
- Business expenditure on R&D (BERD)
  - ⬇ from **57%** (2016) and to **43.9%** in 2018

Malaysia is no where near the OECDs and a few selected Asian countries



The commercialisation rate does not commensurate with the increase in R&D spending

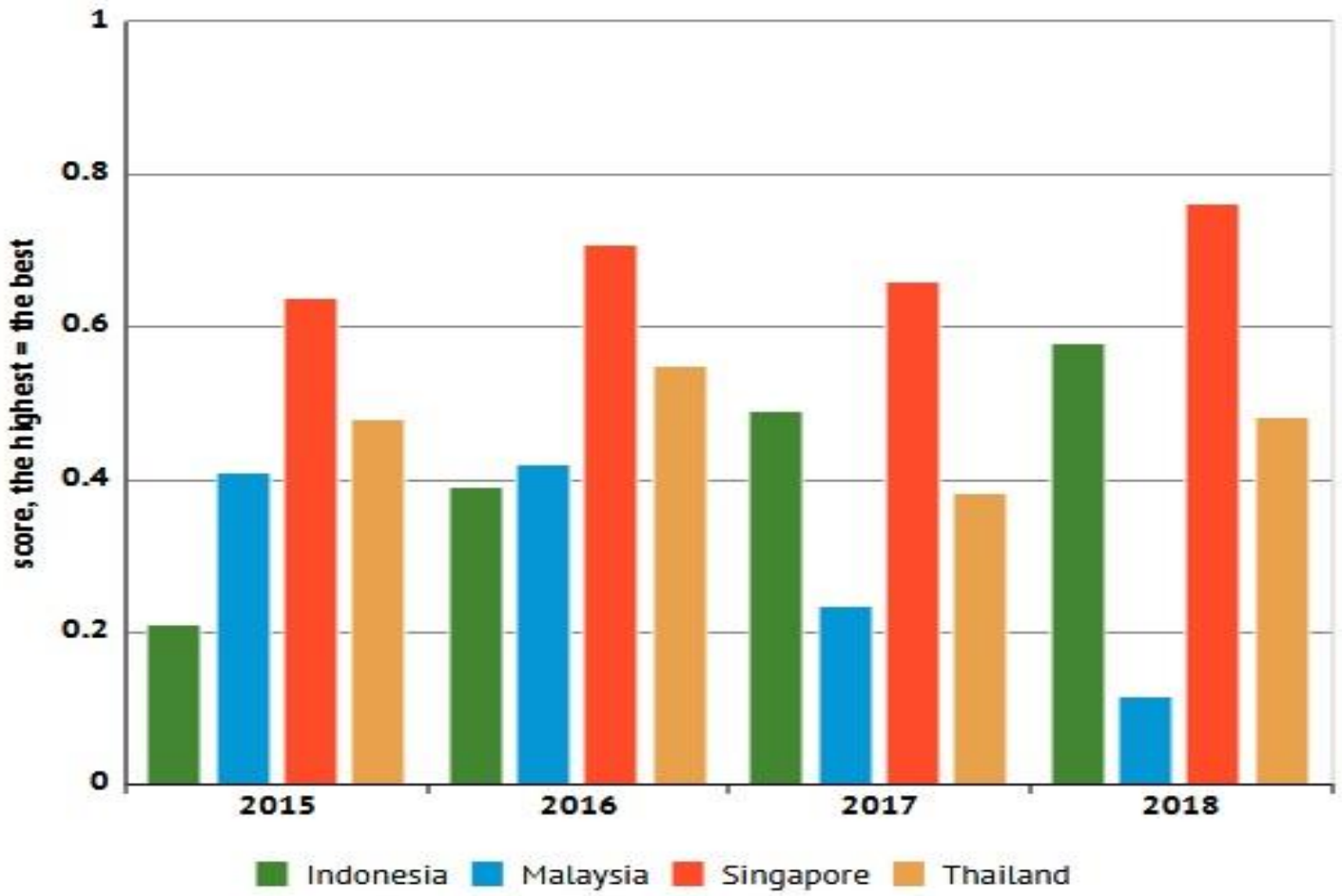
Number of commercialised products and revenue generated, 2016

Item	Total Number	Revenue (RM)
BEs		
Patents licensing and technology know-how licensing: number and value	149	47,867,963
Total number and value of commercialised products	2,850	4,505,364,393
HLIs		
Patents licensing and technology know-how licensing: number and value	92	4,570,856
Total number and value of commercialised products	92	17,660,444
GRIs		
Patents licensing and technology know-how licensing: number and value	197	3,472,639
Total number and value of commercialised products	930	19,818,601
NGOs		
Patents licensing and technology know-how licensing: number and value	0	0
Total number and value of commercialised products	5	0
Total	4,315	4,598,754,896

Source: National Survey of R&D in Malaysia 2017

Malaysia's position in Production Innovation has deteriorated

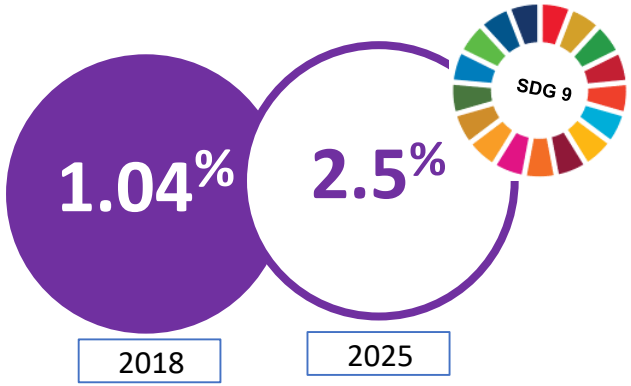
Production Innovation sub pillar of the Global Entrepreneurship Index 2018



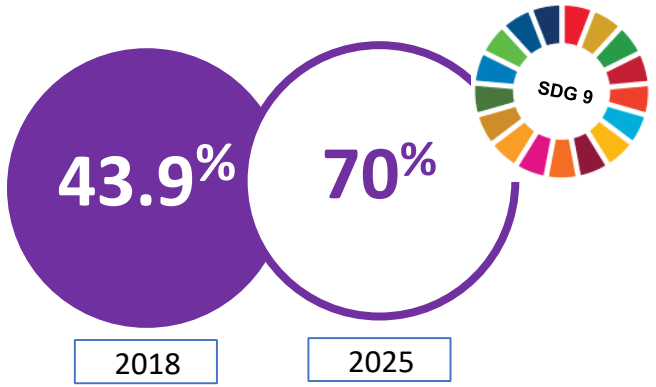
Source: The Global Entrepreneurship and Development Institute

Twelfth Malaysia Plan : Selected Targets

Accelerating Research, Development, Commercialisation and Innovation

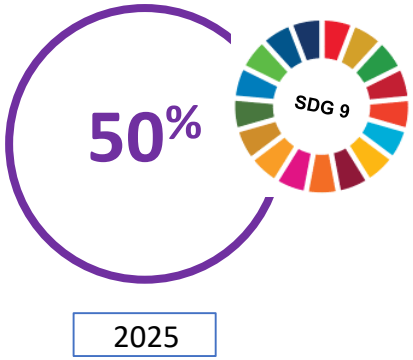


Gross Expenditure on R&D (GERD) to GDP

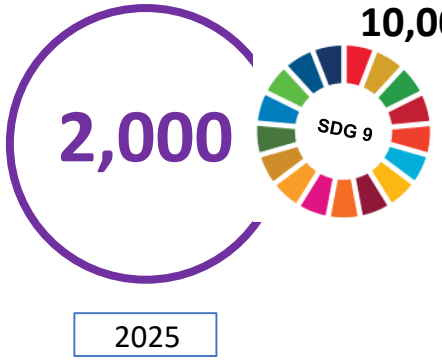


Business Expenditure on R&D (BERD) to GERD

Number of Researchers per 10,000 Labour Force



Experimental Development Research to GERD



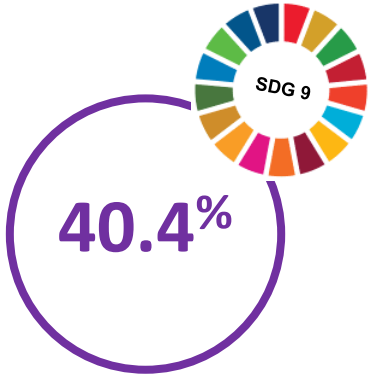
Number of Patent Applications by Malaysians

Performance

Target

Twelfh Malaysia Plan : Selected Targets

Capitalising on Advanced Technology Potential



2025

Multifactor Productivity Contribution to GDP Growth

2025

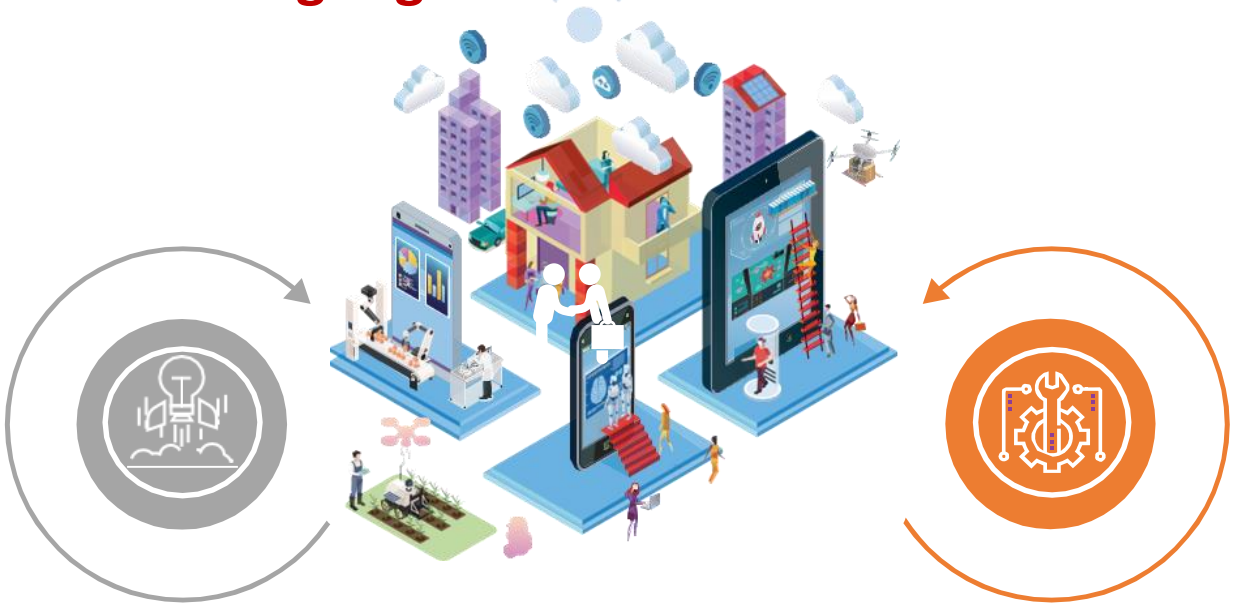
Ranking in the Global Innovation Index

2025

Number of Products/Solutions Commercialised through the National Technology and Innovation Sandbox (NTIS) and Malaysia Commercialisation Year (MCY)

Target

Chapter 11: Boosting Digitalisation and Advanced Technology



PRIORITY AREA C
Accelerating R&D&C&I

Strategy C1
Strengthening Capacity dan Capability in R&D&C&I

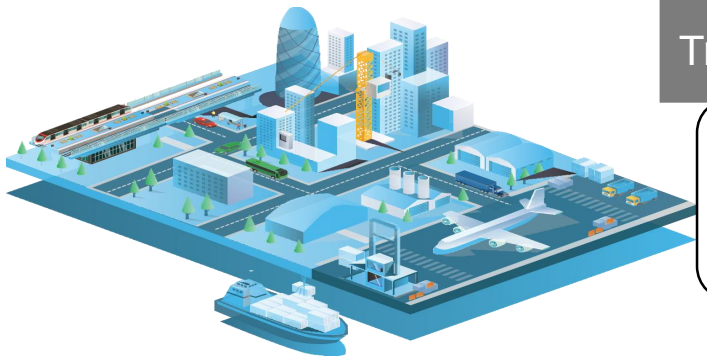
Strategy C2
Nurturing Quality Science, Technology and Innovation Talent

PRIORITY AREA D
Capitalising on Advanced Technology Potential

Strategy D1
Gearing up for the Fourth Industrial Revolution

STRATEGY, INITIATIVES AND ACTIONS

STRATEGY C1



Streamlining National Science, Technology and Innovation Priority Areas

- Implement DSTIN 2021-2030
- Create more local talents as technology develepors and creators based on 10-10 MySTIE niche area

Strengthening Funding for R&D&C&I

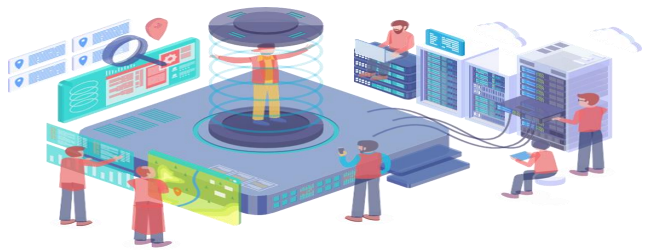
- Ensure R&D&C&I activities are in line with national priorities with the newly established Research Management Unit (RMU)
- Ensure 50% of research funding will be focused on experimental development with high commercialization potential

Translating R&D as well as Intelectual Property into High Value-Added Products

- Accelerate innovation and local technology development through sandbox technology
- Strengthen Malaysia Commercialisation Year 2.0 to increase commercialisation and improve the transfer rate of R&D outputs from lab to market

STRATEGY, INITIATIVES AND ACTIONS

STRATEGY C2



Increasing Supply of Quality Science, Technology and Innovation Talent

- Improve careers and provide competitive remuneration package for STI related schemes
- Implement Structured capacity-building programmes to produce accredited and registered technology transfer professional

Championing Effective and Fun Non-Formal Science, Technology, Engineering and Mathematics Learning

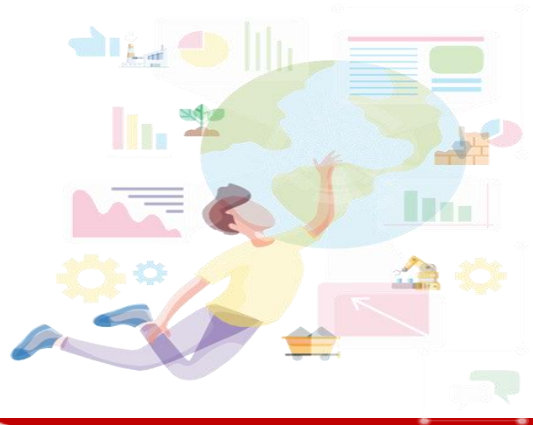
- Implement outreach programmes, thematic exhibitions and interactive educational activities
- Transform National Science Centre and National Planetarium
- Establish new regional science centres

Increasing Effectiveness of Communication and Awareness Programmes

- Establish a coordination committee to streamline and integrate awareness messages
- Undertake strategic engagements between government agencies, social enterprises and civil society organisation to promote STEM education

STRATEGY, INITIATIVES AND ACTIONS

STRATEGY D1



Seizing Economic Growth Opportunities Arising from the Fourth Industrial Revolution

- Enhance the capabilities of MSMEs improving coordination in implementing existing programmes and intiatives
- Focus on 10 potential sectors to facilitate a strategic shift in the economy (Wholesale & Retail Trade, Transportation & Logistics, Tourism, Finance & Insurance, Utilities, Professional, Scientific & Technical Services, Healthcare, Education, Agriculture And Manufacturing)

Creating a Conducive Ecosystem to Harness the Potential of the Fourth Industrial Revolution

- Establish World Economic Forum (WEF) Centre for 4IR
- Expand regulatory sandbox beyond fintech

Establishing Trust and Building an Inclusive Digital Society

- Upgrade open data sharing infrastructure
- Strengthen guidelines and regulations on personal data protection and data sharing

Conclusion

- Malaysia should no longer be a consumer country; instead it should become a country that is **proficient in STI** that produces world-class products and services of its own.
- In order for a country to be self-reliant, it is important that the **our industry excels in research and development**.
- Concerted efforts will need to be undertaken to boost advanced technology adoption to transform Malaysia into **a high technology-based economy** through, among others, increasing the **commercialisation of R&D outputs and investments**.

THANK YOU